

# Shortform Catalog

## *August 2013*

Generation Innovation  
Delivering Innovation Through  
Technology for the Digital Generation

# Shortform Catalog

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# Corporate Profile

Micrel Inc., is a leading global manufacturer of IC solutions for the worldwide High-Performance Linear and Power, LAN, and Timing and Communication markets. The Company's products include advanced mixed-signal, analog and power semiconductors, high-performance communication, clock management, Ethernet switch and physical layer transceiver ICs. Company customers include leading manufacturers of enterprise, consumer, industrial, mobile, telecommunications, automotive, and computer products. Corporation headquarters and state-of-the-art wafer fabrication facilities are located in San Jose, CA, with regional sales and support offices and advanced technology design centers situated throughout the Americas, Europe, and Asia. In addition, the Company maintains an extensive network of distributors and reps worldwide. Web: <http://www.micrel.com>.

Founded in 1978, Micrel maintains a portfolio of world class wafer fabrication processes that enable the Company to produce new products faster than the competition. The Company uses, singularly or in combination, CMOS, Bipolar, and DMOS technologies in its High-Performance Linear and Power products. With the acquisition of Synergy Semiconductor in 1998, Micrel has high-speed bipolar capability in the form of ASSET™ (All Spacer Separated Element Transistor) process. This proprietary, patented bipolar technology employs a narrow deep-trench isolation technique that allows for electrical isolation between adjacent circuit elements. This means the Company can place multiple analog and digital functions on the same IC without the various functions causing the interference typically found when alternate techniques are used.

## LAN Solutions

Micrel is an established leader in wired LAN Solutions networking, with more than 500 million ports shipped. The Company's Ethernet products are widely used in digital home devices (IP-STB, IP-TV, etc.), routers, access points, VoIP, automotive, industrial, and Power over LAN Solutions (PoLS) applications, to name a few. There are a wide range of field-proven, multi-port products in a variety of packages, including physical layer transceivers (PHYs), embedded controllers, unmanaged and managed switches, and System-on-Chip (SoC) ICs with an integrated processor. Micrel's comprehensive portfolio of LAN Solutions products operate over commercial, industrial and extended temperature ranges, support AEC-Q100 Automotive qualification, and are available in a variety of environmentally friendly, lead-free packaging options.

## Timing and Communication Solutions

Micrel's Timing and Communication products include physical media device (PMD) ICs such as multi-rate (up to 4.25Gbps) laser drivers, post amplifiers, and optical module management controllers for all types of fiber-optic module applications. It also includes physical layer ICs such as 155Mbps and multi-rate (up to 2.7Gbps), clock and data recovery (CDR), and MUX/DeMUX ICs for access and telecommunications applications. This growing family of devices leads the industry in design innovation and flexibility. The ICs often exceed stringent industry requirements.

## Precision Edge® Products

Micrel's Precision Edge® product family includes precision frequency synthesizers, clock distribution and translation, multiplexers, crosspoint switches, and high-speed gates — all aimed at meeting the most rigorous, timing-critical applications. All Precision Edge products are designed to provide the lowest skew and jitter IC solutions available.

## Linear Power Filters (Ripple Blocker™)

This family of load switches and low drop-out regulators incorporate Micrel's Ripple Blocker™ active filter technology to provide high frequency ripple attenuation (switching noise rejection) for applications where switching noise cannot be tolerated by sensitive downstream circuits. These products are ideal for providing clean system power to increase overall system performance in applications such as medical imaging, webcams, digital still and video cameras, barcode scanners, smartphone cameras and RF stages, and global positioning systems (GPS).

## Low-Dropout Voltage Regulators

Micrel has gained a reputation as a leading supplier of LDO regulators and is a major global supplier to the mobile phone and computing industries. The Company maintains a very broad portfolio of LDO regulators ranging from 10mA devices in Teeny™ SC-70-5 packages to 7.5A power devices and LDO controllers for even higher current applications. Input voltages up to 120V are supported for industrial and automotive applications.

## Radio Frequency Products

Micrel's RF offering consists of two product groups: QwikRadio® receivers and transmitters for actuation devices such as remote controls and remote keyless entry, and RadioWire® transceivers for connectivity applications such as wire replacement in industrial control and security systems.

## Universal Serial Bus and PCMCIA

As a recognized leader of USB and PC card power-distribution solutions, Micrel's extensive selection of ICs is consistently used by many of the leading PC and peripheral OEMs.

## Hot Swap Controllers

Micrel's hot swap power controllers support the industry requirement for high availability (24/7/365) operation in servers, telecom and datacom equipment, and enterprise storage networks. These

products allow customers to upgrade or replace system boards without having to power down the entire system. Offering products for primary- and secondary-side applications, Micrel's family of hot swap power controllers offers customers a wide range of product choices uniquely suited to these applications.

## MOSFET Drivers

Micrel offers a broad range of MOSFET drivers, ranging from IttyBitty® devices in SOT-23 packaging to 12A high-power devices. New device families offer thermally enhanced exposed pad SOIC, MSOP and space-saving efficient MLF® 2mm x 2mm, 3mm x 3mm and 4mm x 4mm package options. Micrel has also introduced AEC-Q100 automotive qualified MOSFET drivers.

## Switch-Mode Power Supply Products

Micrel has a rapidly expanding portfolio of switching regulator products serving the mobile device, portable computer, telecommunications, and industrial markets. All products combine Micrel's advanced processes with the Company's strong design expertise to produce best-in-class products. These products address step-up, step-down, and multi-output systems (PMICs). The Company's DC-DC converter products are offered in controller (external switches) and regulator (switches on board) form, and are designed to provide high efficiency in a small form factor. One example is the SuperSwitcher II™ family of high-voltage, high current switching regulators. This family features input voltage ratings of up to 75V and output currents up to 12A. PMICs combine supervisory, DC-DC, LDO, and interface functions in a single IC to save space and cost, and Micrel offers many PMIC devices for key applications ranging from graphics processors to LTE dongles. Micrel also offers an expanding line of highly integrated DC-DC regulators with internal inductors.

## System/Thermal Management Products

Thermal management is an increasingly critical function in today's portable and high performance systems. Micrel's proprietary technology enables more functionality in smaller packages and superior, real-world accuracy in temperature measurement via embedded thermal diodes. Thermal diodes are increasingly used to monitor the die temperature of high-performance integrated circuits such as Intel® and AMD® microprocessors, Xilinx Virtex®, FPGAs, and ASICs. Micrel's family of products includes the world's first and only IttyBitty SOT-23 thermal diode supervisor IC and the smallest three-zone thermal supervisor. Altogether, Micrel offers a complete family of one-, two-, and three-zone thermal supervisor ICs as well as both analog and digital fan controllers.

## Operational Amplifiers and Comparators

The Company has a broad range of high- and low-voltage op-amps and comparators. These ICs range from general-purpose to high-speed devices. Of particular note is the MIC86x family of ICs which are, by far, the lowest power consumption op-amps of their type on the market. The advanced features of these products make them ideally suited for all forms of battery-powered equipment.

- Voltage references
- Voltage supervisors
- Miniature MOSFETs
- Serial and parallel-input latched drivers
- Display drivers
- Latched drivers
- Custom and semi-custom products

## Big Technology, Small Package Innovation

In response to increasing demands for smaller footprint solutions, Micrel leads the industry in packaging innovation with IC packaging options, including MLF technology, down to 0.85mm x 0.85mm and smaller CSP packages.

## Quality Assurance

Micrel first achieved ISO 9001 registration on March 31, 1997 and on December of 2004, the Company's wafer fabrication facility was certified to ISO14001:1996, the International Environmental Management System Standard. The goal of the environmental management system is to ensure regulatory compliance and to reduce environmental impact through waste reduction and recycling. Micrel is committed to delivering products and services that meet or exceed our customers' expectations — error free, on-schedule, and at a competitive price. Micrel maintains a culture of continuous improvement that runs through all disciplines in the company, and includes the activities of its suppliers.

## Commitment to Customer Satisfaction

Micrel remains committed to contributing to its customers' success. Internal processes have been developed with flexibility in mind, so the Company can quickly react to changing requirements. Micrel's outstanding sales, customer service, and technical support organizations are set up to address customer needs and requirements.

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# High Performance Linear and Power Solutions Highlights

## MIC26603-ZA/MIC26903-ZA/MIC261203-ZA

### Constant-Frequency, Synchronous Buck Regulator Family

The Micrel MIC26603-ZA/MIC26903-ZA/MIC261203-ZA is a constant-frequency, synchronous buck regulator family of products featuring a unique adaptive ON-time control architecture. The MIC26603-ZA/MIC26903-ZA/MIC261203-ZA operates over an input supply range of 4.5V to 28V and provides a regulated output of up to 6A, 9A, and 12A of load current, respectively. The output voltage is adjustable down to 0.6V with a guaranteed accuracy of  $\pm 1\%$ , and the device operates at a switching frequency of 600kHz.

Micrel's Hyper Speed Control™ architecture allows for ultra-fast transient response while reducing the output capacitance and also makes (High  $V_{IN}$ )/(Low  $V_{OUT}$ ) operation possible. This adaptive  $t_{ON}$  ripple-control architecture combines the advantages of fixed-frequency operation and fast transient response in a single device.

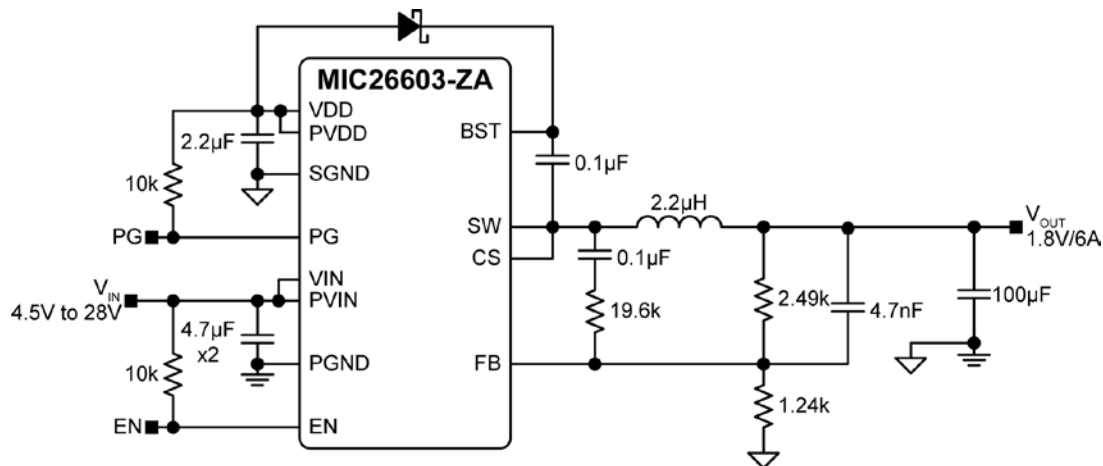
The MIC26603-ZA/MIC26903-ZA/MIC261203-ZA family of products offers a full suite of features to ensure protection of the IC during fault conditions. These include undervoltage lockout to ensure proper operation under power-sag conditions, internal soft-start to reduce inrush current, foldback current limit, "hiccup mode" short-circuit protection, and thermal shutdown. An open-drain Power Good (PG) pin is provided.

### Features

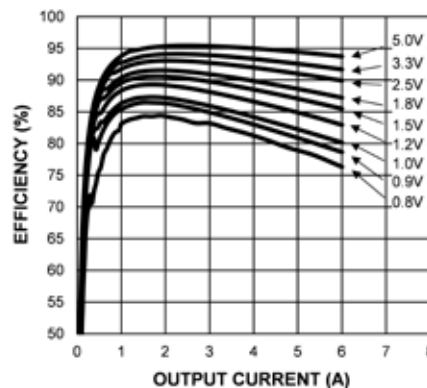
- Single input supply voltage
- Input voltage range: 4.5V to 28V
- 0.6V reference voltage
- High conversion ratio 28V to 0.6V
- Hyper Speed Control™ for faster dynamic response
- Peak efficiency of 95%
- Adjustable output voltage from 0.6V to 5.5V
- $\pm 1\%$  Feedback accuracy over 0°C to 85°C
- 600kHz switching frequency
- Hiccup mode short circuit protection
- Safe pre-bias start-up capability
- Supports all ceramic output capacitors

### Applications

- Servers, workstations
- Routers, switches
- Networking equipment
- Base stations



Efficiency ( $V_{IN} = 12V$ )  
vs. Output Current



# Power Management Selection Guide

## Linear Power Filters (Discrete Ripple Blocker™)

Bold = New P/N	Rated I <sub>OUT</sub>	V <sub>IN</sub>		V <sub>OUT</sub> (V)	Voltage Drop Typ (mV)	V <sub>D-OUT</sub> @ Rated I <sub>OUT</sub> Typ (mV)	I <sub>GND</sub> Typ (μA)	Tol Typ %	Noise (μV) rms	PSRR				Load Dischg	μCap	* = Reduced height package Package
		Min (V)	Max (V)							100Hz (dB)	100kHz (dB)	1MHz (dB)	10MHz (dB)			
MIC94300	200mA	1.8	3.6	Input Follower	170		138		98	0	58	60	55	X	1.2x1.6*, 0.88x0.88 CSP	
MIC94305	500mA	1.8	3.6	Input Follower	170		150		98	0	55	60	55	X	1.6x1.6*, 0.84x1.32 WLCSP	
MIC94310	200mA	1.8	3.6	1.2, 1.5, 1.8, 1.85, 2.5, 2.7, 2.8, 2.85, 3.0, 3.3		40	170	±1	83	85	68	57	50	X	1.2x1.6*, 0.88x0.88 CSP	
MIC94325	500mA	1.8	3.6	Adj		100	170	±1	83	85	57	60		X	1.6x1.6*, 0.84x1.32 CSP	
MIC94345	500mA	1.8	3.6	1.2, 1.5, 1.8, 2.8, 3.3		100	170	±1	83	85	57	60		X	1.6x1.6*, 0.84x1.32 CSP	
MIC94355	500mA	1.8	3.6	1.2, 1.5, 1.8, 2.8, 3.3		100	170	±1	83	85	57	60	X	X	1.6x1.6*, 0.84x1.32 CSP	

## Single LDOs

Bold = New P/N	I <sub>OUT</sub>	V <sub>IN</sub>		V <sub>OUT</sub> (V)	V <sub>D-OUT</sub> Typ (mV)	I <sub>GND</sub> Typ	PSRR (dB)	Load Dump	Rev Bat	PWR Good	V <sub>OUT</sub> ≤1.2V	μCap	V <sub>BIAS</sub> Reqd	* = Reduced height package Package
		Min (V)	Max (V)											
MIC5231	10mA	3.5	12	2.75, 3.0, 3.3, 5.0	150	650nA	50					X		SOT23-5
MIC5232	10mA	2.7	7.0	1.2, 2.5, 2.8, 3.3	100	1.8μA	55					X		SOT23-5*, 2x2
MAQ5280	25mA	4.5	120	Adj	1100	31μA	80	X	X			X		eSOIC-8
MAQ5281	25mA	6.0	120	3.3, 5.0, Adj	2000	6μA	90	X				X		eMSOP-8
MAQ5282	50mA	6.0	120	3.3, 5.0, Adj	2000	6μA	90	X				X		eMSOP-8
MAQ5283	150mA	6.0	120	3.3, 5.0, Adj	1800	8μA	75	X				X		eSOIC-8
MIC5281	25mA	6.0	120	3.3, 5.0, Adj	2000	6μA	90	X				X		eMSOP-8, MSOP-8
MIC5280	25mA	4.5	120	Adj	1100	31μA	80	X	X			X		eSOIC-8
MIC5282	50mA	6.0	120	3.3, 5.0, Adj	2000	6μA	90	X				X		eMSOP-8, MSOP-8
MIC5283	150mA	6.0	120	3.3, 5.0, Adj	1800	8μA	75	X				X		eMSOP-8, 3x3
MIC5203	80mA	2.5	16	2.6, 2.8, 3.0, 3.3, 3.6, 3.8, 4.0, 4.5, 5.0	300	180μA	60		X			X		SOT23-5, SOT143
MIC5213	80mA	2.5	16	2.5, 2.6, 2.7, 2.8, 3.0, 3.3, 3.6, 5.0	280	180μA	60		X			X		SC70-5
LP2951	100mA	2.0	30	4.8, 5.0, Adj	380	100μA	70			X				SOIC-8, PDIP-8
MIC5200	100mA	2.5	26	3.0, 3.3, 4.8, 5.0	230	130μA	70		X					MSOP-8, SOIC-8, SOT223
MIC5233	100mA	2.3	36	1.8, 2.5, 3.0, 3.3, 5.0, Adj	270	18μA	50		X			X		SOT23-5, SOT223
MIC5253	100mA	2.7	5.5	1.5, 1.8, 1.85, 2.5, 2.6, 2.7, 2.8, 2.9, 3.0, 3.1, 3.2, 3.3	165	75μA	70					X		SC70-5
MIC5270	100mA	-2.0	-16	-3.0, -4.1, -5.0, Adj	500	35μA	50					X		SOT23-5
MIC5271	100mA	-3.3	-16	-3.0, -5.0, Adj	500	25μA	50					X		SOT23-5
MIC2950	150mA	2.0	30	5.0	300	120μA	65	X	X	X				TO92
MIC2951	150mA	2.0	30	3.3, 5.0	320	120μA	67	X	X	X				MSOP-8, SOIC-8, PDIP-8
MIC5205	150mA	2.5	16	2.5, 2.7, 2.8, 2.85, 2.9, 3.0, 3.1, 3.2, 3.3, 3.6, 3.8, 4.0, 5.0, Adj	165	80μA	75		X			X		SOT23-5
MIC5206	150mA	2.5	16	2.5, 2.7, 3.0, 3.2, 3.3, 3.6, 3.8, 4.0, 5.0, Adj	165	1.3mA	75		X	X		X		MSOP-8, SOT23-5
MIC5225	150mA	2.3	16	1.5, 1.8, 2.5, 2.7, 3.0, 3.3, 5.0, Adj	310	29μA	35		X			X		SOT23-5
MIC5234	150mA	2.3	30	Adj	320	20μA		X	X			X		eSOIC-8
MIC5235	150mA	2.3	24	1.5, 1.8, 2.5, 2.7, 3.0, 3.3, 5.0, Adj	310	18μA	35		X			X		SOT23-5
MIC5236	150mA	2.3	30	2.5, 3.0, 3.3, 5.0, Adj	300	20μA	55	X	X	X	X	X		MSOP-8, SOIC-8
MIC5247	150mA	2.7	6.0	1.5, 1.6, 1.8, 1.85, 2.0, 2.1, 2.2, 2.4	150	85μA	60			X	X	X		SOT23-5, SOT23-5*, 2x2
MIC5248	150mA	2.7	6.0	1.2		100μA	63			X		X		SOT23-5, 2x2
MIC5238	150mA	1.5	6.0	1.0, 1.1, 1.3	310	23μA	50					X	X	SOT23-5, SOT23-5*
MIC5252	150mA	2.7	6.0	1.8, 2.5, 2.8, 2.85, 3.0, 4.75	135	90μA	60					X		SOT23-5, 2x2
MIC5255	150mA	2.7	6.0	2.5, 2.6, 2.7, 2.75, 2.8, 2.85, 2.9, 3.0, 3.1, 3.2, 3.3, 3.5	135	90μA	60				X	X		SOT23-5, SOT23-5*, 2x2



# Power Management Selection Guide

## Single LDOs

Bold = New P/N	I <sub>OUT</sub>	V <sub>IN</sub>		V <sub>OUT</sub> (V)	V <sub>D-OUT</sub> Typ (mV)	I <sub>GND</sub> Typ	PSRR (dB)	Load Dump	Rev Bat	PWR Good	V <sub>OUT</sub> ≤1.2V	μCap	V <sub>BIAS</sub> Reqd	* = Reduced height package Package
		Min (V)	Max (V)											
MIC5256	150mA	2.7	6.0	1.5, 1.8, 2.5, 2.6, 2.7, 2.8, 2.85, 2.9, 3.0, 3.1, 3.3	135	90μA	60			X		X		SOT23-5, SOT23-5*
MIC5258	150mA	2.7	6.0	1.2		85μA				X	X	X		SOT23-5
MIC5265	150mA	2.7	5.5	1.5, 1.8, 1.85, 2.5, 2.6, 2.7, 2.8, 2.85, 2.9, 3.0, 3.1, 3.2, 3.3	210	75μA	64					X		SOT23-5*
MIC5268	150mA	2.7	6.0	1.2		110μA				X		X		SOT23-5
MIC5295	150mA	2.3	24	3.0, 3.3, 5.0, Adj	310	18μA	50		X			X		TO252-5
MIC5301	150mA	2.3	5.5	1.3, 1.5, 1.8, 2.1, 2.5, 2.6, 2.8, 2.85, 2.9, 3.0, 3.3, 4.6, Adj	40	85μA	75					X		SOT23-5*, 1.6x1.6*, 1.6x1.6
MIC5305	150mA	2.25	5.5	1.5, 1.8, 2.0, 2.5, 2.6, 2.7, 2.8, 2.85, 2.9, 3.0, 3.3, 4.6, 4.75, Adj	60	90μA	85					X		2x2, 2x2*, SOT23-5*
MIC5302	150mA	2.3	5.5	1.3, 1.5, 1.8, 2.1, 2.5, 2.6, 2.8, 2.85, 2.9, 3.0, 3.3, 4.6	50	85μA	65					X		1.2x1.6*
MIC5304	150mA	2.3	5.5	3.15/1.85, 3.15/1.875, 3.2/1.8	85	24μA	65				X	X		1.6x1.6*
MIC5306	150mA	2.25	5.5	1.8, 2.5, 2.6	45	16μA	62					X		SOT23-5*
MIC5308	150mA	1.6	5.5	1.2, 1.5, 1.8, Adj	45	23μA	90					X	X	SOT23-6*, 1.6x1.6*
<b>MIC5323</b>	300mA	2.7	5.5	1.8, 2.8, 3.3, Adj	120	90μA	80				X	X		SOT23-5*, 2x2*
MIC5326	150mA	2.3	5.5	2.8	85	24μA	60				X	X		1.2x1.6*
<b>MIC5363</b>	300mA	2.5	5.5	1.2, 2.1, 2.8, 3.3	225	38μA	80					X		1.2x1.2*
<b>MIC5364</b>	300mA	2.5	5.5	1.2, 2.1, 2.8, 3.3	225	38μA	80					X		1.2x1.2*
MIC5365	150mA	2.5	5.5	1.5, 1.8, 2.0, 2.5, 2.6, 2.7, 2.8, 2.85, 2.9, 3.0, 3.3	155	32μA	80					X		SC70-5, 1x1*
MIC5366	150mA	2.5	5.5	1.5, 1.8, 2.0, 2.5, 2.6, 2.7, 2.8, 2.85, 2.9, 3.0, 3.3	155	32μA	80					X		SC70-5, 1x1*
MIC5375	150mA	2.5	5.5	2.8	120	29μA	60					X		SC70-5, 1x1*
MIC5376	150mA	2.5	5.5	2.8	120	29μA	60					X		SC70-5, 1x1*
MIC5377	150mA	2.5	5.5	Adj	120	29μA	60							SC70-5, 1.2x1.2*
MIC5378	150mA	2.5	5.5	Adj	120	29μA	60							SC70-5, 1.2x1.2*
MIC5207	180mA	2.5	16	1.8, 2.5, 2.8, 2.9, 3.0, 3.1, 3.2, 3.3, 4.0, 5.0, Adj	165	80μA	75		X		X	X		SOT23-5, SOT23-5*
MIC5201	200mA	2.5	26	3.0, 3.3, 4.8, 5.0, Adj	270	130μA	75	X	X		X	X		SOIC-8, SOT223
MIC5367	200mA	2.5	5.5	1.2, 1.5, 3.3	180	29μA	65							1.6x1.6*
MIC5368	200mA	2.5	5.5	1.2, 1.5, 3.3	180	29μA	65							1.6x1.6*
MIC2954	250mA	2.0	30	5.0, Adj	375	140μA		X		X				SOIC-8, SOT223, TO220-3
MIC5249	300mA	2.7	6.0	1.5, 1.8, 2.5, 2.8, 2.85, 3.0, 3.3	340	85μA	65			X		X		MSOP-8
MIC5259	300mA	2.7	6.0	1.5, 1.8, 2.1, 2.5, 2.8, 2.85, 3.0, 3.3	300	105μA	70					X		SOT23-5*, 2x2
MIC5303	300mA	2.3	5.5	1.5, 1.8, 2.1, 2.5, 2.6, 2.8, 2.85, 2.9, 3.0, 3.3	100	85μA	65					X		1.2x1.6*
MIC5307	300mA	2.4	5.5	1.5, 1.8, 2.8, 3.0	120	20μA	62					X		SOT23-5*, 2x2
MIC5309	300mA	1.7	5.5	1.2, 1.5, 1.8, Adj	100	23μA	90				X	X	X	SOT23-6*, 1.6x1.6*
MIC5318	300mA	2.3	6.0	1.5, 1.8, 2.5, 2.8, 3.3, Adj	110	85μA	75					X		SOT23-5*, 1.6x1.6*
MIC5327	300mA	2.3	5.5	1.8, 2.8	180	24μA	60					X		1.2x1.6*
MIC5337	300mA	2.3	5.5	1.8, 2.8	180	24μA	65					X		1.2x1.6*
MIC5501	300mA	2.5	5.5	1.2, 1.8, 2.8, 3.0, 3.3	160	38μA	60					X		1x1*
MIC5502	300mA	2.5	5.5	1.2, 1.8, 2.8, 3.0, 3.3	160	38μA	60					X		1x1*
MIC5503	300mA	2.5	5.5	1.2, 1.8, 2.8, 3.0, 3.3	160	38μA	60					X		1x1*
MIC5504	300mA	2.5	5.5	1.2, 1.8, 2.8, 3.0, 3.1, 3.3	160	38μA	60					X		1x1*
MIC5512	300mA	2.5	5.5	1.2, 1.8, 2.8, 3.3	160	38μA	65					X		1.6x1.6*
<b>MIC5514</b>	300mA	2.5	5.5	1.2, 1.8, 2.8, 3.0, 3.3	160	38μA	65					X		1.6x1.6*
MIC29201	400mA	2.0	26	3.3, 4.8, 5.0, 12	400	140μA	70	X	X	X				TO220-5, TO263-5, SOIC-8
MIC29202	400mA	2.0	26	Adj	400	140μA	70	X	X					TO220-5, TO263-5

# Power Management Selection Guide

## Single LDOs

<b>Bold = New P/N</b>	<b>I<sub>OUT</sub></b>	<b>V<sub>IN</sub> Min (V)</b>	<b>Max (V)</b>	<b>V<sub>OUT</sub> (V)</b>	<b>V<sub>D-OUT</sub> Typ (mV)</b>	<b>I<sub>GND</sub> Typ</b>	<b>PSRR (dB)</b>	<b>Load Dump</b>	<b>Rev Bat</b>	<b>PWR Good</b>	<b>V<sub>OUT</sub> ≤1.2V</b>	<b>µCap</b>	<b>V<sub>BIAS</sub> Reqd</b>	<b>* = Reduced height package Package</b>
<b>MIC29204</b>	400mA	2.0	26	5.0, Adj	400	140µA	70	X	X					SOIC-8, PDIP-8
MIC2920A	400mA	2.0	26	3.3, 4.8, 5.0, 12	400	140µA	70	X	X					SOT223, TO220
MIC5209	500mA	2.5	16	1.8, 2.5, 3.0, 3.3, 3.6, 4.2, 5.0, Adj	350	8mA	75		X					SOIC-8, SOT223, TO263-5, 3x3
MIC5216	500mA	2.5	12	2.5, 3.3, 3.6, 5.0	300	8mA	75		X	X				SOT23-5, MSOP-8
MIC5325	400mA	1.7	5.5	1.2, 1.5, 1.8, 3.3, 3.6	110	35µA	65				X	X	X	2x2*
<b>MIC47050</b>	500mA	1.0	3.6	1.2, 1.8, Adj	44	6µA	50			X	X	X	X	2x2*, 2x2
MIC47053	500mA	1.0	3.6	Adj	44	6µA	55			X	X	X	X	2x2*
MIC5219	500mA	2.5	12	2.5, 2.6, 2.7, 2.8, 2.85, 2.9, 3.0, 3.1, 3.3, 3.6, 5.0, Adj	350	12mA	75		X					SOT23-5, MSOP-8, 2x2*, 2x2
MIC5237	500mA	2.5	16	2.5, 3.3, 5.0	300	8mA	75		X					TO220-3, TO263-3
MIC5239	500mA	2.3	30	1.5, 1.8, 2.5, 3.0, 3.3, 5.0, Adj	350	23µA	50		X	X		X		MSOP-8, SOIC-8, SOT223
MIC5319	500mA	2.5	5.5	1.375, 1.8, 1.85, 2.5, 2.6, 2.7, 2.8, 2.85, 2.9, 3.0, 3.3, 5.0, Adj	200	90µA	70					X		SOT23-5*, 2x2
MIC5353	500mA	2.6	6.0	1.8, 2.5, 2.6, 2.8, 3.0, 3.3, Adj	160	90µA	60					X		1.6x1.6
MIC29371	750mA	4.3	26	3.3, 5.0, 12	370	160µA		X	X	X				TO220-5, TO263-5
MIC29372	750mA	4.3	26	Adj	370	160µA		X	X					TO220-5, TO263-5
<b>MIC2937A</b>	750mA	4.3	26	3.3, 5.0, 12	370	160µA		X	X					TO220-3, TO263-3
<b>MIC3775</b>	750mA	2.25	6.0	1.5, 1.65, 1.8, 2.5, 3.0, 3.3, Adj	280	6.5mA	60			X		X		MSOP-8
<b>MIC3975</b>	750mA	2.25	16	1.65, 1.8, 2.5, 3.0, 3.3, 5.0, Adj	300	7.5mA	55			X		X		MSOP-8
MIC37100	1.0A	2.25	6.0	1.5, 1.65, 1.8, 2.5, 3.3	280	400µA	50		X			X		SOT223
MIC37101	1.0A	2.25	6.0	1.5, 1.65, 1.8, 2.1, 2.5, 3.3	280	400µA	50		X	X		X		SOIC-8
MIC37102	1.0A	2.25	6.0	Adj	280	400µA	50		X			X		SOIC-8, SPAK-5
MIC37110	1.0A	2.375	5.5	1.8	230	250µA	60					X		SOT223, SOIC-8, 2x2
MIC37112	1.0A	2.375	5.5	Adj.	230	250µA	60				X	X		SOIC-8, 2x2
MIC37120	1.0A	2.375	5.5	1.8	230	250µA	60					X		SOIC-8, 2x2
MIC37122	1.0A	2.375	5.5	Adj.	230	250µA	60				X	X		SOIC-8, 2x2
MIC39100	1.0A	2.25	16	1.8, 2.5, 3.3, 5.0	410	6.5mA	55		X					SOT223
MIC39101	1.0A	2.25	16	1.8, 2.5, 3.3, 5.0	410	6.5mA	55		X	X				SOIC-8
MIC39102	1.0A	2.25	16	Adj	410	6.5mA	55		X					SOIC-8
MIC47100	1.0A	1.0	3.6	0.8, 1.0, 1.2, Adj	80	350µA	80				X	X	X	eMSOP-8, 2x2
MIC69101	1.0A	1.65	5.5	1.8	215	11mA	55			X	X	X		3x3
MIC69103	1.0A	1.65	5.5	Adj	215	11mA	55			X	X	X		3x3
MIC2940A	1.25A	2.0	26	3.3, 5.0, 12	400	35mA		X	X					TO220-3, TO263-3
MIC2941A	1.25A	2.0	26	Adj	400	35mA		X	X					TO220-5, TO263-5
MIC29150	1.5A	2.25	26	3.3, 5.0, 12	350	22mA		X	X					TO220-3, TO263-3
MIC29151	1.5A	2.25	26	3.3, 5.0, 12	350	22mA		X	X	X				TO220-5, TO263-5
MIC29152	1.5A	2.25	26	Adj	350	22mA		X	X					TO220-5, TO252-5
MIC29153	1.5A	2.25	26	Adj	350	22mA		X	X	X				TO220-5, TO263-5
MIC35152	1.5A	2.25	6.0	Adj	365	11mA	45					X		TO252-5
MIC37139	1.5A	2.25	6.0	1.8, 2.5	500	17mA	50		X			X		SOT223
MIC37150	1.5A	2.25	6.0	1.5, 1.65, 1.8, 2.5, 3.3	325	17mA	45		X			X		SPAK-3
MIC37151	1.5A	2.25	6.0	1.5, 1.65, 1.8, 2.5, 3.3	325	17mA	45		X	X		X		SPAK-5, eSOIC-8
MIC37152	1.5A	2.25	6.0	Adj	325	17mA	45		X			X		SPAK-5, SOIC-8
MIC37153	1.5A	2.25	6.0	Adj	325	17mA	45		X	X		X		eSOIC-8
MIC39150	1.5A	2.25	16	1.65, 1.8, 2.5	375	17mA	53		X					TO220-3, TO263-3
MIC39151	1.5A	2.25	16	1.65, 1.8, 2.5	375	17mA	53		X	X				TO220-5, TO263-5
MIC39152	1.5A	2.25	16	Adj	375	17mA	53		X					TO252-5, TO263-5
MIC47150	1.5A	1.4	6.5	Adj	280	15mA	55				X	X	X	TO252-5

# Power Management Selection Guide

## Single LDOs

Bold = New P/N	I <sub>OUT</sub>	V <sub>IN</sub>		V <sub>OUT</sub> (V)	V <sub>D-OUT</sub> Typ (mV)	I <sub>GND</sub> Typ	PSRR (dB)	Load Dump	Rev Bat	PWR Good	V <sub>OUT</sub> ≤1.2V	μCap	V <sub>BIAS</sub> Reqd	* = Reduced height package Package
		Min (V)	Max (V)											
MIC49150	1.5A	1.4	6.5	0.9, 1.2, 1.5, 1.8, Adj	280	15mA	57				X	X	X	MSOP-8, SPAK-5
MIC59150	1.5A	1.0	3.8	Adj	100	12.5mA	60				X	X	X	eSOIC-8
MIC61150	1.5A	1.1	3.6	1.0, Adj	75	7.6mA	50				X	X		eMSOP-10, 3x3
MIC69151	1.5A	1.65	5.5	1.8	250	20mA	55			X	X	X		eSOIC-8, 3x3
MIC69153	1.5A	1.65	5.5	Adj	250	20mA	55			X	X	X		eSOIC-8, 3x3
<b>MIC49200</b>	2.0A	1.4	6.5	1.0, 1.8, Adj	400	15mA	83				X	X	X	SPAK-5
MIC68200	2.0A	1.65	5.5	1.2, 1.5, 1.8, 2.5, 3.3, Adj	300	42mA	60			X	X	X		3x3
MIC37252	2.5A	3.0	6.0	Adj	550	40mA	50					X		SPAK-5, TO263-5
MIC29300	3.0A	2.25	26	3.3, 5.0, 12	370	37mA		X	X					TO220-3, TO263-3
MIC29301	3.0A	2.25	26	3.3, 5.0, 12	370	37mA		X	X	X				TO220-5, TO263-5
MIC29302	3.0A	2.25	26	Adj	370	37mA		X	X					TO220-5, TO263-5
MIC29302A	3.0A	3.00	16	Adj	450	60mA			X					TO252-5, TO263-5
MIC29303	3.0A	2.25	26	Adj	370	37mA		X	X	X				TO220-5, TO263-5
MIC29310	3.0A	2.3	16	3.3, 5.0	600	60mA		X	X					TO220-3, TO263-3
MIC29311	3.0A	2.3	8.0	5.1	600	60mA		X	X	X				TO220-5
MIC29312	3.0A	2.3	16	Adj	600	60mA		X	X					TO220-5, TO263-5
MIC35302	3.0A	2.25	6.0	Adj	370	20mA	50		X			X		TO252-5
MIC37300	3.0A	2.25	6.0	1.5, 1.65, 1.8, 2.5, 3.3	300	27mA	50					X		SPAK-3
MIC37301	3.0A	2.25	6.0	1.5, 1.8, 2.5, 3.3	300	27mA	50			X		X		SPAK-5, eSOIC-8
MIC37302	3.0A	2.25	6.0	Adj	300	27mA	50					X		SPAK-5, TO263-5
MIC37303	3.0A	2.25	6.0	Adj	300	27mA	50			X		X		eSOIC-8
MIC39300	3.0A	2.25	16	1.8, 2.5	385	45mA			X					TO220-3, TO263-3
MIC39301	3.0A	2.25	16	1.8, 2.5	385	45mA			X	X				TO220-5, TO263-5
MIC39302	3.0A	2.25	16	Adj	385	45mA			X					TO263-5
MIC47300	3.0A	1.4	6.5	Adj	230	25mA						X	X	TO252-5
MIC49300	3.0A	1.4	6.5	0.9, 1.2, 1.5, 1.8, Adj	280	25mA					X	X	X	SPAK-5
MIC59300	3.0A	1.0	3.8	1.2V, Adj	205	30mA	65				X	X	X	TO263-5, eSOIC-8
MIC61300	3.0A	1.1	3.6	1.0, Adj	150	7.6mA	55				X	X		eMSOP-10, 3x3
MIC69301	3.0A	1.65	5.5	1.2	275	32mA	55			X	X	X		SPAK-5, eSOIC-8, TO263-5
MIC69302	3.0A	1.65	5.5	Adj	275	32mA	55				X	X		SPAK-5, TO263-5
MIC69303	3.0A	1.65	5.5	Adj	275	32mA	55			X	X	X		eSOIC-8, 4x4
MIC68400	4.0A	1.65	5.5	1.8, Adj	360	90mA	50			X	X	X		4x4
MIC29500	5.0A	2.25	26	3.3, 5.0, 12	370	70mA		X	X					TO220-3
MIC29501	5.0A	2.25	26	3.3, 5.0, 12	370	70mA		X	X	X				TO220-5, TO263-5
MIC29502	5.0A	2.25	26	Adj	370	70mA		X	X					TO220-5, TO263-5
MIC29503	5.0A	2.25	26	Adj	370	70mA		X	X	X				TO220-5, TO263-5
MIC29510	5.0A	2.3	16	3.3, 5.0	700	100mA		X	X					TO220-3
MIC29512	5.0A	2.3	16	Adj	700	100mA		X	X					TO220-5
MIC37501	5.0A	2.3	6.0	1.5, 1.65, 1.8, 2.5, 3.3	330	57mA				X		X		SPAK-7
MIC37502	5.0A	2.3	6.0	Adj	330	57mA						X		SPAK-7, TO263-5
MIC49500	5.0A	1.4	6.0	0.9, 1.2, Adj	290	55mA	75				X	X	X	SPAK-7, TO263-7
MIC39500	5.0A	2.25	16	1.8, 2.5	400	70mA	30			X				TO220-3, TO263-3
MIC39501	5.0A	2.25	16	1.8, 2.5	400	70mA	30			X	X			TO220-5, TO263-5
MIC69502	5.0A	1.65	5.5	Adj	250	54mA	52				X	X		SPAK-5
MIC39500	5.0A	2.25	16	1.8, 2.5	400	70mA	30			X				TO220-3, TO263-3
MIC29710	7.5A	2.3	16	3.3, 5.0	700	250mA								TO220-3
MIC29712	7.5A	2.3	16	Adj	700	250mA								TO220-5

