

General Description

The AP2126 series are positive voltage regulator ICs fabricated by CMOS process.

The AP2126 series have features of low dropout voltage, low noise, high output voltage accuracy, and low current consumption which make them ideal for use in various battery-powered devices.

AP2126 is available in 1.25V to 5.5V adjustable voltage versions.

AP2126 series are available in SOT-23-5 Package.

Features

- Wide Operating Voltage: 3.0V to 6V
- High Output Voltage Accuracy: $\pm 2\%$
- High Ripple Rejection:
68dB@ f=1kHz, 54dB@ f=10kHz
- Low Standby Current: 0.1 μ A
- Low Dropout Voltage: 170mV@300mA for $V_{OUT}=3.3V$, 140mV@300mA for $V_{OUT}=5.2V$
- Low Quiescent Current: 60 μ A Typical
- Low Output Noise: 80 μ Vrms@ $V_{OUT}=1.25V$
- Short Current Limit: 50mA
- Over Temperature Protection
- Compatible with Low ESR Ceramic Capacitor: 1 μ F for C_{IN} and C_{OUT}
- Excellent Line/Load Regulation
- Soft Start Time: 50 μ s
- Auto Discharge Resistance: $R_{DS(ON)}=60\Omega$

Applications

- Datacom
- Notebook Computers
- Mother Board

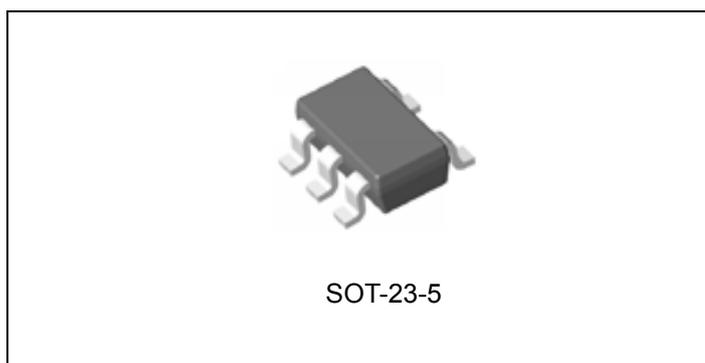


Figure 1. Package Type of AP2126

Pin Configuration

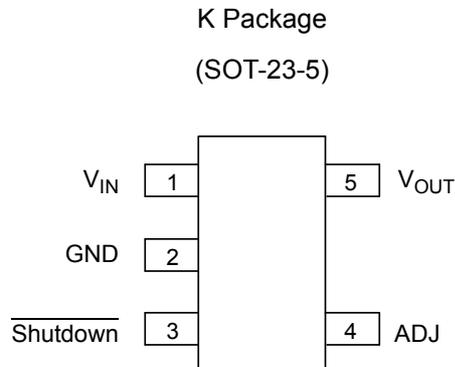


Figure 2. Pin Configuration of AP2126 (Top View)

Functional Block Diagram

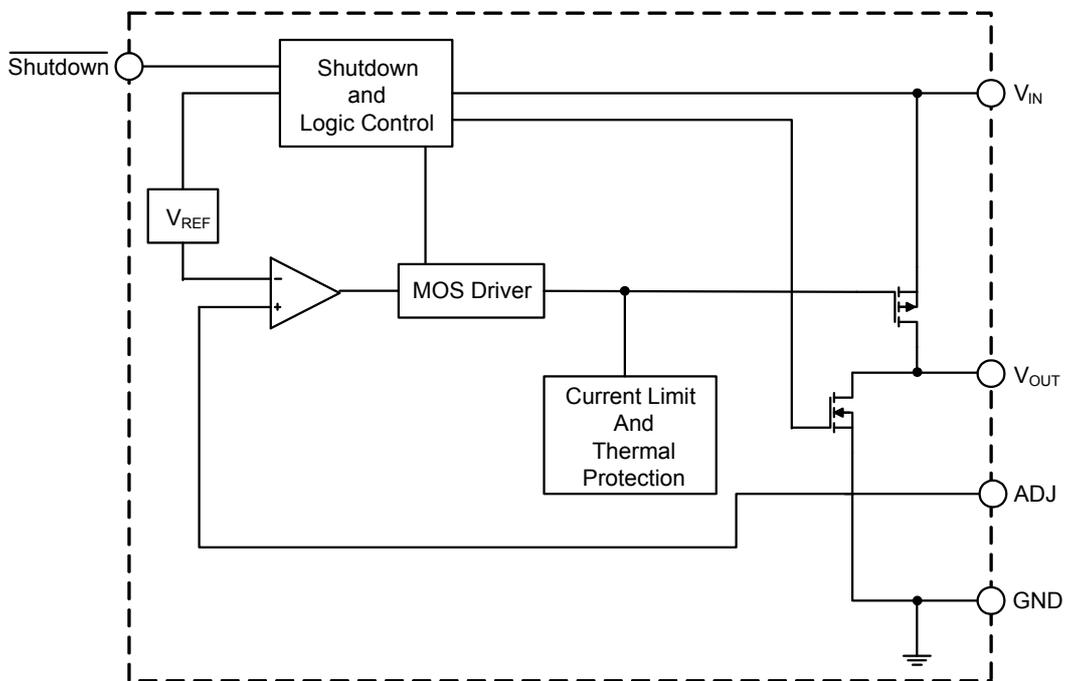
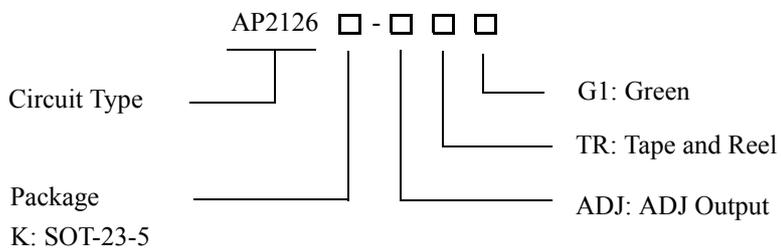


Figure 3. Functional Block Diagram of AP2126



300mA HIGH SPEED, EXTREMELY LOW NOISE CMOS LDO REGULATOR AP2126

Ordering Information



Package	Temperature Range	Part Number	Marking ID	Packing Type
SOT-23-5	-40 to 85°C	AP2126K-ADJTRG1	GHH	Tape & Reel

BCD Semiconductor's products, as designated with "G1" suffix in the part number, are RoHS compliant and Green.

**300mA HIGH SPEED, EXTREMELY LOW NOISE CMOS LDO REGULATOR****AP2126****Absolute Maximum Ratings (Note 1)**

Parameter	Symbol	Value	Unit
Input Voltage	V_{IN}	6.5	V
Shutdown Input Voltage	V_{CE}	-0.3 to $V_{IN}+0.3$	V
Output Current	I_{OUT}	450	mA
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-65 to 150	°C
Lead Temperature (Soldering, 10sec)	T_{LEAD}	260	°C
Thermal Resistance (Junction to Ambient)	θ_{JA}	250	°C/W
ESD (Human Body Model)	ESD	6000	V
ESD (Machine Model)	ESD	250	V

Note 1: Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "Recommended Operating Conditions" is not implied. Exposure to "Absolute Maximum Ratings" for extended periods may affect device reliability.