# Power Management Selection Guide

## Single LDOs

Bold = New P/N	I <sub>OUT</sub>	V <sub>IN</sub>		V <sub>OUT</sub> (V)	V <sub>D-OUT</sub> Typ (mV)	I <sub>GND</sub> Typ	PSRR (dB)	Load Dump	Rev Bat	PWR Good	V <sub>OUT</sub> ≤1.2V	μCap	V <sub>BIAS</sub> Reqd	* = Reduced height Package
		Min (V)	Max (V)											
MIC29750	7.5A	2.5	26	3.3, 5.0	425	120mA		X	X					TO247-3
MIC29751	7.5A	2.5	26	3.3, 5.0	425	120mA		X	X	X				TO247-5
MIC29752	7.5A	2.5	26	Adj	425	120mA		X	X					TO247-5
<b>MIC5501</b>	300mA	2.5	5.5	1.2, 1.8, 2.8, 3.0, 3.3	160	38μA	60					X		1x1*
<b>MIC5502</b>	300mA	2.5	5.5	1.2, 1.8, 2.8, 3.0, 3.3	160	38μA	60					X		1x1*
<b>MIC5503</b>	300mA	2.5	5.5	1.2, 1.8, 2.8, 3.0, 3.3	160	38μA	60					X		1x1*
<b>MIC5504</b>	300mA	2.5	5.5	1.2, 1.8, 2.8, 3.0, 3.1, 3.3	160	38μA	60					X		1x1*
<b>MIC5512</b>	300mA	2.5	5.5	1.2, 1.8, 2.8, 3.3	160	38μA	65					X		1.6x1.6*
<b>MIC5514</b>	300mA	2.5	5.5	1.2, 1.8, 2.8, 3.0, 3.3	160	38μA	65					X		1.6x1.6*
MIC5524	500mA	2.5	5.5	1.2, 1.8, 2.8, 3.0, 3.3	260	38μA	65					X		1x1*
MIC5528	500mA	2.5	5.5	3.3	260	38μA	70					X		1.2x1.2*

## Dual LDOs

Bold = New P/N	I <sub>OUT</sub>		V <sub>IN</sub>		V <sub>OUT</sub> (V)	V <sub>D-OUT</sub> Typ (mV)	I <sub>GND</sub> Typ	PSRR (dB)	Rev Bat	PWR Good	V <sub>OUT</sub> ≤1.2V	μCap	V <sub>BIAS</sub> Reqd	* Reduced Height Package
	#1	#2	Min (V)	Max (V)										
MIC5208	50mA	50mA	2.5	16	3.0/3.0, 3.3/3.3, 3.6/3.6, 4.0/4.0, 5.0/5.0	250	180μA		X			X		MSOP-8
MIC5211	80mA	80mA	2.5	16	1.8/1.8, 1.8/2.5, 1.8/3.3, 2.5/2.5, 2.5/3.3, 2.5/5.0, 2.7/2.7, 2.8/2.8, 3.0/3.0, 3.3/3.3, 5.0/5.0	250	90μA		X			X		SOT23-6
MIC5202	100mA	100mA	2.5	26	3.0/3.0, 3.3/3.3, 4.8/4.8, 5.0/5.0	225	170μA		X					SOIC-8
MIC5210	150mA	150mA	2.5	16	2.7/2.7, 2.8/2.8, 2.8/3.0, 2.9/2.9, 3.0/3.0, 3.3/3.3, 3.6/3.6, 4.0/4.0, 5.0/5.0	165	80μA	75	X					MSOP-8
MIC5310	150mA	150mA	2.3	5.5	1.8/1.5, 1.8/1.8, 1.8/1.6, 2.5/1.8, 2.5/2.5, 2.6/1.85, 2.6/1.8, 2.7/2.7, 2.8/1.5, 2.8/1.8, 2.8/2.6, 2.8/2.8, 2.85/1.85, 2.85/2.6, 2.85/2.85, 2.9/1.5, 2.9/1.8, 2.9/2.9, 3.0/1.8, 3.0/2.5, 3.0/2.6, 3.0/2.8, 3.0/2.85, 3.0/3.0, 3.3/1.5, 3.3/1.8, 3.3/2.5, 3.3/2.6, 3.3/2.8, 3.3/2.85, 3.3/2.9, 3.3/3.0, 3.3/3.2, 3.3/3.3	35	85μA	70			X		2x2	
MIC5320	150mA	150mA	2.3	5.5	1.8/1.5, 1.8/1.8, 1.8/1.6, 2.4/1.5, 2.5/1.8, 2.5/2.5, 2.6/1.85, 2.6/1.8, 2.7/2.7, 2.8/1.5, 2.8/1.8, 2.8/2.6, 2.8/2.8, 2.85/1.85, 2.85/2.6, 2.85/2.85, 2.9/1.5, 2.9/1.8, 2.9/2.9, 3.0/1.8, 3.0/2.5, 3.0/2.6, 3.0/2.8, 3.0/2.85, 3.0/3.0, 3.3/1.5, 3.3/1.8, 3.3/2.5, 3.3/2.6, 3.3/2.8, 3.3/2.85, 3.3/2.9, 3.3/3.0, 3.3/3.2, 3.3/3.3, 4.6/2.8	35	85μA	65			X		1.6x1.6*, 1.6x1.6, SOT23-6*	
MIC5321	150mA	150mA	2.3	5.5	1.8/1.5, 1.8/1.8, 1.8/1.6, 2.5/1.8, 2.5/2.5, 2.6/1.85, 2.6/1.8, 2.7/2.7, 2.8/1.5, 2.8/1.8, 2.8/2.6, 2.8/2.8, 2.85/1.85, 2.85/2.6, 2.85/2.85, 2.9/1.5, 2.9/1.8, 2.9/2.9, 3.0/1.8, 3.0/2.5, 3.0/2.6, 3.0/2.8, 3.0/2.85, 3.0/3.0, 3.3/1.5, 3.3/1.8, 3.3/2.5, 3.3/2.6, 3.3/2.8, 3.3/2.85, 3.3/2.9, 3.3/3.0, 3.3/3.2, 3.3/3.3, 4.6/2.8	35	85μA	75			X		1.6x1.6*, 1.6x1.6, SOT23-6*	
MIC5322	150mA	150mA	2.3	5.5	2.8/1.5, 2.8/1.8, 2.85/2.85, 3.0/2.8, 3.0/2.85, 3.0/3.0	35	150μA	75				X		1.6x1.6*
MIC5370	150mA	150mA	2.3	5.5	1.2/1.0, 1.8/1.2, 2.8/1.2, 2.8/1.5, 2.8/1.8, 2.8/2.6, 2.8/2.8, 3.0/1.8, 3.0/2.6, 3.0/2.8, 3.0/3.0, 3.3/1.8, 3.3/2.6, 3.3/2.8, 3.3/3.0, 3.3/3.3	155	32μA	60			X	X		1.6x1.6*
MIC5371	150mA	150mA	2.5	5.5	1.2/1.0, 1.8/1.2, 2.8/1.2, 2.8/1.5, 2.8/1.8, 2.8/2.8, 3.0/2.8, 3.0/3.0, 3.3/1.8, 3.3/1.8, 3.3/3.0, 3.3/3.3	155	32μA	60			X	X		1.6x1.6*
MIC5380	150mA	150mA	2.5	5.5	1.8/1.2, 2.6/2.0, 2.7/2.7, 2.8/1.2, 2.8/1.8, 3.0/3.0, 3.3/3.3	155	32μA	60			X	X		1x1*
MIC5381	150mA	150mA	2.5	5.5	1.8/1.2, 2.8/1.2, 2.8/1.8, 3.0/3.0, 3.3/3.3	155	32μA	60			X	X		1x1*
MIC5264	150mA	150mA	2.7	5.5	2.5/1.8, 2.6/1.8, 2.6/2.6, 2.8/1.5, 2.8/1.8, 2.8/2.5, 2.8/2.6, 2.8/2.8, 2.85/1.8, 2.85/2.85, 2.9/1.5, 2.9/1.8, 2.9/2.6, 3.0/1.8, 3.0/2.5, 3.0/2.8, 3.0/3.0, 3.3/3.0, 3.3/1.8, 3.3/2.5, 3.3/3.3	210	75μA	64			X		2.5x2.5	
MIC5254	150mA	150mA	2.7	6.0	3.3/2.5	135	96μA	60		X		X		MSOP-10
MIC5388	200mA	200mA	2.5	5.5	3.3/1.8, 2.8/2.8, 2.8/2.7, 2.8/1.8, 2.8/1.2, 1.8/1.2	175	32μA	73				X		CSP-6 (1.5x1)
MIC5389	200mA	200mA	2.5	5.5	3.3/1.8, 2.8/2.8, 2.8/2.7, 2.8/1.8, 2.8/1.2, 1.8/1.2	175	32μA	73				X		CSP-6 (1.5x1)

# Power Management Selection Guide

## Dual LDOs

P/N	I <sub>OUT</sub>		V <sub>IN</sub>		V <sub>OUT</sub> (V)	V <sub>D-OUT</sub> Typ (mV)	I <sub>GND</sub> Typ	PSRR (dB)	Rev Bat	PWR Good	V <sub>OUT</sub> ≤1.2V	μCap	V <sub>BIAS</sub> Req	* Reduced Height Package
	#1	#2	Min (V)	Max (V)										
MIC2211	150mA	300mA	2.25	5.5	1.5/1.8, 1.5/2.8, 1.5/2.85, 1.5/2.9, 1.5/3.1, 1.6/2.8, 1.6/2.9, 1.6/3.3, 1.8/2.5, 1.8/2.6, 1.8/2.8, 1.8/2.9, 1.8/3.0, 1.8/3.3, 1.9/2.8, 2.0/3.0, 2.5/1.8, 2.5/1.9, 2.5/2.8, 2.5/3.0, 2.5/3.3, 2.6/1.8, 2.6/2.85, 2.6/3.0, 2.7/1.8, 2.7/3.0, 2.8/1.5, 2.8/1.6, 2.8/1.8, 2.8/2.5, 2.8/2.8, 2.8/3.0, 2.8/3.3, 2.85/2.85, 2.85/3.3, 2.9/1.5, 2.9/2.9, 3.0/1.6, 3.0/2.7, 3.0/2.8, 3.0/2.85, 3.0/3.0, 3.0/3.3, 3.3/1.8, 3.3/2.8, 3.3/3.3, 3.6/3.6, Adj/Adj	124/240	48/60μA	60				X		3x3
MIC2212	150mA	300mA	2.25	5.5	1.6/2.8, 1.6/3.3, 1.8/2.6, 1.8/2.7, 1.8/2.8, 1.8/3.3, 1.85/2.85, 1.85/2.9, 2.5/3.3, 2.6/2.8, 2.6/2.85, 2.7/2.8, 2.7/2.9, 2.7/3.0, 2.8/2.6, 2.8/2.8, 2.8/3.0, 2.85/2.85, 3.0/2.8, 3.0/2.85, 3.0/3.0, 3.0/3.3, 3.3/1.8, 3.3/2.5, 3.3/2.8, 3.3/3.6	124/240	48/60μA	60		X		X		3x3
MIC2213	150mA	300mA	2.25	5.5	1.8/2.85, 2.5/3.3, Adj/Adj	124/240	48/60μA	60			X	X		3x3, 4x4
MIC2214	150mA	300mA	2.25	5.5	1.5/2.8, 1.6/2.8, 1.6/3.0, 1.6/3.3, 1.8/2.6, 1.8/2.7, 1.8/2.8, 1.8/2.9, 1.8/3.0, 1.8/3.3, 1.85/2.6, 1.85/2.65, 1.85/2.7, 1.85/2.85, 1.85/2.9, 2.5/1.8, 2.5/2.8, 2.5/3.0, 2.5/3.1, 2.6/2.6, 2.6/2.8, 2.6/2.85, 2.6/3.0, 2.7/2.8, 2.7/3.0, 2.8/2.8, 2.8/3.0, 2.85/2.85, 3.0/2.8, 3.0/2.85, 3.0/3.3, 3.0/1.6, 3.3/1.8, 3.3/2.8, 3.3/1.6, Adj/Adj	124/240	48/60μA	60			X	X		3x3, 4x4
MIC2219	150mA	300mA	2.25	5.5	3.0/3.3	120	48μA	60				X		3x3
MIC5311	300mA	300mA	2.5	5.5	1.8/2.8, 1.85/2.6, 2.85/2.7	120	28μA	60				X		3x3
MIC5312	300mA	300mA	2.5	5.5	1.8/2.8, 1.85/2.6	120	28μA	60		X		X		3x3
MIC5313	300mA	300mA	1.7	5.5	1.5/1.0, 1.5/1.1, 1.5/1.2, 1.5/1.3, 1.5/1.4, 1.5/1.5, 1.8/1.2, 1.8/1.8	85	30μA	65			X	X	X	2x2*
MIC2210	150mA	300mA	2.25	5.5	1.5/2.8, 1.8/3.3, 2.8/1.6, 2.8/3.0, 3.0/3.3, 3.3/3.3	124/240	48/60μA	60				X		3x3
MIC5314	300mA	300mA	1.7	5.5	1.5/1.0, 1.5/1.1, 1.5/1.2, 1.5/1.3, 1.5/1.4, 1.5/1.5, 1.8/1.2, 1.8/1.8	85	30μA	65		X	X	X	X	2.5x2.5*
MIC5315	300mA	300mA	1.7	5.5	1.5/(1.2/1.0), 1.5/(1.3/1.0), 1.8/(1.6/1.1), 1.8/(1.8/1.0)	85	30μA	65			X	X	X	2x2*
MIC5316	300mA	300mA	1.7	5.5	1.5/(1.2/1.0), 1.5/(1.3/1.0), 1.8/(1.6/1.1), 1.8/(1.8/1.0)	85	30μA	65		X	X	X	X	2.5x2.5*
MIC5330	300mA	300mA	2.3	5.5	1.8/1.5, 1.8/1.8, 1.8/1.6, 2.5/1.8, 2.5/2.5, 2.6/1.85, 2.6/1.8, 2.7/2.7, 2.8/1.5, 2.8/1.8, 2.8/2.6, 2.8/2.8, 2.85/1.85, 2.85/2.6, 2.85/2.85, 2.9/1.5, 2.9/1.8, 2.9/2.9, 3.0/1.8, 3.0/2.5, 3.0/2.6, 3.0/2.8, 3.0/2.85, 3.0/3.0, 3.3/1.5, 3.3/1.8, 3.3/2.5, 3.3/2.6, 3.3/2.8, 3.3/2.85, 3.3/2.9, 3.3/3.0, 3.3/3.2, 3.3/3.3	75	85μA	70				X		2x2
MIC5331	300mA	300mA	2.3	5.5	1.8/1.2, 2.5/1.2, 2.8/2.8, 2.8/2.85, 2.85/2.85, 3.0/2.8, 3.0/2.85, 3.0/3.0	120	40μA	65				X		2x2*
MIC5332	300mA	300mA	2.3	5.5	1.8/1.2, 2.5/1.2, 2.8/2.8, 2.8/2.85, 2.85/2.85, 3.0/2.8, 3.0/2.85, 3.0/3.0	120	40μA	65		X		X		2x2*
MIC5333	300mA	300mA	2.3	5.5	2.5/1.2, 2.8/2.8, 2.8/2.85, 2.85/2.85, 3.0/2.85, 3.0/3.0	120	40μA	65		X		X		2.5x2.5*
MIC5335	300mA	300mA	2.3	5.5	1.8/1.5, 1.8/1.8, 1.8/1.6, 2.5/1.8, 2.5/2.5, 2.6/1.85, 2.6/1.8, 2.7/2.7, 2.8/1.5, 2.8/1.8, 2.8/2.6, 2.8/2.8, 2.85/1.85, 2.85/2.6, 2.85/2.85, 2.9/1.5, 2.9/1.8, 2.9/2.9, 3.0/1.8, 3.0/2.5, 3.0/2.6, 3.0/2.8, 3.0/2.85, 3.0/3.0, 3.3/1.5, 3.3/1.8, 3.3/2.5, 3.3/2.6, 3.3/2.7, 3.3/2.8, 3.3/2.85, 3.3/2.9, 3.3/3.0, 3.3/3.2, 3.3/3.3	75	90μA	65				X		1.6x1.6*
MIC5338	300mA	300mA	2.5	5.5	1.2/1.0, 1.8/1.2, 2.8/1.2, 2.8/1.8, 3.3/2.8	220	38μA	55			X	X		1.6x1.6*
MIC5339	300mA	300mA	2.5	5.5	1.2/1.0, 1.8/1.2, 2.8/1.2, 2.8/1.8, 3.3/2.8	220	38μA	55			X	X		1.6x1.6*
MIC5350	300mA	500mA	2.6	5.5	2.8/1.8, 2.8/2.8, 3.0/1.8, 3.3/1.8, 3.3/2.8	75/125	95μA	50				X		2x2*
MIC5212	500mA	500mA	4.0	16	3.3/2.5	350	1.5mA	75				X		SOIC-8
MIC5355	500mA	500mA	2.5	5.5	1.8/1.2, 2.5/1.8, 3.3/1.0, 3.3/1.2, 3.3/1.8	350	38μA	55			X	X		eMSOP-8
MIC5356	500mA	500mA	2.5	5.5	1.8/1.2, 2.5/1.8, 3.3/1.0, 3.3/1.2, 3.3/1.8	350	38μA	55			X	X		eMSOP-8, 3x3
MIC5357	500mA	500mA	2.6	5.5	1.8/1.5, 2.8/1.8, 3.3/1.8, 3.3/2.8	130	95μA	70				X		eMSOP-8
MIC68220	2.0A	2.0A	1.65	5.5	Adj/Adj	300	15mA	40		X	X	X		4x5
<b>MIC5392</b>	150mA	150mA	2.5	5.5	1.2/1.0, 2.8/1.5, 2.8/1.8, 3.0/2.8, 3.3/3.3	155	57μA	60			X	X		1.2x1.2*
<b>MIC5393</b>	150mA	150mA	2.5	5.5	3.0/3.0, 3.3/1.8, 3.3/3.3	155	57μA	60				X		1.2x1.2*
<b>MIC5396</b>	300mA	300mA	2.5	5.5	1.8/2.8	160	37μA	60				X		1.2x1.6*
<b>MIC5397</b>	300mA	300mA	2.5	5.5	1.8/3.0	160	37μA	60				X		1.2x1.6*
<b>MIC5398</b>	300mA	300mA	2.5	5.5	3.0/1.2	160	37μA	60				X		1.2x1.6*
<b>MIC5399</b>	300mA	300mA	2.5	5.5	1.8/2.8, 1.8/3.0, 2.8/2.8, 3.3/1.8, 3.3/2.8, 3.3/3.3	160	37μA	60				X		1.2x1.6*

# Power Management Selection Guide

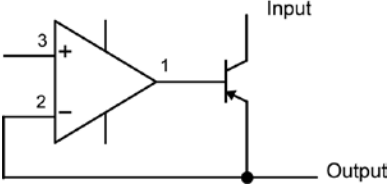
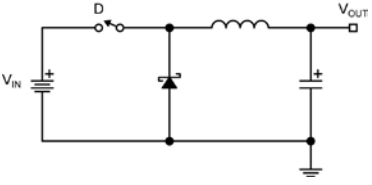
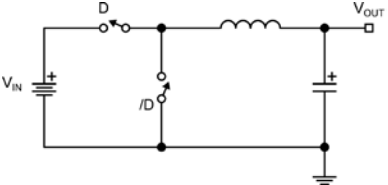
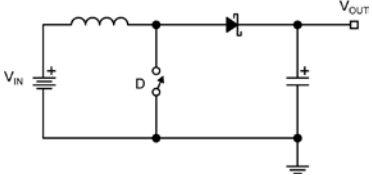
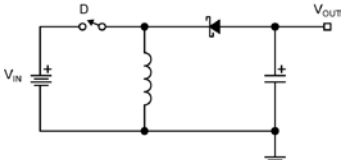
## Multi-Channel LDOs

Bold = New P/N	I <sub>OUT</sub>				V <sub>IN</sub>		V <sub>OUT</sub> (V)	V <sub>D-OUT</sub> Typ (mV)	I <sub>GND</sub> (Typ)	PSRR (dB)	PWR Good	V <sub>OUT</sub> ≤1.2V	μCaP	V <sub>BIAS</sub> Reqd	* Reduced Height Package
	#1	#2	#3	#4	Min (V)	Max (V)									
MIC5385	150mA	150mA	150mA		2.5	5.5	3.3/1.8/1.5	180	32μA/LDO	70			X		2x2*
MIC5387	150mA	150mA	150mA		2.5	5.5	1.8/2.8/1.8, 1.8/2.8/2.8, 3.3/1.8/1.2, 3.3/1.8/1.5	180	32μA/LDO	70			X		1.6x1.6*
MIC2215	250mA	250mA	250mA		2.25	5.5	2.8/2.8/2.8, 3.0/2.8/2.8, 3.0/3.0/2.8, 3.0/3.0/1.8, 3.0/3.0/3.0, Adj/Adj/Adj	100	110μA/LDO	70			X		4x4
MIC5373	200mA	200mA	200mA		1.7	5.5	2.8/1.8/1.2	170	32μA/LDO	55	X	X	X	X	2.5x2.5*
MIC5383	200mA	200mA	200mA		1.7	5.5	2.8/1.8/1.2	170	32μA/LDO	55	X	X	X	X	2.5x2.5*
MIC5374	200mA	200mA	200mA	1mA	1.7	5.5	3.3/2.5/1.8/1.0	170	42μA/LDO	55	X	X	X	X	2.5x2.5*
MIC5384	200mA	200mA	200mA	1mA	1.7	5.5	2.8/1.8/1.2/1.2	170	42μA/LDO	55	X	X	X	X	2.5x2.5*

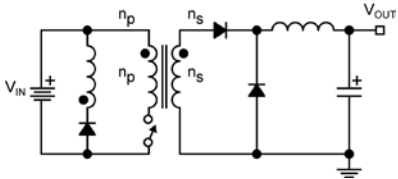
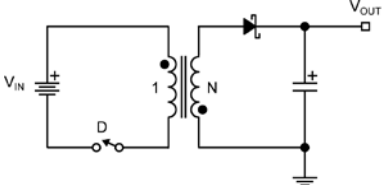
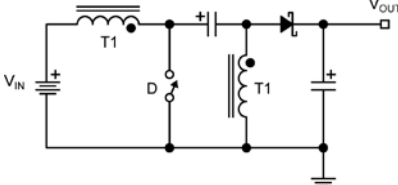
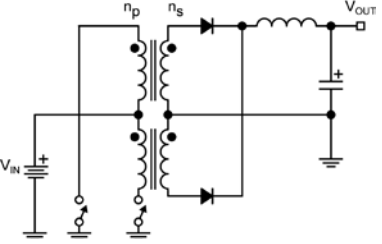
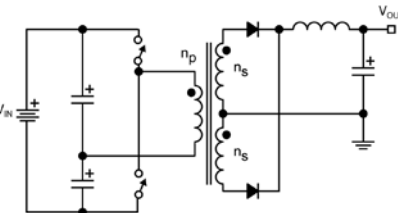
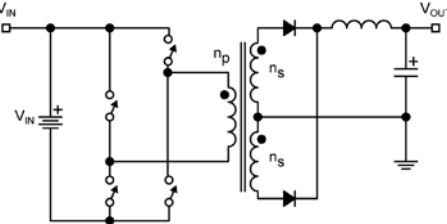
## LDO Controllers

Bold = New P/N	I <sub>OUT</sub>	V <sub>IN</sub>		V <sub>OUT</sub> (V)	I <sub>GND</sub> Typ (mA)	V <sub>D-OUT</sub> Typ (mV)	Tol (Typ) %	PWR Good	V <sub>OUT</sub> ≤1.2V	μCap	Internal Charge Pump	External N-Ch MOSFET	V <sub>REF</sub> (V)	Comments	Package
		Min (V)	Max (V)												
MIC5156	Adj	3.0	36.0	3.3, 5.0, Adj	2.7	Very Low	±1	X				X	1.235		PDIP-8, SOIC-8
MIC5157	Adj	3.0	36.0	3.3, 5.0, 12	4.5	Very Low	±1	X			X	X	1.235		PDIP-14, SOIC-14
MIC5158	Adj	3.0	36.0	5.0, Adj	4.5	Very Low	±1	X			X	X	1.235		PDIP-14, SOIC-14
MIC5159	Adj	1.65	5.5	1.8, 3.0, Adj	10	Very Low	±1			X		X	1.235		SOT23-6
MIC5190	Adj	0.9	5.5	Adj down to 0.5V	15	<25mV	±1		X	X		X	0.5	>40dB PSRR @ 500kHz	MSOP-10, 3x3
MIC5191	Adj	1.0	5.5	Adj down to 1.0V	15	<25mV	±1		X	X		X	1.0	>40dB PSRR @ 500kHz	MSOP-10, 3x3

# Voltage Regulator DC-to-DC Topologies

	Pros	Cons
<h2>Linear Regulator</h2> 	<p>Only Steps Down (<math>V_{OUT} &lt; V_{IN}</math>)</p> <ul style="list-style-type: none"> <li>- Inexpensive</li> <li>- Very Small</li> <li>- Low Noise/EMI</li> <li>- Ideal for:             <ul style="list-style-type: none"> <li>- 3.3V to 2.5V</li> <li>- 2.5V to 1.8V</li> <li>- 1.8V to 1.2V</li> </ul> </li> </ul>	<p>Inefficient at high input-to-output voltage differential</p> <p><math>Eff = V_{OUT}/V_{IN}</math></p> <p>Note: If a linear regulator gets too hot, then use a buck switching regulator instead or the new HELDO® MIC38300.</p>
<h2>Buck Regulator</h2> 	<p>Only Steps Down (<math>V_{OUT} &lt; V_{IN}</math>)</p> <ul style="list-style-type: none"> <li>- Lowest Peak Current</li> <li>- Only One Switch Voltage Drop</li> <li>- Low-Ripple Current In</li> <li>- Output-Filter Capacitor</li> <li>- Simple Inductor</li> <li>- Low Switch-Stress Voltage</li> </ul> <p>Eff <math>\approx</math> +85%</p>	<p>High-Side Switch</p> <p><math>I_{SW} (Avg) \approx I_{OUT}</math></p> <p><math>DC \approx \frac{V_{OUT}}{V_{IN} \times Eff}</math></p>
<h2>Synchronous Buck Regulator</h2> 	<p>(Internal Switch)</p> <ul style="list-style-type: none"> <li>- Highest Efficiency (+90%)</li> <li>- Highest Efficiency Step Down</li> <li>- Same Pros as Buck</li> <li>- High Output Current (up to 20A)</li> </ul>	<p>Two Switches</p> <p><math>I_{SW} (Avg) \approx I_{OUT}</math></p> <p><math>DC \approx \frac{V_{OUT}}{V_{IN} \times Eff}</math></p>
<h2>Boost</h2> 	<p>Only Steps Down (<math>V_{OUT} &lt; V_{IN}</math>)</p> <ul style="list-style-type: none"> <li>- Low Peak Current</li> <li>- Low-Side Switch</li> <li>- Simple Inductor</li> <li>- Low Switch-Stress Voltage</li> </ul> <p>Eff <math>\approx</math> 85%</p>	<p>Output can't be completely turned off. No short-circuit protection.</p> <p><math>I_{SW} (Avg) \approx \frac{I_{OUT}}{1 - DC}</math></p> <p><math>DC \approx \frac{V_{OUT} - (V_{IN} \times Eff)}{V_{OUT}}</math></p>
<h2>Inverter/Buck-Boost</h2> 	<p>Negative Output Only</p> <ul style="list-style-type: none"> <li>- Simple Inductor</li> </ul> <p>Eff <math>\approx</math> 85%</p>	<p>High-Side Switch High Peak Currents</p> <p><math>I_{SW} (Avg) \approx \frac{I_{OUT}}{1 - DC}</math></p> <p><math>DC \approx \frac{V_{OUT}}{V_{OUT} + (V_{IN} \times Eff)}</math></p>

# Voltage Regulator DC-to-DC Topologies

	Pros	Cons
<b>Forward</b> 	Steps Up and Down - Isolated Outputs - Low-Side Switch Low Input/Output Ripple Eff $\approx$ 90%	$I_{SW} (Avg) \approx \frac{n_s}{n_p} \times I_{OUT}$ $DC \approx \frac{V_{OUT}}{(Eff \times V_{IN})} \times \frac{n_p}{n_s}$
<b>Flyback Applications</b> 	Steps Up and Down - Isolated Outputs - Multiple Outputs - Negative Output - High Output Voltage - Low-Side Switch Eff $\approx$ 80%	Transformer instead of inductor High Peak Current High Switch-Stress Voltage $I_{SW} (Avg) \approx \frac{I_{OUT}}{1 - DC}$ $DC \approx \frac{V_{OUT}}{V_{OUT} + N \times V_{IN} \times Eff}$
<b>SEPIC</b> 	Steps Up and Down - Low-Side Switch Eff $\approx$ 80%	High Peak Currents 2 inductors or coupled inductor High Switch-Stress Voltage $I_{SW} (Avg) \approx \frac{V_{OUT} \times I_{OUT} + I_{OUT}}{V_{OUT} \times Eff}$ $DC \approx \frac{V_{OUT}}{V_{OUT} + (V_{IN} \times Eff)}$
<b>Push-Pull</b> 	Steps Up and Down - Isolated Outputs - Low-Side Switches - Low Input/Output Ripple Eff $\approx$ 94%	$I_{SW} (Avg) \approx \frac{n_s}{n_p} \times I_{OUT}$ $DC \approx \frac{V_{OUT}}{2(Eff \times V_{IN})} \times \frac{n_p}{n_s}$
<b>Half-Bridge</b> 	Steps Up and Down - Isolated Outputs - Low FET Stress - Low Transformer Leakage Eff $\approx$ 95%	$I_{SW} (Avg) \approx \frac{n_s}{n_p} \times I_{OUT}$ $DC \approx \frac{V_{OUT}}{2(Eff \times V_{IN})} \times \frac{n_p}{n_s}$
<b>Full-Bridge</b> 	Steps Up and Down - Isolated Outputs - High Power - Low FET Stress Eff $\approx$ 95%	$I_{SW} (Avg) \approx \frac{n_s}{n_p} \times I_{OUT}$ $DC \approx \frac{V_{OUT}}{2(Eff \times V_{IN})} \times \frac{n_p}{n_s}$



# Power Management Selection Guide

## Modules, Internal Inductors

Bold = New P/N	I <sub>OUT</sub> (A)	V <sub>IN</sub>		V <sub>OUT</sub> (V)	V <sub>FB</sub> (V)	V <sub>OUT</sub> Max (V)	Synchronous	HLL Mode	LowQ® Mode	PWR Good	Soft Start	Tol (Typ) %	Freq (Hz)	Duty Cycle Max	* = Reduced height package Package
		Min (V)	Max (V)												
MIC33030	0.4	2.7	5.5	1.2, 1.8, Adj	0.62	3.6	X	X				±2.5	8.0M	90%	2.5x2.0
MIC33050	0.6	2.7	5.5	1.0, 1.2, 1.8, 3.3, Adj	0.40	3.3	X	X				±2.5	4.0M	89%	3x3
MIC33153	1.2	2.7	5.5	1.2, Adj	0.62	3.6	X	X		X	X	±2.5	4.0M	80%	3x3.5
MIC3385	0.6	2.7	5.5	1.5, Adj	1.0	5.5	X		X			±1	8.0M	100%	3x3.5
MIC38150	1.5	3.0	5.5	Adj	1.0	V <sub>in</sub> -0.85	X					±2.5	~2.0M		4x6
MIC38300	3.0	3.0	5.5	Adj	1.0	V <sub>in</sub> -0.85	X					±2.5	~2.0M		4x6

## Step-Down Switching Regulators (Internal Switches)

Bold = New P/N	I <sub>OUT</sub> (A)	V <sub>IN</sub>		V <sub>OUT</sub> (V)	V <sub>FB</sub> (V)	V <sub>OUT</sub> Max (V)	Synch- ronous	HLL Mode	LowQ® Mode	Skip Mode	Sync Pin	PWR Good	Soft Start	Tol (Typ) %	Freq (Hz)	V <sub>BIAS</sub> Reqd	Duty Cycle Max	* = Reduced height package Package
		Min (V)	Max (V)															
MIC23030	0.4	2.7	5.5	1.0, 1.2, 1.5, 1.8, Adj	0.62	0.80*V <sub>in</sub>	X	X						±2.5	8.0M		80%	1.6x1.6
MIC23031	0.4	2.7	5.5	1.0, 1.2, 1.5, 1.8, Adj	0.62	0.89*V <sub>in</sub>	X	X						±2.5	4.0M		89%	1.6x1.6
MIC23050	0.6	2.7	5.5	1.0, 1.2, 1.8, 3.3		0.89*V <sub>in</sub>	X	X						±2.5	4.0M		89%	2x2
MIC23051	0.6	2.7	5.5	1-1.2, 1-1.8, 1.15-1.4, 0.95-1.25		0.89*V <sub>in</sub>	X	X					X	±2.5	4.0M		89%	2x2
MIC23150	2.0	2.7	5.5	1.0, 1.2, 1.35, 1.8, 3.3		0.80*V <sub>in</sub>	X	X					X	±2.5	4.0M		80%	2x2
MIC23153	2.0	2.7	5.5	1.8, Adj	0.62	0.89*V <sub>in</sub>	X	X				X	X	±2.5	4.0M		80%	2.5x2.5
MIC23155	2.0	2.7	5.5	1.8, Adj	0.62		X	X				X	X	±2.5	3.0M			2.5x2.5
MIC23156	1.5	2.7	5.5	1.0-0.8, Adj		2.4	X	X				X	X	±1.5	3.0M		80%	1.81x1.71 WLCSP, 2.8x2.5
<b>MIC23201</b>	2.0	2.7	5.5	Adj	0.62	3.6	X					X	X	±2.5	2.0M		80%	3x3
<b>MIC23303</b>	3.0	2.9	5.5	Adj	0.62	3.6	X	X				X	X	±2.5	4.0M		80%	3x3
MIC23603	6.0	2.9	5.5	Adj	0.62	3.6	X	X				X	X	±2.5	4.0M		80%	4x5
MIC2245	0.5	2.7	5.5	Adj	1.0	5.5	X		X					±2	4M		100%	3x3
MIC2285	0.5	2.7	5.5	Adj	1.0	5.5	X		X					±2	8.0M		100%	3x3
MIC2285A	0.5	2.7	5.5	Adj	1.0	5.5	X		X					±2	8.0M		100%	3x3*
MIC2205	0.6	2.7	5.5	Adj, 1.58	1.0	5.5	X		X					±2	2.0M		100%	3x3
MIC2206	0.6	2.7	5.5	1.2, 1.8	1.0	5.5	X		X					±2	2.0M		100%	3x3
MIC2203	0.3	2.3	5.5	Adj	0.5	5.5	X					X		±2.5	1.0M		100%	MSOP-10, 3x3
MIC2204	0.6	2.3	5.5	Adj	1.0	5.5	X					X		±2	2.0M		100%	MSOP-10, 3x3
MIC2224	1.0	2.7	5.5	DAC Controlled		5.5	X								2.0M		100%	3x3
LM2574	0.5	4.0	40	3.3, 5.0, 12, Adj	1.23	0.98*V <sub>in</sub>								±1	52k		98%	DIP-8
LM2575	1.0	4.0	40	3.3, 5.0, 12, Adj	1.23	0.98*V <sub>in</sub>								±1	52k		98%	DIP-16, TO220-5, TO263-5, SOP-24
LM2576	3.0	4.0	40	3.3, 5.0, 12, Adj	1.23	0.98*V <sub>in</sub>								±1	52k		98%	TO220-5, TO263-5
MIC4574	0.5	4.0	24	3.3, 5.0, Adj	1.23	0.95*V <sub>in</sub>								±3	200k		95%	DIP-8
MIC4575	1.0	4.0	24	3.3, 5.0, Adj	1.23	0.95*V <sub>in</sub>								±3	200k		95%	TO220-5, TO263-5
MIC4576	3.0	4.0	36	3.3, 5.0, Adj	1.23	0.95*V <sub>in</sub>								±3	200k		95%	TO220-5, TO263-5
MIC4680	1.3	4.0	34	3.3, 5.0, Adj	1.23	0.97*V <sub>in</sub>								±1	200k		97%	SOIC-8
MIC4690	1.3	4.0	34	Adj	1.23	0.93*V <sub>in</sub>								±1	500k		93%	SOIC-8
MIC4681	2.0	4.0	30	Adj	1.25	0.95*V <sub>in</sub>								±1	400k		95%	SOIC-8
MIC4682	2.0	4.0	34	Adj	1.23	0.95*V <sub>in</sub>								±1	200k		95%	SOIC-8
MIC4684	2.0	4.0	30	Adj	1.24	0.94*V <sub>in</sub>								±2	200k		94%	SOIC-8
MIC4685	3.0	4.0	30	Adj	1.24	0.94*V <sub>in</sub>								±2	200k		94%	SPAK-7

# Power Management Selection Guide

## Step-Down Switching Regulators (Internal Switches)

Bold = New P/N	I <sub>OUT</sub> (A)	V <sub>IN</sub>		V <sub>OUT</sub> (V)	V <sub>FB</sub> (V)	V <sub>OUT</sub> Max (V)	Synch- ronous	HLL Mode	LowQ® Mode	Skip Mode	Sync Pin	PWR Good	Soft Start	Tol (Typ) %	Freq (Hz)	V <sub>BIAS</sub> Reqd	Duty Cycle Max	* = Reduced height package Package
		Min (V)	Max (V)															
MIC4720	2.0	2.7	5.5	Adj	1.0	5.5						X	X	±2	2.0M		100%	eMSOP-10, 3x3
MIC4721	1.5	2.7	5.5	Adj	1.0	5.5						X	X	±2	2.0M		100%	MSOP-10
MIC4722	3.0	2.7	5.5	Adj	1.0	5.5						X	X		2.7M		100%	3x3
MIC4723	3.0	2.7	5.5	Adj	1.0	5.5						X	X	±2	2.0M		100%	eMSOP-10, 3x3
MIC4724	3.0	3.0	6.0	Adj	1.0	5.5						X	X	±2	2.0M		100%	eMSOP-10
MIC2177	2.5	4.5	16.5	3.3, 5.0, Adj	1.245	16.5	X			X	X			±3	200k		100%	WSOIC-20
MIC2178	2.5	4.5	16.5	3.3, 5.0, Adj	1.245	16.5	X			X	X	X		±3	200k		100%	WSOIC-20
MIC2179	1.5	4.5	16.5	3.3, 5.0, Adj	1.245	16.5	X			X	X	X		±3	200k		100%	SSOP-20
MIC2267	2.0	3.0	5.5	Adj	1.0	5.5	X					X	X	±2	400k- 1.5M		100%	3x3
MIC2207	3.0	2.7	5.5	Adj	1.0	5.5	X					X	X	±2	2.0M		100%	3x3
MIC2208	3.0	2.7	5.5	Adj	1.0	5.5	X					X		±1	1.0M		100%	3x3
MIC22200**	2.0	2.6	5.5	Adj	0.7	5.5	X					X	X	±2	800k- 1.2M		100%	3x3
MIC22205	2.0	2.9	5.5	Adj	0.7	5.5	X					X	X	±2	300k- 4M		100%	3x3
MIC22400**	4.0	2.6	5.5	Adj	0.7	5.5	X					X	X	±1	800k- 4M		100%	eTSSOP-20, 3x4
MIC22405	4.0	2.9	5.5	Adj	0.7	5.5	X					X	X	±1	300k- 4M		100%	3x4
MIC22600**	6.0	2.6	5.5	Adj	0.7	5.5	X					X	X	±1	1.0M		100%	eTSSOP-24, 4x4
MIC22601**	6.0	2.6	5.5	Adj	0.7	5.5	X					X	X	±1	4.0M		100%	4x4
MIC22602**	6.0	2.6	5.5	Adj	0.7	5.5	X					X	X	±2	1.0M		100%	4x4
MIC22700**	7.0	2.6	5.5	Adj	0.7	5.5	X					X	X	±2	1.0M		100%	4x4
MIC22705	7.0	2.9	5.5	Adj	0.7	5.5	X					X	X	±2	1.0M		100%	4x4
MIC22950	10	2.6	5.5	Adj	0.7	5.5	X					X	X	±2	400k- 2M		100%	5x5
MIC24051	6.0	4.5	19	Adj	0.8	5.5	X					X	X	±1	600k		82%	5x6
MIC24052	6.0	4.5	19	Adj	0.8	5.5	X	X				X	X	±1	600k		82%	5x6
MIC24053	9.0	4.5	19	Adj	0.8	5.5	X					X	X	±1	600k		82%	5x6
MIC24054	9.0	4.5	19	Adj	0.8	5.5	X	X				X	X	±1	600k		82%	5x6
MIC24055	12.0	4.5	19	Adj	0.8	5.5	X					X	X	±1	600k		82%	5x6
MIC24056	12.0	4.5	19	Adj	0.8	5.5	X	X				X	X	±1	600k		82%	5x6
MIC26400	5.0	4.5	26	Adj	0.8	5.5	X						X	±1	300k	X	87%	5x6
MIC26600	7.0	4.5	26	Adj	0.8	5.5	X						X	±1	300k	X	87%	5x6
MIC26950	12	4.5	26	Adj	0.8	5.5	X						X	±1	300k	X	87%	5x6
MIC26601	6.0	4.5	28	Adj	0.8	5.5	X					X	X	±1	600k		82%	5x6
MIC26901	9.0	4.5	28	Adj	0.8	5.5	X					X	X	±1	600k		82%	5x6
MIC261201	12	4.5	28	Adj	0.8	5.5	X					X	X	±1	600k		82%	5x6
MIC26603	6.0	4.5	28	Adj	0.8	5.5	X	X				X	X	±1	600k		82%	5x6
MIC26903	9.0	4.5	28	Adj	0.8	5.5	X	X				X	X	±1	600k		82%	5x6
MIC261203	12	4.5	28	Adj	0.8	5.5	X	X				X	X	±1	600k		82%	5x6
MIC27600	7.0	4.5	36	Adj	0.8	5.5	X						X	±1	300k	X	87%	5x6
MIC28500	4.0	30	75	Adj	0.8	5.5	X						X	±1	100- 500k	X	82%	5x6
MIC28510	4.0	4.5	75	Adj	0.8	5.5	X						X	±1	100- 500k	X	80%	5x6

# Power Management Selection Guide

## Step-Down Switching Regulators (Internal Switches)

Bold = New P/N	I <sub>OUT</sub> (A)	V <sub>IN</sub>		V <sub>OUT</sub> (V)	V <sub>FB</sub> (V)	V <sub>OUT</sub> Max (V)	Synch- ronous	HLL Mode	LowQ® Mode	Skip Mode	Sync Pin	PWR Good	Soft Start	Tol	Freq (Hz)	V <sub>BIAS</sub> Reqd	Duty Cycle Max	* = Reduced height package Package	
		Min (V)	Max (V)											(Typ) %					
MIC26603-ZA	6.0	4.5	28	Adj	0.6	5.5	X							X	X	±1	600k	82%	5x6
MIC26903-ZA	9.0	4.5	28	Adj	0.6	5.5	X							X	X	±1	600k	82%	5x6
MIC23163	2.0	2.7	5.5	Adj	0.7	3.8	X	X						X	X	±2.5	4.0M	100%	2x2*
MIC23164	2.0	2.7	5.5	Adj	0.7	3.8	X	X						X	X	±2.5	4.0M	100%	2x2*
MIC261203-ZA	12.0	4.5	28	Adj	0.6	5.5	X							X	X	±1	600k	82%	5x6

\*\* Not recommended for new designs

## Step-Down Switching Regulators (External Switches)

Bold = New P/N	V <sub>IN</sub>		V <sub>OUT</sub> (V)	V <sub>FB</sub> (V)	V <sub>OUT</sub> Max (V)	Synch- ronous	HLL Mode	LowQ® Mode	Skip Mode	Sync Pin	PWR Good	Soft Start	Tol	Freq (Hz)	V <sub>BIAS</sub> Reqd	Duty Cycle Max	* = Reduced height package Package
	Min (V)	Max (V)											(Typ) %				
MIC2101	4.5	38	Adj	0.8		X	X				X	X	±1	600k		85%	3x3
MIC2102	4.5	38	Adj	0.8		X					X	X	±1	600k		85%	3x3
MIC2103	4.5	75	Adj	0.8		X	X				X	X	±1	600k		85%	3x3
MIC2104	4.5	75	Adj	0.8		X					X	X	±1	600k		85%	3x3
MIC2124	3.0	18	Adj	0.8	5.1	X						X	±1	300k	X	93%	MSOP-10
MIC2130-1	8.0	40	Adj	0.7		X					X	X	±2	150k		92%	TSSOP-16, 4x4
MIC2130-4	8.0	40	Adj	0.7		X					X	X	±2	400k		80%	TSSOP-16, 4x4
MIC2131-1	8.0	40	Adj	0.7		X					X	X	±2	150k		92%	TSSOP-16, 4x4
MIC2131-4	8.0	40	Adj	0.7		X					X	X	±2	400k		80%	TSSOP-16, 4x4
MIC2164	3.0	28	Adj	0.8	5.5	X						X	±1	300k	X	87%	MSOP-10
MIC2164-2	3.0	28	Adj	0.8	5.5	X						X	±1	600k	X	74%	MSOP-10
MIC2164-3	3.0	28	Adj	0.8	5.5	X						X	±1	1.0M	X	66%	MSOP-10
MIC2164C	3.0	28	Adj	0.8	5.5	X						X	±3	270k	X	87%	MSOP-10
MIC2165	4.5	28	Adj	0.8	5.5	X	X				X	X	±1	600k		82%	eMSOP-10
MIC2166	4.5	28	Adj	0.8	5.5	X					X	X	±1	600k		82%	eMSOP-10
MIC2174-1	3.0	40	Adj	0.8	5.5	X						X	±1	300k	X	87%	MSOP-10
MIC2174C-1	3.0	40	Adj	0.8	5.5	X						X	±3	270k	X	87%	MSOP-10
MIC2176-1	4.5	75	Adj	0.8	-	X						X	±1	100k	X	96%	MSOP-10
MIC2176-2	4.5	75	Adj	0.8	-	X						X	±1	200k	X	93%	MSOP-10
MIC2176-3	4.5	75	Adj	0.8	-	X						X	±1	300k	X	89%	MSOP-10
MIC2182	4.5	32	3.3, 5.0, Adj	1.245	6.0	X		X	X			X	±1	300k		86%	SOP-16, SSOP-16
MIC2183	2.9	14	Adj	1.245	12	X				X		X	±1	400k		100%	SOP-16, QSOP-16
MIC2184	2.9	14	Adj	1.245	12	X				X		X	±1	400k		100%	SOP-16, QSOP-16
MIC2193	2.9	14	Adj	1.245		X							±1	400k		100%	SOIC-8
MIC2198	4.5	32	Adj	0.8	6.0	X							±1	500k		76%	4x4
MIC2199	4.5	32	Adj	0.8	6.0	X							±1	300k		85%	4x4

## Multiple Output - Step-Down Switching Regulators (Internal Switches)

Bold = New P/N	# of Outputs	V <sub>IN</sub>		V <sub>OUT</sub> (V)	V <sub>FB</sub> (V)	V <sub>OUT</sub> Max (V)	Synchronous	HLL Mode	Sync Pin	PWR Good	Soft Start	Tol	Freq (Hz)	V <sub>BIAS</sub> Reqd	Duty Cycle Max	* = Reduced height package Package
		Min (V)	Max (V)									(Typ) %				
MIC4742	2	2/2	2.9 5.5	Adj/Adj	0.6	5.5						±2	2.0M		100%	3x3, SSOP*
MIC4744	2	2/2	2.9 5.5	Adj/Adj	0.6	5.5						±2	4.0M		100%	3x3, SSOP*
MIC4782	2	2/2	3.0 6.0	Adj/Adj	0.607	6						±3	1.8M		100%	3x3

# Power Management Selection Guide

## Multiple Output - Step-Down Switching Regulators (Internal Switches)

Bold = New P/N	# of Outputs	I <sub>OUT</sub> (A)	V <sub>IN</sub>		V <sub>OUT</sub> (V)	V <sub>FB</sub> (V)	V <sub>OUT</sub> Max (V)	Synchronous	HLL Mode	Sync Pin	PWR Good	Soft Start	Tol (Typ) %	Freq (Hz)	V <sub>BIAS</sub> Reqd	Duty Cycle Max	* = Reduced height package Package
			Min (V)	Max (V)													
MIC2238	2	0.8/0.8	2.5	5.5	1.28/1.28, 1.8/1.2, 1.8/1.545, 1.8/1.575, 1.8/3.3, 1.8/1.6, 2.5/1.2, 3.3/1.2, 3.3/3.3, Adj/Adj	0.8	5.5	X			X	X	±2	2.5M		100%	3x3
MIC23250	2	0.4/0.4	2.7	5.5	0.9/1.1, 1.2/1.0, 1.2/1.6, 1.2/1.8, 1.2/2.8, 1.2/3.3, 1.575/1.8, 2.6/3.3, Adj/Adj	0.72	0.86*Vin	X	X			X	±2.5	4.0M		86%	2x2*, 2.5x2.5*
MIC23254	2	0.4/0.4	2.5	5.5	1.0/1.8		0.86*Vin	X	X			X	±2.5	4.0M		86%	2x2*
<b>MIC23158</b>	2	2/2	2.7	5.5	Adj/Adj	0.62	3.3	X	X		X	X	±2.5	3.0M		90%	3x4
<b>MIC23159</b>	2	2/2	2.7	5.5	Adj/Adj	0.62	3.3	X	X		X	X	±2.5	3.0M		90%	3x4
<b>MIC23450</b>	3	2/2/2	2.7	5.5	Adj/Adj/Adj	0.62	3.3	X	X		X	X	±2.5	3.0M		90%	5x5
MIC23451	3	1/1/1	2.7	5.5	Adj/Adj/Adj	0.62	3.3	X	X		X	X	±2.5	3.0M		90%	4x4
<b>MIC24420</b>	2	2.5/2.5	4.5	15	Adj/Adj	0.7	0.7*Vin	X			X	X	±2	1.0M		76%	4x4
<b>MIC24421</b>	2	2.5/2.5	4.5	15	Adj/Adj	0.7	0.7*Vin	X			X	X	±2	500k		90%	4x4
MIC25400	2	2/2	4.5	13.2	Adj/Adj	0.7	9.24	X			X	X	±2	1.0M		70%	4x4

## Multiple Phase - Step-Down Switching Regulators (External Switches)

Bold = New P/N	# of Outputs	# of Phases	I <sub>OUT</sub>	V <sub>IN</sub>		V <sub>OUT</sub> (V)	V <sub>FB</sub> (V)	V <sub>OUT</sub> Max (V)	Synchronous	Sync Pin	PWR Good	Soft Start	Tol (Typ) %	Freq (Hz)	V <sub>BIAS</sub> Reqd	Duty Cycle Max	* = Reduced height package Package
				Min (V)	Max (V)												
MIC2150	2	2	20A/Phase	4.5	14.5	Adj/Adj	0.7	12.03	X		X	X	±1	500k		80%	4x4
MIC2151	2	2	20A/Phase	4.5	14.5	Adj/Adj	0.7	12.03	X		X	X	±1	300k		83%	4x4
MIC2155	1	2	25A/Phase	4.5	14.5	Adj/Adj	0.7	3.6	X	X	X	X	±1	500k		80%	5x5
MIC2156	1	2	25A/Phase	4.5	14.5	Adj/Adj	0.7	3.6	X	X	X	X	±1	300k		80%	5x5

## Step-Up Switching Regulators (Internal Switches)

Bold = New P/N	Peak SW (A)	V <sub>IN</sub>		V <sub>OUT</sub>		Synchronous	Int Diode	Soft Start	Tol (Typ) %	Freq (Hz)	OVP	Dithered	* = Reduced height package Package
		Min (V)	Max (V)	Min (V)	Max (V)								
MIC2141	1.00	2.5	14	2.8	22				±1	330k			SOT23-5
MIC2171	4.00	3.0	40	3.6	65				±2	100k			TO220, TO263
MIC2172	2.00	3.0	40	3.6	65				±2	100k			DIP-8, SOIC-8
MIC2250	2.00	2.5	5.5	3.0	32			X	±3	Var		X	SOT23-5, 2x2
MIC2251	2.00	2.5	5.5	3.0	37			X	±3	Var		X	SOT23-5, 2x2
MIC2253	3.50	2.5	10	3.0	30			X	±3	1.0M	X		3x3
MIC2288	1.20	2.5	10	3.6	34				±1	1.2M	X		SOT23-5, 2x2
MIC2290	0.75	2.5	10	3.0	34		X		±1	1.2M	X		2x2
MIC2295	1.70	2.5	10	3.0	34				±1	1.2M	X		SOT23-5, 2x2
MIC2296	1.70	2.5	10	3.0	34				±1	600k	X		SOT23-5, 2x2
MIC2570	1.10	1.3	15	2.85	36				±5.5	20k			SOIC-8
MIC2571	1.10	0.9	15	2.85	36				±5.5	20k			MSOP-8
MIC2601	1.70	4.5	20	5.0	40			X	±2	1.2M	X		2x2
MIC2602	1.70	4.5	20	5.0	40			X	±2	2.0M	X		2x2
MIC2605	0.80	4.5	20	5.0	40		X	X	±2	1.2M	X		2x2
MIC2606	0.80	4.5	20	5.0	40		X	X	±2	2.0M	X		2x2
MIC2619	0.35	2.8	6.5	2.8	35				±3	1.2M	X		SOT23-6*
MIC3172	1.25	3.0	40	3.6	65				±1.6	100k			SOIC-8, DIP8

# Power Management Selection Guide

## Step-Up Switching Regulators (External Switches)

P/N	V <sub>IN</sub>		V <sub>OUT</sub>		Synchronous	Skip Mode	Sync Pin	Soft Start	Tol Typ %	Freq (Hz)	OVP	Dithered	Package
	Min (V)	Max (V)	Min (V)	Max (V)									
MIC2185	2.9	14			X	X	X	X	±2	400k			SOIC-16, QSOP-16
MIC2186	2.9	14				X	X	X	±1	100/200/400k			SOIC-16, QSOP-16
MIC2196	2.9	14							±1	400k			SOIC-8

## Flyback/Forward Converters/Push-Pull Controllers for Isolated Applications

P/N	V <sub>IN</sub>		Gate Drive (A)	V <sub>START</sub> (V)	V <sub>STOP</sub> (V)	Start-Up Current Max (µA)	Duty Cycle (Max)	Topology	Frequency	Package
	Min (V)	Max (V)								
MIC9130	9.0	180	1.0	9.0			50%	Forward, Flyback	Adj to 1.5MHz	SOIC-16, QSOP-16
MIC9131	9.0	180	1.0	9.0			75%	Forward, Flyback	Adj to 1MHz	SOIC-16, QSOP-16
MIC3808	8.3	15	0.5	12.5	8.3	130	50%	Push-Pull	Adj to 1MHz	SOIC-8, MSOP-8
MIC3809	4.1	15	0.5	4.3	4.1	130	50%	Push-Pull	Adj to 1MHz	SOIC-8, MSOP-8
MIC3838	8.3	15	0.5	12.5	8.3	130	50%	Push-Pull	Adj to 1MHz	MSOP-10
MIC3839	4.1	15	0.5	4.3	4.1	130	50%	Push-Pull	Adj to 1MHz	MSOP-10
MIC38C42	15.5	20	0.5	14.5	9.0	200	96%	Forward, Flyback	Adj to 500kHz	PDIP-8/14, MSOP-8, SOIC-8/14
MIC38C43	9.0	20	0.5	8.4	7.6	200	96%	Forward, Flyback	Adj to 500kHz	PDIP-8/14, MSOP-8, SOIC-8/14
MIC38C44	15.5	20	0.5	14.5	9.0	200	50%	Forward, Flyback	Adj to 500kHz	PDIP-8/14, MSOP-8, SOIC-8/14
MIC38C45	9.0	20	0.5	8.4	7.6	200	50%	Forward, Flyback	Adj to 500kHz	PDIP-8/14, MSOP-8, SOIC-8/14
MIC38HC42	15.5	20	1.0	14.5	9.0	200	96%	Forward, Flyback	Adj to 500kHz	PDIP-8/14, SOIC-8/14
MIC38HC43	9.0	20	1.0	8.4	7.6	200	96%	Forward, Flyback	Adj to 500kHz	PDIP-8/14, SOIC-8/14
MIC38HC44	15.5	20	1.0	14.5	9.0	200	50%	Forward, Flyback	Adj to 500kHz	PDIP-8/14, SOIC-8/14
MIC38HC45	9.0	20	1.0	8.4	7.6	200	50%	Forward, Flyback	Adj to 500kHz	PDIP-8/14, SOIC-8/14
MIC38C42A **	15.5	20	0.5	14.5	9.0	200	96%	Forward, Flyback	Adj to 500kHz	SOIC-8, MSOP-8
MIC38C43A **	9.0	20	0.5	14.5	9.0	200	96%	Forward, Flyback	Adj to 500kHz	SOIC-8, MSOP-8
MIC38C44A **	15.5	20	0.5	14.5	9.0	200	50%	Forward, Flyback	Adj to 500kHz	SOIC-8, MSOP-8
MIC38C45A **	9.0	20	0.5	14.5	9.0	200	50%	Forward, Flyback	Adj to 500kHz	SOIC-8, MSOP-8

\*\* Recommended for new designs

# Power Management Selection Guide

## Multi-Output PMICs

Bold = New P/N	DC/DC (mA)	I <sub>OUT</sub> LDO (mA)	V <sub>IN</sub>		DC-DC	V <sub>OUT</sub> **		HLL Mode	LowQ® Mode	Comments	* = Reduced height package Package
			Min (V)	Max (V)		LDO	LDO				
MIC2225	600	300	2.7	5.5	Down to 1.0V	Down to 0.8V				Digital Power Management IC, 2MHz DC-DC converter with LDO and independent enable, >95% efficiency.	2x2*
MIC23060	600	300	2.7	5.5	1.8/3.3V	1.2V		X		4MHz 600mA DC-DC Regulator and 300mA LDO Regulator with flexible sequencing feature. DC-DC features HyperLight Load®. >95% efficiency.	2.5x2.5*
MIC2800	600	300/300	2.7	5.5	1.8/3.3V	LDO1: 0.8V to (VDC/DC-VDD), LDO2: 0.8V to 3.6V			X	Digital Power Management IC, 2MHz DC-DC converter with two Linear Regulators. LDO1 is directly connected to the output of the DC-DC converter. POR/Power Good pin and LOWQ mode.	3x3
MIC2807	600	200/30	2.7	5.5	DAC cntrl, 0.3V to Vin	2.85/2.85V				RF Power Management IC, 600mA DC-DC converter with DAC controlled output to power amplifier. 200mA RF LDO output current (provides bias voltage supply for PA), 30mA PA LDO (provides highly accurate PA reference voltage).	2.5x2.8
MIC2808	600	200/30	2.7	5.5	DAC cntrl, 0.3V to Vin	2.85/2.85V				RF Power Management IC, 600mA DC-DC converter with DAC controlled output to power amplifier. 200mA RF LDO output. Reduced package size and LDO dropout compared to MIC2807.	2x2.5*
MIC2810	600	300/300	2.7	5.5	1.0/2.0V	0.8V to 3.6V			X	Digital Power Management IC, 2MHz with two linear regulators. LDO1 has a separate VIN pin and can either post-regulate the DC-DC converter or be connected directly to the main input supply. POR/Power Good pin.	3x3
MIC2811	600	300/300	2.7	5.5	1.0/2.0V	LDO1,2: 0.8V to 3.6V, LDO3: 1.0V to 3.9V				Digital Power Management IC, 2MHz DC-DC converter with 3 LDOs. Bypass cap for improved noise performance on LDO1 and LDO2. LDO1 and LDO2 have separate VIN pins. Separate enable pins.	3x3
MIC2821	600	300/300/ 300	2.7	5.5	1.0/2.0V	LDO1,2: 0.8V to 3.6V, LDO3: 1.0V to 3.9V				Digital Power Management IC, 2MHz DC-DC converter with 3 LDOs. LDO1 and 2 have separate VIN pins. Independent enable for all four regulators.	3x3
MIC2826	500	150/150/ 150	2.7	5.5	I2C and Dynamic Scaling from 0.8V to 1.8V	I2C and Dynamic Scaling from 0.8V to 3.3V		X		4MHz DC-DC HyperLight Load converter with 1.8V to DVIN Adj via I2C and dynamic voltage scaling. 3 LDOs. Fast-mode (400kHz) I2C Control for start-up, enables and output voltages. Optional default start-up sequence and voltages. Fault monitoring mlag (IRQb).	2.5x2.5*
MIC2827	500	150/150	2.7	5.5	I2C and Dynamic Scaling from 0.8V to 1.8V	I2C and Dynamic Scaling from 0.8V to 3.3V		X		4MHz DC-DC HyperLight Load converter with dynamic voltage scaling and 2 LDOs. Fast-mode (400kHz) I2C control for start-up, enables, and output voltages. Optional default start-up sequence and voltages. Fault monitoring flag (IRQb).	2.5x2.5
MIC2829	1000/300/ 600/600/ 800/800	11x200	2.7	5.5	DC-DCs: 0.8V to 1.8V	0.8V to 3.3V				Highly integrated PMIC for 3G/4G wireless data and portable applications. 6 buck regulators, 5 general-purpose LDOs, 6 low noise regulators, SIM card level shifter, and PGOOD indicator with adjustable delay.	LGA-76, FBGA-85 (5.5x5.5mm)

\*\* Contact factory for additional voltage output options.

## Sub-Power Management ICs (Sub-PMIC)

Bold = New P/N	Comments		Package
MIC4555	SIM Card Interface + Level Shifter with 50mA LDO		3x3

## Battery Chargers

Bold = New P/N	Charge Cell Type	Charge Voltage	Gate Voltage Accuracy	V <sub>IN</sub>		I <sub>GND</sub> (Typ)	I <sub>GND</sub> Shutdown Typ (µA)	V <sub>D-OUT</sub> +25°C (Typ)	V <sub>D-OUT</sub> @ T <sub>max</sub>	Package
				Min (V)	Max (V)			(mV)	(mV)	
MIC79050	Li-Ion, 1 cell	4.2V	±0.75%	2.5	16	85µA	3.0	380	600	MSOP-8, SOIC-8, SOT223
MIC79110	Li-Ion	4.2V, Adj	±0.75%	2.5	16	2mA	0.1	375	550	3x3

# Power Management Selection Guide

## DDR Terminators

P/N	Linear	Switching	Max I <sub>OUT</sub> (A)	V <sub>IN</sub>		V <sub>OUT</sub> (V)	PWR Good	V <sub>TT</sub> Accuracy (mV)	External Transistor	Freq	µCaP	Comments	Package
				Min (V)	Max (V)								
MIC5162	X		±7	1.35	6.0	1/2 of VDDQ		±5	X		X		MSOP-10
MIC5163	X		±7	0.75	6.0	1/2 of VDDQ		±5	X		X	Low voltage	MSOP-10
MIC5164	X		±7	1.35	6.0	1/2 of VDDQ	X	±5	X		X		MSOP-10
MIC5165	X		±7	0.75	6.0	1/2 of VDDQ	X	±5	X		X	Low voltage	MSOP-10
<b>MIC5166</b>	X		±3	0.9	3.6	1/2 of VDDQ	X	±40			X	Integrated FETs	3x4
MIC5167		X	±6	2.6	5.5	Adj down to 0.35V	X	±12		1MHz	X	Integrated Sync Buck	4x4

## SCSI Terminators

P/N	Description	Package
MIC5204	±1%, 500mA SCSI-II Terminator	SOIC-8, SOT223

## Electroluminescent (EL) Drivers

P/N	V <sub>IN</sub>		V <sub>OUT</sub> (V <sub>pp</sub> )	Operating		Frequency	Features	Package
	Min (V)	Max (V)		I <sub>Q</sub> (µA)	I <sub>Q</sub> (µA)			
MIC4826	1.8	5.5	160	21	21	60Hz-1kHz	EL panels up to 3 sq in	MSOP-8
MIC4827	1.8	5.5	180	21	21	60Hz-1kHz	EL panels up to 3 sq in	MSOP-8
MIC4830	1.8	5.5	180	45	45	60Hz-1kHz	EL panels up to 4 sq in, lowest audible noise	MSOP-8, 3x3
MIC4832	1.8	5.5	220	45	45	60Hz-1kHz	EL panels up to 3 sq in, lowest audible noise	MSOP-8, 3x3
MIC4833	2.3	5.8	220	152	152	100Hz-1.5kHz	Independent control of two EL elements, up to 4 sq in	3x3
MIC4834	2.3	5.8	220	152	152	100Hz-1.5kHz	For two EL elements in parallel, up to 3 sq in	MSOP-10, 3x3

## LED Backlight Drivers

P/N	V <sub>IN</sub>		I <sub>LIM</sub> Typ (A)	I <sub>Q</sub> Typ	Int Diode	V <sub>FB</sub> (V)	Tol (Typ) %	V <sub>OUT</sub> Max (V)	Duty Cycle Max	Freq (Hz)	Comments	Package
	Min (V)	Max (V)										
MIC2142	2.2	16		85µA		1.28	±2	22	57%	330k		SOT23-5
MIC2145	2.4	16	0.900	200µA		1.08	±2	16		450k	Hysteretic	MSOP-8, 3x3
MIC2282	0.9	15	1.100	120µA		0.220	±10	36	67%	20k	Single AA boost	MSOP-8
MIC2287	2.5	10	0.750	2.5mA		0.095	±5	34	90%	1.2M		TSOT-23-5, 2x2
MIC2287C	2.5	10	0.750	2.5mA		0.095	±10	34	90%	1.2M		TSOT-23-5, 2x2
MIC2289	2.5	10	0.750	2.5mA	X	0.095	±5	34	90%	1.2M		TSOT-23-6, 2x2
MIC2289C	2.5	10	0.750	2.5mA	X	0.095	±10	34	90%	1.2M		TSOT-23-6
MIC2291	2.5	10	1.20	2.8mA		0.095	±5	34	90%	1.2M	Photo flash mode	TSOT-23-5, 2x2
MIC2292	2.5	10	0.750	2.5mA	X	0.095	±5	34	90%	1.6M		2x2
MIC2292C	2.5	10	0.750	2.5mA	X	0.095	±10	34	90%	1.6M		2x2
MIC2293	2.5	10	0.750	2.5mA	X	0.095	±5	34	90%	2.0M		2x2
MIC2293C	2.5	10	0.750	2.5mA	X	0.095	±10	34	90%	2.0M		2x2
MIC2297	2.5	10	1.70	4.0mA		0.200	±5	40	93%	600k	Current mode	2.5x2.5
MIC2298	2.5	10	4.75	15mA		0.200	±8	30	90%	1.0M	Photo flash and torch mode	3x3
MIC2299	2.5	10	4.75	15mA		0.200	±8	30	90%	2.0M	10W flash driver and torch mode	3x3
MIC3223	4.5	20	3.50	2.1mA		0.200	±5	37	90%	1.0M	Boost high-power LED driver, integrated FET and PWM dimming	eTSSOP-16
MIC3263	6.0	40	2.40	6.5mA		2.36		40	90%	400k-1.8M	Six-Channel WLED driver for backlighting applications with flicker-free dimming. Internal and external dimming modes	4x4
MIC3287	2.8	6.5	0.350	2.1mA		0.250	±7.5	36	90%	1.2M		TSOT-23-5, TSOT-23-6, 2x2
MIC3289	2.5	6.5	0.750	1.4mA	X	0.250	±5	24	90%	1.2M	Dig 1-Wire	TSOT-23-6, 2x2
MIC3291	2.5	6.5	0.750	2.0mA	X	0.250	±5	25	90%	1.2M	Dig 1-Wire	TSOT-23-6, 2x2

# Power Management Selection Guide

## High-Brightness LED Drivers

Bold = New P/N	Type		V <sub>IN</sub>		# of White LEDs	Dimming	I <sub>Q</sub> (mA)	Switching Frequency	Switching MOSFET	Dithered	I <sub>LED</sub> Accuracy	V <sub>FB</sub> (mV)	* = Reduced height package Package
	Buck	Boost	Min (V)	Max (V)									
MIC3201	X		6.0	20	Up to 4	PWM to 20kHz	1.2	Hyst to 1.0MHz	Internal 1A		±5%	200	eSOIC-8
MIC3202	X		6.0	37	Up to 8	PWM to 20kHz	1.2	Hyst to 1.0MHz	Internal 1A	X	±5%	200	eSOIC-8
MIC3202-1	X		6.0	37	Up to 8	PWM to 20kHz	1.2	Hyst to 1.0MHz	Internal 1A		±5%	200	eSOIC-8
MIC3203	X		4.5	42	Up to 9	PWM to 20kHz	1.0	Hyst to 1.5MHz	External	X	±5%	200	SOIC-8
MIC3203-1	X		4.5	42	Up to 9	PWM to 20kHz	1.0	Hyst to 1.5MHz	External		±5%	200	SOIC-8
MAQ3203**	X		4.5	42	Up to 9	PWM to 20kHz	1.0	Hyst to 1.5MHz	External	X	±5%	200	SOIC-8
<b>MIC3205</b>	X		4.5	40	Up to 9	PWM to 20kHz	1.3	Hyst to 1MHz	External		±5%	200	3x3
MIC3230		X	6.0	45	Up to 20 or more	PWM to 500Hz	3.2	100kHz-1MHz	External		±3%	250	eTSSOP-16, 3x3
MIC3231		X	6.0	45	Up to 20 or more	PWM to 500Hz	3.2	100kHz-1MHz	External	X	±3%	250	eTSSOP-16, 3x3
MIC3232		X	6.0	45	Up to 20 or more	PWM to 500Hz	3.2	400kHz	External		±3%	250	MSOP-10

\*\* AEC-Q100 Qualified

## Linear LED Drivers

Bold = New P/N	V <sub>IN</sub>		# of White LEDs	Dimming	I <sub>Q</sub> (mA)	LED		Extra LDOs	V <sub>D-OUT</sub> (mV)	I <sub>Q</sub> LDO (µA)	Comments	* = Reduced height package Package
	Min (V)	Max (V)				V <sub>D-OUT</sub> @ 20mA	I <sub>LED</sub> Matching					
MIC2841A	3.0	5.5	4 @ 20mA	PWM (200Hz-500kHz)	1.4	40mV	±1.5%				DAM™	2x2*
MIC2842A	3.0	5.5	4 @ 20mA	1-Wire, 48-Steps	1.4	40mV	±1.5%				DAM	2x2*
MIC2843A	3.0	5.5	6 @ 20mA	PWM (200Hz-500kHz)	1.4	40mV	±1.5%				DAM	2x2*
MIC2844A	3.0	5.5	6 @ 20mA	1-Wire, 48-Steps	1.4	40mV	±1.5%				DAM	2x2*
MIC2845A	3.0	5.5	6 @ 20mA	PWM (200Hz-500kHz)	1.4	40mV	±1.5%	2	150	35	DAM	2.5x2.5*
MIC2846A	3.0	5.5	6 @ 20mA	1-Wire, 48-Steps	1.4	40mV	±1.5%	2	150	35	DAM	2.5x2.5*
MIC2860-2D	3.0	5.5	2 @ 30.2mA	1-Wire, 32-Steps	0.7	52mV @ 30.2mA	±0.5%					SC70-6, SOT-23-6*
MIC2860-2P	3.0	5.5	2 @ 30.2mA	PWM down to 250Hz	0.7	52mV @ 30.2mA	±0.5%					SC70-6, SOT-23-6*
MIC4811	3.0	5.5	6 @ 50mA	PWM (200Hz-500kHz)	1.7	100mV @ 50mA	±1.0%				DAM	MSOP-10
MIC4812	3.0	5.5	6 @ 100mA	PWM (200Hz-500kHz)	3.2	190mV @ 100mA	±1.0%				DAM	eMSOP-10
MIC4801	3.0	5.5	1 @ 600mA	PWM (200Hz-500kHz)	2.2	130mV @ 400mA					±1% accuracy	SOIC-8
MIC4802	3.0	5.5	1 @ 800mA	PWM (200Hz-500kHz)	4.1	280mV @ 800mA					±1% accuracy	eSOIC-8

## Display Drivers

Bold = New P/N	V <sub>IN</sub>		Sink Current (mA)	Segments	LEDs	Description	Package
	Min (V)	Max (V)					
MIC5400	4.75	5.5	30		2 banks of 8	Driving large LED array in signs	SOIC-28
MM5450	4.75	11.0	15	34		7-Segment LED driver with EN	PDIP-40, PLCC-44
MM5451	4.75	11.0	15	35		7-Segment LED driver	PDIP-40, PLCC-44



# Power Management Selection Guide

## Half-Bridge MOSFET Drivers

Bold = New P/N	V <sub>IN</sub>		Boot- strap Max (V)	Type	Logic	Sink/Source Peak Output	Sink/Source Output Impedance	t <sub>r</sub> /t <sub>f</sub>	t <sub>pd</sub> (input rise/fall)	Comments	Package
	Min (V)	Max (V)									
MIC4100	9.0	16	100V	Dual	Noninverting (CMOS)	2A/2A	2.5Ω/2.5Ω	10ns into 1000pF	27ns into 1000pF	Hysteresis on input pins for noisy or slow signals	SOIC-8
MIC4101	9.0	16	100V	Dual	Noninverting (TTL)	2A/2A	2.5Ω/2.5Ω	10ns into 1000pF	27ns into 1000pF	Level shift between VIN signal and VDD supply voltage	SOIC-8
MIC4102	9.0	16	100V	Dual	Noninverting (TTL)	3A/2A	1.5Ω/2.5Ω	10ns/6ns into 1000pF	27ns into 1000pF	Embedded anti shoot-through protection, PWM input	SOIC-8
MIC4103	9.0	16	100V	Dual	Noninverting (CMOS)	3A/2A	1.25Ω/2.5Ω	10ns/6ns into 1000pF	27ns into 1000pF		SOIC-8
MIC4104	9.0	16	100V	Dual	Noninverting (TTL)	3A/2A	1.25Ω/2.5Ω	10ns/6ns into 1000pF	27ns into 1000pF		SOIC-8
MIC4604	5.5	16	85V	Dual	Noninverting (TTL)	1A/1A	6Ω/4Ω	20ns/20ns into 1000pF	31ns into 1000pF	Widest programmable gate drive from 5.5V to 16V, allows longer run time in battery-operated tools, internal 85V bootstrap diode	SOIC-8, 2.5x2.5*