Recommended Operating Conditions

Parameter	Symbol	Min	Max	Unit
Input Voltage	V_{IN}	3.0	6	V
Operating Ambient Temperature Range	T_A	-40	85	°C



300mA HIGH SPEED, EXTREMELY LOW NOISE CMOS LDO REGULATOR AP2126

Electrical Characteristics

(AP2126-ADJ, V_{IN} min=3.0V, C_{IN} =1 μ F, C_{OUT} =1 μ F, Bold typeface applies over $-40^{\circ}\text{C}\leq T_A\leq 85^{\circ}\text{C}$, unless otherwise specified.)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Reference Voltage	V_{REF}	$V_{IN}=3.0\text{V}$ $1\text{mA}\leq I_{OUT}\leq 300\text{mA}$	1.225	1.25	1.275	V
Input Voltage	V_{IN}		3.0		6	V
Maximum Output Current	$I_{OUT(MAX)}$	$V_{IN}=3.0\text{V}$, $V_{OUT}=98\%\times V_{OUT}$	300	400		mA
Load Regulation	$\frac{\Delta V_{OUT}}{(\Delta I_{OUT}\times V_{OUT})}$	$V_{IN}=3.0\text{V}$, $1\text{mA}\leq I_{OUT}\leq 300\text{mA}$			0.6	%/A
Line Regulation	$\frac{\Delta V_{OUT}}{(\Delta V_{IN}\times V_{OUT})}$	$V_{IN}=3.0\text{V}$ to 6V $I_{OUT}=30\text{mA}$			0.06	%/V
Quiescent Current	I_Q	$V_{IN}=3.0\text{V}$, $I_{OUT}=0\text{mA}$		60	90	μ A
Standby Current	I_{STD}	$V_{IN}=3.0\text{V}$, $V_{SHUTDOWN}$ in off mode		0.1	1.0	μ A
Power Supply Rejection Ratio	PSRR	Ripple 1Vp-p $V_{IN}=3.5\text{V}$	f=100Hz		68	dB
			f=1KHz		68	dB
			f=10KHz		54	dB
Output Voltage Temperature Coefficient	$\frac{(\Delta V_{OUT}/V_{OUT})}{\Delta T}$	$I_{OUT}=30\text{mA}$, $-40^{\circ}\text{C}\leq T_A\leq 85^{\circ}\text{C}$		± 100		ppm/ $^{\circ}\text{C}$
Short Current Limit	I_{SHORT}	$V_{OUT}=0\text{V}$		50		mA
Soft Start Time	t_{UP}			50		μ s
RMS Output Noise	V_{NOISE}	$T_A=25^{\circ}\text{C}$, $10\text{Hz}\leq f\leq 100\text{kHz}$, $V_{OUT}=1.25\text{V}$		80		μ Vrms
Shutdown "High" Voltage		Shutdown input voltage "High"	1.5		6	V
Shutdown "Low" Voltage		Shutdown input voltage "Low"	0		0.4	V
V_{OUT} Discharge MOSFET $R_{DS(ON)}$		Shutdown input voltage "Low"		60		Ω
Shutdown Pull Down Resistance				3		M Ω
Thermal Shutdown				165		$^{\circ}\text{C}$
Thermal Shutdown Hysteresis				30		$^{\circ}\text{C}$
Thermal Resistance	θ_{JC}	SOT-23-5		150		$^{\circ}\text{C}/\text{W}$