## Low-Side MOSFET Drivers

Bold = New P/N	V <sub>IN</sub>		Type	Logic	Sink/Source Peak Output	Sink/Source Output Impedance	t <sub>r</sub> /t <sub>f</sub>	t <sub>pd</sub> (input rise/fall)	Comments	* = Reduced height package Package
	Min (V)	Max (V)								
MIC4414	4.5	18	Single	Noninverting	1.5A	3.5Ω/3.5Ω	12ns/12ns into 1000pF	12ns into 1000pF		1.2x1.2*
MIC4415	4.5	18	Single	Inverting	1.5A	3.5Ω/3.5Ω	12ns/12ns into 1000pF	12ns into 1000pF		1.2x1.2*
MIC4416	4.5	18	Single	Noninverting	1.2A	7.6Ω/7.8Ω	24ns/28ns into 1000pF	42ns into 1000pF		SOT-143
MIC4417	4.5	18	Single	Inverting	1.2A	7.6Ω/7.8Ω	24ns/28ns into 1000pF	37ns into 1000pF		SOT-143
MIC4467	4.5	18	Quad	Noninverting NAND Inputs	1.2A	5Ω	14ns/13ns into 470pF	35ns/55ns into 470pF	MOSFET: 400pF to 3000pF, latch-up protected, input to -5V	WSOIC-16, PDIP-14
MIC4468	4.5	18	Quad	Noninverting AND Inputs	1.2A	5Ω	14ns/13ns into 470pF	35ns/55ns into 470pF	MOSFET: 400pF to 3000pF, latch-up protected, input to -5V	WSOIC-16, PDIP-14
MIC4469	4.5	18	Quad	Inverting + Noninverting AND Inputs	1.2A	5Ω	14ns/13ns into 470pF	35ns/55ns into 470pF	MOSFET: 400pF to 3000pF, latch-up protected, input to -5V, SMD (Military) 5962-9459403MCA	WSOIC-16, PDIP-14, CerDIP-14
MIC4126	4.5	20	Dual	Inverting	1.5A	6Ω	13ns/15ns into 1000pF	37ns/40ns into 1000pF	MIC4426 upgrade. Higher input voltage, input pulse down to 50ns	eSOIC-8, eMSOP-8, 3x3
MIC4127	4.5	20	Dual	Noninverting	1.5A	6Ω	13ns/15ns into 1000pF	37ns/40ns into 1000pF	MIC4427 upgrade. Higher input voltage, input pulse down to 50ns	eSOIC-8, eMSOP-8, 3x3
MIC4128	4.5	20	Dual	Inverting + Noninverting	1.5A	6Ω	13ns/15ns into 1000pF	37ns/40ns into 1000pF	MIC4428 upgrade. Higher input voltage, input pulse down to 50ns	eSOIC-8, eMSOP-8, 3x3
MIC4426	4.5	18	Dual	Inverting	1.5A	6Ω	18ns/15ns into 1000pF	17ns/23ns into 1000pF	MIC4126 is recommended upgrade. SMD (Military) 5962-8850307PA	SOIC-8, MSOP-8, PDIP-8, CerDIP-8
MIC4427	4.5	18	Dual	Noninverting	1.5A	6Ω	18ns/15ns into 1000pF	17ns/23ns into 1000pF	MIC4127 is recommended upgrade. SMD (Military) 5962-8850309PA	SOIC-8, MSOP-8, PDIP-8, CerDIP-8
MIC4428	4.5	18	Dual	Inverting + Noninverting	1.5A	6Ω	18ns/15ns into 1000pF	17ns/23ns into 1000pF	MIC4128 is recommended upgrade. SMD (Military) 5962-8850309PA	SOIC-8, MSOP-8, PDIP-8, CerDIP-8
MIC4123	4.5	20	Dual	Noninverting	3A	2.2Ω	11ns/11ns into 1800pF	44ns/59ns into 1800pF	MIC4423 upgrade. Higher input voltage, input pulse down to 50ns	eSOIC-8, 4x4
MIC4124	4.5	20	Dual	Noninverting	3A	2.2Ω	11ns/11ns into 1800pF	44ns/59ns into 1800pF	MIC4424 upgrade. Higher input voltage, input pulse down to 50ns	eSOIC-8, 4x4
MIC4125	4.5	20	Dual	Inverting + Noninverting	3A	2.2Ω	11ns/11ns into 1800pF	44ns/59ns into 1800pF	MIC4425 upgrade. Higher input voltage, input pulse down to 50ns	eSOIC-8, 4x4
<b>MAQ4123</b>	4.5	20	Dual	Inverting	3A	2.2Ω	11ns/11ns into 1800pF	40ns/60ns into 1800pF	Automotive Qualified. Input pulse down to 50ns	eSOIC-8
<b>MAQ4124</b>	4.5	20	Dual	Noninverting	3A	2.2Ω	11ns/11ns into 1800pF	40ns/60ns into 1800pF	Automotive Qualified. Input pulse down to 50ns	eSOIC-8
<b>MAQ4125</b>	4.5	20	Dual	Inverting + Noninverting	3A	2.2Ω	11ns/11ns into 1800pF	40ns/60ns into 1800pF	Automotive Qualified. Input pulse down to 50ns	eSOIC-8
MIC4423	4.5	18	Dual	Inverting	3A	2.8Ω/3.5Ω	23ns/25ns into 1800pF	33ns/38ns into 1800pF		SOIC-8, WSOIC-16, PDIP-8

# Power Management Selection Guide

## Low-Side MOSFET Drivers

Bold = New P/N	$V_{IN}$		Type	Logic	Sink/Source	Sink/Source	$t_r/t_f$	$t_{pd}$ (input rise/fall)	Comments	* = Reduced height package Package
	Min (V)	Max (V)			Peak Output	Output Impedance				
MIC4424	4.5	18	Dual	Noninverting	3A	2.8Ω/3.5Ω	23ns/25ns into 1800pF	33ns/38ns into 1800pF	SMD (Military) 5962-8850305PA	SOIC-8, WSOIC-16, PDIP-8, CerDIP-8
MIC4425	4.5	18	Dual	Inverting + Noninverting	3A	2.8Ω/3.5Ω	23ns/25ns into 1800pF	33ns/38ns into 1800pF		SOIC-8, WSOIC-16, PDIP-8
MIC4223	4.5	18	Dual	Inverting	4A	30Ω/16Ω	15ns/15ns into 2000pF	25ns/35ns into 2000pF	MOSFET drivers with enable	8-pin SOIC, eMSOP-8
MIC4224	4.5	18	Dual	Non-Inverting	4A	30Ω/16Ω	15ns/15ns into 2000pF	25ns/35ns into 2000pF	MOSFET drivers with enable	8-pin SOIC, eMSOP-8
MIC4225	4.5	18	Dual	Inverting + Noninverting	4A	30Ω/16Ω	15ns/15ns into 2000pF	25ns/35ns into 2000pF	MOSFET drivers with enable	8-pin SOIC, eMSOP-8
MIC4120	4.5	20	Single	Noninverting	6A	1.4Ω/1.5Ω	12ns/13ns into 2200pF	45ns/50ns into 2200pF	MIC4420 upgrade. Recommended for new designs. Higher input voltage, input pulse down to 50ns	eSOIC-8, 3x3
MIC4420	4.5	18	Single	Noninverting	6A	1.7Ω/1.5Ω	12ns/13ns into 2500pF	18ns/48ns into 2500pF	SMD (Military) 5962-8877003PA	SOIC-8, MSOP-8, PDIP-8, TO-220-5, CerDIP-8
MIC4129	4.5	20	Single	Inverting	6A	1.4Ω/1.5Ω	12ns/13ns into 2200pF	45ns/50ns into 2200pF	MIC4429 upgrade. Recommended for new designs. Higher input voltage, input pulse down to 50ns	eSOIC-8, 3x3
MIC4429	4.5	18	Single	Inverting	6A	1.7Ω/1.5Ω	12ns/13ns into 2500pF	18ns/48ns into 2500pF		SOIC-8, MSOP-8, PDIP-8, TO-220-5
MIC44F18	4.5	13.2	Single	Noninverting (TTL), EN = 0; O/P Low	6A	2Ω	10ns/10ns into 1000pF	15ns/13ns into 1000pF	High speed; small, thermally efficient package with enable	eMSOP-8, 2x2
MIC44F19	4.5	13.2	Single	Inverting (TTL), EN = 0; O/P High	6A	2Ω	10ns/10ns into 1000pF	15ns/13ns into 1000pF	P-Ch driver; high speed; small, thermally efficient package with enable	eMSOP-8, 2x2
MIC44F20	4.5	13.2	Single	Inverting (TTL) EN = 0, O/P Low	6A	2Ω	10ns/10ns into 1000pF	15ns/13ns into 1000pF	High speed; small, thermally efficient package with enable	eMSOP-8, 2x2
MIC4421	4.5	18	Single	Inverting	9A	0.6Ω/0.8Ω	20ns/24ns into 10nF	15ns/35ns into 10nF	MIC4421A is recommended upgrade. Latch-up protected, input to -5V	PDIP-8, SOIC-8, TO-220-5
MIC4421A	4.5	18	Single	Inverting	9A	0.6Ω/0.8Ω	20ns/24ns into 10nF	15ns/35ns into 10nF	Recommended upgrade to MIC4421. 50ns minimum input pulse width	PDIP-8, SOIC-8, TO-220-5
MIC4422	4.5	18	Single	Noninverting	9A	0.6Ω/0.8Ω	20ns/24ns into 10nF	15ns/35ns into 10nF	MIC4422A is recommended upgrade. Latch-up protected, input to -5V	PDIP-8, SOIC-8, TO-220-5
MIC4422A	4.5	18	Single	Noninverting	9A	0.6Ω/0.8Ω	20ns/24ns into 10nF	15ns/35ns into 10nF	Recommended upgrade to MIC4422. 50ns minimum input pulse width	PDIP-8, SOIC-8, TO-220-5
MIC4451	4.5	18	Single	Inverting	12A	0.6Ω/0.8Ω	20ns/24ns into 15nF	25ns/40ns into 15nF	Latch-up protected, input to -5V	PDIP-8, SOIC-8, TO-220-5
MIC4452	4.5	18	Single	Noninverting	12A	0.6Ω/0.8Ω	20ns/24ns into 15nF	25ns/40ns into 15nF	Latch-up protected, input to -5V	PDIP-8, SOIC-8, TO-220-5
MIC5020	11	50	Single	Noninverting			500ns into 1500pF	400ns/900ns into 1500pF	Complementary driver, current sense (50mV nominal)	SOIC-8

## High-Side MOSFET Drivers

Bold = New P/N	$V_{IN}$		Type	Logic	Sink/Source	Sink/Source	$t_r/t_f$	Comments	Package
	Min (V)	Max (V)			Peak Output	Output Impedance			
MIC5021	12	36	Single	Noninverting			550ns into 2000pF	High-speed driver, current sense (50mV nominal)	SOIC-8, PDIP-8
MIC5060	2.75	30	Single	Noninverting			90μs into 1000pF	Rev bat and load dump protected	3x3

# Power Management Selection Guide

## High or Low-Side MOSFET Drivers

Bold = New P/N	$V_{IN}$		Type	Logic	$t_r/t_f$	Comments	* = Reduced height package Package
	Min (V)	Max (V)					
MIC5011	4.75	32	Single	Noninverting	60 $\mu$ s into 1000pF	Ext charge pump caps (optional)	SOIC-8, PDIP-8
MIC5013	7.0	32	Single	Noninverting	60 $\mu$ s into 1000pF	Current sense, fault	SOIC-8, PDIP-8
MIC5014	2.75	30	Single	Noninverting	90 $\mu$ s into 1000pF	Rev bat and load dump protected	SOIC-8, PDIP-8
MIC5015	2.75	30	Single	Inverting	90 $\mu$ s into 1000pF		SOIC-8, PDIP-8
MIC5018	2.7	9.0	Single	Noninverting	2.1ms into 3000pF		SOT143
MIC5019	2.7	9.0	Single	Noninverting	1.34ms into 3000pF		1.2x1.2*
MIC5021	12	36	Single	Noninverting	400ns into 1500pF	Current sense (50mV nominal)	SOIC-8, PDIP-8
MIC5060	2.75	30.0	Single	Noninverting	90 $\mu$ s into 1000pF		3x3

## Latched Drivers

Bold = New P/N	Input	# of Channels	Max Output Voltage	Nominal Sink Current (mA)	Nominal Source Current (mA)	Thermal, UVLO, Overcurrent Protection	Package
MIC5801	Parallel	8	50V	400		SOIC-24, PDIP-22, PLCC-28, CerDIP-22*	
MIC58P01	Parallel	8	80V	400		X SOICW-24, PDIP-22, PLCC-28	
MIC5821	Serial	8	50V/35V	400		PDIP-16	
MIC5822	Serial	8	80V/50V	400		PDIP-16	
MIC5841	Serial	8	50V/35V	400		SOIC-18, PDIP-18, PLCC-20	
MIC5842	Serial	8	80V/50V	400		SOIC-18, PDIP-18, PLCC-20	
MIC58P42	Serial	8	80V/50V	400		X SOIC-18, PDIP-18, PLCC-20	
MIC5891	Serial	8	50V		400	SOICW-16, PDIP-16	
MIC59P50	Parallel	8	80V	400		X SOICW-24, PDIP-24, PLCC-28	
MIC59P60	Serial	8	80V/50V	400		X SOICW-20, PDIP-20, PLCC-20	

\* SMD (military) 5962-8764001WA

## Un-Latched Driver Arrays

Bold = New P/N	Input	# of Channels	Max Output Voltage	Input Signal	Package
MIC2981	Parallel	8	50V	5V-TTL or 5V-to-15V CMOS or PMOS	PDIP-18, WSOIC-18
MIC2982	Parallel	8	50V	5V-TTL or 5V-to-15V CMOS or PMOS	PDIP-18, WSOIC-18

## References

Bold = New P/N	Description	$V_{IN}$ Max (V)	Tol (Typ) %	$V_{OUT}$ (V)	Output Current Min	Output Current Max	Noise ( $\mu$ V) rms	Reverse Breakdown Stability	Package
LM4040C	Precision Micropower Shunt	15	$\pm$ 0.5	2.5, 4.096, 5.0	60 $\mu$ A	15mA	35	120ppm	SOT23-3
LM4040D	Precision Micropower Shunt	15	$\pm$ 1.0	2.5, 4.096, 5.0	60 $\mu$ A	15mA	35	120ppm	SOT23-3
LM4041C	Precision Micropower Shunt	15	$\pm$ 0.5	1.225, Adj (1.24V-10V)	60 $\mu$ A	12mA	20	120ppm	SOT23-3
LM4041D	Precision Micropower Shunt	15	$\pm$ 1.0	1.225, Adj (1.24V-10V)	60 $\mu$ A	12mA	20	120ppm	SOT23-3
LM4043	Low-Side Secondary-Side Shunt Regulator Improved Low-Voltage LM431	10	$\pm$ 1.0	Adj	1mA	15mA			SOT143

# Power Management Selection Guide

## Single High-Side Load Switches

Bold = New P/N	V <sub>IN</sub>		Max SW Current (A)	R <sub>DS(ON)</sub> @5V (mΩ)	Soft Start (μs)	Load Discharge (Ω)	Enable Logic	V <sub>EN</sub> (V)	Input Pull-Up Resistor	Reverse Current Blocking	* = Reduced height package Package
	Min (V)	Max (V)									
MIC94030	2.7	13.5	1.0	750			Low True	1.40		X	SOT143-4
MIC94031	2.7	13.5	1.0	750			Low True	1.40	X	X	SOT143-4
MIC94040	1.7	5.5	3.0	28			High True	1.20			1.2x1.2
MIC94041	1.7	5.5	3.0	28		250	High True	1.20			1.2x1.2
MIC94042	1.7	5.5	3.0	28	100		High True	1.20			1.2x1.2
MIC94043	1.7	5.5	3.0	28		250	High True	1.20			1.2x1.2
MIC94044	1.7	5.5	3.0	28	900		High True	1.20			1.2x1.2
MIC94045	1.7	5.5	3.0	28	900	200	High True	1.20			1.2x1.2
MIC94050	1.8	5.5	1.8	125			Low True	1.20		X	SOT143-4
MIC94051	1.8	5.5	1.8	125			Low True	1.20	X	X	SOT143-4
MIC94052	1.8	5.5	2.0	70			Low True	1.20			SC70-6
MIC94053	1.8	5.5	2.0	70			Low True	1.20	X		SC70-6
MIC94060	1.7	5.5	2.0	77			High True	1.20			SC70-6, 1.2x1.6*
MIC94061	1.7	5.5	2.0	77		200	High True	1.20			SC70-6, 1.2x1.6*
MIC94062	1.7	5.5	2.0	77	800		High True	1.20			SC70-6, 1.2x1.6*
MIC94063	1.7	5.5	2.0	77	800	200	High True	1.20			SC70-6, 1.2x1.6*
MIC94064	1.7	5.5	2.0	77	115		High True	1.20			SC70-6, 1.2x1.6*
MIC94065	1.7	5.5	2.0	77	115	200	High True	1.20			SC70-6, 1.2x1.6*
MIC94070	1.7	5.5	1.2	120			High True	1.20			SC70-6, 1.2x1.6*
MIC94071	1.7	5.5	1.2	120		200	High True	1.20			SC70-6, 1.2x1.6*
MIC94072	1.7	5.5	1.2	120	800		High True	1.20			SC70-6, 1.2x1.6*
MIC94073	1.7	5.5	1.2	120	800	200	High True	1.20			SC70-6, 1.2x1.6*
MIC94080	1.7	5.5	2.0	67			High True	1.25			0.85x0.85*
MIC94081	1.7	5.5	2.0	67		250	High True	1.25			0.85x0.85*
MIC94082	1.7	5.5	2.0	67	800		High True	1.25			0.85x0.85*
MIC94083	1.7	5.5	2.0	67	800	250	High True	1.25			0.85x0.85*
MIC94084	1.7	5.5	2.0	67	120		High True	1.25			0.85x0.85*
MIC94085	1.7	5.5	2.0	67	120	250	High True	1.25			0.85x0.85*
MIC94090	1.7	5.5	1.2	130			High True	1.25			SC70-6, 1.2x1.2*
MIC94091	1.7	5.5	1.2	130		250	High True	1.25			SC70-6, 1.2x1.2*
MIC94092	1.7	5.5	1.2	130	790		High True	1.25			SC70-6, 1.2x1.2*
MIC94093	1.7	5.5	1.2	130	790	250	High True	1.25			SC70-6, 1.2x1.2*
MIC94094	1.7	5.5	1.2	130	120		High True	1.25			SC70-6, 1.2x1.2*
MIC94095	1.7	5.5	1.2	130	120	250	High True	1.25			SC70-6, 1.2x1.2*

# Power Management Selection Guide

## Dual High-Side Load Switches

Bold = New P/N	V <sub>IN</sub>		Max SW Current (A)	R <sub>DS(ON)</sub> @5V (mΩ)	Soft Start (μs)	Load Discharge (Ω)	Enable Logic	V <sub>EN</sub> (V)	Input Pull-Up Resistor	Reverse Current Blocking	Package
	Min (V)	Max (V)									
MIC94066	1.7	5.5	2.0	85			High True	1.20			2x2
MIC94067	1.7	5.5	2.0	85		200	High True	1.20			2x2
MIC94068	1.7	5.5	2.0	85	800		High True	1.20			2x2
MIC94069	1.7	5.5	2.0	85	800	200	High True	1.20			2x2

## General-Purpose Power Distribution (USB) Switches

Bold = New P/N	Type	V <sub>IN</sub>		Adj Current Limit	Current Limit		R <sub>DS(ON)</sub> @5V (mΩ)	Rev Block Diode	Enable Logic	UVLO	Current Limited	Thermal Shutdown	Fault Flag	Flag Transient Filter	UL Approved	* = Reduced height package Package
		Min (V)	Max (V)		Fixed (Min)	Adj (Max)										
MIC2003/13	Single	2.5	5.5		500mA, 800mA, 1.2A		70			X	X	X		X	X	SOT23-5, 2x2
MIC2004/14	Single	2.5	5.5		500mA, 800mA, 1.2A		70		Active High	X	X	X		X	X	SOT23-5, 2x2
MIC2005/15	Single	2.5	5.5		500mA, 800mA, 1.2A		70		Active High	X	X	X	X	X	X	SOT23-5, SOT23-6, 2x2
MIC2005A	Single	2.5	5.5		500mA		170		Active Low, Active High	X	X	X	X	X	X	SOT23-5, SOT23-6
<b>MIC2009A</b>	Single	2.5	5.5	X		900mA	170		Active Low, Active High	X	X	X		X	X	SOT23-6
MIC2005L	Single	2.5	5.5		500mA, 800mA, 1.2A		70		Active Low	X	X	X	X	X	X	SOT23-5
MIC2006/16	Single	2.5	5.5		500mA, 800mA, 1.2A		70		Active High	X	X	X		X	X	SOT23-6, 2x2
MIC2007/17	Single	2.5	5.5		200mA	2.0A	100	Single	Noninverting	X	X	X		X	X	SOT23-6, 2x2
MIC2008/18	Single	2.5	5.5	X		2.0A	70		Active High	X	X	X		X	X	SOT23-6, 2x2
MIC2009/19	Single	2.5	5.5	X		2.0A	70		Active High	X	X	X	X	X	X	SOT23-6, 2x2
MIC2025-1	Single	2.7	5.5		500mA		140	X	Active High	X	X	X	X	X	X	SOIC-8, MSOP-8
MIC2025-2	Single	2.7	5.5		500mA		140	X	Active Low	X	X	X	X	X	X	SOIC-8, MSOP-8
MIC2026-1	Dual	2.7	5.5		500mA		90	X	Active High	X	X	X	X	X	X	SOIC-8, PDIP-8
MIC2026-2	Dual	2.7	5.5		500mA		90	X	Active Low	X	X	X	X	X	X	SOIC-8, PDIP-8
MIC2026A-1	Dual	2.7	5.5		500mA		100	X	Active High	X	X	X	X	X	X	SOIC-8
MIC2026A-2	Dual	2.7	5.5		500mA		100	X	Active Low	X	X	X	X	X	X	SOIC-8
MIC2027-1	Quad	2.7	5.5		500mA		150	X	Active High	X	X	X	X	X	X	SOIC-16, WSOIC-16
MIC2027-2	Quad	2.7	5.5		500mA		150	X	Active Low	X	X	X	X	X	X	SOIC-16, WSOIC-16
MIC2033	Single	2.5	5.5		475mA, 517mA, 760mA, 950mA, 1.14A		125		Active Low, Active High	X	X	X	X	X		SOT-23-6, DFN-6*
<b>MIC2039</b>	Single	2.5	5.5	X	2.5	75			Active Low, Active High	X	X	X	X	X		SOT-23-6, 2x2*
MIC2040-1	Single	0.8	5.5	X		1.5A	75	X	Active High	X	X	X	X	X	X	MSOP-10
MIC2040-2	Single	0.8	5.5	X		1.5A	75	X	Active Low	X	X	X	X	X	X	MSOP-10
MIC2041-1	Single	0.8	5.5	X		1.5A	75	X	Active High	X	Latched	X	X	X	X	MSOP-10
MIC2041-2	Single	0.8	5.5	X		1.5A	75	X	Active Low	X	Latched	X	X	X	X	MSOP-10
MIC2042-1	Single	0.8	5.5	X		3.0A	60	X	Active High	X	X	X	X	X	X	SOIC-8, TSSOP-14
MIC2042-2	Single	0.8	5.5	X		3.0A	60	X	Active Low	X	X	X	X	X	X	SOIC-8, TSSOP-14
MIC2043-1	Single	0.8	5.5	X		3.0A	60	X	Active High	X	Latched	X	X	X	X	SOIC-8, TSSOP-14
MIC2043-2	Single	0.8	5.5	X		3.0A	60	X	Active Low	X	Latched	X	X	X	X	SOIC-8, TSSOP-14
MIC2044-1	Single	0.8	5.5	X		6.0A	30	X	Active High	X	X	X	X	X	X	TSSOP-16
MIC2044-2	Single	0.8	5.5	X		6.0A	30	X	Active Low	X	X	X	X	X	X	TSSOP-16
MIC2045-1	Single	0.8	5.5	X		6.0A	30	X	Active High	X	Latched	X	X	X	X	TSSOP-16
MIC2045-2	Single	0.8	5.5	X		6.0A	30	X	Active Low	X	Latched	X	X	X	X	TSSOP-16

# Power Management Selection Guide

## General-Purpose Power Distribution (USB) Switches

Bold = New P/N	Type	V <sub>IN</sub>		Adj Current Limit	Current Limit		R <sub>DS(ON)</sub> @5V (mΩ)	Rev Block Diode	Enable Logic	UVLO	Current Limited	Thermal Shutdown	Fault Flag	Flag Transient Filter	UL Approved	* = Reduced height package Package
		Min (V)	Max (V)		Fixed (Min)	Adj (Max)										
MIC2075-1	Single	2.7	5.5		500mA		140	X	Active High	X	X	Latched	X	X	X	SOIC-8, MSOP-8
MIC2075-2	Single	2.7	5.5		500mA		140	X	Active Low	X	X	Latched	X	X	X	SOIC-8, MSOP-8
MIC2076-1	Dual	2.7	5.5		500mA		90	X	Active High	X	X	Latched	X	X	X	SOIC-8, PDIP-8
MIC2076-2	Dual	2.7	5.5		500mA		90	X	Active Low	X	X	Latched	X	X	X	SOIC-8, PDIP-8
MIC2076A-1	Dual	2.7	5.5		500mA		100	X	Active High	X	X	Latched	X	X	X	SOIC-8
MIC2076A-2	Dual	2.7	5.5		500mA		100	X	Active Low	X	X	Latched	X	X	X	SOIC-8
MIC2077-1	Quad	2.7	5.5		500mA		150	X	Active High	X	X	Latched	X	X	X	SOIC-16, WSOIC-16
MIC2077-2	Quad	2.7	5.5		500mA		150	X	Active Low	X	X	Latched	X	X	X	SOIC-16, WSOIC-16
MIC2090-1	Single	1.8	5.5		50mA		700	X	Active High	X	X	X	X	X		SOT-23-5
MIC2090-2	Single	1.8	5.5		50mA		700	X	Active High	X	Latched	Latched	X	X		SOT-23-5
MIC2091-1	Single	1.8	5.5		100mA		700	X	Active High	X	X	X	X	X		SOT-23-5
MIC2091-2	Single	1.8	5.5		100mA		700	X	Active High	X	Latched	Latched	X	X		SOT-23-5
MIC2095-1	Single	2.5	5.5		500mA		170	X	Active High	X	X	X	X	X		1.6x1.6*
MIC2095-2	Single	2.5	5.5		500mA		170	X	Active Low	X	X	X	X	X		1.6x1.6*
MIC2097-1	Single	2.5	5.5	X		1.1A	170	X	Active High	X	X	X	X	X		1.6x1.6*
MIC2097-2	Single	2.5	5.5	X		1.1A	170	X	Active Low	X	X	X	X	X		1.6x1.6*
MIC2098-1	Single	2.5	5.5		900mA		170	X	Active High	X	X	X	X	X		1.6x1.6*
MIC2098-2	Single	2.5	5.5		900mA		170	X	Active Low	X	X	X	X	X		1.6x1.6*
MIC2099-1	Single	2.5	5.5	X		1.1A	170	X	Active High	X	X	X	X	X		1.6x1.6*
MIC2099-2	Single	2.5	5.5	X		1.1A	170	X	Active Low	X	X	X	X	X		1.6x1.6*
MIC2505	Single	2.7	7.5		2.0A		30	X	Active High		X	X	X	X		SOIC-8, PDIP-8
MIC2505-1	Single	2.7	7.5		2.0A		30	X	Active High		X	X	X	X		SOIC-8
MIC2505-2	Single	2.7	7.5		2.0A		30	X	Active Low		X	X	X	X		SOIC-8
MIC2506	Dual	2.7	7.5		1.0A		75	X	Active High		X	X	X	X		SOIC-8, PDIP-8
MIC2514	Single	3	13.5		400mA		1500		Active High		X	X				SOT23-5
MIC2536-1	Dual	2.7	5.5		100mA		400	X	Active High		X	X	X	X	X	SOIC-8, MSOP-8
MIC2536-2	Dual	2.7	5.5		100mA		400	X	Active Low		X	X	X	X	X	SOIC-8, MSOP-8
MIC2537-1	Quad	2.7	5.5		100mA		425	X	Active High		X	X	X		X	SOIC-16
MIC2537-2	Quad	2.7	5.5		100mA		425	X	Active Low		X	X	X		X	SOIC-16
MIC2544-1	Single	2.7	5.5	X		1.5A	80	X	Active High		X	X	X		X	SOIC-8, MSOP-8
MIC2544-2	Single	2.7	5.5	X		1.5A	80	X	Active Low		X	X	X		X	SOIC-8, MSOP-8
MIC2544A-1	Single	2.7	5.5	X		1.5A	80	X	Active High		X	X	X		X	SOIC-8, MSOP-8
MIC2544A-2	Single	2.7	5.5	X		1.5A	80	X	Active Low		X	X	X		X	SOIC-8, MSOP-8
MIC2545A-1	Single	2.7	5.5	X		3.0A	35	X	Active High		X	X	X		X	SOIC-8, PDIP-8, TSSOP-14
MIC2545A-2	Single	2.7	5.5	X		3.0A	35	X	Active Low		X	X	X		X	SOIC-8, PDIP-8, TSSOP-14
MIC2546-1	Dual	2.7	5.5	X		1.5A	80	X	Active High		X	X	X		X	SOIC-16, TSSOP-16
MIC2546-2	Dual	2.7	5.5	X		1.5A	80	X	Active Low		X	X	X		X	SOIC-16, TSSOP-16
MIC2547-1	Dual	2.7	5.5	X		1.5A	80	X	Active High		X	Latched	X		X	SOIC-16, TSSOP-16
MIC2547-2	Dual	2.7	5.5	X		1.5A	80	X	Active Low		X	Latched	X		X	SOIC-16, TSSOP-16
MIC2548-1	Single	2.7	5.5	X		1.5A	80	X	Active High		X	Latched	X		X	SOIC-8, MSOP-8
MIC2548-2	Single	2.7	5.5	X		1.5A	80	X	Active Low		X	Latched	X		X	SOIC-8, MSOP-8
MIC2548A-1	Single	2.7	5.5	X		1.5A	80	X	Active High		X	Latched	X		X	SOIC-8, MSOP-8
MIC2548A-2	Single	2.7	5.5	X		1.5A	80	X	Active Low		X	Latched	X		X	SOIC-8, MSOP-8
MIC2549A-1	Single	2.7	5.5	X		3.0A	35	X	Active High		X	Latched	X		X	SOIC-8, PDIP-8, TSSOP-14
MIC2549A-2	Single	2.7	5.5	X		3.0A	35	X	Active Low		X	Latched	X		X	SOIC-8, PDIP-8, TSSOP-14

# Power Management Selection Guide

## USB Power Switches Supporting ACPI S0/S3 State Transitions

Bold = New P/N	Type	V <sub>IN</sub>		Adj Current Limit	Current Limit		R <sub>DS(ON)</sub> @5V (mΩ)	Rev Block Diode	Enable Logic	UVLO	Current Limited	Thermal Shutdown	Fault Flag	Flag Transient Filter	UL Approved	Switch Element	Internal Charge Pump	Package
		Min (V)	Max (V)		Fixed (Min)	Adj (Max)												
MIC2010-1	Dual	4.5	5.5	X	500mA	50mA to 300mA	140	X	Active High	X	X	X	X	X	X	N-Ch	X	QSOP-16
MIC2010-2	Dual	4.5	5.5	X	500mA	50mA to 300mA	140	X	Active Low	X	X	X	X	X	X	N-Ch	X	QSOP-16
MIC2012-1	Dual	4.5	5.5		500mA		140	X	Active High	X	X	X	X	X	X	N-Ch	X	QSOP-16
MIC2012-2	Dual	4.5	5.5		500mA		140	X	Active Low	X	X	X	X	X	X	N-Ch	X	QSOP-16
MIC2012	Dual	4.5	5.5		500mA		140	X		X	X	X	X	X	X	N-Ch	X	SOIC-8
MIC2070-1	Dual	4.5	5.5	X	500mA	50mA to 300mA	140	X	Active High	X	X	Latched	X	X		N-Ch	X	QSOP-16
MIC2070-2	Dual	4.5	5.5	X	500mA	50mA to 300mA	140	X	Active Low	X	X	Latched	X	X		N-Ch	X	QSOP-16
MIC2072-1	Dual	4.5	5.5		500mA		140	X	Active High	X	X	Latched	X	X	X	N-Ch	X	QSOP-16
MIC2072-2	Dual	4.5	5.5		500mA		140	X	Active Low	X	X	Latched	X	X	X	N-Ch	X	QSOP-16
MIC2072	Dual	4.5	5.5		500mA		140	X		X	X	Latched	X	X	X	N-Ch	X	SOIC-8
MIC2073-1	Dual	2.7	5.5		500mA		210	X	Active High	X	X	X	X	X	X	N-Ch	X	SOIC-8
MIC2073-2	Dual	2.7	5.5		500mA		210	X	Active Low	X	X	X	X	X	X	N-Ch	X	SOIC-8
MIC2074-1	Dual	2.7	5.5		500mA		210	X	Active High	X	X	Latched	X	X	X	N-Ch	X	SOIC-8
MIC2074-2	Dual	2.7	5.5		500mA		210	X	Active Low	X	X	Latched	X	X	X	N-Ch	X	SOIC-8

## USB Transceivers

Bold = New P/N	Description	Supported Speeds	Package
MIC2550	Universal Serial Bus Transceiver	1.5Mbps (low) and 12Mbps (full)	TSSOP-14, 3x3
MIC2550A*	Universal Serial Bus Transceiver	1.5Mbps (low) and 12Mbps (full)	TSSOP-14, 3x3
MIC2550A-2.5*	Universal Serial Bus Transceiver	1.5Mbps (low) and 12Mbps (full)	2.5x2.5
MIC2551	Universal Serial Bus Transceiver	1.5Mbps (low) and 12Mbps (full)	TSSOP-14, 3x3
MIC2551A*	Universal Serial Bus Transceiver	1.5Mbps (low) and 12Mbps (full)	TSSOP-14, 3x3
MIC2551A-2.5*	Universal Serial Bus Transceiver	1.5Mbps (low) and 12Mbps (full)	2.5x2.5
MIC2555*	Universal Serial Bus On-The-Go (OTG) Transceiver	1.5Mbps (low) and 12Mbps (full)	4x4

\* Recommended for new designs

## PC Card/PCMCIA/CardBus Power Distribution Switches

Bold = New P/N	Slots Supported	V <sub>CC3</sub> On-Resistance (mΩ)	V <sub>CC5</sub> On-Resistance (mΩ)	V <sub>PP</sub> On-Resistance (mΩ)	Current Limit	Thermal Shutdown	Charge Pump*	UL Approved	Package
MIC2560	Single	40	70	550	X	X			WSOIC-16
MIC2561	Single	110	210	550	X	X			SOIC-14
MIC2562A	Single	100	70	600	X	X	X	X	SOIC-14, TSSOP-16
MIC2563A	Dual	100	70	600	X	X	X	X	SSOP-28
MIC2564A	Dual	120	85	1300	X	X	X	X	SSOP-24, TSSOP-24
MIC2566	Single	120	85		X	X	X	X	SOIC-14, TSSOP-14
MIC2568	Dual	120	85		X	X	X	X	SSOP-28, TSSOP-28
MIC2569	1-CableCard	90		275	X	X	X		QSOP-16

\* 12V is not required for switching when equipped with a charge pump.

# Power Management Selection Guide

## Single-Voltage Monitors and Supervisors

<b>Bold = New P/N</b>	<b>Reset Output</b>	<b>Threshold (V)</b>	<b>t<sub>RESET</sub> (ms)</b>	<b>Accuracy (%)</b>	<b>I<sub>SUPPLY</sub> (<math>\mu</math>A)</b>	<b>Manual Reset</b>	<b>Watchdog Timer (ms)</b>	<b>Power Fail Comparator</b>	<b>* = Reduced height package Package</b>
MIC705	Active-Low Push-Pull	4.65	140	$\pm 2.5$	30	Yes	1600	1.25	SOIC-8, PDIP-8
MIC706	Active-Low Push-Pull	2.63, 2.93, 3.08, 4.40	140	$\pm 2.5$	30	Yes	1600	1.25	SOIC-8, PDIP-8
MIC707	Active-High/Low Push-Pull	4.65	140	$\pm 2.5$	30			1.25	SOIC-8, PDIP-8
MIC708	Active-High/Low Push-Pull	2.63, 2.93, 3.08, 4.40	140	$\pm 2.5$	30			1.25	SOIC-8, PDIP-8
MIC803	Active-Low Open-Drain	2.63, 2.93, 3.00, 3.08, 4.00, 4.10, 4.38, 4.63	20/140/1100	$\pm 2.5$	5.0				SOT23-3, SC70-3
MIC809	Active-Low Push-Pull	2.63, 2.93, 3.08, 4.00, 4.38, 4.63	140	$\pm 2.5$	5.0				SOT23-3, SC70-3
MIC809-5	Active-Low Push-Pull	2.93	30	$\pm 2.5$	5.0				SOT23-3, SC70-3
MIC810	Active-High Push-Pull	2.63, 2.93, 3.08, 4.00, 4.38, 4.63	140	$\pm 2.5$	5.0				SOT23-3, SC70-3
MIC811	Active-Low Push-Pull	2.63, 2.93, 3.08, 4.00, 4.38, 4.63	140	$\pm 2.5$	5.0	Yes			SOT143
MIC812	Active-High Push-Pull	2.63, 2.93, 3.08, 4.00, 4.38, 4.63	140	$\pm 2.5$	5.0	Yes			SOT143
MIC826	Active-High/Low Push-Pull	1.665, 2.188, 2.315, 2.625, 2.925, 3.075, 4.375, 4.625	140	$\pm 0.15$	3.8	Yes	1600		1.6x1.6*
MIC1810	Active-Low Push-Pull	4.12, 4.37, 4.62	100	$\pm 2.5$	5.0				SOT23-3
MIC1815	Active-Low Push-Pull	2.55, 2.88	100	$\pm 3.0$	5.0				SOT23-3
MIC1232	Active-High/Low Push-Pull	4.37, 4.62	250	$\pm 3.0$	18		120/600/1200		SOIC-8, PDIP-8
MIC1832	Active-High/Low Push-Pull	2.55, 2.88	250	$\pm 3.0$	15	Yes	120/600/1200		SOIC-8, PDIP-8
MIC2755	Active-Low Open-Drain	1.24	700	$\pm 2.0$	2.0	Yes			MSOP-8
MIC2775	Active-High/Low Push-Pull	1.69, 2.25, 2.34, 2.53, 2.67, 2.81, 2.93, 3.09, 4.43, 4.68	140	$\pm 1.5$	5.0	Yes			SOT23-5
MIC2776N	Active-Low Open-Drain	0.3	140	$\pm 1.5$	3.0	Yes			SOT23-5
MIC2776H	Active-High Push-Pull	0.3	140	$\pm 1.5$	3.0	Yes			SOT23-5
MIC2776L	Active-Low Push-Pull	0.3	140	$\pm 1.5$	3.0	Yes			SOT23-5
MIC2778	Active-Low Open-Drain	1.24 with adjustable hysteresis	140	$\pm 1$ or $\pm 2$	1.0				SOT23-5
MIC2779H	Active-High Push-Pull	1.24 with adjustable hysteresis	140	$\pm 1$ or $\pm 2$	1.0				SOT23-5
MIC2779L	Active-Low Push-Pull	1.24 with adjustable hysteresis	140	$\pm 1$ or $\pm 2$	1.0				SOT23-5
MIC2785	Active-Low Push-Pull	1.62	0.025	$\pm 1.5$	4.5	Yes			1.2x1.2
MIC2786	Active-Low Open-Drain and Active-High Push-Pull	1.665, 2.188, 2.313, 2.625, 2.925, 3.075, 4.375, 4.625	140/240	$\pm 2.0$	7.4	Dual			2.0x2.0
MIC2787	Active-Low Open-Drain and Active-High Push-Pull	1.665, 2.188, 2.313, 2.625, 2.925, 3.075, 4.375, 4.625	140/240	$\pm 2.0$	7.4	Dual			2.0x2.0
MIC6315	Active-Low Open-Drain	2.63, 2.93, 3.00, 3.08, 4.00, 4.10, 4.38, 4.63	20/140/1100	$\pm 2.5$	5.0	Yes			SOT143
MIC8114	Active-Low Push-Pull	3.08	790	$\pm 2.5$	5.0	Yes			SOT143
MIC8115	Active-Low Push-Pull	3.08	1100	$\pm 2.5$	5.0	Yes			SOT143
MIC826	Active-High, Active-Low Push-Pull	1.665, 2.188, 2.315, 2.625, 2.925, 3.075, 4.375, 4.625	140	$\pm 1.5$	3.8	Yes	1600		1.6x1.6*



# Power Management Selection Guide

## Dual-Voltage Monitors and Supervisors

<b>Bold = New</b> P/N	Reset Output	Reset Threshold Voltage	Reset Output Threshold Voltage	t <sub>RESET</sub> (ms)	Accuracy (%)	I <sub>SUPPLY</sub> (μA)	Manual Reset	* = Reduced height package Package
MIC2772	Active-Low Open-Drain	2.93, 3.08, 4.38, 4.63	2.93, 3.08, 4.38, 4.63	20/140/1100	±2.5	10	X	2x2
MIC2774N	Active-Low Open-Drain	1.69, 2.25, 2.34, 2.53, 2.67, 2.81, 2.93, 3.09, 4.43, 4.68	0.3	140	±1.5	3.5	X	SOT23-5
MIC2774H	Active-High Push-Pull	1.69, 2.25, 2.34, 2.53, 2.67, 2.81, 2.93, 3.09, 4.43, 4.68	0.3	140	±1.5	3.5	X	SOT23-5
MIC2774L	Active-Low Push-Pull	1.69, 2.25, 2.34, 2.53, 2.67, 2.81, 2.93, 3.09, 4.43, 4.68	0.3	140	±1.5	3.5	X	SOT23-5
MIC2777	Active-High/Low Push-Pull	1.69, 2.25, 2.34, 2.53, 2.67, 2.81, 2.93, 3.09, 4.43, 4.68	0.3	140	±1.5	3.5		SOT23-5

## Pushbutton Reset ICs

<b>Bold = New</b> P/N	Reset Output	Reset Threshold Voltage	t <sub>SETUP</sub> (s)	t <sub>RESET</sub> (ms)	Accuracy (%)	I <sub>SUPPLY</sub> (μA)	Manual Reset	* = Reduced height package Package
MIC2782	Active-Low Open-Drain	None	6, 8, 10, 12	500/1000/2000		2.2	Dual	0.8x1.2 CSP
MIC2786	Active-Low Open-Drain and Active-High Push-Pull	1.665, 2.188, 2.313, 2.625, 2.925, 3.075, 4.375, 4.625	2, 4, 6	140/240	±2.0	7.4	Dual	2x2*
MIC2787	Active-Low Open-Drain and Active-High Push-Pull	1.665, 2.188, 2.313, 2.625, 2.925, 3.075, 4.375, 4.625	2, 4, 6	140/240	±2.0	7.4	Dual	2x2*
MIC2788	Active-Low Open-Drain and Active-High Push-Pull	None	2, 4, 6	140/240		2.9	Dual	2x2*
MIC2789	Active-Low Open-Drain and Active-High Push-Pull	None	2, 4, 6	140/240		2.9	Dual	2x2*

## Fan Control

<b>Bold = New</b> P/N	Description	Package
MIC502	Fan Management IC	PDIP-8, SOIC-8
MIC74	2-wire SMBus, I2C I/O Expander and Fan Controller	QSOP-16

## Temperature Sensors

<b>Bold = New</b> P/N	Description	Internal Zone	Remote Zone	Data Width	CRIT Output	# of Device per I2C Bus	Resolution (Bits)	Accuracy	Package
MIC184	Local/Remote Thermal Supervisor	1	1*	9		8**	9	±3%	SOIC-8, MSOP-8
MIC280	Precision IttyBitty® Thermal Supervisor	1	1	12	X	8	12	±1%	SOT23-6
MIC281	Low-Cost IttyBitty Thermal Sensor		1	8		8	8	±3%	SOT23-6
MIC284	2-Zone Thermal Supervisor w/CRIT Output	1	1	8	X	8	8	±3%	SOIC-8, MSOP-8
MIC384	3-Zone Thermal Supervisor	1	2	8		8	8	±3%	SOIC-8, MSOP-8

\* MIC184 has limit registers for monitoring one zone at a time; either the internal or external zone may be monitored at any given time.

\*\* In LM75 mode; 4 when using T1 function.

## I/O Expanders

<b>Bold = New</b> P/N	Description	Min (V)	V <sub>IN</sub> Max (V)	# Of Outputs	V <sub>OUT</sub> Max	Max Sink Current Per Pin	Supply Current Typ	Package
MIC74	2-wire SMBus, I2C I/O Expander and Fan Controller	2.7	3.6	8	5.5V	10mA	2μA	QSOP-16

# Hot Swap/Power Controller Selection Guide

## Low Voltage (<16V)

<b>Bold = New P/N</b>	<b># of Output</b>	<b>Input Voltage Range</b>	<b>Latch Off</b>	<b>Auto Retry</b>	<b>/FAULT</b>	<b>/POR</b>	<b># of PWRGD</b>	<b>Foldback Current Limit</b>	<b>Comments</b>	<b>Package</b>
MIC2085	1	+2.3V to +16.5V	X		X	X		X	Crowbar output for fast discharge of large Load during overvoltage condition. Pin-for-pin equivalent to LTC1642	QSOP-16
MIC2086	1	+2.3V to +16.5V	X		X	X	1 Active-High	X	Auto-discharge of Load and PWRGD signal in addition to all of the MIC2085 features	QSOP-20
MIC2580A	4	±12V, +3.3V, +5V	X		X	X	2 Active-Low	X	Single-slot controller for CompactPCI® applications	TSSOP-24
MIC2582	1	+2.3V to +13.2V	X			X			Pin-for-pin equivalent to LTC1422. Dual-level overcurrent fault detection	SOIC-8
MIC2583	1	+2.3V to +13.2V	X		X	X	1 Active-High		Dual-level overcurrent fault detection, Load discharge capability	QSOP-16
MIC2583R	1	+2.3V to +13.2V		X	X	X	1 Active-High		Dual-level overcurrent fault detection, Load discharge capability	QSOP-16
MIC2310-1	1	+10.8V to +13.2V	X	X	X		1 Active-High		Single FET, constant power-limit 240VA controller	TSSOP-24
MIC2310-2	1	+10.8V to +13.2V	X	X	X		1 Active-Low		Single FET, constant power-limit 240VA controller	TSSOP-24
MIC2584	2	CH1: +2.3V to +13.2V CH2: +1.0V to +13.2V	X		X	X			Output voltage tracking with dual-level overcurrent fault detection	TSSOP-16
MIC2585-1	2	CH1: +2.3V to +13.2V CH2: +1.0V to +13.2V	X		X	X	2 Active-High		VOUT2 follows VOUT1	TSSOP-24
MIC2585-2	2	CH1: +2.3V to +13.2V CH2: +1.0V to +13.2V	X		X	X	2 Active-High		VOUT1 follows VOUT2	TSSOP-24

## High Voltage (>16V)

<b>Bold = New P/N</b>	<b># of Output</b>	<b>Input Voltage Range</b>	<b>Latch Off</b>	<b>Auto Retry</b>	<b>/FAULT</b>	<b>/POR</b>	<b># of PWRGD</b>	<b>Foldback Current Limit</b>	<b>Comments</b>	<b>Package</b>
MIC2586-1	1	+10V to +80V	X				3 Active-High	X	Multiple PWRGD signals with programmable sequencing delay for enabling downstream DC-DC converters	SOIC-14
MIC2586-2	1	+10V to +80V	X				3 Active-Low	X	Multiple /PWRGD signals with programmable sequencing delay for enabling downstream DC-DC converters	SOIC-14
MIC2586R-1	1	+10V to +80V		X			3 Active-High	X	Multiple PWRGD signals with programmable sequencing delay for enabling downstream DC-DC converters	SOIC-14
MIC2586R-2	1	+10V to +80V		X			3 Active-Low	X	Multiple /PWRGD signals with programmable sequencing delay for enabling downstream DC-DC converters	SOIC-14
MIC2587-1	1	+10V to +80V	X				1 Active-High	X	Pin-pin equivalent to LT1641-1	SOIC-8
MIC2587-2	1	+10V to +80V	X				1 Active-Low	X	Pin-pin equivalent to LT1641-1	SOIC-8
MIC2587R-1	1	+10V to +80V		X			1 Active-High	X	Pin-pin equivalent to LT1641-2	SOIC-8
MIC2587R-2	1	+10V to +80V		X			1 Active-Low	X	Pin-pin equivalent to LT1641-2	SOIC-8
MIC2588-1	1	-19V to -80V	X				1 Active-High		Pin-pin equivalent to LT1640/LT1640A/LT4250	SOIC-8
MIC2588-2	1	-19V to -80V	X				1 Active-Low		Pin-pin equivalent to LT1640/LT1640A/LT4250	SOIC-8
MIC2594-1	1	-19V to -80V	X				1 Active-High		MIC2588 with programmable input ON/OFF control	SOIC-8
MIC2594-2	1	-19V to -80V	X				1 Active-Low		MIC2588 with programmable input ON/OFF control	SOIC-8
MIC2589-1	1	-19V to -80V	X				3 Active-High		Programmable UVLO and OV, staggered PWRGD signals for sequencing downstream loads	SOIC-14
MIC2589-2	1	-19V to -80V	X				3 Active-Low		Programmable UVLO and OV, staggered /PWRGD signals for sequencing downstream loads	SOIC-14
MIC2589R-1	1	-19V to -80V		X			3 Active-High		Programmable UVLO and OV, staggered PWRGD signals for sequencing downstream loads	SOIC-14
MIC2589R-2	1	-19V to -80V		X			3 Active-Low		Programmable UVLO and OV, staggered /PWRGD signals for sequencing downstream loads	SOIC-14
MIC2595-1	1	-19V to -80V	X				3 Active-High		Programmable UVLO hysteresis, staggered PWRGD signals for sequencing downstream loads	SOIC-14
MIC2595-2	1	-19V to -80V	X				3 Active-Low		Programmable UVLO hysteresis, staggered /PWRGD signals for sequencing downstream loads	SOIC-14
MIC2595R-1	1	-19V to -80V		X			3 Active-High		Programmable UVLO hysteresis, staggered PWRGD signals for sequencing downstream loads	SOIC-14
MIC2595R-2	1	-19V to -80V		X			3 Active-Low		Programmable UVLO hysteresis, staggered /PWRGD signals for sequencing downstream loads	SOIC-14

# Hot Swap/Power Controller Selection Guide

## Compact-PCI/PCI-X/PCI-Express

<b>Bold = New P/N</b>	<b># of Output</b>	<b>Input Voltage Range</b>	<b>Latch Off</b>	<b>Auto Retry</b>	<b># of /FAULT</b>	<b># of /POR</b>	<b># of PWRGD</b>	<b>Foldback Current Limit</b>	<b>Comments</b>	<b>Package</b>
MIC2590B	10	±12, +5, +3.3, +3.3VAUX	X		2				Dual-slot controller for PCI v2.x and PCI-X 1.0b. Compliant with IPMI v1.0 support. SMBus interface	TQFP-48
MIC2593	10	±12, +5, +3.3, +3.3VAUX	X		2				Dual-slot controller for PCI v2.x and PCI-X 1.0b. Compliant with IPMI v1.0 support. SMBus interface	TQFP-48
MIC2341	6	+12, +3.3, +3.3VAUX	X		4		4		Dual-slot PCIe, no SMBus interface, main and AUX outputs independent	TQFP-48
MIC2341R	6	+12, +3.3, +3.3VAUX		X	4		4		Dual-slot PCIe, no SMBus interface, main and AUX outputs independent	TQFP-48
MIC2342	6	+12, +3.3, +3.3VAUX	X		4		4		Dual-slot PCIe, no SMBus interface, main and AUX outputs interdependent on AUX overcurrent event	TQFP-48
MIC2342R	6	+12, +3.3, +3.3VAUX		X	4		4		Dual-slot PCIe, no SMBus interface, main and AUX outputs interdependent on AUX overcurrent event	TQFP-48
MIC2591B	6	+12, +3.3, +3.3VAUX	X		2		1 Active-Low		Dual-slot PCIe with IPMI v1.0 support	TQFP-48
MIC2592B	6	+12, +3.3, +3.3VAUX	X		2		1 Active-Low		Dual-slot PCIe with IPMI v1.0 support	TQFP-48

# Linear ICs Selection Guide

## Comparators

Bold = New P/N	Description	$V_{IN}$		Supply Current ( $\mu$ A)	Input Offset Voltage (Max)	Input Bias Current	Propagation Delay	Output	Package
		Min (V)	Max (V)						
MIC6270	Fast, High-Voltage Comparator	2.0	36	300	5mV	25nA	0.6 $\mu$ s	Open-Drain	SOT23-5
MIC7211	Rail-to-Rail Input Comparator	2.2	10	5.0	10mV	5pA	4 $\mu$ s	Push-Pull	SOT23-5
MIC7221	Rail-to-Rail Input Comparator	2.2	10	5.0	10mV	5pA	4 $\mu$ s	Open-Drain	SOT23-5

## Comparators with Internal Reference

Bold = New P/N	Description	$V_{IN}$		Supply Current ( $\mu$ A)	Onboard Reference (V)	Onboard Reference Tolerance	Input Bias Current	Propagation Delay	Output	Package
		Min (V)	Max (V)							
MIC833	Comparator + Ref w/ Adj Hysteresis	1.5	5.5	1.0	1.25	$\pm$ 1%	5pA	5 $\mu$ s	Open-Drain	SOT23-5
MIC834	Comparator with Reference	1.5	5.5	1.5	1.25	$\pm$ 1%	5pA	5 $\mu$ s	Open-Drain	SOT23-5
MIC841H	Comparator + Ref w/ Adj Hysteresis	1.5	5.5	1.5	1.25	$\pm$ 1.25%	5pA	12 $\mu$ s	Push-Pull	SC70-5
MIC841L	Comparator + Ref w/ Adj Hysteresis	1.5	5.5	1.5	1.25	$\pm$ 1.25%	5pA	12 $\mu$ s	Push-Pull	SC70-5
MIC841N	Comparator + Ref w/ Adj Hysteresis	1.5	5.5	1.5	1.25	$\pm$ 1.25%	5pA	12 $\mu$ s	Open-Drain	SC70-5
MIC842H	Comparator with Reference	1.5	5.5	1.5	1.25	$\pm$ 1.25%	5pA	12 $\mu$ s	Push-Pull	SC70-5
MIC842L	Comparator with Reference	1.5	5.5	1.5	1.25	$\pm$ 1.25%	5pA	12 $\mu$ s	Push-Pull	SC70-5
MIC842N	Comparator with Reference	1.5	5.5	1.5	1.25	$\pm$ 1.25%	5pA	12 $\mu$ s	Open-Drain	SC70-5
MIC845	Comparator with Reference	2.75	5.5	1.0	2.55	$\pm$ 2%	5pA	12 $\mu$ s	Open-Drain	SC70-5

## Operational Amplifiers

Bold = New P/N	Description	$V_{IN}$		# of Op- Amps per Package	Supply Current (per Op-Amp)	Rail-to-Rail	Input Offset Voltage		Typ Input Bias Current	GBW	Slew Rate (V/ $\mu$ s)	Package
		Min (V)	Max (V)				Typ (mV)	Max (mV)				
MIC6211	High-Voltage Op-Amp	4.0	32	1	1.2mA			7.0	50nA	2.5MHz	6.0	SOT23-5
LMC7101A	General Purpose	2.7	12	1	500 $\mu$ A	Input/Output	0.1	6.0	1pA	500kHz	0.5	SOT23-5
LMC7101B	General Purpose	2.7	12	1	500 $\mu$ A	Input/Output		9.0	1pA	500kHz	0.5	SOT23-5
MIC7111	Micropower 1.8V	1.8	11	1	15 $\mu$ A	Input/Output		7.0	1pA	25kHz	20	SOT23-5
MIC7122	General Purpose	2.2	15	2	350 $\mu$ A	Input/Output		9.0	1pA	750kHz	0.7	MSOP-8
MIC7300	High Output Drive	2.2	10	1	700 $\mu$ A	Input/Output		9.0	0.5pA	500kHz	0.5	SOT23-5, MSOP-8
MIC860	Very Low Power	2.43	5.25	1	30 $\mu$ A	Output		15	20pA	4.0MHz	3.0	SC70-5
MIC861	Very Low Power	2.43	5.25	1	4.6 $\mu$ A	Output		10	20pA	400kHz	0.12	SC70-5
MIC862	Very Low Power	2.0	5.25	2	31 $\mu$ A	Output		6.0	10pA	3.0MHz	4.0	SOT23-8
MIC863	Very Low Power	2.0	5.25	2	4.2 $\mu$ A	Output		6.0	10pA	450kHz	0.35	SOT23-8
<b>MIC864</b>	Dual 33 $\mu$ A/350kHz Op-Amp	2.5	5.5	2	33 $\mu$ A	Input/Output		8	2.5pA	350kHz	0.2	SOIC-8
MIC910	Low Power/High Speed	5.0	18	1	2.4mA			15	3.5 $\mu$ A	135MHz	270	SOT23-5
MIC911	Low Power/High Speed	5.0	18	1	1.25mA			10	1.5 $\mu$ A	105MHz	120	SOT23-5
MIC912	Low Power/High Speed	5.0	18	1	2.4mA			15	3.5 $\mu$ A	200MHz	360	SOT23-5
MIC913	Low Power/High Speed	5.0	18	1	4.2mA			16	5.5 $\mu$ A	350MHz	500	SOT23-5
MIC914	Low Power/High Speed	5.0	18	1	1.25mA			10	1.5 $\mu$ A	160MHz	160	SOT23-5
MIC915	Low Power/High Speed	5.0	18	2	2.4mA			15	3.5 $\mu$ A	135MHz	270	MSOP-10
MIC916	Low Power/High Speed	5.0	18	3	2.4mA			15	3.5 $\mu$ A	135MHz	270	QSOP-16
MIC918	Low Power/High Speed	5.0	18	1	550 $\mu$ A			5.0	0.26 $\mu$ A	51MHz	1500	SOT23-5, SC70-5
MIC919	Low Power/High Speed	5.0	18	1	360 $\mu$ A			5.0	0.13 $\mu$ A	27MHz	1500	SOT23-5, SC70-5
MIC920	Low Power/High Speed	5.0	18	1	500 $\mu$ A			5.0	0.26 $\mu$ A	80MHz	3000	SOT23-5, SC70-5
MIC921	Low Power/High Speed	5.0	18	1	300 $\mu$ A			5.0	0.13 $\mu$ A	45MHz	3000	SOT23-5, SC70-5
MIC922	Low Power/High Speed	5.0	18	1	2.5mA			5.0	1.7 $\mu$ A	230MHz	1500	SC70-5
MIC923	Low Power/High Speed	5.0	18	1	2.5mA			5.0	1.7 $\mu$ A	410MHz	2200	SC70-5

# Linear ICs Selection Guide

## References

<b>Bold = New</b> P/N	Description	V <sub>IN</sub> Max (V)	Tol (Typ) %	V <sub>OUT</sub> (V)	Output Current Min	Output Current Max	Noise ( $\mu$ V) rms	Reverse Breakdown Stability	Package
LM4040C	Precision Micropower Shunt	15	$\pm 0.5$	2.5, 4.096, 5.0	60 $\mu$ A	15mA	35	120ppm	SOT23-3
LM4040D	Precision Micropower Shunt	15	$\pm 1.0$	2.5, 4.096, 5.0	60 $\mu$ A	15mA	35	120ppm	SOT23-3
LM4041C	Precision Micropower Shunt	15	$\pm 0.5$	1.225, Adj (1.24V-10V)	60 $\mu$ A	12mA	20	120ppm	SOT23-3
LM4041D	Precision Micropower Shunt	15	$\pm 1.0$	1.225, Adj (1.24V-10V)	60 $\mu$ A	12mA	20	120ppm	SOT23-3
MIC4043	Low-Side Secondary-Side Shunt Regulator, Improved Low-Voltage LM431	10	$\pm 1.0$	Adj	1mA	15mA			SOT143

## Timers

<b>Bold = New</b> P/N	Description	Min (V)	V <sub>IN</sub> Max (V)	Supply Current ( $\mu$ A)	Timing Accuracy	Max Frequency	Package
MIC1555	RC Timer/Oscillator "555 Timer"	2.7	18	240	0.02	5MHz	SOT23-5
MIC1557	RC Timer/Oscillator with Shutdown	2.7	18	240	0.02	5MHz	SOT23-5

# RF Wireless ICs Selection Guide

## Receivers

Bold = New P/N	Frequency Range (MHz)	$V_{IN}$		Modulation	Maximum Data Rate	Supply Current (mA)		Sensitivity	Temp Range	Auto Polling	Package
		Min (V)	Max (V)			Rx	Tx				
MICRF009	300-440	4.75	5.5	ASK/OOK	2Kbps	2.9		-104dBm @ 1Kbps	-40°C to +85°C		SOIC-16
MICRF010	300-440	4.75	5.5	ASK/OOK	2Kbps	2.9		-105dBm @ 1Kbps	-40°C to +85°C		SOIC-8
MICRF211	380-450	3.0	3.6	ASK/OOK	10Kbps	6.0		-110dBm @ 1Kbps	-40°C to +105°C		QSOP-16
MICRF213	300-350	3.0	3.6	ASK/OOK	7.2Kbps	3.9		-110dBm @ 1Kbps	-40°C to +105°C		QSOP-16
MICRF218	300-450	3.0	3.6	ASK/OOK	10Kbps	5.5		-110dBm @ 1Kbps	-40°C to +85°C		QSOP-16
MICRF219A	300-450	3.0	3.6	ASK/OOK	10Kbps	4.0		-110dBm @ 1Kbps	-40°C to +105°C	X	QSOP-16
MICRF220	300-450	3.0	3.6	ASK/OOK	10Kbps	4.0		-110dBm @ 1Kbps	-40°C to +105°C		QSOP-16
MICRF221	850-950	3.0	3.6	ASK/OOK	10Kbps	9.0		-109dBm @ 1Kbps	-40°C to +105°C	X	QSOP-16

## Transmitters

Bold = New P/N	Frequency Range (MHz)	$V_{IN}$		Modulation	Data Rate Modulation	Supply Current (mA)	Output Power	Temp Range	Package
		Min (V)	Max (V)						
MAQRF112	300-450	1.8	3.6	ASK/FSK	10Kbps	6.9 (ASK) 11.5 (FSK)	+10dBm	-40°C to +125°C	MSOP-10
MICRF112	300-450	1.8	3.6	ASK/FSK	50Kbps ASK 10Kbps FSK	6.9 (ASK) 11.5 (FSK)	+10dBm	-40°C to +125°C	MSOP-10, 2x2
MICRF113	300-450	1.8	3.6	ASK/OOK	20Kbps	12.3	+10dBm	-40°C to +85°C	SOT23-6
MICRF405	290-980	2.2	3.6	ASK/FSK	200Kbps FSK 50Kbps ASK	18.0	+10dBm	-40°C to +125°C	4x4

## Transceivers

Bold = New P/N	Frequency Range (MHz)	$V_{IN}$		Modulation	Maximum Data Rate	Supply Current		Sensitivity	Output Power	Temp Range	Package
		Min (V)	Max (V)			Rx (mA)	Tx (mA)				
MICRF505	850-950	2.0	2.5	FSK	<200Kbps	13.5	28.0	-111dBm @ 2.4Kbps	+10dBm	-40°C to +85°C	5x5
MICRF505L	850-950	2.25	5.5	FSK	<200Kbps	13.5	28.0	-110dBm @ 2.4Kbps	+10dBm	-40°C to +85°C	5x5
MICRF506	410-450	2.0	2.5	FSK	<200Kbps	12.0	21.5	-113dBm @ 2.4Kbps	+11dBm	-40°C to +85°C	5x5
MICRF507	470-510	2.0	2.5	FSK	<200Kbps	12.0	21.5	-113dBm @ 2.4Kbps	+11dBm	-40°C to +85°C	5x5

## RF Low Noise Amplifiers

Bold = New P/N	Frequency Range (MHz)	$V_{IN}$		Supply Current (mA)	Shutdown Supply Current ( $\mu$ A)	Gain (dB)	Noise Figure (dB)	Input IP3 (dBm)	Input P1dB (dBm)	Temp. Range	Package
		Min (V)	Max (V)								
MICRF300	300-1000	1.8	3.6	2.5	1	18.3	1.15	-13	-5	-40°C to +85°C	SC70-6

## Encoders

Bold = New P/N	Data Rate	$V_{IN}$		Internal Address	Address Combinations	Supply Current (mA)	CRC	Temp Range	Package
		Min (V)	Max (V)						
MICRF302	<4.8Kbps	1.8	3.6	20-bit	>1Million	0.130	8-bit	-40°C to +85°C	2.5x2.5

# LAN Solutions Product Highlights

## 10Base-T/100Base-TX Physical Layer Transceivers

The KSZ8081 and KSZ8091 are single-supply 10Base-T/100Base-TX Ethernet physical-layer transceivers that transmit and receive data over standard CAT-5 unshielded twisted pair (UTP) cable.

The KSZ8081/91 is a highly-integrated PHY solution. It reduces board cost and simplifies board layout by using on-chip termination resistors for the differential pairs and by integrating a low-noise regulator to supply the 1.2V core.

The KSZ8081/91MNX and KSZ8081/91MLX offers the Media Independent Interface (MII) and the KSZ8081/91RNB offers the Reduced Media Independent Interface (RMII) for direct connection with MII/RMII-compliant Ethernet MAC processors and switches. The KSZ8081/91RNA offers the Reduced Media Independent Interface (RMII) for direct connection to RMII-compliant MACs in Ethernet processors and switches.

Energy Efficient Ethernet (EEE) included in the KSZ8091 parts provides further power saving during idle traffic periods and Wake-on-LAN (WOL) provides a mechanism for the KSZ8091 to wake up a system that is in standby power mode.

A 25MHz crystal is used to generate all required clocks, including the 50MHz RMII reference clock output for the KSZ8081/91RNB.

The KSZ8081/91 provides diagnostic features to facilitate system bring-up and debugging in production testing and in product deployment. Parametric NAND tree support enables fault detection between KSZ8081 I/Os and the board. Micrel LinkMD<sup>®</sup> TDR-based cable diagnostics identify faulty copper cabling.

The KSZ8081/91MNX and KSZ8081/91RNB are available in 32-pin, lead-free QFN packages. The KSZ8081/91MLX is available in 48-pin, lead-free LQFP packages. The KSZ8081/91RNA and KSZ8081/91RND are available in 24-pin, lead-free QFN packages.

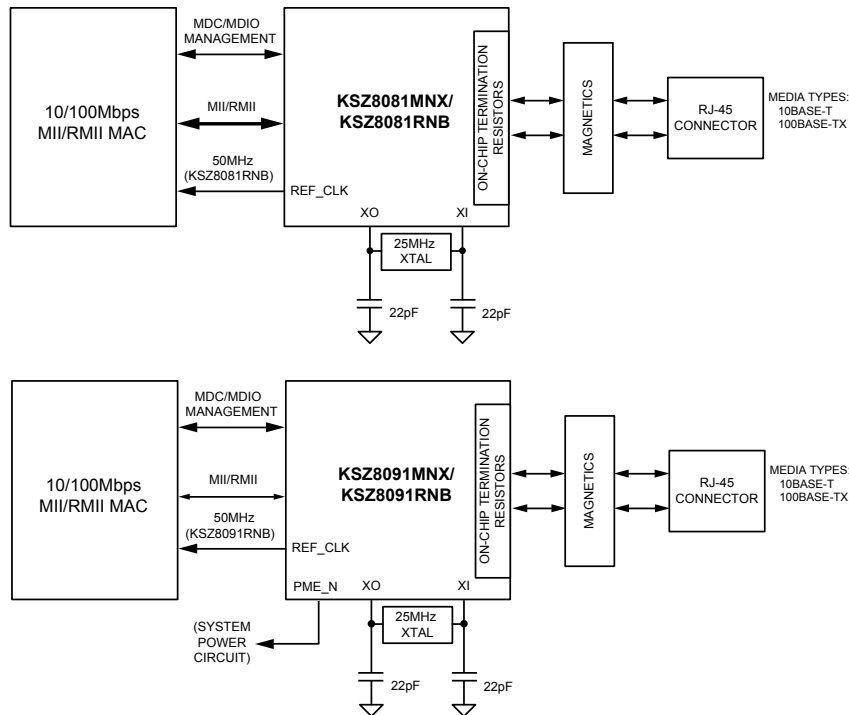
## Applications

- Game consoles
- IP phones
- IP set-top boxes
- IP TV
- LOM
- Printers

## Ordering Information

P/N	Package	Interface
KSZ8081MLX	48-Pin LQFP	MII
KSZ8081MNX	32-Pin QFN	MII
KSZ8081RNA	24-Pin QFN	RMII
KSZ8081RNB	32-Pin QFN	RMII
KSZ8081RND	24-Pin QFN	RMII
KSZ8091MNX	32-Pin QFN	MII
KSZ8091RNB	32-Pin QFN	RMII

- Commercial and industrial temperature range
- LinkMD TDR-based cable diagnostics to identify faulty copper cabling



# LAN Solutions Product Highlights

## VoIP IP Phone-on-a-Chip Family with Multiple Solutions for Mainstream Enterprise and Consumer Solutions

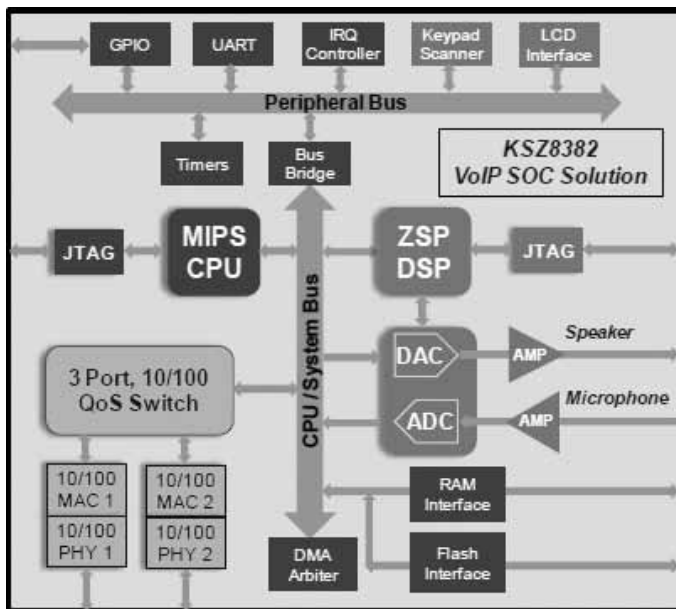
Micrel's new KSZ838x family provides a very high level of integration that results in an over 40% reduction in power consumption and over 30% reduction in BOM costs of legacy solutions.

The Micrel KSZ838x IP Phone-on-a-Chip SOC supplies a complete IP phone solution for enterprise and residential IP telephony, implementing a compact, green, and low-cost IP phone. The KSZ8382 is a highly integrated SoC designed to enable a new generation of functionality for green IP phones.

The KSZ8382 SoC is the ideal choice for enterprise and residential IP phones, backed by Micrel's high reliability and solution robustness, which has been proven in commercial, industrial, and automotive applications around the globe.

The KSZ8382 implements a multiprocessor architecture with embedded RISC CPU and powerful DSP, providing a flexible VoIP platform to offer excellent voice quality.

The chip's superior integration increases performance, and features a high-performance audio subsystem, LCD interface, keypad scanner, memory controllers for both SDRAM and DDR2, and flexible GPIO.



KSZ838x IP Phone SoC

Micrel integrates the industry's most robust, and lowest-power 10/100 Ethernet Switch, implementing critical features including IEEE 802.1p priority QoS, 802.1Q VLANs, and IGMP v1/v2 snooping for multicast packet filtering. The part implements innovative advanced power management including EEE (IEEE 802.3az) PHY technology.

## KSZ8382 Functionality

- MIPS32 RISC CPU for configuration and network processing
- External SDRAM, DDR2, and flash interfaces
- ZSP400 DSP for high-quality voice/audio processing
- 8kHz/16kHz 16-bit ADC/DAC with integrated amplifiers
- Embedded VoIP firmware (DSP)
  - Wideband CODECs: G.722, G.722.1, G.722.2
  - Narrowband CODECs: G.711  $\mu$ -law/A-law, G.723.1, G.726, G.729A/B
  - Voice quality optimizations and telephony features
- 3-port 10/100BaseT Ethernet Switch with integrated low-power PHY transceivers supporting IEEE 802.3az EEE
- Flexible GPIO support
- Keypad Scanner: 6x6 and 8x8 keypad configurations
- LCD interface

## Applications

- Industrial LAN solutions end-device attachments for both distributed and centralized topologies
- Daisy Chained 1588 networks

## KSZ8382L IP Phone SOC Evaluation Board

- Evaluation platform for Micrel VoIP KSZ8382L Single-Chip IP Phone SOC solution
- Enables OEM bring-up of complete SIP IP Phone solution, phone call functions, and user interface

**Micrel offers the entire SIP stack and driver free of cost to its customers.**

## Ordering Information

P/N	Memory Interface	Comments
KSZ8381Q	SDR	Narrowband
KSZ8382Q	SDR	Wideband
KSZ8382L	DDR2	Wideband

- Package: ROHS
  - KSZ8381Q: 128-Pin PQFP
  - KSZ8382L: 176-Pin LQFP
- Power: 3.3V, 1.2V, I/O: 3.3V (SDRAM support with 3.3V, 1.2V)
- Industrial temperature range:  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$
- Interfaces: GPIO, UART, JTAG, PCM



# LAN Solutions Selection Guide

## PHYs

Bold = New P/N	Copper Support	Fiber Support	Interface			Supply Voltage (V)	Internal LDO	V <sub>DD</sub> I/O (V)	LinkMD® (Cable Diag)	Temp Range	802.3az EEE	Int Term	Package	
			MII	RMI	SMII									GMI
KSZ9031MNX	10/100/1000		X			X	1.2, 2.5/3.3	X cntlr	1.8/2.5/3.3	X	C, I	X	X	8x8
KSZ9031RNX	10/100/1000						1.2, 2.5/3.3	X cntlr	1.8/2.5/3.3	X	C, I	X	X	7x7
KSZ8091RNA	10/100			X			3.3	X	1.8/2.5/3.3	X	C, I	X	X	4x4
KSZ8091RND	10/100			X			3.3	X	1.8/2.5/3.3	X	C	X	X	4x4
KSZ8091MNX	10/100		X				3.3	X	1.8/2.5/3.3	X	C, I	X	X	5x5
KSZ8091RNB	10/100			X			3.3	X	1.8/2.5/3.3	X	C, I	X	X	5x5
KSZ8091MLX	10/100		X				3.3	X	1.8/2.5/3.3	X	C, I	X	X	LQFP-48
KSZ8081RNA	10/100			X			3.3	X	1.8/2.5/3.3	X	C, I		X	4x4
KSZ8081RND	10/100			X			3.3	X	1.8/2.5/3.3	X	C		X	4x4
KSZ8081MNX	10/100		X				3.3	X	1.8/2.5/3.3	X	C, I		X	5x5
KSZ8081RNB	10/100			X			3.3	X	1.8/2.5/3.3	X	C, I		X	5x5
KSZ8081MLX	10/100		X				3.3	X	1.8/2.5/3.3	X	C, I		X	LQFP-48
KSZ8051MNLU	10/100		X				3.3	X	1.8/2.5/3.3	X	A		X	5x5
KSZ8051RNLU	10/100			X			3.3	X	1.8/2.5/3.3	X	A		X	5x5
KSZ8041NLJ	10/100		X	X			3.3	X	3.3		J			5x5
KSZ8041FTL	10/100	100FX	X	X	X		3.3	X	3.3	X	C, I			TQFP-48

C (Commercial) 0°C to +70°C  
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 J (Extended) -40°C to +125°C

## Controllers

Bold = New P/N	# of Eth Ports	Copper Support	Fiber Support	Interface			Buffer Size		Supply Voltage (V)	Internal LDO	V <sub>DD</sub> I/O (V)	LinkMD® Cable Diag	Temp Range	Repeater Mode	Int Term	Package
				8/16-Bit	32-Bit	SPI	PCI	Rx (KB)								
KSZ8851-16MLL	1	10/100		X				12	6	3.3	X	1.8/2.5/3.3	X	A, C, I		LQFP-48
KSZ8851-16MLLJ	1	10/100		X				12	6	3.3	X	1.8/2.5/3.3	X	J		LQFP-48
KSZ8851-16MQL	1	10/100		X				12	6	3.3	X	1.8/2.5/3.3	X	C, I		PQFP-128
KSZ8851-32MQL	1	10/100			X			12	6	3.3	X	1.8/2.5/3.3	X	C, I		PQFP-128
KSZ8851SNL	1	10/100				X		12	6	3.3	X	1.8/2.5/3.3	X	C, I		5x5
KSZ8841-PMQL	1	10/100					X	4	4	3.3	X	3.3/5.0	X	C, I		PQFP-128
KSZ8842-16MQL	2	10/100		X				4	4	3.3	X	3.3/5.0	X	C	X	PQFP-128
KSZ8842-16MVL	2	10/100		X				4	4	3.3	X	3.3/5.0	X	C, I	X	LQFP-128
KSZ8842-16MBL	2	10/100		X				4	4	3.3	X	3.3/5.0	X	C, I	X	LFPGA-100
KSZ8842-32MQL	2	10/100			X			4	4	3.3	X	3.3/5.0	X	C	X	PQFP-128
KSZ8842-32MVL	2	10/100			X			4	4	3.3	X	3.3/5.0	X	C, I	X	LQFP-128
KSZ8842-PMQL	2	10/100					X	4	4	3.3	X	3.3/5.0	X	C, I	X	PQFP-128
KSZ8842-PMBL	2	10/100					X	4	4	3.3	X	3.3/5.0	X	A, C	X	LFPGA-100
KSZ8862-16MQL-FL	2	10/100	10FL	X				4	4	3.3	X	3.3/5.0	X	C		PQFP-128
KSZ8862-16MQL-FX	2	10/100	100FX	X				4	4	3.3	X	3.3/5.0	X	C		PQFP-128
KSZ8862-16MQL-SX	2	10/100	100SX	X				4	4	3.3	X	3.3/5.0	X	C		PQFP-128
KSZ8862-32MQL-FL	2	10/100	10FL		X			4	4	3.3	X	3.3/5.0	X	C		PQFP-128
KSZ8862-32MQL-FX	2	10/100	100FX		X			4	4	3.3	X	3.3/5.0	X	C		PQFP-128
KSZ8862-32MQL-SX	2	10/100	100SX		X			4	4	3.3	X	3.3/5.0	X	C		PQFP-128

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# LAN Solutions Selection Guide

## Switches

<b>Bold = New</b> P/N	# of Eth Ports	Copper Support	Fiber Support	MII	RMI	Interface SNI 8/16-Bit	32-Bit	PCI	Supply Voltage (V)	Internal LDO	V <sub>DD</sub> I/O (V)	LinkMD® Cable Diag	Temp Range	Repeater Mode	Int Term	Package
KSZ8863MML	3	10/100 (2)		X					3.3	X	1.8/2.5/3.3	X	C, I			LQFP-48
KSZ8863RLL	3	10/100 (2)			X				3.3	X	1.8/2.5/3.3	X	C, I			LQFP-48
KSZ8863FLL	3	10/100 (1)	100FX(1)	X					3.3	X	1.8/2.5/3.3	X	C, I			LQFP-48
KSZ8873MML	3	10/100 (2)		X					3.3	X	1.8/2.5/3.3	X	A, C, I			LQFP-64
KSZ8873MMLJ	3	10/100 (2)		X					3.3	X	1.8/2.5/3.3	X	J			LQFP-64
KSZ8873RLL	3	10/100 (2)			X				3.3	X	1.8/2.5/3.3	X	A, C, I			LQFP-64
KSZ8873FLL	3		100FX (2)	X					3.3	X	1.8/2.5/3.3	X	C, I			LQFP-64
KSZ8873MML	3	10/100 (1)		X(2)					3.3	X	1.8/2.5/3.3	X	C, I			LQFP-64
KSZ8864RMN	4	10/100 (2)		X(2)	X(2)				3.3	X	1.8/2.5/3.3		A, C, I		X	8x8
KSZ8895MQ	5	10/100 (5)		X(2)		X			3.3	X cntlr	1.8/2.5/3.3		C, I		X	PQFP-128
KSZ8895RQ	5	10/100 (5)			X(2)	X			3.3	X cntlr	1.8/2.5/3.3		C, I		X	PQFP-128
KSZ8895FMQ	5	10/100 (3)	100FX (2)	X(2)					3.3	X cntlr	1.8/2.5/3.3		C, I		X	PQFP-128
KSZ8895MLU	5	10/100 (4)		X(2)					3.3	X cntlr	1.8/2.5/3.3		A		X	LQFP-128
KSZ8997	8	10/100 (8)							2.1		3.3		C			PQFP-128
KSZ8999	9	10/100 (8)	100FX (8)	X		X			2.1		3.3		C, I			PQFP-208
KSZ8842-16MQL	2	10/100 (2)					X		3.3	X	3.3/5.0	X	C			PQFP-128
KSZ8842-16MVL	2	10/100 (2)					X		3.3	X	3.3/5.0	X	C, I			LQFP-128
KSZ8842-16MBL	2	10/100 (2)					X		3.3	X	3.3/5.0	X	C, I			LFPGA-100
KSZ8842-32MQL	2	10/100 (2)					X		3.3	X	3.3/5.0	X	C			PQFP-128
KSZ8842-32MVL	2	10/100 (2)					X		3.3	X	3.3/5.0	X	C, I			LQFP-128
KSZ8842-PMQL	2	10/100 (2)						X	3.3	X	3.3/5.0	X	C, I			PQFP-128
KSZ8842-PMBL	2	10/100 (2)						X	3.3	X	3.3/5.0	X	C, A			LFPGA-100
KSZ8862-16MQL	2	10/100	FL,SX,FX				X		3.3	X	3.3/5.0		C			PQFP-128
KSZ8862-32MQL	2	10/100	FL,SX,FX				X		3.3	X	3.3/5.0		C			PQFP-128

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## IEEE 1588 Ethernet

<b>Bold = New</b> P/N	# of Eth Ports	Copper Support	Fiber Support	MII	RMI	Interface 8/16-Bit	# of GPIO	Supply Voltage (V)	Internal LDO	V <sub>DD</sub> I/O (V)	LinkMD® (Cable Diag)	Temp Range	802.3az EEE	Int Term	Package	
<b>KSZ8463ML</b>	2	10/100 (2)		X			12	3.3	X	1.8/2.5/3.3	X	I	X	X	LQFP-64	
<b>KSZ8463RL</b>	2	10/100 (2)				X	12	3.3	X	1.8/2.5/3.3	X	I	X	X	LQFP-64	
<b>KSZ8462HL</b>	2	10/100 (2)					X	7	3.3	X	1.8/2.5/3.3	X	I	X	X	LQFP-64
<b>KSZ8441HL</b>	1	10/100					X	7	3.3	X	1.8/2.5/3.3	X	I	X	X	LQFP-64
<b>KSZ8463FML*</b>	2	10/100 (2)	100FX (2)	X			12	3.3	X	1.8/2.5/3.3	X	I	X	X	LQFP-64	
<b>KSZ8463FRL*</b>	2	10/100 (2)	100FX (2)			X	12	3.3	X	1.8/2.5/3.3	X	I	X	X	LQFP-64	
<b>KSZ8462FHL*</b>	2	10/100 (2)	100FX (2)				X	7	3.3	X	1.8/2.5/3.3	X	I	X	X	LQFP-64
<b>KSZ8441FHL*</b>	1	10/100	100FX				X	7	3.3	X	1.8/2.5/3.3	X	I	X	X	LQFP-64

\* Contact Micrel for Availability

C (Commercial) 0°C to +70°C  
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# LAN Solutions Selection Guide

## ARM-Based Ethernet SOC

Bold = New P/N	# of Eth Ports	Copper Support	Fiber Support	# of PCI Ports	Processor Speed	UART(s) Speed	USB 2.0	SDIO	GPIO	Counter Timer	Other I/O	DES/3DES Security Engine	LinkMD® Cable Diag	Supply Voltage	Temp Range	Package
KSZ8695PX	5	10/100 (5)	100FX (2)	1	ARM922T 166MHz	1 x 115Kbps			16	2 x 32-bit				1.8, 3.3	C	PQFP-208
KSZ8695P	5	10/100 (5)	100FX (2)	3	ARM922T 166MHz	1 x 115Kbps			16	2 x 32-bit				1.8, 3.3	C, I	PBGA-289
KSZ8695X	5	10/100 (5)	100FX		ARM922T 166MHz	1 x 115Kbps			8	2 x 32-bit				1.8, 3.3	C	PBGA-289
KSZ8692PB	2	10/100 MAC		3	ARM922T 250MHz	4 x 10Mbps	2 x Host/Device 480Mbps	X	20	2 x 32-bit	I2S, SPI, I2C	X	X	1.2, 2.5, 3.3	C, I	PBGA-400 (24x24)
KSZ8692PB-S	2	10/100 MAC		3	ARM922T 250MHz	4 x 10Mbps	2 x Host/Device 480Mbps	X	20	2 x 32-bit	I2S, SPI, I2C	X	X	1.2, 2.5, 3.3	C	PBGA-400 (17x17)
KSZ8692XPB	2	10/100 MAC		1	ARM922T 250MHz	4 x 10Mbps	2 x Host/Device 480Mbps		20	2 x 32-bit	I2S, SPI, I2C		X	1.2, 2.5, 3.3	C	PBGA-400 (24x24)
KSZ9692PB	2	10/100/1000 MAC		3	ARM922T 250MHz	4 x 10Mbps	2 x Host/Device 480Mbps	X	20	2 x 32-bit	I2S, SPI, I2C	X	X	1.2, 2.5, 3.3	C, I	PBGA-400 (24x24)
KSZ9692PB-S	2	10/100/1000 MAC		3	ARM922T 250MHz	4 x 10Mbps	2 x Host/Device 480Mbps	X	20	2 x 32-bit	I2S, SPI, I2C	X	X	1.2, 2.5, 3.3	C	PBGA-400 (17x17)
KSZ9692XPB	2	10/100/1000 MAC		1	ARM922T 250MHz	2 x 10Mbps	2 x Host/Device 480Mbps		20	2 x 32-bit	I2S, SPI, I2C		X	1.2, 2.5, 3.3	C	PBGA-400 (24x24)

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## Voice Over IP (VoIP) SOC

Bold = New P/N	Processor Support	Bands Narrow/Wide	Switch 10/100 Ports	Memory Controller	Memory Size	UART Port	LCD Interface	LED Dedicated	# of Dedi- cated GPIO	# of Shared GPIO	Supply Voltage (V)	Temp Range	802.3az EEE	Package
KSZ8381Q	MIPS32 M4KEc	Narrowband	3	SDR	8MByte to 32MByte	1	Serial/Parallel	No	0	18	3.3, 1.2	C	Yes	PQFP-128
KSZ8382Q	MIPS32 M4KEc	Wideband	3	SDR	8MByte to 32MByte	1	Serial/Parallel	No	0	18	3.3, 1.2	C	Yes	PQFP-128
KSZ8382L	MIPS32 M4KEc	Wideband	3	DDR2	256MBit to 2GBit	1	Serial/Parallel	Yes	13	38	3.3, 1.2	C	Yes	LQFP-176
KSZ8342Q	MIPS32 M4KEc	Wideband	3	SDR	8MByte to 32MByte	1	Serial/Parallel	No	X	7	3.3, 1.2	C, I	Yes	PQFP-128

C (Commercial) 0°C to 70°C  
 I (Industrial) -40°C to 85°C  
 A (Automotive) -40°C to 85°C  
 J (Extended) -40°C to 125°C

# Automotive (AEC-Q100 Qualified) Selection Guide

## Power Management

Bold = New

P/N	V <sub>IN</sub>	Comments	Package
MAQ5280	4.5V to 120V	25mA LDO with reverse battery protection	eSOIC-8
MAQ5281	4.5V to 120V	25mA LDO with reverse battery protection	eMSOP-8
MAQ5282	4.5V to 120V	50mA LDO with reverse battery protection	eMSOP-8
MAQ5283	4.5V to 120V	150mA LDO with reverse battery protection	eSOIC-8
MAQ3203	4.5V to 42V	1.5MHz Step-Down LED Driver	SOIC-8
MAQ4123	4.5V to 20V	Low-Side MOSFET Driver, dual inverting	eSOIC-8
MAQ4124	4.5V to 20V	Low-Side MOSFET Driver, dual noninverting	eSOIC-8
MAQ4125	4.5V to 20V	Low-Side MOSFET Driver, inverting + noninverting	eSOIC-8

## RF Transmitters

Bold = New

P/N	V <sub>IN</sub>	Comments	Package
MAQRF112	1.8V to 3.6V	Automotive, +10dBm, 300MHz to 450MHz, 1.8V to 3.6V, ASK/FSK Transmitter with Shutdown	MSOP-10

## LAN Solutions

Bold = New

P/N	V <sub>IN</sub>	Comments	Package
<b>KSZ8051MNLU</b>	3.3V	10/100 Ethernet PHY with MII	5x5
<b>KSZ8051RNLU</b>	3.3V	10/100 Ethernet PHY with RMII	5x5
KSZ8041NL AM	3.3V	10/100 Ethernet PHY with MII and RMII	5x5
KSZ8851-16MLLU	3.3V	10/100 Ethernet (MAC+PHY) Controller with 16-bit host bus	LQFP-48
KSZ8873MLL AM	3.3V	10/100 Ethernet 3-Port Switch with MII	LQFP-64
KSZ8842-PMBL AM	3.3V	10/100 Ethernet 2-Port Switch with PCI	LFPGA-100
KSZ8893MQL AM	3.3V	10/100 Ethernet 3-Port Switch with MII and RMII	PQFP-128
KSZ8895MLU	3.3V	10/100 Ethernet 5-Port Switch with MII	LQFP-128
KSZ8864RMNU	3.3V	10/100 Ethernet 4-Port Switch with MII and RMII	8x8

# Timing and Communications Product Highlights

## PCIe Clock Generators

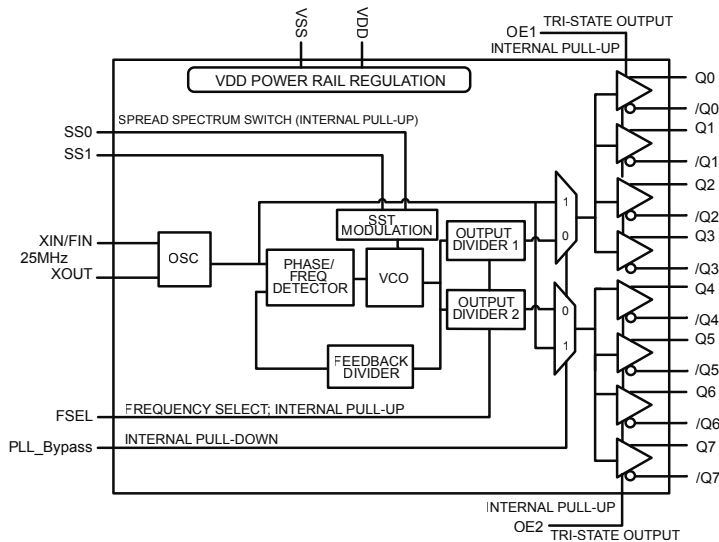
Micrel has been introducing a complete line of new clock generation and clock distribution solutions for the growing Peripheral Component Interconnect Express (PCIe) market.

The complete line of PCIe clock generators offers the highest performance for single and multi-output solutions designed for Gen1, Gen2, and Gen3 applications. The increased bandwidth requirements of applications such as cloud computing and video streaming are driving PCIe to become a leading high data rate interconnect standard in telecommunications equipment, computing applications, and consumer applications.

PL6020xx and the PL6070xx provide extremely low noise timing for PCIe clock signals. The solutions support Gen1, Gen2, and Gen3 PCIe standards as well as SST for EMI reduction.

The devices operate from a 2.5V or 3.3V power supply and synthesize up to eight HCSL output clocks, supporting 25MHz, 100MHz, 125MHz, or 200MHz output from a single 25MHz crystal or LVCMOS reference clock.

SY75576L and SY75578L offer superior phase noise performance of less than 200fs additive jitter. These parts are ideal for PCIe reference clock distribution for a wide variety of high-end networking and storage applications.



## Features

- 25MHz fundamental crystal or reference input
- Generates up to 8 HCSL clock outputs at 25MHz, 100MHz, 125MHz, and 200MHz
- Typical phase jitter: 250fs
- Spread spectrum for EMI reduction
- Gen1, Gen2, Gen3 architecture compliant
- 2.5V or 3.3V operating range
- Industrial temperature range (–40°C to +85°C)
- GREEN, RoHS, and PFOS compliant
- Available in 6-pin SOT, and 16-pin, 24-pin, and 44-pin QFN packages

## Applications

- Servers
- Storage systems
- Switches and routers
- Gigabit Ethernet
- Set-top boxes/DVRs

## Ordering Information

### PCIe Clock Synthesizers

P/N	# of O/P	Package Type	EMI Support
PL602-2X	1	6-Pin SOT, 8-Pin SOP	No
PL60203X	2	16-Pin QFN	No
PL602041	4	24-Pin QFN	No
PL60208X	8	44-Pin QFN	No
PL607041	4	24-Pin QFN	Yes
PL60708X	8	44-Pin QFN	Yes

### PCIe Clock Buffers

P/N	# of O/P	Package Type	Comments
SY75576L	4	20-Pin TSSOP	IDT Second Source: ICS557-06

# Timing and Communications Selection Guide

## Clock Modules

Bold = New P/N	Supply Voltage	Output Type	Output(s) (MHz)	Typ Jitter 12kHz-20MHz	Options		Applications	Package
					FSEL	OE		
MX85xxx	2.5/3.3V	PECL, LVDS, HCSL, CMOS	<840	160fs	15-170	LVC MOS	1/10/40/100GbE, PCIe, SONET, SAS/SATA	SOP-8L, SOT23-6L

## Fanout Buffers

Bold = New P/N	Fanout	Input	Output	Supply Voltage	Output Voltage	Max Freq (GHz)	Max Data Rate (Gbps)	Options			Input Mux	Input EQ	Package
								OE	RPE	FSI			
SY75576L	1:4	HCSL/LVDS	HCSL/LVDS	3.3V	3.3V	0.3		X			X		TSSOP-20
PL123-02N	1:2	LVC MOS	LVC MOS	1.8V ~ 3.3V	1.8/2.5/3.3V	0.2		X					DFN-6L
PL123-05N	1:5	LVC MOS	LVC MOS	2.5/3.3V	2.5/3.3V	0.13							SOP-8
PL123-09N	1:9	LVC MOS	LVC MOS	2.5/3.3V	2.5/3.3V	0.13							TSSOP-16
PL133-27	1:2	Multiple	LVC MOS	1.8V ~ 3.3V	1.8/2.5/3.3V	0.15		X					DFN-6L
PL133-37	1:3	Multiple	LVC MOS	1.8V ~ 3.3V	1.8/2.5/3.3V	0.15							SOT23-6
PL133-47	1:4	LVC MOS	LVC MOS	2.5/3.3V	2.5/3.3V	0.15							SOP-8
PL133-67	1:6	LVC MOS	LVC MOS	2.5/3.3V	2.5/3.3V	0.15		X					TSSOP-16
PL133-97	1:9	LVC MOS	LVC MOS	2.5/3.3V	2.5/3.3V	0.15		X					QFN-16L
PL135-27	1:2	XTAL	LVC MOS	1.8V ~ 3.3V	1.8/2.5/3.3V	0.04							DFN-6L
PL135-37	1:3	XTAL	LVC MOS	1.8V ~ 3.3V	1.8/2.5/3.3V	0.04		X					SOP-8
PL135-47	1:4	XTAL	LVC MOS	1.8V ~ 3.3V	1.8/2.5/3.3V	0.04		X					QFN-16L
PL135-67	1:6	XTAL	LVC MOS	1.8V ~ 3.3V	1.8/2.5/3.3V	0.04		X					QFN-16L
PL138-18	2:10	LVDS/LVPECL/ LVHSTL/SSTL/ HCSL	LVPECL	2.5/3.3V	2.5/3.3V	0.7					X		LQFP-32
PL138-28	1:2	LVDS/LVPECL/ LVHSTL/SSTL/ HCSL	LVPECL	2.5/3.3V	2.5/3.3V	1							SOP-8
PL138-48	2:4	LVDS/LVPECL/ LVHSTL/SSTL/ HCSL	LVPECL	2.5/3.3V	2.5/3.3V	1		X			X		TSSOP-20
PL138-58	2:4	LVC MOS	LVPECL	2.5/3.3V	2.5/3.3V	0.26		X			X		4x4
PL138-98	2:9	LVDS/LVPECL/ LVHSTL/SSTL/ HCSL	LVPECL	2.5/3.3V	2.5/3.3V	0.7		X			X		LQFP-32
SY58608U	1:2	ANY	LVDS	2.5V	2.5V	2.0	3.2			X			3x3
SY58606U	1:2	ANY	CML	2.5/3.3V	2.5/3.3V	2.5	4.25			X			3x3
SY58607U	1:2	ANY	LVPECL	2.5/3.3V	2.5/3.3V	2.5	3.2			X			3x3
SY89311U	1:2	ECL/PECL/ LVPECL/LVECL	ECL/PECL/ LVPECL/ LVECL	2.5/3.3/5V	2.5/3.3/5V	3.0							2x2
SY89851U	1:2	ANY	LVPECL	2.5/3.3V	2.5/3.3V	3.0	2.5						3x3
SY54011R	1:2	ANY	CML	2.5V	1.2/1.8V	3.2	3.2			X			3x3
SY54020AR	1:4	ANY	CML	2.5V	1.2/1.8V	3.2	3.2	X					3x3
SY54020R	1:4	ANY	CML	2.5V	1.2/1.8V	2.5	3.2	X		X			3x3
SY56011R	1:2	ANY	CML	2.5V	1.2/1.8/2.5V	4.5	6.4					X	3x3
SY58012U	1:2	ANY	LVPECL	2.5/3.3V	2.5/3.3V	5.0	5						3x3
SY58013U	1:2	ANY	RS-LVPECL	2.5/3.3V	2.5/3.3V	6.0	10.7						3x3
SY58011U	1:2	ANY	CML	2.5/3.3V	2.5/3.3V	7.0	10.7					X	3x3
SY89843U	2:2	ANY	LVPECL	2.5/3.3V	2.5/3.3V	1.5			X	X	X		4x4
SY89844U	2:2	ANY	LVDS	2.5V	2.5V	1.5			X	X	X		4x4
SY89473U	2:2	ANY	LVPECL	2.5/3.3V	2.5/3.3V	3.0	2.5				X		4x4
SY89474U	2:2	ANY	LVDS	2.5V	2.5V	2.5					X		4x4
SY89645L	1:4	LVC MOS/ LV TTL	LVDS	3.3V	3.3V	0.65							TSSOP-16

# Timing and Communications Selection Guide

## Fanout Buffers

Bold = New P/N	Fanout	Input	Output	Supply Voltage	Output Voltage	Max Freq (GHz)	Max Data Rate (Gbps)	Options			Input Mux	Input EQ	Package
								OE	RPE	FSI			
SY89831U	1:4	ANY	LVPECL	2.5/3.3V	2.5/3.3V	2.0						3x3	
SY89832U	1:4	ANY	LVDS	2.5V	2.5V	2.0						3x3	
SY89833AL	1:4	ANY	LVDS	3.3V	3.3V	2.0						3x3	
SY89833L	1:4	ANY	LVDS	3.3V	3.3V	2.0						3x3	
SY89854U	1:4	ANY	LVPECL	2.5/3.3V	2.5/3.3V	3.5						3x3	
SY58021U	1:4	ANY	LVPECL	2.5/3.3V	2.5/3.3V	4.0	5					3x3	
SY56020R	1:4	ANY	CML	2.5V	1.2/1.8/2.5V	4.5	6.4	X			X	3x3	
SY56020XR	1:4	ANY	CML	2.5V	1.2/1.8/2.5V	4.5	6.4	X			X	3x3	
SY58022U	1:4	ANY	RS-LVPECL	2.5/3.3V	2.5/3.3V	5.5	10					3x3	
SY58020U	1:4	ANY	CML	2.5/3.3V	2.5/3.3V	6.0						3x3	
SY898535L	2:4	LVC MOS/ LV TTL	LVPECL	3.3V	3.3V	0.24					X	TSSOP-20	
SY898535XL	2:4	XTAL/LVCMOS	LVPECL	3.3V	3.3V	0.24					X	TSSOP-20	
SY898533L	2:4	Multiple	LVPECL	3.3V	3.3V	0.65					X	TSSOP-20	
SY89834U	2:4	LV TTL	LVPECL	2.5/3.3V	2.5/3.3V	1.0					X	3x3	
SY89830U	2:4	ECL/PECL/ LVPECL/LVECL	ECL/PECL/ LVPECL/ LVECL	2.5/3.3/5V	2.5/3.3/5V	2.5					X	TSSOP-16	
SY89846U	2:5	ANY	LVPECL	2.5/3.3V	2.5/3.3V	1.5		X		X	X	5x5	
SY89847U	2:5	ANY	LVDS	2.5V	2.5V	1.5		X		X	X	5x5	
SY89856U	2:6	ANY	LVPECL	2.5/3.3V	2.5/3.3V	3.0					X	5x5	
SY58035U	2:6	ANY	LVPECL	2.5/3.3V	2.5/3.3V	4.5					X	5x5	
SY58034U	2:6	ANY	CML	2.5/3.3V	2.5/3.3V	6.0					X	5x5	
SY58036U	2:6	ANY	RS-LVPECL	2.5/3.3V	2.5/3.3V	6.0					X	5x5	
SY56034AR	2:6	ANY	CML	2.5V	1.2/1.8/2.5V	5.0	6.4				X	5x5	
SY89200U	1:8	ANY	LVDS	2.5V	2.5V	1.5						5x5	
SY89202U	1:8	ANY	LVPECL	2.5/3.3V	2.5/3.3V	1.5						5x5	
SY89858U	1:8	ANY	LVPECL	2.5/3.3V	2.5/3.3V	3.0						5x5	
SY58032U	1:8	ANY	LVPECL	2.5/3.3V	2.5/3.3V	4.0						5x5	
SY58031U	1:8	ANY	CML	2.5/3.3V	2.5/3.3V	5.0						5x5	
SY58033U	1:8	ANY	RS-LVPECL	2.5/3.3V	2.5/3.3V	5.5						5x5	
SY89837U	2:8	ANY	LVPECL	2.5/3.3V	2.5/3.3V	1.5			X	X	X	5x5	
SY89838U	2:8	ANY	LVDS	2.5V	2.5V	1.5			X	X	X	5x5	
SY89843U	2:2	ANY	LVPECL	2.5/3.3V	2.5/3.3V	1.5			X		X	4x4	
SY89808L	2:9	LVPECL/HSTL	HSTL	3.3V	3.3V	0.5		X			X	TQFP-32	
SY89809L	2:9	LVPECL/HSTL	HSTL	3.3V	3.3V	0.5		X			X	TQFP-32	
SY89809AL	2:9	LVPECL/HSTL	HSTL	1.8/3.3V	1.8/3.3V	0.75		X			X	TQFP-32	
SY898531L	1:9	LVPECL/LVDS/ LVHSTL/CML/ SSTL/HC SL	LVPECL	3.3V	3.3V	0.5		X			X	TQFP-32	
SY89827L	Dual 1:10	LVPECL/HSTL	HSTL	3.3V	3.3V	0.5		X			X	TQFP-64	
SY89828L	Dual 1:10	LVPECL/LVDS	LVDS	3.3V	3.3V	1.0		X			X	TQFP-64	
SY89829U	Dual 1:10	LVPECL/LVDS	LVPECL	2.5/3.3V	2.5/3.3V	1.0		X			X	TQFP-64	
SY89464U	2:10 RPE	ANY	LVPECL	2.5/3.3V	2.5/3.3V	2.0			X	X	X	7x7	
SY89465U	2:10 RPE	ANY	LVDS	2.5V	2.5V	2.0			X	X	X	7x7	
SY89112U	2:12	ANY	LVPECL	2.5/3.3V	2.5/3.3V	3.0					X	7x7	
SY89113U	2:12	ANY	LVDS	2.5V	2.5V	1.0					X	7x7	
SY898530U	1:16	LVDS/LVPECL/ LVHSTL/SSTL/ HC SL	LVPECL	3.3V	3.3V	0.5						TQFP-48	

# Timing and Communications Selection Guide

## Fanout Buffers

Bold = New P/N	Fanout	Input	Output	Supply Voltage	Output Voltage	Max Freq (GHz)	Max Data Rate (Gbps)	OE	Options			Input Mux	Input EQ	Package
									RPE	FSI				
SY89467U	2:20	ANY	LVPECL	2.5/3.3V	2.5/3.3V	1.5				X	X			TQFP-64
SY89468U	2:20	ANY	LVDS	2.5V	2.5V	1.5					X	X		TQFP-64
SY89823L	2:22	LVPECL/HSTL	HSTL	3.3V	3.3V	0.5		X				X		TQFP-64
SY89824L	2:22	LVPECL/HSTL	HSTL	3.3V	3.3V	0.5		X				X		TQFP-64
SY89825U	2:22	LVPECL/LVDS	LVPECL	2.5/3.3V	2.5/3.3V	1.0		X				X		TQFP-64
SY89826L	2:22	LVPECL/LVDS	LVDS	3.3V	3.3V	1.0		X				X		TQFP-64
SY897132L	Link Replicator	LVPECL	LVPECL	3.3V	3.3V	0.8	1.5	X				X		TSSOP-28

## Zero Delay Buffers

Bold = New P/N	# of Outputs	Fanout	ZDB	Input (MHz)	Output Type	Voltage	Package
PL102-10	3	X	X	15-170	LVC MOS	2.5/3.3V	SOP-8L, SOT23-6L
PL123-05	5	X	X	10-134	LVC MOS	3.3V	SOP-8L
PL123-09	9	X	X	10-134	LVC MOS	3.3V	TSSOP-16L, SOP-16L
PL123E-05	5	X	X	10-220	LVC MOS	2.5/3.3V	SOP-8L
PL123E-09	9	X	X	10-220	LVC MOS	2.5/3.3V	TSSOP-16L, SOP-16L
PL123S-05	5	X	X	10-134	LVC MOS	3.3V	SOP-8L
PL123S-09	9	X	X	10-134	LVC MOS	3.3V	TSSOP-16L, SSOP-16L

## Clock Dividers

Bold = New P/N	Fanout Buffer	Input	Output	# of Outputs	Supply Voltage	Max Freq (GHz)	Options			Description	Package
							OE	FSI	Input Mux		
SY89200U	Y	ANY	LVDS	8	2.5V	1.5	X		X	3 Banks (+1, +2, +4) 8 Total	5x5
SY89202U	Y	ANY	LVPECL	8	2.5/3.3V	1.5	X		X	3 Banks (+1, +2, +4) 8 Total	5x5
SY89218U	Y	ANY	LVDS	15	2.5V	1.5		X	X	4 Banks (+1, +2, +4) 15 Total	TQFP-64
SY89221U	Y	ANY	LVPECL	15	2.5/3.3V	1.5		X	X	4 Banks (+1, +2, +4) 15 Total	TQFP-64
SY89228U	N	ANY	LVPECL	1	2.5/3.3V	1.0		X		+3, +5	3x3
SY89229U	N	ANY	LVDS	1	2.5V	1.0		X		+3, +5	3x3
SY89230U	N	ANY	LVPECL	1	2.5/3.3V	3.2		X		+3, +5	3x3
SY89231U	N	ANY	LVDS	1	2.5V	3.2		X		+3, +5	3x3
SY89312V	N	ECL/PECL	ECL/PECL	1	3.3/5V	4.0		X		+2, 2x2 ver of SY100EP32	2x2
SY89313V	N	ECL/PECL	ECL/PECL	1	3.3/5V	4.0				+4, 2x2 ver of SY100EP33	2x2
SY89871U	Y	ANY	LVPECL	2	2.5/3.3V	2.5	X			2 Banks (+1, +2, +4, +8, +16)	3x3
SY89872U	Y	ANY	LVDS	2	2.5V	2.0	X			2 Banks (+1, +2, +4, +8, +16)	3x3
SY89873L	Y	ANY	LVDS	2	3.3V	2.0	X			2 Banks (+1, +2, +4, +8, +16)	3x3
SY89874U	Y	ANY	LVPECL	2	2.5/3.3V	2.5	X			+1, +2, +4, +8, +16	3x3
SY89874AU	Y	ANY	LVPECL	2	2.5/3.3V	2.5	X			+1, +2, +4, +8, +16	3x3
SY89875U	Y	ANY	LVDS	2	2.5V	2.0	X			+1, +2, +4, +8, +16	3x3
SY89876L	Y	ANY	LVDS	2	3.3V	2.0	X			+1, +2, +4, +8, +16	3x3



# Timing and Communications Selection Guide

## Translators

<b>Bold = New P/N</b>	Channels	Input	Output	Supply Voltage	Output Voltage	Max Freq (GHz)	Max Prop Delay (ps)	Max Within Device Skew (ps)	Description	Package
PL130-05	Single	Multiple	LVPECL	2.5/3.3V	2.5/3.3V	1.00				3x3
PL130-07	Single	Multiple	LVC MOS	2.5/3.3V	2.5/3.3V	0.20				3x3
PL130-09	Single	Multiple	LVDS	2.5/3.3V	2.5/3.3V	1.00				SOP-8
PL130-58	Single	Multiple	LVPECL	2.5/3.3V	2.5/3.3V	0.26				SOP-8
SY55851/A	Single	PECL/LVPECL/CML	CML	2.5/3.3V	2.5/3.3V	3.00	350			MSOP-10
SY55855V	Dual	PECL/LVPECL/CML	LVDS	3.3/5V	3.3/5V	0.75	700	50		MSOP-10
SY55857L	Dual	ANY	LVPECL	3.3V	3.3V	2.50	400	50		MSOP-10
SY54016R	Single	ANY	CML	2.5V	1.2/1.8/2.5V	2.50	420			2x2
SY54016AR	Single	ANY	CML	2.5V	1.2/1.8/2.5V	2.50	420			2x2
SY56016R	Single	ANY	CML	2.5V	1.2/1.8/2.5V	7.00	80			2x2
SY89222L	Dual	TTL	PECL	3.3V	3.3V	0.40	600	100	2x2 ver of SY100ELT22	2x2
SY89223L	Dual	LVPECL	LVTTTL	3.3V	3.3V	0.16	250	30	2x2 ver of SY100ELT23	2x2
SY89321L	Single	LVPECL	LVTTTL	3.3V	3.3V	0.28	250		2x2 ver of SY100EPT21	2x2
SY89322V	Dual	LVTTTL	LVPECL	3.3/5V	3.3/5V	0.80	600	100	2x2 ver of SY100EPT22	2x2
SY89323L	Dual	LVPECL	LVTTTL	3.3V	3.3V	0.28	250	50	2x2 ver of SY100EPT23	2x2
SY89325V	Single	PECL/LVPECL/CML	LVDS	3.3V	3.3V	0.75	700			2x2
SY89327L	Single	ANY	LVPECL	3.3V	3.3V	2.50	400			2x2
SY89328L	Single	LVPECL/LVTTTL	LVTTTL/LVPECL	3.3V	3.3V	0.28	600			2x2
SY89329V	Single	LVTTTL	LVPECL	3.3/5V	3.3/5V	0.80	600		2x2 ver of SY100EPT20	2x2

## Multiplexers

<b>Bold = New P/N</b>	Fanout Buffer	Input	Output	Supply Voltage	Output Voltage	Max Freq (GHz)	Data Rate (Gbps)	Options	Input EQ	Description	Package	
								OE RPE FSI				
SY897132L	2:1	LVPECL	LVPECL	3.3V	3.3V	0.8	1.5	X			TSSOP-28	
SY89841U	2:1	ANY	LVDS	2.5V	2.5V	1.5			X		3x3	
SY89840U	2:1	ANY	LVPECL	2.5/3.3V	2.5/3.3V	2.0				X	3x3	
SY89842U	2:1	ANY	CML	2.5/3.3V	2.5/3.3V	2.0			X		3x3	
SY54017AR	2:1	ANY	CML	2.5V	1.2/1.8V	2.5	3.2				3x3	
SY54017R	2:1	ANY	CML	2.5V	1.2/1.8V	2.5	3.2			X	3x3	
SY58609U	2:1	ANY	CML	2.5/3.3V	2.5/3.3V	2.5	4.3			X	3x3	
SY58610U	2:1	ANY	LVPECL	2.5/3.3V	2.5/3.3V	2.5	3.2			X	3x3	
SY58611U	2:1	ANY	LVDS	2.5V	2.5V	2.5	3.2			X	3x3	
SY89208V	2:1	ECL/PECL	ECL/PECL	3.3/5V	3.3/5V	3.0					2x2 ver of SY100EP58	2x2
SY56017R	2:1	ANY	CML	2.5V	1.2/1.8/2.5V	3.2	6.4			X	5x5	
SY58018U	2:1	ANY	LVPECL	2.5/3.3V	2.5/3.3V	4.0	5.0				3x3	
SY58017U	2:1	ANY	CML	2.5/3.3V	2.5/3.3V	7.0	10.7				3x3	
SY58019U	2:1	ANY	RS-LVPECL	2.5/3.3V	2.5/3.3V	7.0	10.7				3x3	
SY89843U	2:2	ANY	LVPECL	2.5/3.3V	2.5/3.3V	2.0			X	X	4x4	
SY89844U	2:2	ANY	LVDS	2.5V	2.5V	2.0			X	X	4x4	
SY89845U	2:2	ANY	CML	2.5/3.3V	2.5/3.3V	2.0			X	X	4x4	
SY89473U	2:2	ANY	LVPECL	2.5/3.3V	2.5/3.3V	2.5	2.5				4x4	
SY89474U	2:2	ANY	LVDS	2.5V	2.5V	2.5	2.5				4x4	
SY89852U	2:2	ANY	LVPECL	2.5/3.3V	2.5/3.3V	2.5	2.5				3x3	
SY89464U	2:10	ANY	LVPECL	2.5/3.3V	2.5/3.3V	2.0				X	7x7	
SY89465U	2:10	ANY	LVDS	2.5V	2.5V	2.0				X	7x7	

# Timing and Communications Selection Guide

## Multiplexers

Bold = New P/N	Fanout Buffer	Input	Output	Supply Voltage	Output Voltage	Max Freq (GHz)	Data Rate (Gbps)	Options			Input EQ	Description	Package
								OE	RPE	FSI			
SY89853U	Dual 2:1	ANY	LVPECL	2.5/3.3V	2.5/3.3V	2.5	2.5						5x5
SY89543L	Dual 2:1	ANY	LVDS	3.3V	3.3V	3.0	3.2						5x5
SY89542U	Dual 2:1	ANY	LVDS	2.5V	2.5V	4.0	3.2						5x5
SY58026U	Dual 2:1	ANY	LVPECL	2.5/3.3V	2.5/3.3V	6.0	5.0						5x5
SY58027U	Dual 2:1	ANY	RS-LVPECL	2.5/3.3V	2.5/3.3V	6.0	10.7						5x5
SY58025U	Dual 2:1	ANY	CML	2.5/3.3V	2.5/3.3V	7.0	10.7						5x5
SY89545L	4:1	ANY	LVDS	3.3V	3.3V	3.0	3.2						5x5
SY89544U	4:1	ANY	LVDS	2.5V	2.5V	4.0	3.2						5x5
SY56028XR	4:1	ANY	CML	2.5V	1.2/1.8/2.5V	4.5	6.4				X		5x5
SY56572XR	4:1	ANY	CML	2.5V	1.2/1.8/2.5V	4.5	6.4				X		5x5
SY89855U	4:2	ANY	LVPECL	2.5/3.3V	2.5/3.3V	2.5	2.5						5x5
SY58029U	4:2	ANY	LVPECL	2.5/3.3V	2.5/3.3V	4.0	5.0						5x5
SY89546U	4:2	ANY	LVDS	2.5V	2.5V	4.0	3.2						5x5
SY89547L	4:2	ANY	LVDS	3.3V	3.3V	4.0	3.2						5x5
SY58028U	4:2	ANY	CML	2.5/3.3V	2.5/3.3V	7.0	10.7						5x5
SY58030U	4:2	ANY	RS-LVPECL	2.5/3.3V	2.5/3.3V	7.0	10.7						5x5
SY89859U	8:2	ANY	LVPECL	2.5/3.3V	2.5/3.3V	2.5	2.5						7x7
SY58037U	8:2	ANY	CML	2.5/3.3V	2.5/3.3V	4.0	5.0						7x7
SY58038U	8:2	ANY	LVPECL	2.5/3.3V	2.5/3.3V	5.0	4.5						7x7
SY58039U	8:2	ANY	RS-LVPECL	2.5/3.3V	2.5/3.3V	5.5	5.0						7x7

## Crosspoint Switches

Bold = New P/N	Input	Output	Supply Voltage	Output Voltage	Max Data Rate (Gbps)	OE	RPE	Options			Description	Package
								FSI	Input MUX	Input EQ		
SY55854U	ANY	CML	2.5/3.3/5V	2.5/3.3/5V	2.5				X		2x2	QSOP-16
SY54023R	ANY	CML	2.5V	1.2/1.8V	3.2			X	X		2x2	3x3
SY56023R	ANY	CML	2.5V	1.2/1.8/2.5V	6.4				X	X	2x2	3x3
SY58023U	ANY	CML	2.5/3.3V	2.5/3.3V	10.7				X		2x2	3x3
SY55859L	CML	CML	3.3V	3.3V	2.7				X		Dual 2x2	5x5
SY55858U	CML/PECL/ LVPECL	CML	2.5/3.3V	2.5/3.3V	3.0				X		Dual 2x2	TQFP-32
SY58024U	ANY	CML	2.5/3.3V	2.5/3.3V	10.7				X		Dual 2x2	5x5
SY56034AR	ANY	CML	2.5V	1.2/1.8/2.5V	6.4				X		2x2 with 6 outputs	5x5
SY89540U	ANY	LVDS	2.5V	2.5V	3.2				X		4x4	6x6
SY58040U	ANY	CML	2.5/3.3V	2.5/3.3V	5.0				X		4x4	6x6
SY56040AR	ANY	CML	2.5V	1.2/1.8/2.5V	6.4				X		4x4	6x6

# Timing and Communications Selection Guide

## Backplane and Cable Management

Bold = New P/N	Input	Output	Supply Voltage	Max Data Rate (Gbps)	Description	Options			Package
						OE	Input EQ	Pre-Emph	
SY58621L	ANY	LVPECL/CML	3.3V	3.2	Integrated Loopback				4x4
SY58620L	ANY	CML	3.3V	4.25	Integrated Loopback				4x4
SY56016R	ANY	CML	1.2/1.8/2.5V	6.4	Differential Line Driver		X	X	2x2
SY56216R	ANY	CML	1.2/1.8/2.5V	6.4	Dual Channel Receiver				3x3
SY58626L	ANY	CML	3.3V	6.4	Integrated Loopback			X	5x5
SY58627L	ANY	CML	3.3V	6.4	Integrated Loopback		X		5x5
<b>SY88808L</b>	ANY	CML	3.3V	10.3	Programmable Transceiver	X	X	X	4x4

## Receivers/Buffers/Drivers

Bold = New P/N	Input	Output	Supply Voltage	Output Voltage	Max Data Rate (Gbps)	Max Freq (GHz)	Options			Description	Package
							OE	FSI	Input EQ		
SY89207L	LVECL/LVPECL	PECL	3.3V	3.3V		0.8				Amp. with Low-Gain Feedback	MSOP-10
SY89206V	ECL/PECL	ECL/PECL	3.3/5V	3.3/5V		1.0				2x2 version of SY100EL16	2x2
SY89216V	ECL/PECL	ECL/PECL	3.3/5V	3.3/5V		1.0				2x2 version of SY10EL16	2x2
SY89250V	ECL/PECL	ECL/PECL	3.3/5V	3.3/5V						Enhanced Diff Receiver	2x2
SY89307V	ECL/PECL	ECL/PECL	3.3/5V	3.3/5V	2.5					2x2 version of SY100EP16VS	2x2
<b>SY58605U</b>	ANY	LVDS	2.5V	2.5V	3.2	2.0		X		Line Driver/Receiver	2x2
<b>SY89835U</b>	LVDS	LVDS	2.5V	2.5V	3.2	2.0		X		Buffer	2x2
<b>SY54016R</b>	ANY	CML	2.5V	1.2/1.8V	3.2	2.5		X		Low-Voltage CML Translator	2x2
<b>SY58604U</b>	ANY	LVPECL	2.5/3.3V	2.5/3.3V	3.2	2.5		X		Line Driver/Receiver	2x2
SY89306V	ECL/PECL	ECL/PECL	3.3/5V	3.3/5V		2.5				2x2 version of SY100EP16	2x2
SY89316V	ECL/PECL	ECL/PECL	3.3/5V	3.3/5V		2.5				2x2 version of SY10EP16	2x2
<b>SY54016AR</b>	ANY	CML	2.5V	1.2/1.8V	3.2	3.2				Low-Voltage CML Translator	2x2
SY89850U	CML/PECL/LVDS	LVPECL	2.5/3.3V	2.5/3.3V	3.2	4.0				Low Power	2x2
<b>SY58603U</b>	ANY	CML	2.5/3.3V	2.5/3.3V	4.25	2.5		X		Line Driver/Receiver	2x2
SY58601U	ANY	LVPECL	2.5/3.3V	2.5/3.3V	5.0	5.0				Line Driver/Receiver	2x2
SY56016R	ANY	CML	2.5V	1.2/1.8/2.5V	6.4	5.0			X	Line Driver	2x2
SY56216R	ANY	CML	2.5V	1.2/1.8/2.5V	6.4	5.0	X		X	Dual-Ch Buf with Pre-Emphasis & EQ	3x3
SY58016L	CML/PECL	CML	3.3V	3.3V	10.7	7.0				CML Line Driver/Receiver	3x3
SY58600U	ANY	CML	2.5/3.3V	2.5/3.3V	10.7	7.0				Line Driver/Receiver	2x2
SY58602U	ANY	RS-LVPECL	2.5/3.3V	2.5/3.3V	10.7	7.0				400mV Output Swing	2x2
SY89251V	ECL/LVPECL	ECL/LVPECL	3.3/5V	3.3/5V						Equivalent to SY100EL16VC	2X2
<b>SY897132L</b>	LVPECL	LVPECL	3.3V	3.3V	1.25					Link Replicator, GigE, SATA, Fiber Ch, HDTV	TSSOP-28
SY10/100EL12	ECL/PECL	ECL/PECL	5V	5V						Low-Impedance Driver	SOIC-8
SY100EP16V	ECL/PECL	ECL/PECL	3.3/5V	3.3/5V	2.5	4.0				ECL Differential Receiver/Driver	2x2
SY10/100EL16V	ECL/LVPECL	ECL/LVPECL	3.3/5V	3.3/5V						Differential Receiver	SOIC-8, MSOP-8
SY10/100EL16VS	ECL/LVPECL	ECL/LVPECL	3.3/5V	3.3/5V						Variable Output Swing Receiver	SOIC-8, MSOP-8
SY10/100EL16VA-VF	ECL/LVPECL	ECL/LVPECL	3.3/5V	3.3/5V						Enhanced Differential Receiver	SOIC-8, MSOP-8
SY10/100EP16U	ECL/PECL	ECL/PECL	2.5/3.3V	2.5/3.3V	2.5	4.0				ECL Differential Receiver/Driver	2x2
SY100EL17V	ECL/LVPECL	ECL/LVPECL	3.3/5V	3.3/5V						Quad Differential Receiver	SOIC-20
SY10EL89	ECL/LVPECL	ECL/LVPECL	3.3/5V	3.3/5V						Coaxial Cable Driver	SOIC-8
SY10/100E112	ECL/PECL	ECL/PECL	5V	5V						Quad Driver	PLCC-28
SY10/100E116	ECL/PECL	ECL/PECL	5V	5V						Quint Differential Line Driver	PLCC-28

# Timing and Communications Selection Guide

## Skew Management (Delay Lines)

<b>Bold = New</b> P/N	Input	Output	Supply Voltage	Max Freq (GHz)	Max Data Rate (Gbps)	Delay Resolution ps/step	Description	Package
SY89295U	LVPECL/LVTTL	LVPECL		1.5		10	Programmable Delay	TQFP-32, 5x5
SY89296U	LVPECL/LVTTL	LVPECL		1.5		10	Delay with Fine Tune Control	TQFP-32, 5x5
SY89297U	ANY	CML		1.6	3.2	5	Dual Channel Programmable Delay	4x4
SY55856U	CML	CML		2.5	5.0	10	Dual Channel Programmable Delay	eTQFP-32

## Registers and Flip-Flops

<b>Bold = New</b> P/N	Channel	Supply Voltage	Max Freq (GHz)	Description	Package
SY10/100E131	Quad	5V	1.1	4-Bit D Flip-Flop	PLCC-28
SY10/100E141	Single	5V	0.7	8-Bit Shift Register	PLCC-28
SY10/100E142	Single	5V	0.7	9-Bit Shift Register	PLCC-28
SY10/100E151	Single	5V	1.1	6-Bit D Register	PLCC-28
SY10/100E451	Single	5V	1.1	6-Bit D Register	PLCC-28
SY10/100E452	Single	5V	1.1	5-Bit D Register	PLCC-28
SY10/100EL31	Single	5V	2.8	D Flip-Flop with Set and Reset	PLCC-28
SY10/100EL35	Single	5V	2.2	JK Flip-Flop	SOIC-8
SY10/100EL51	Single	5V	2.8	Differential Clock D Flip-Flop	SOIC-8
SY10/100EL52	Single	5V	2	Differential Data and Clock D Flip-Flop	SOIC-8
SY100S331	Single	5V	0.8	Triple D Flip-Flop	PLCC-28
SY100S351	Single	5V	0.7	Hex D Flip-Flop	PLCC-28
SY100S341	Single	5V	0.6	8-Bit Shift Register	PLCC-28
SY10/100S891	Single	5V		5-Bit Registered Transceiver	PLCC-28
SY10/100E143	Single	5V	0.7	9-Bit Hold Register	PLCC-28
SY10/100E241	Single	5V	0.7	8-Bit Scannable Register	PLCC-28
SY10/100E431	Tri	5V		3-Bit Differential Flip-Flop	PLCC-28
SY100EL29V	Dual	3.3/5V	1.1	Data and Clock D Flip-Flop with Set and Reset	SOIC-20
SY55852U	Single	2.5/3.3/5V	2.5	D Flip-Flop	MSOP-10

# Timing and Communications Selection Guide

## Gates

<b>P/N</b>	<b>Input</b>	<b>Output</b>	<b>Supply Voltage</b>	<b>Max Freq (GHz)</b>	<b>Description</b>	<b>Package</b>
SY58051U	ANY	CML	2.5/3.3V	7.0	CML AnyGate®	3x3
SY58052U	ANY	CML	2.5/3.3V	10.7	Data/Clock Synchronizer	3x3
SY55851A	CML/PECL/LVPECL	CML	2.5/3.3V	3.0	CML AnyGate	MSOP-10
SY55852U	CML/PECL/LVPECL	CML	2.5/3.3/5V	2.5	D Flip-Flop	MSOP-10
SY55853U	CML/PECL/LVPECL	CML	2.5/3.3/5V	2.5	D Latch	MSOP-10
SY10/100E101	ECL	ECL	5V		Quad 4-Input OR/NOR	PLCC-28
SY10/100E104	ECL	ECL	5V		Quint 2-Input AND/NAND	PLCC-28
SY10/100E122	ECL	ECL	5V		9-Bit Buffer	PLCC-28
SY10/100EL01	ECL	ECL	5V	2.0	4-Input OR/NOR	SOIC-8
SY10/100EL04	ECL	ECL	5V		2-Input AND/NAND	SOIC-8
SY10/100EL05	ECL	ECL	5V		2-Input Diff. AND/NAND	SOIC-8
SY10/100EL07	ECL	ECL	5V		2-Input XOR/XNOR	SOIC-8
SY100S301	ECL	ECL	5V		Triple 5-Input OR/NOR	PLCC-28
SY100S302	ECL	ECL	5V		Quint 2-Input OR/NOR	PLCC-28
SY100S304	ECL	ECL	5V		Quint AND/NAND	PLCC-28
SY100S307	ECL	ECL	5V		Quint XOR/XNOR	PLCC-28
SY100S317	ECL	ECL	5V		Triple 2-Wide OA/OAI	PLCC-28
SY100S318	ECL	ECL	5V		5-Wide 5,4,4,4,2 OA/OAI	PLCC-28
SY100S321	ECL	ECL	5V		Low-Power 9-Bit Inverter	PLCC-28
SY100S322	ECL	ECL	5V		9-Bit Buffer	PLCC-28
SY10/100E107	ECL	ECL	5V		Quint 2-Input XOR/XNOR Gate	PLCC-28
SY10/100E404	ECL	ECL	5V		Quad Differential AND/NAND	PLCC-28
SY10/100E431	ECL	ECL	5V		3-Bit Differential Flip-Flop	PLCC-28
SY10EP08V	ECL	ECL	3.3/5V	3	2-Input XOR/XNOR	SOIC-8
SY10EP01V	ECL	ECL	3.3/5V		4 Input OR/NOR	SOIC-8/MSOP-8
SY10EP05V	ECL	ECL	3.3/5V		Differential AND/NAND	SOIC-8/MSOP-8

## Latches

<b>P/N</b>	<b>Input</b>	<b>Output</b>	<b>Supply Voltage</b>	<b>Description</b>	<b>Package</b>
SY100S350	ECL	ECL	5V	Hex D Latch	PLCC-28
SY100S355	ECL	ECL	5V	Quad Multiplexer/Latch	PLCC-28
SY10/100E150	ECL	ECL	5V	6-Bit D Latch	PLCC-28
SY10/100E154	ECL	ECL	5V	5-Bit 2:1 Mux-Latch	PLCC-28
SY10/100E155	ECL	ECL	5V	6-Bit 2:1 Mux-Latch	PLCC-28
SY10/100E156	ECL	ECL	5V	3-Bit 4:1 Mux-Latch	PLCC-28
SY10/100E175	ECL	ECL	5V	9-Bit Latch with Parity	PLCC-28
SY10/100E256	ECL	ECL	5V	3-Bit 4:1 Mux-Latch	PLCC-28
SY100H603	ECL	TTL	5V	9-Bit Latched ECL to TTL	PLCC-28

# Timing and Communications Selection Guide

## Super 300K (Fairchild Semiconductor Second Source)

<b>P/N</b>	<b>Input</b>	<b>Output</b>	<b>Supply Voltage</b>	<b>Description</b>	<b>Package</b>
SY100S301	ECL	ECL	5V	Triple 5-Input OR/NOR	PLCC-28
SY100S302	ECL	ECL	5V	Quint 2-Input OR/NOR	PLCC-28
SY100S304	ECL	ECL	5V	Quint AND/NAND	PLCC-28
SY100S307	ECL	ECL	5V	Quint XOR/XNOR	PLCC-28
SY100S313	ECL	ECL	5V	Quad Driver	PLCC-28
SY100S314	ECL	ECL	5V	Quint Differential Line Receiver	PLCC-28
SY100S317	ECL	ECL	5V	Triple 2-Wide OA/OAI	PLCC-28
SY100S318	ECL	ECL	5V	5-Wide 5,4,4,4,2 OA/OAI	PLCC-28
SY100S321	ECL	ECL	5V	Low-Power 9-Bit Inverter	PLCC-28
SY100S322	ECL	ECL	5V	9-Bit Buffer	PLCC-28
SY100S324	TTL	ECL	5V	Low Power Hex TTL to ECL Translator	PLCC-28
SY100S325	ECL	TTL	5V	Low Power Hex ECL to TTL Translator	PLCC-28
SY100S331	ECL	ECL	5V	Triple D Flip-Flop	PLCC-28
SY100S341	ECL	ECL	5V	8-Bit Shift Register	PLCC-28
SY100S350	ECL	ECL	5V	Hex D Latch	PLCC-28
SY100S351	ECL	ECL	5V	Hex D Flip-Flop	PLCC-28
SY100S355	ECL	ECL	5V	Quad Multiplexer/Latch	PLCC-28
SY100S360	ECL	ECL	5V	Dual Parity Checker/Generator	PLCC-28
SY100S363	ECL	ECL	5V	Dual 8-Input Multiplexer	PLCC-28
SY100S364	ECL	ECL	5V	16-Input Multiplexer	PLCC-28
SY100S366	ECL	ECL	5V	9-Bit Comparator	PLCC-28
SY100S370	ECL	ECL	5V	Universal Demux/Decoder	PLCC-28
SY100S371	ECL	ECL	5V	Triple 4-Input Multiplexer with Enable	PLCC-28
SY100S391	TTL	ECL	5V	Low Power Hex TTL to PECL Translator	PLCC-28
SY100S811	PECL/TTL	PECL	5V	1:9 PECL/TTL-to-PECL Fanout Buffer	PLCC-28
SY100S815	PECL/TTL	PECL	5V	Quad PECL/TTL-to-PECL Fanout Buffer	SOIC-16
SY100S834/L	LVPECL/PECL	LVPECL/PECL	3.3/5V	(+1, +2, +4) or (+2, +4, +8) Clock Generator	SOIC-16
SY100S838/L	LVPECL/PECL	LVPECL/PECL	3.3/5V	(+1, +2/3) or (+2, +4/6) Clock Generator	SOIC-20
SY100S863	ECL	ECL	5V	8-Input PECL Differential Multiplexer	PLCC-28
SY10/100S891	ECL	ECL	5V	5-Bit Registered Transceiver	PLCC-28

# High-Speed Clock Generation Selection Guide

## Clock Generators

Bold = New P/N	Supply Voltage	Input Type	Output Type	Output Frequency		Description	Package
				Min (MHz)	Max (MHz)		
SY87729L	3.3V	XTAL	PECL	10	365	AnyClock® Fractional-N Synthesizer	TQFP-32
SY87739L	3.3V	XTAL	PECL	10	730	AnyClock Fractional-N Synthesizer	TQFP-32
SY89426	5V	TTL	PECL	33	622	SONET OC-12/OC-3	PLCC-28
SY89529L	3.3V	16.66MHz	LVPECL		200	Spread-Spectrum Clock Synthesizer	TQFP-32, SOIC-28
SY89531L	3.3V	XTAL	HSTL/LVPECL	33	500	XTAL Input Synthesizer	TQFP-64
SY89532L	3.3V	XTAL	LVPECL	33	500	XTAL Input Synthesizer	TQFP-64
SY89533L	3.3V	XTAL	LVDS/LVPECL	33	500	XTAL Input Synthesizer	TQFP-64
SY89534L	3.3V	ANYX	LVPECL	33	500	Ref. Input Synthesizer	TQFP-64
SY89535L	3.3V	ANYX	LVDS/LVPECL	33	500	Ref. Input Synthesizer	TQFP-64
SY89536L	3.3V	ANYX	HSTL/LVPECL	33	500	Ref. Input Synthesizer	TQFP-64
SY89537L	3.3V	ANYX	LVDS/LVPECL	73	750	Ref. and XTAL Prog. Freq.	7x7
SY89538L	3.3V	ANYX	LVDS/LVPECL	73	750	Ref. Input, Multiple Banks, Zero Delay	TQFP-64
SY89610L	3.3V	ANYX	CML	19	694	Ultra-Low Jitter Clock Synthesizer	5x5

## Ultra-Low Jitter Clock Synthesizers

Bold = New P/N	Supply Voltage	Crystal Input (MHz)	REF_IN (MHz)	Output Type	Output(s) (MHz)	Typ. Jitter (1.875- 20MHz)	Options				Application	Package
							FSEL	PLL Bypass	NSEL	OE		
<b>SM803xxx</b>	2.5/3.3V	12-55		12-Diff/SE	12-850	105fs	X	X		X	GbE, 10GbE, PCIe, SONET, SAS/SATA	7x7
<b>SM802xxx</b>	2.5/3.3V	11-30	11-80	8-Diff/ 16-SE	11-840	115fs	X	X		X	GbE, 10GbE, PCIe, SONET, SAS/SATA	7x7
<b>SM802101</b>	2.5/3.3V	25	25	8-HCSL	100/200	105/100fs	X	X		X	PCIe	7x7
<b>SM802104</b>	2.5/3.3V	26.5625	26.5625	2-LVPECL	106.25/212.5	200/200fs	X	X		X	Fibre Channel	4x4
<b>SM802105</b>	2.5/3.3V	25	25	2-LVPECL	156.25/312.5	110/110fs	X	X		X	10GbE	4x4
<b>SM802108</b>	2.5/3.3V	25	25	4-LVPECL	156.25/125	110/110fs		X			GbE, 10GbE	4x4
<b>SM802109</b>	2.5/3.3V	25	25	4-HCSL	100	105fs		X			PCIe	4x4
<b>SM802110</b>	2.5/3.3V		30.72	1-LVPECL	153.60	99fs *		X			CPRI	4x4
<b>SM802111</b>	2.5/3.3V		15	2-LVPECL	125.00	85fs		X			Fibre Channel	4x4
<b>SM802112</b>	2.5/3.3V		80	2-LVDS, 1-LVCMOS	80/480	290fs***					Set Top Box	7x7
<b>SM802116</b>	2.5/3.3V	26.5625	26.5625	2-LVDS	106.25/212.5	190/180fs **	X	X		X	Fibre Channel	4x4
<b>SM802117</b>	2.5/3.3V	25	25	2-LVPECL	125	115fs	X	X		X	GbE	4x4
<b>SM802120</b>	2.5/3.3V	25		6-LVDS, 2-HCSL	125	100fs				X	10GbE, PCIe	7x7
<b>SM802121</b>	2.5/3.3V	25	25	1-LVPECL	156.25	110fs					10GbE	4x4
<b>SM802123</b>	2.5/3.3V		25	8-LVCMOS	25/125	115fs		X		X	GbE	7x7
<b>SM802124</b>	2.5/3.3V		15	2-LVCMOS	125	85fs		X			GbE	4x4
<b>SM802128</b>	2.5/3.3V	25	25	8-LVPECL	156.25/312.5	110fs	X	X		X	10GbE	7x7
<b>SM802149</b>	2.5/3.3V	26.04166	26.04166	8-LVDS	156.26/312.5, 78.125/156.25	99fs	X	X		X	10GbE	7x7
<b>SM803020</b>	2.5/3.3V	39.0625		12-LVPECL	156.25	74fs				X	10GbE	7x7

\* Depends on crystal used and PLL divider settings.

\*\* 2MHz-20MHz

\*\*\* 637kHz-10MHz

# High-Speed Clock Generation Selection Guide

## Analog Frequency Multiplier - XO

Bold = New P/N	Input Type	Input Freq (MHz)	Multiplication	Output Frequency		Output Logic	Phase Jitter	Package
				Min (MHz)	Max (MHz)			
PL663-18	3rd Overtone Xtal	75-140	x2	150	280	LVPECL	70fs @ 156.25MHz	QFN-16L, TSSOP-16L
PL663-28	3rd Overtone Xtal	140-160	x2	280	320	LVPECL	100fs @ 312.5MHz	QFN-16L, TSSOP-16L
PL663-29	3rd Overtone Xtal	100-160	x2	200	300	LVPECL	120fs @ 312.5MHz	QFN-16L, TSSOP-16L

## Analog Frequency Multiplier - VCXO

Bold = New P/N	Input Type	Input Freq (MHz)	Multiplication	Output Frequency		Output Logic	Phase Jitter	Package
				Min (MHz)	Max (MHz)			
PL565-08	Fund Xtal	150-200	x4	600	800	LVPECL	50fs @ 622.08MHz	Die, QFN-16L
PL560-08	Fund Xtal	62.5-150	x4	250	600	LVPECL	40fs @ 491.52MHz	Die, QFN-16L
PL565-68	Fund Xtal	62.5-160	x2	250	320	LVPECL	70fs @ 245.76MHz	Die, QFN-16L
PL565-37	Fund Xtal	30-62.5	x4	120	250	LVCOS	100fs @ 155.52MHz	Die, QFN-16L, TSSOP-16L
PL565-38	Fund Xtal	30-62.5	x4	120	250	LVPECL	120fs @ 155.52MHz	Die, QFN-16L, TSSOP-16L
PL560-47	Fund Xtal	30-80	x2	60	160	LVCOS	100fs @ 155.52MHz	Die, QFN-16L, TSSOP-16L
PL560-48	Fund Xtal	30-80	x2	60	160	LVPECL	120fs @ 155.52MHz	Die, QFN-16L, TSSOP-16L

## VCXO with Multiplier

Bold = New P/N	Function	Input Type	Input Freq (MHz)	Multiplier	Output Frequency		Output Type	Pull Range (PPM)	Voltage	Comments	Package
					Min (MHz)	Max (MHz)					
PL585-88	PhasorVI	Fund Xtal	19-40	Programmable	19	800	LVPECL	150	3.3V		Die
PL585-28	PhasorVI	Fund Xtal	19-40	Programmable	19	250	LVPECL	150	3.3V		Die
PL585-XX	PhasorVI	Fund Xtal	32-42	x2 to x20 in 14 steps	65	800	LVPECL	150	3.3V		TSSOP-16L
PL502-00	VCXO+PLL	Fund Xtal	12-25	1,2,4,8	12	200	LVCOS	250	3.3V		Die
PL502-02	VCXO+PLL	Fund Xtal	12-25	2	24	50	LVCOS	250	3.3V		SOP-8L
PL502-03	VCXO+PLL	Fund Xtal	12-25	4	48	100	LVCOS	250	3.3V		SOP-8L
PL502-04	VCXO+PLL	Fund Xtal	12-25	8	96	200	LVCOS	250	3.3V		SOP-8L
PL502-30	VCXO+PLL	Fund Xtal	12-25	+16 to x32	0.75	800	LVCOS, LVPECL, LVDS	150	3.3V		Die
PL502-35	VCXO+PLL	Fund Xtal	12-25	+16 to x32	0.75	800	LVPECL	150	3.3V	Inverted OE	QFN-16L, TSSOP-16L
PL502-37/38/39	VCXO+PLL	Fund Xtal	12-25	+16 to x32	0.75	800	LVCOS, LVPECL, LVDS	150	3.3V		QFN-16L, TSSOP-16L
PL520-00	VCXO+PLL	Fund Xtal	100-200	1,2,4,8	100	1GHz	LVCOS, LVPECL, LVDS	100	3.3V		Die



# High-Speed Clock Generation Selection Guide

## VCXO Non-Multiplier

Bold = New P/N	Function	Input Type	Input Freq (MHz)	Output Frequency		Output Type	Pull Range (PPM)	Voltage	Phase Jitter	Linearity	Ultra Low Power	Package
				Min (MHz)	Max (MHz)							
PL586-05/08	VCXO	Fund Xtal	130-200	130	200	LVPECL	140	3.3V	<100fs	<5%	45mA	Die
PL586-15/18	VCXO	Fund Xtal	70-130	70	130	LVPECL	125	3.3V	<100fs	<3%	45mA	Die
PL586-25/28	VCXO	Fund Xtal	120-125	120	125	LVPECL	100	3.3V		<3%	45mA	Die
PL586-55/58	VCXO	Fund Xtal	150-160	150	160	LVPECL	125	3.3V		<3%	45mA	Die
PL586-09	VCXO	Fund Xtal	120-160	120	160	LVDS	125	3.3V	<100fs	<3%	45mA	Die
PL500-15/16	VCXO	Fund Xtal	16-36	1	18	LVC MOS	150	2.5/3.3V		<5%		SOT23-6L, SOP-8L
PL500-17	VCXO	Fund Xtal	17-36	17	36	LVC MOS	150	2.5/3.3V		<5%		SOT23-6L, SOP-8L
PL500-37	VCXO	Fund Xtal	36-130	36	130	LVC MOS	150	2.5/3.3V		<5%		SOT23-6L, SOP-8L
PL520-20	VCXO	Fund Xtal	100-200	100	200	LVC MOS, LVPECL, LVDS	100	2.5/3.3V		<5%		Die
PL520-30	VCXO	Fund Xtal	65-130	65	130	LVPECL, LVDS	100	2.5/3.3V		<5%		Die
PL520-80	VCXO	Fund Xtal	19-65	9.5	9.5-65	LVPECL, LVDS	100	2.5/3.3V		<5%		Die

## XO Non-Multiplier - High Frequency

Bold = New P/N	Function	Input Type	Input Freq (MHz)	Output Frequency		Output Logic	Voltage	Package
				Min (MHz)	Max (MHz)			
PL686-05	XO	Fund Xtal	70-170	70	170	LVPECL	3.3V	Die
PL686-35	3OT XO	3rd Overtone Xtal	120-170	120	170	LVPECL	3.3V	Die
PL620-20	XO	Fund or 3rd Overtone Xtal	100-200	100	200	LVPECL, LVDS	2.5/3.3V	Die
PL620-21	XO	Fund or 3rd Overtone Xtal	100-200	100	200	LVPECL, LVDS	3.3V	Die
PL620-30	XO	Fund or 3rd Overtone Xtal	65-130	32.5	130	LVPECL, LVDS	3.3V	Die
PL620-80	XO	Fund or 3rd Overtone Xtal	19-65	9.5	65	LVC MOS, LVPECL, LVDS	3.3V	Die
PL620-88/89	XO	Fund or 3rd Overtone Xtal	19-65	19	65	LVPECL, LVDS	3.3V	TSSOP-16L

## XO Non-Multiplier - Low Frequency

Bold = New P/N	Function	Input Type	Input Freq (MHz)	Output Frequency		Output Logic	Voltage	Package
				Min (MHz)	Max (MHz)			
PL610 Series	XO	Fund Xtal	10-60	0.3	60	LVC MOS	1.8V ~ 3.3V	Die
PL610-32/32A/33	XO 32kHz	Fund Xtal	16-26	0.032768	0.032768	LVC MOS	1.8V ~ 3.3V	Die
PL610-32	XO 32kHz	Fund Xtal	16.777216	0.032768	0.032768	LVC MOS	1.8V ~ 3.3V	DFN-6L, SOT23-6L

## XO with Multiplier

Bold = New P/N	Function	Input Type	Input Freq (MHz)	Multiplier	Output Frequency		Output Type	Voltage	Package
					Min (MHz)	Max (MHz)			
PL685-88	PhasorVI	Fund Xtal	19-40	Programmable	19	800	LVPECL	3.3V	Die
PL685-28	PhasorVI	Fund Xtal	19-40	Programmable	19	250	LVPECL	3.3V	Die
PL685-XX	PhasorVI	Fund Xtal or REF Input	32-42	x2 to x20 in 14 steps	65	800	LVPECL	3.3V	TSSOP-16L
PL602-00	XO+PLL	Fund Xtal	12-25	1,2,4,8	12	200	LVC MOS	3.3V	Die
PL602-03	XO+PLL	Fund Xtal	12-25	4	48	100	LVC MOS	3.3V	SOP-8L, TSSOP-8L
PL602-04	XO+PLL	Fund Xtal	12-25	8	96	200	LVC MOS	3.3V	SOP-8L, TSSOP-8L
PL602-37/38/39	XO+PLL	Fund Xtal or REF Input	12-25	+16 to x32	0.75	800	LVC MOS, LVPECL, LVDS	3.3V	QFN-16L, TSSOP-16L
PL620-00	XO+PLL	Fund Xtal	100-200	1,2,4	100	800	LVC MOS, LVPECL, LVDS	3.3V	Die

# High-Speed Clock Generation Selection Guide

## XO for PCI-Express

<b>Bold = New P/N</b>	Function	Input Type	Input Freq (MHz)	Multiplier	Output Freq (MHz)	Output Type	Voltage	Package
PL602-21	XO	Fund Xtal or Single-Ended Clk	25	4	100	Differential	2.5/3.3V	SOP-8L, SOT23-6L
PL602-22	XO	Fund Xtal or Single-Ended Clk	25	5	125	Differential	2.5/3.3V	SOP-8L, SOT23-6L
PL602-23	XO	Fund Xtal or Single-Ended Clk	25	8	200	Differential	2.5/3.3V	SOP-8L, SOT23-6L
PL602-26	XO	Fund Xtal or Single-Ended Clk	25	1	25	Differential	2.5/3.3V	SOP-8L, SOT23-6L
PL602-27	XO	Fund Xtal or Single-Ended Clk	25	10	250	Differential	2.5/3.3V	SOP-8L, SOT23-6L
PL602-15	XO	Fund Xtal or Single-Ended Clk	25	6.25	156.25	Differential	2.5/3.3V	SOP-8L, SOT23-6L
PL602031	XO	Fund Xtal or Single-Ended Clk	25	1	25	2 Differential	2.5/3.3V	3x3
PL602032	XO	Fund Xtal or Single-Ended Clk	25	4	100	2 Differential	2.5/3.3V	3x3
PL602033	XO	Fund Xtal or Single-Ended Clk	25	5	125	2 Differential	2.5/3.3V	3x3
PL602034	XO	Fund Xtal or Single-Ended Clk	25	8	200	2 Differential	2.5/3.3V	3x3
PL602041	XO	Fund Xtal or Single-Ended Clk	25	1, 4, 5, 8	25, 100, 125, 200	4 Differential	2.5/3.3V	4x4
PL607041	XO EMI	Fund Xtal or Single-Ended Clk	25	1, 4, 5, 8	25, 100, 125, 200	4 Differential	2.5/3.3V	4x4
PL602081	XO	Fund Xtal or Single-Ended Clk	25	1, 4, 8	25, 100, 200	8 Differential	2.5/3.3V	7x7
PL602082	XO	Fund Xtal or Single-Ended Clk	25	1, 5, 10	25, 125, 250	8 Differential	2.5/3.3V	7x7
PL607081	XO EMI	Fund Xtal or Single Ended Clk	25	1, 4, 8	25, 100, 200	8 Differential	2.5/3.3V	7x7
PL607082	XO EMI	Fund Xtal or Single Ended Clk	25	1, 5, 10	25, 125, 250	8 Differential	2.5/3.3V	7x7

## Programmable Clock - MHz-to-MHz

<b>Bold = New P/N</b>	# of PLLs	Crystal Input (MHz)	Reference Input (MHz)	Output Frequency		# of Outputs	Voltage	Programmable Pin(s)				Ultra Low Power	Package
				Min (MHz)	Max (MHz)			PDB	OE	FSEL	CLK		
PL610-01/02/03	0	10-130		0.16	130	≤2	1.8V ~ 3.3V	X	X		X	X	Die
PL610-06	0	10-60		0.16	60	≤2	1.8V ~ 3.3V	X	X		X	X	Die
PL610-01	0	10-130	1-130	0.16	130	≤2	1.8V ~ 3.3V	X	X		X	X	DFN-6L, SOT23-6L
PL611-01	1	10-30	1-200	1	200	≤3	2.5/3.3V	X	X	X	X		SOP-8L, SOT23-6L
PL611-30	1	10-30	1-200	5	400	≤3	2.5/3.3V		X	X	X		SOP-8L, SOT23-6L
PL611s-02	1	10-50	1-200	2	200	≤2	1.8V ~ 3.3V	X	X	X	X		DFN-6L, SOT23-6L
PL611s-02/03	1	10-50		2	200	≤2	1.8V ~ 3.3V	X	X	X	X		Die
PL611s-04	1	10-50		2	200	≤2	1.8V ~ 3.3V	X	X	X	X		Die
PL611s-27	1		1-200	1	125	≤2	1.8V ~ 3.3V	X	X	X	X	X	DFN-6L, SOT23-6L
PL613-01	3	10-40	10-200	1	200	≤8	1.8V ~ 3.3V	X	X	X	X	X	QFN-16L, TSSOP-16L
PL613-05	3	10-40	10-200	1	200	≤3	1.8V ~ 3.3V	X	X	X	X	X	SOP-8L
PL613-21	3	10-40	10-200	0.004	125	≤4	1.8V ~ 3.3V	X	X	X	X	X	QFN-16L, TSSOP-16L

## Programmable Clock - MHz-to-kHz

<b>Bold = New P/N</b>	# of PLLs	Crystal Input (MHz)	Reference Input (MHz)	Output Frequency		# of Outputs	Voltage	Programmable Pin(s)				Ultra Low Power	Package
				Min (kHz)	Max (MHz)			PDB	OE	FSEL	CLK		
PL611s-18	1	10-50	1-200	0.5	125	2	1.8V ~ 3.3V	X	X	X	X	X	DFN-6L, SOT23-6L
PL611s-19	1		0.01-200	0.5	125	2	1.8V ~ 3.3V	X	X	X	X	X	DFN-6L, SOT23-6L

# High-Speed Clock Generation Selection Guide

## Programmable EMI Reduction - MHz-to-MHz

Bold = New P/N	# of PLLs	Crystal Input (MHz)	Reference Input (MHz)	Output Frequency		# of Outputs	Voltage	Programmable Pin(s)			Package
				Min (MHz)	Max (MHz)			PDB	OE	CLK	
PL671-01	1	10-40	1-200	1	200	≤3	2.5/3.3V	X	X	X	SOP-8L, SOT23-6L
PL671-02	1		1-200	1	200	≤3	2.5/3.3V	X	X	X	SOT23-6L
PL671-25	1	10-40	1-200	1	200	2	2.5/3.3V	X	X	X	SOP-8L
PL671-29	1	10-40	1-200	1	200	1	2.5/3.3V	X	X	X	SOP-8L
PL671-30	1		1-200	1	200	1	2.5/3.3V	X	X	X	SOP-8L
PL671-33	1	10-40	1-200	1	200	≤2	2.5/3.3V	X	X	X	SOP-8L

## Second Source Clock Synthesizers

Bold = New P/N	Supply Voltage	Crystal Input (MHz)	Input Reference (MHz)	Output Type	Output(s) (MHz)	Typ Jitter (1.875- 20MHz)	FSEL	Options			Applications	Package	Competitor
								PLL By	NSEL	OE			
SM840021	2.5/3.3V	25		1-LVCMOS	125	250fs				X	GbE	TQFP-8	IDT
SM840002	2.5/3.3V	25		2-LVCMOS	62.5/125/156.25	80fs	X	X		X	GbE, 10GbE	TSSOP-16	IDT
SM840004-11	2.5/3.3V	25		4-LVCMOS	62.5/125	356/55fs	X			X	GbE	TSSOP-20	IDT
SM843256	2.5/3.3V	24, 25, 18.75, 19.44, 19.53125		6-LVPECL	75-625*	80fs @ 156.25	X	X	X		GbE, 10GbE, PCIe, SONET, SAS/SATA	eTSSOP-24	IDT
SM844256	2.5/3.3V	24, 25, 18.75, 19.44, 19.53125		6-LVDS	75-625*	80fs @ 125	X	X	X		GbE, 10GbE, PCIe, SONET, SAS/SATA	eTSSOP-24	IDT
SM840051	2.5/3.3V	19.44, 19.53125, 20.121601		1-LVCMOS	(77.76/155.52) (80.566406/ 161.132812) (78.125/ 156.25)*	58fs @ 156.25	X			X	SONET, 10GbE	TQFP-8	IDT
SM843251-156	2.5/3.3V	25		1-LVPECL	156.25	110fs					10GbE	TSSOP-8	IDT
SM843031-01	2.5/3.3V	25		1-LVPECL	312.5	119fs					10GbE	TSSOP-8	IDT
SM840001	2.5/3.3V	26.5625		1-LVCMOS	106.25/212.5	510/320fs**	X			X	Fibre Channel	TQFP-8	IDT
SM843001-106	2.5/3.3V	26.5625		1-LVPECL	106.25	170fs**					Fibre Channel	TSSOP-8	IDT
SM843001-212	2.5/3.3V	26.5625		1-LVPECL	212.5	170fs**					Fibre Channel	TSSOP-8	IDT

\* Depends on crystal used and PLL divider settings

\*\* 637kHz-10MHz

## Integrated Clocking Solution

Bold = New P/N	Supply Voltage	Output Type	Output(s) (MHz)	Typ. Jitter (12kHz-20MHz)	Options		Applications	Package
					FSEL	OE		
<b>MX85xxx</b>	2.5/3.3V	PECL, LVDS, HCSL, CMOS	<840	160fs	X	X	1/10/40/100GbE, 10GbE, PCIe, SONET, SAS/SATA	5x7-LGA

# Communications Product Highlights

## 12.5G High-Sensitivity Post Amplifiers for Next Generation XGPON, 10GEPON, and SFP+ Applications

The SY88053CL and SY88063CL limiting post amplifiers are designed for use in fiber-optic receivers for multi-rate applications from 1.0625Gbps up to 12.5Gbps. The devices incorporate high-bandwidth, high-sensitivity input stages with user programmable, wide range SD assert and LOS de-assert thresholds levels. They typically provide 4dB of electrical hysteresis to minimize LOS or SD chattering caused by noisy input signals to enable optimized system reach and performance.

Both devices incorporate fast SD assert and LOS de-assert times across the entire differential input voltage range of 5mV<sub>pp</sub> to 1800mV<sub>pp</sub> to enable improved link efficiency and optimization. Electrical hysteresis of 4dB is provided across a wide LOS/SD threshold range of 3mV<sub>pp</sub> to 30mV<sub>pp</sub>. Integrated 50Ω input and output impedances optimize high speed signal integrity while reducing external component counts. The TTL compatible JAM input enables a SQUELCH function by routing back the LOS or SD signal.

The SY88053CL enables user-adjustable decision threshold adjustment for optimized bit error rate (BER) operation in noisy applications with asymmetrical noise distribution. The SY88063CL provides a user-selectable digital offset correction (DOC) function that automatically compensates for internal device offsets in the high-speed data path.

### Ordering Information

Part Number	Package Type	Operating Range	Lead Finish
SY88053CLMG	3x3mm QFN-16	Industrial	NiPdAu Pb-Free
SY88053CLMG TR	3x3mm QFN-16	Industrial	NiPdAu Pb-Free
SY88063CLMG	3x3mm QFN-16	Industrial	NiPdAu Pb-Free
SY88063CLMG TR	3x3mm QFN-16	Industrial	NiPdAu Pb-Free

### Features

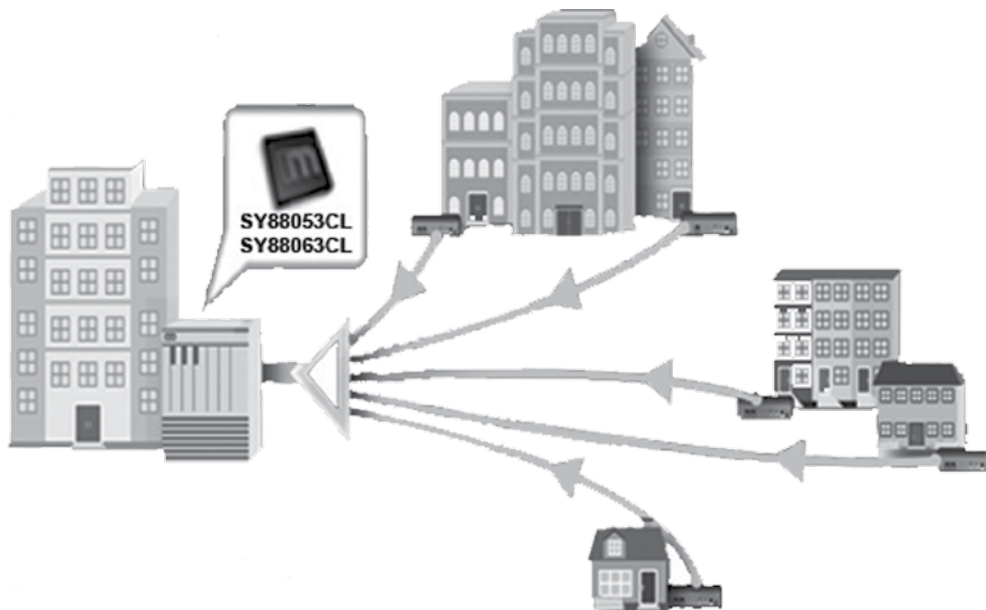
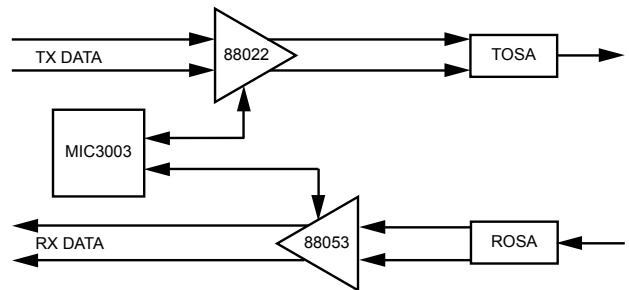
- High differential input sensitivity
- Wide SD de-assert/LOS assert threshold range
- Fast SD assert/LOS de-assert times
- Programmable decision threshold (SY88053CL)
- Digital offset correction (SY88063CL)
- 3.3V ±10% power supply range
- Industrial temperature range
- Tiny 3x3mm QFN package

### Applications

- Asymmetrical/Symmetrical XGPON
- Asymmetrical/Symmetrical 10GEPON
- 10G Ethernet
- 8G and 10G Fibre Channel
- SONET OC192 / SDH STM64
- WDM / DWDM Systems

### Markets

- PON/FTTx
- Datacom/Enterprise/Datacenters
- Storage area networks (SAN)
- High-performance computing (HPC)
- Telecom
- Wireless



# Communications and Fiber-Optic ICs Selection Guide

## Optical Module Controllers

<b>Bold = New</b> P/N	Supply Voltage	Description	Package
MIC3003GFL	3.3V	FOM Management IC with Internal Calibration, CSFP/CSFF MSA and SFF-8472 compliant	3x3
MIC3003GML	3.3V	FOM Management IC with Internal Calibration, SFP/SFF MSA and SFF-8472 compliant	4x4

## Fiber-Optic Burst Mode Post Amplifiers

<b>Bold = New</b> P/N	Data Rate (Gbps)	Supply Voltage	LOS/SD	Input	Output	LOS/SD Gain	Maximum SD Assert/LOS De-Assert Time	Noise Discriminator	Hysteresis Typ (dB)	Package
SY88149HL	1.250	3.3V	SD & LOS (TTL)	CML/PECL	PECL	1x	5ns		3.0	3x3 QFN
SY88149HAL	1.250	3.3V	SD & LOS (TTL)	CML/PECL	PECL	1x	5ns		3.0	3x3 QFN
<b>SY88149NDL</b>	1.250	3.3V	SD & LOS (TTL)	CML/PECL	PECL	1x	7ns	X	4.0	3x3 QFN
<b>SY88349NDL</b>	2.500	3.3V	SD & LOS (TTL)	CML/PECL	CML	1x	7ns	X	4.0	3x3 QFN

## Fiber-Optic Single-Chip Transceivers

<b>Bold = New</b> P/N	Description	Features	Supply Voltage	EVB Available	Package
SY88432L	4.25G Integrated Transceiver with FP/DFB LDD and Post Amp	<ul style="list-style-type: none"> <li>• Multi-rate up to 4.25Gbps</li> <li>• 10-1800mVpp input sensitivity, programmable LOSLVL</li> <li>• 70mA IBIAS/85mA IMOD</li> </ul>	3.3V	X	4x4 QFN

## Fiber-Optic Laser Diode Drivers

<b>Bold = New</b> P/N	Description	Data Rate (Gbps)	Drive Current (mA)	Supply Voltage	EVB Available	Package
<b>SY88932L</b>	VCSEL/FP/DFB Laser Driver with Output Enable	4.25	60	3.3V	X	3x3 QFN
SY88902V	VCSEL Laser Driver with Output Enable	1.25	25	5V		MSOP-10
SY88992L	VCSEL Driver with PE and Output Enable	4.25	25	3.3	X	3x3 QFN
SY100EL16VS	Variable Output Swing Differential Receiver	1.25	25	3.3/5V		MSOP-8, SOIC-8
SY100EP16VS	Variable Output Swing Differential Receiver	2.50	25	3.3/5V		MSOP-8, SOIC-8
<b>SY84782L</b>	Ultra Low Power 1.25Gbps Laser Diode Driver	1.25	90	2.5V	X	3x3 QFN
<b>SY84402L</b>	Tiny VCSEL Laser Diode Driver	4.25	25	3.3V	X	3x3 QFN
SY88922	SONET/SDH VCSEL Laser Driver	2.50	25	5V		MSOP-10
SY88922V	SONET/SDH VCSEL Laser Driver	2.50	25	3.3/5V		MSOP-10
SY89307V	Output Swing Differential Receiver—VCSEL Driver	2.125	25	3.3/5V	X	2x2 QFN
SY88822V	Laser Driver with Output Enable	0.155	25	3.3/5V	X	MSOP-10
SY88722V	Laser Driver with Output Enable	0.622	30	3.3/5V	X	MSOP-10
<b>SY100EL1003</b>	Laser Driver with Output Enable	1.25	75	5V		SOIC-16
<b>SY88422L</b>	Laser Driver with Integrated Bias	4.25	90	3.3V	X	3x3 QFN
SY88782L	High-Current, Low-Power FP/DFB Laser Driver	1.25	90	3.3V		3x3 QFN
SY88982L	High-Current, Low-Power FP/DFB Laser Driver	2.70	90	3.3V	X	3x3 QFN
<b>SY88024L</b>	11.3Gbps VCSEL Laser Diode Driver with Integrated Bias	11.3	20	3.3V	X	3x3 QFN
SY88952L	Laser Diode Driver with Automatic Power Control	2.70	90	3.3V		5x5 QFN
SY88022AL	11.3Gbps FP/DFB Laser Diode Driver with Integrated Bias	11.3	60	3.3V	X	3x3 QFN

# Communications and Fiber-Optic ICs Selection Guide

## Fiber-Optic Post Amplifiers

<b>Bold = New P/N</b>	<b>Data Rate (Gbps)</b>	<b>Supply Voltage</b>	<b>LOS/SD</b>	<b>Input</b>	<b>Output</b>	<b>LOS/SD Gain</b>	<b>RC Time Constant</b>	<b>Hysteresis Typ (dB)</b>	<b>Package</b>
<b>SY88053CL</b>	12.5	3.3V	LOS/SD (TTL)	PECL with internal 50Ω to Vref	CML	1x	20x	4	3x3 QFN
<b>SY88063CL</b>	12.5	3.3V	LOS/SD (TTL)	PECL with internal 50Ω to Vref	CML	1x	20x	4	3x3 QFN
SY84403BL	4.25	3.3V	LOS (TTL)	PECL with internal 50Ω to Vref	CML	1x	20x	3.5	2x2 QFN
SY88403BL	4.25	3.3V	LOS (TTL)	PECL with internal 50Ω to Vref	CML	1x	20x	3.5	eMSOP-10, 3x3 QFN
SY88289AL	3.2	3.3V	LOS (TTL)	PECL with internal 50Ω to Vref	CML	1x	20x	3.5	3x3 QFN
SY88289CL	3.2	3.3V	LOS (TTL)	PECL	CML	4x	20x	3.5	3x3 QFN
SY88289HL	3.2	3.3V	LOS (TTL)	PECL	CML	4x	20x	3.5	3x3 QFN
SY88303BL	3.2	3.3V	LOS (TTL)	PECL with internal 50Ω to Vref	CML	0.5x	20x	3.5	eMSOP-10, 3x3 QFN
SY88313BL	3.2	3.3V	LOS (TTL)	PECL with internal 50Ω to Vref	CML	1x	20x	3.5	eMSOP-10, 3x3 QFN
SY88343BL	3.2	3.3V	LOS (TTL)	PECL with internal 50Ω to Vref	CML	4x	20x	3.5	eMSOP-10, 3x3 QFN
SY88343DL	3.2	3.3V	LOS (TTL)	PECL	CML	4x	20x	3.5	3x3 QFN
SY88343HL	3.2	3.3V	LOS (TTL)	PECL	CML	4x	20x	3.5	3x3 QFN
SY88347DL	3.2	3.3V	LOS (TTL)	PECL	PECL	4x	20x	3.5	MSOP-10
SY88353BL	3.2	3.3V	LOS (TTL)	PECL with internal 50Ω to Vref	CML	1x	20x	3.5	3x3 QFN
SY88773V	3.2	3.3/5V	LOS (TTL)	PECL	CML	1x	1x	4.6	eMSOP-10, 3x3 QFN
SY88843V	3.2	3.3/5V	SD (TTL)	PECL with internal 50Ω to Vref	CML	1x	1x	4.6	eMSOP-10, 3x3 QFN
SY88923AV	3.2	3.3/5V	LOS (TTL)	PECL	PECL	1x	1x	4.6	eMSOP-10, MSOP-10
SY88973V	3.2	3.3/5V	LOS (TTL)	PECL with internal 50Ω to Vref	CML	1x	1x	4.6	eMSOP-10, 3x3 QFN
SY88973BL	3.2	3.3V	LOS (TTL)	PECL with internal 50Ω to Vref	CML	1x	1x	4.6	3x3 QFN
SY88983V	3.2	3.3/5V	SD (TTL)	PECL with internal 50Ω to Vref	CML	1x	1x	4.6	eMSOP-10, 3x3 QFN
SY88993AV	3.2	3.3/5V	LOS (TTL)	PECL	CML	1x	1x	4.6	MSOP-10
SY88993V	3.2	3.3/5V	LOS (TTL)	PECL	CML	1x	1x	5.6	MSOP-10
SY88923V	2.5	3.3/5V	LOS (TTL)	PECL	PECL	1x	1x	4.6	MSOP-10
SY88943V	2.5	3.3/5V	SD (TTL)	PECL	PECL	1x	1x	4.6	MSOP-10
<b>SY84113BU</b>	1.25	2.5V	LOS (TTL)	PECL with internal 50Ω to Vref	CML	1x	20x	3.5	3x3
SY88993AL	1.25	3.3V	LOS (TTL)	PECL	PECL	1x	1x	5.6	MSOP-10
SY88147DL	1.25	3.3V	LOS (TTL)	PECL	PECL	4x	20x	3.5	MSOP-10
SY88149CL	1.25	3.3V	LOS (TTL)	PECL	PECL	4x	1x	3.5	MSOP-10
<b>SY88149NDL</b>	1.25	3.3V	LOS (TTL)	PECL	PECL	4x	1x	5.0	3x3
<b>SY88149HL</b>	1.25	3.3V	SD & LOS (TTL)	PECL	PECL	4x	5ns	3.0	3x3
<b>SY88149HAL</b>	1.25	3.3V	SD & LOS (TTL)	PECL	PECL	4x	5ns	3.0	3x3
SY88903AL	1.25	3.3V	LOS (TTL)	PECL	PECL	4x	1x	3.5	MSOP-10
SY88903V	1.25	3.3/5V	LOS (TTL)	PECL	PECL	1x	1x	4.6	MSOP-10
SY88913V	1.25	3.3/5V	LOS (PECL)	PECL	PECL	1x	1x	4.6	MSOP-10
SY88933AL	1.25	3.3V	SD (TTL)	PECL	PECL	4x	20x	3.5	MSOP-10
SY88933V	1.25	3.3/5V	SD (TTL)	PECL	PECL	1x	1x	4.6	MSOP-10
SY88713V	0.622	3.3/5V	SD (PECL)	PECL	PECL	1x	1x	4.6	MSOP-10
SY88803V	0.155	3.3/5V	LOS (TTL)	PECL	PECL	1x	1x	4.6	MSOP-10
SY88813V	0.155	3.3/5V	SD (PECL)	PECL	PECL	1x	1x	4.6	MSOP-10
SY88893V	0.155	3.3/5V	SD (TTL)	PECL	PECL			4.6	MSOP-10
SY88883V	3.2	3.3/5V	SD (TTL)	PECL	CML			4.6	MSOP-10
SY88793V	0.622	3.3/5V	SD (TTL)	PECL	PECL			4.6	MSOP-10
SY88703V	0.622	3.3/5V	LOS (PECL)	PECL	PECL			4.6	MSOP-10

# Multiplexer/Demultiplexer Selection Guide

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## *Multiplexer/Demultiplexer*

<b>P/N</b>	<b>Description</b>	<b>Data Rate (Mbps)</b>	<b>Output Type</b>	<b>Supply Voltage</b>	<b>Temperature</b>	<b>Conversion</b>	<b>Package</b>
SY87724L	AnyRate <sup>®</sup> Mux/Demux	2700	CML/PECL	3.3V	Industrial	4, 5, 8 or 10-Bit	TQFP-80
SY87725L	GPON/BPON ONU SERDES	2500	CML	3.3V	Industrial	4-Bit	eTQFP-64
SY10/100E445	4-Bit Demux	2.5	PECL	5V	Commercial	4-Bit	LPCC-28
SY10/100E446	4- Bit Mux	1.6	PECL	5V	Commercial	4-Bit	LPCC-28

# CDRs with Integrated Clock Synthesis Selection Guide

## CDRs with Integrated Clock Synthesis

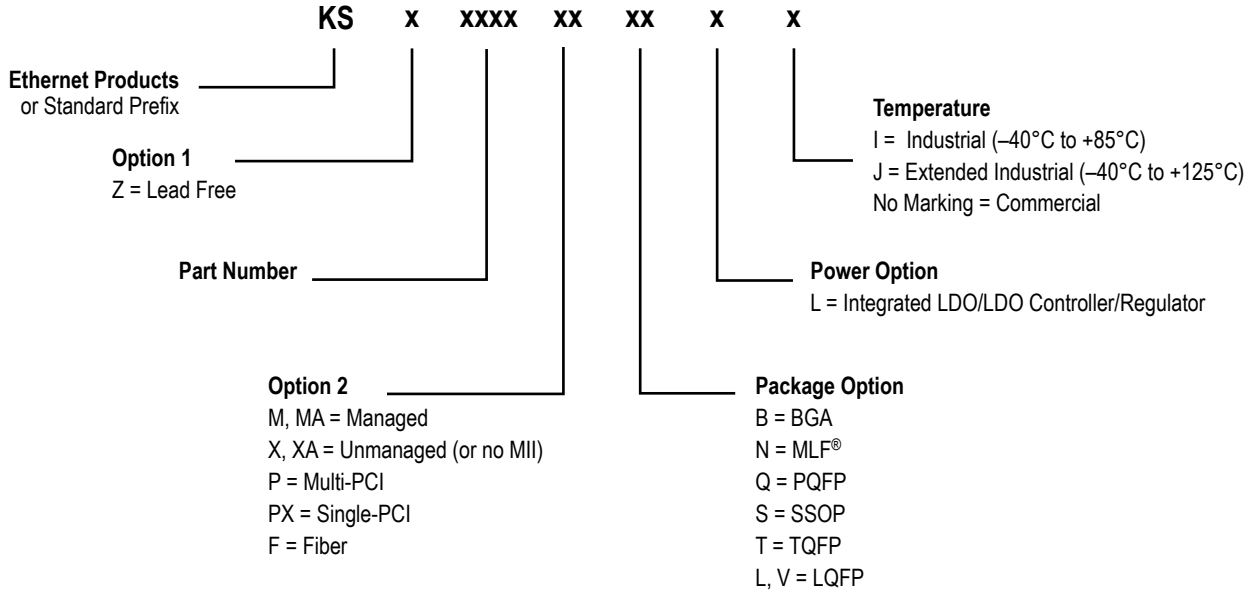
**Bold = New**

<b>P/N</b>	<b>Description</b>	<b>Data Rate (Mbps)</b>	<b>Output Type</b>	<b>Supply Voltage</b>	<b>Package</b>
SY69952	Clock Recovering Transceiver	51.84-155	PECL	5V	SOIC-28
SY69753L	Clock and Data Recovery	125-155	PECL	3.3V	eTQFP-64
SY69753AL	Clock and Data Recovery	125-155	PECL	3.3V	eTQFP-32
SY69754AL	Clock and Data Recovery	622	PECL	3.3V	eTQFP-32
SY87700V	AnyRate® Clock and Data Recovery	32-175	PECL	3.3/5V	eTQFP-32, SOIC-28
SY87700L	AnyRate Clock and Data Recovery	32-175	PECL	3.3V	eTQFP-32, SOIC-28
SY87700AL	AnyRate Clock and Data Recovery	32-208	PECL	3.3V	eTQFP-32, SOIC-28
SY87701V	AnyRate Clock and Data Recovery	32-1250	PECL	3.3/5V	eTQFP-32, SOIC-28
SY87701L	AnyRate Clock and Data Recovery	32-1250	PECL	3.3V	eTQFP-32, SOIC-28
SY87701AL	AnyRate Clock and Data Recovery	28-1300	PECL	3.3V	eTQFP-32, SOIC-28
SY87721L	AnyRate Clock and Data Recovery	28-2700	CML/PECL	3.3V	eTQFP-64
SY87813L	AnyRate CDR with Differential Clock	28-1300	PECL	3.3V	eTQFP-32

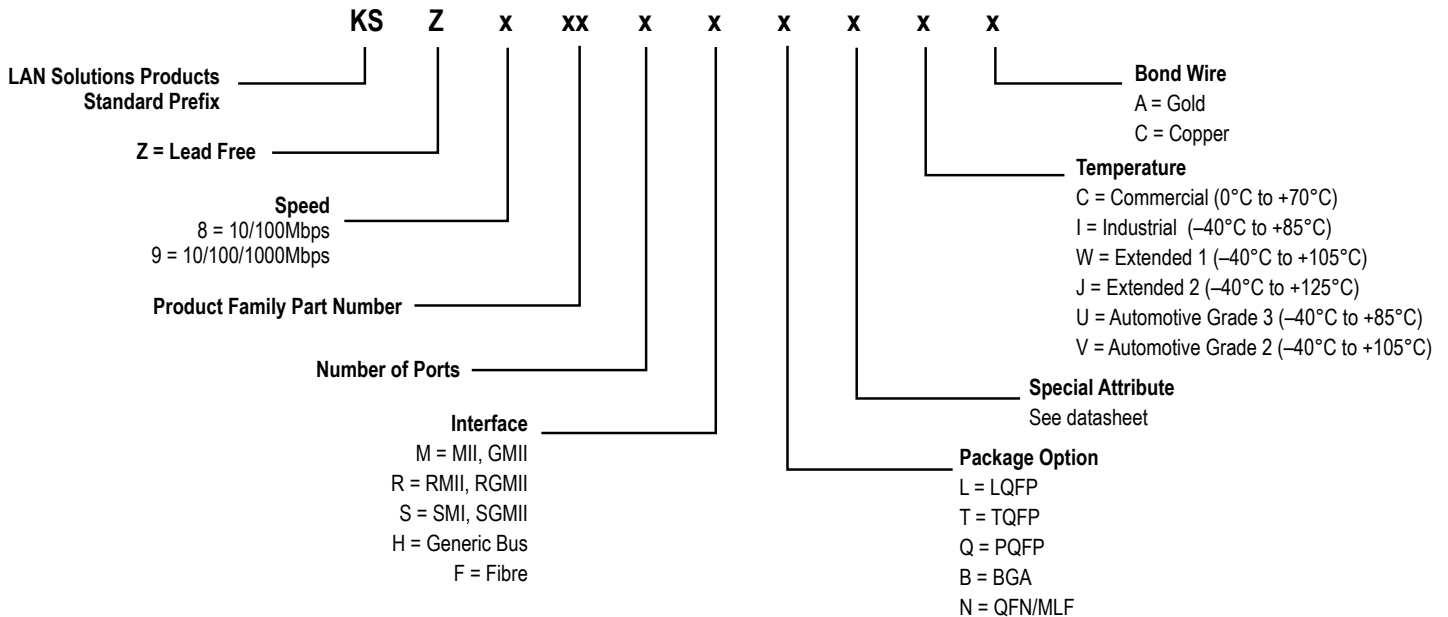


# LAN Solutions Part Identification

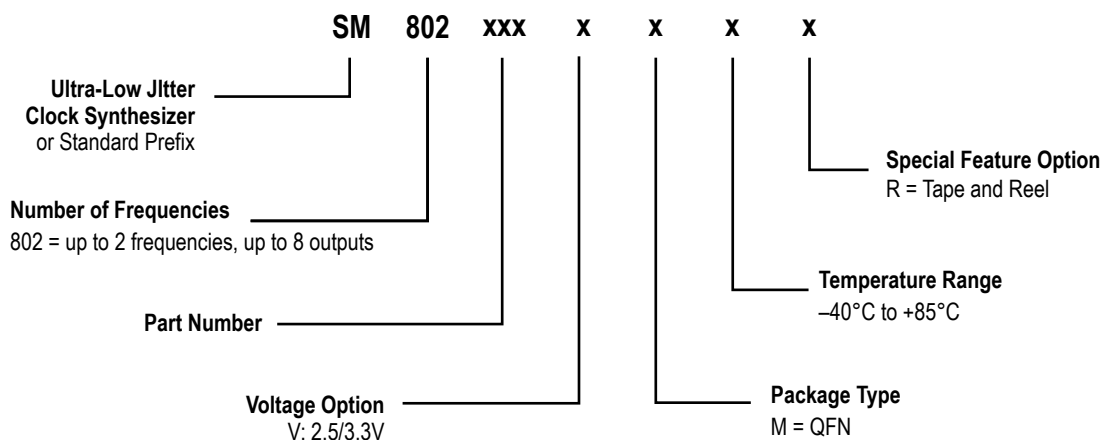
## Legacy Part Identification



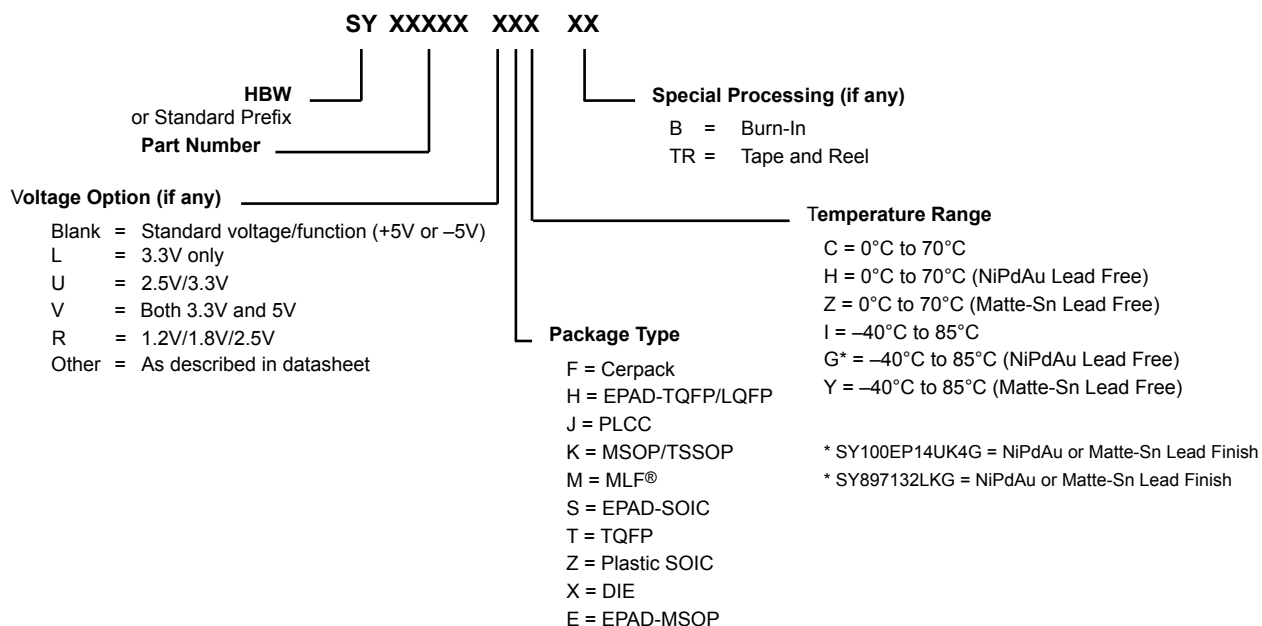
## New Part Identification



# Ultra-Low Jitter Clock Synthesizers Part Identification

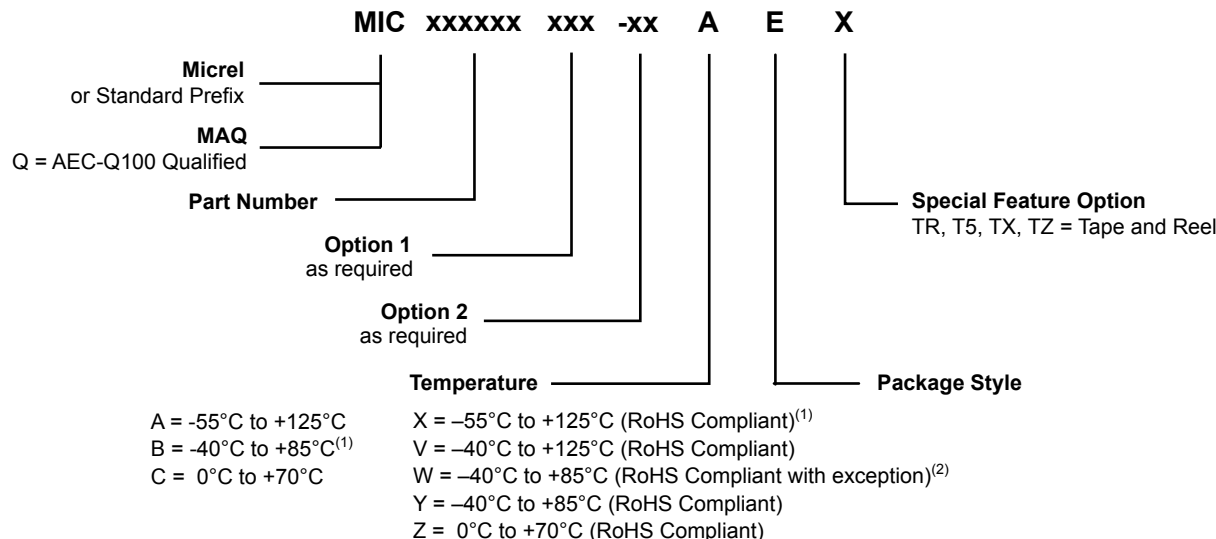


# Clock and Data Distribution Part Identification



# High Performance Linear and Power Solutions Part Identification

## Micrel Analog High Performance Linear and Power Solutions Standard

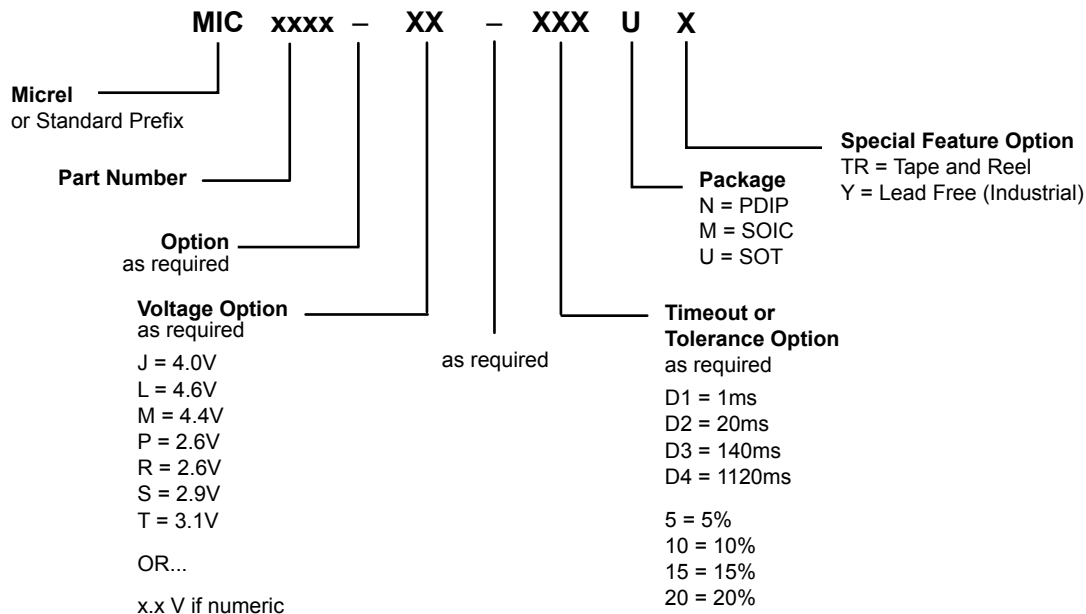


### Notes:

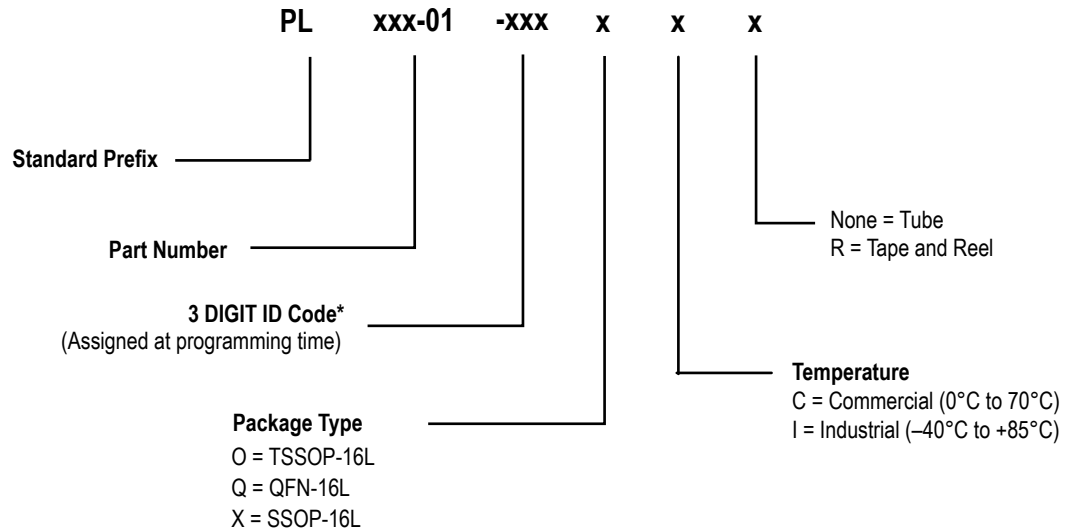
- Typically, industrial grade power products rate the junction temperature up to +125°C. Varies from device to device. Refer to the datasheet.
- Applicable to TO-220, TO-247, TO-263, SOT-223, SPAK packages using 85% lead plus lead alloy die attach material. Refer to the datasheet.
- Package outline drawing convention reference for "MLF" has changed to DFN or QFN. Please refer to the datasheet.

<b>CS</b> = WLCSP	<b>J</b> = Ceramic DIP	<b>MU</b> = UTDFN	<b>SM</b> = SSOP
<b>C3</b> = SC70-3	<b>JL</b> = MLF	<b>M3</b> = SOT-23-3	<b>T</b> = TO-220
<b>C5</b> = SC70-5	<b>LQ</b> = LQFP (Low Profile QFP)	<b>M4</b> = SOT-143	<b>TS</b> = TSSOP
<b>C6</b> = SC70-6	<b>M</b> = 150-mil SOIC	<b>M5</b> = SOT-23-5	<b>TSE</b> = EPAD-TSSOP
<b>D</b> = TO-252	<b>ME</b> = 150-mil EPAD-SOIC	<b>M6</b> = SOT-23-6	<b>TQ</b> = TQFP
<b>D5</b> = Thin SOT	<b>MK</b> = DFN (Height 0.75mm nominal)	<b>M8</b> = SOT-23-8	<b>TQE</b> = EPAD-TQFP
<b>D6</b> = Thin SOT	<b>ML</b> = MLF	<b>N</b> = Plastic DIP	<b>U</b> = TO-263
<b>FL</b> = MLF®	<b>MM</b> = MSOP	<b>QS</b> = QSOP	<b>V</b> = PLCC
<b>HL</b> = Hybrid MLF	<b>MME</b> = EPAD-MSOP	<b>QSE</b> = EPAD-QSOP	<b>WM</b> = 300-mil Wide SOIC
<b>HJ</b> = Hybrid MLF (Height 1.1mm nominal)	<b>MT</b> = Thin MLF	<b>R</b> = SPAK	<b>WME</b> = 300-mil Wide EPAD-SOIC
		<b>S</b> = SOT-223	<b>WT</b> = TO-247

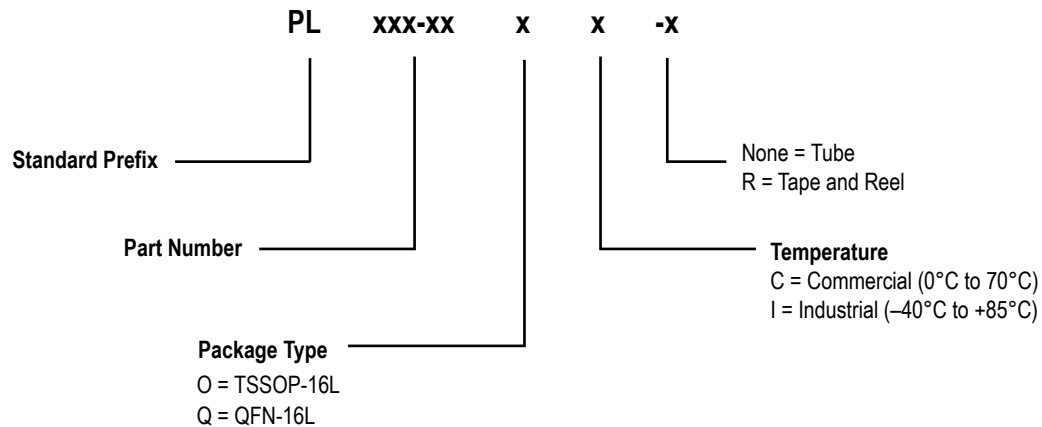
## Industry Standard Voltage Supervisors



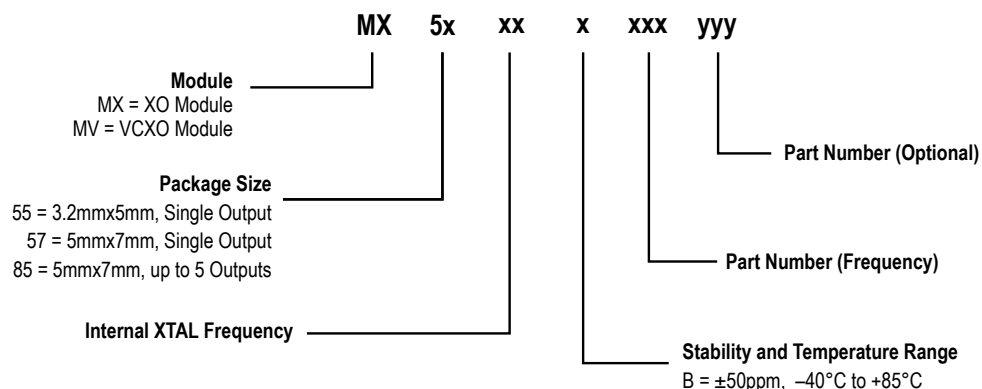
# High-Speed Clock Programmable Part Identification



# High-Speed Clock Non-Programmable Part Identification



# XO/VCXO Clock Module Part Identification



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www.nuhorizons.com

### *Phoenics Electronics Corporation*

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www.phoenicselectronics.com

## Worldwide Die Distributor

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