300mA HIGH SPEED, EXTREMELY LOW NOISE CMOS LDO REGULATOR AP2126

Typical Performance Characteristics

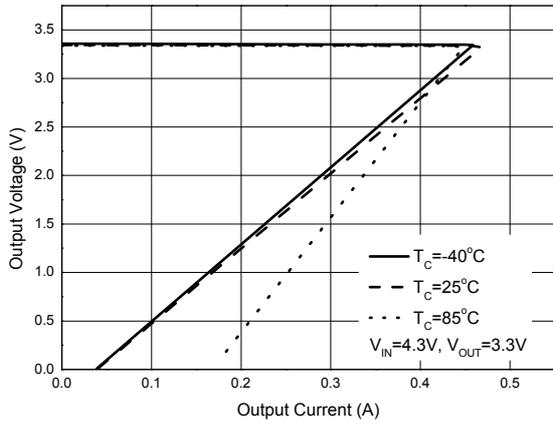


Figure 4. Output Voltage vs. Output Current

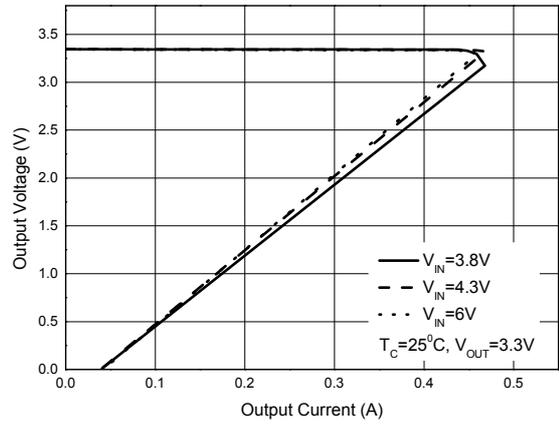


Figure 5. Output Voltage vs. Output Current

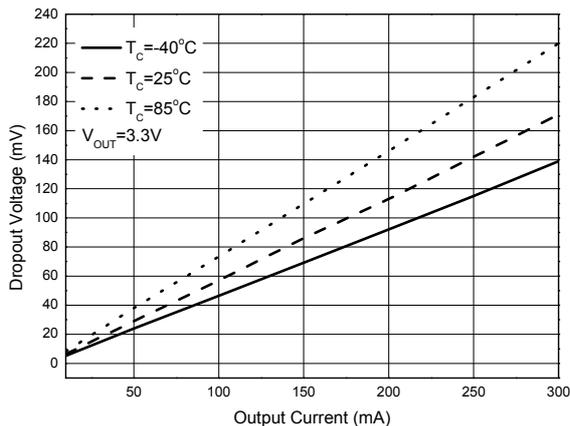


Figure 6. Dropout Voltage vs. Output Current

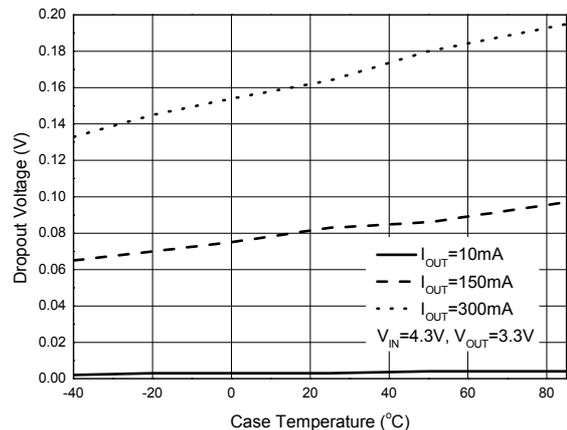


Figure 7. Dropout Voltage vs. Case Temperature



300mA HIGH SPEED, EXTREMELY LOW NOISE CMOS LDO REGULATOR AP2126

Typical Performance Characteristics (Continued)

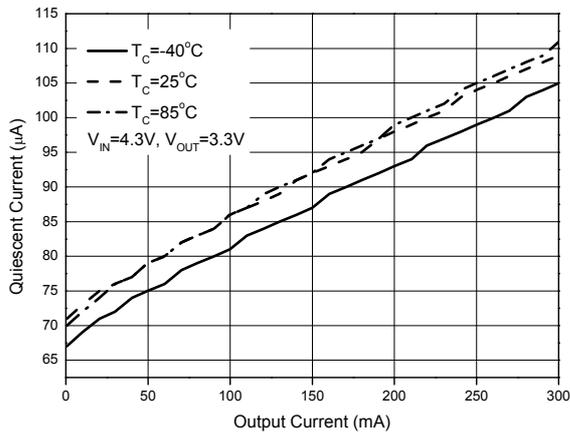


Figure 8. Quiescent Current vs. Output Current

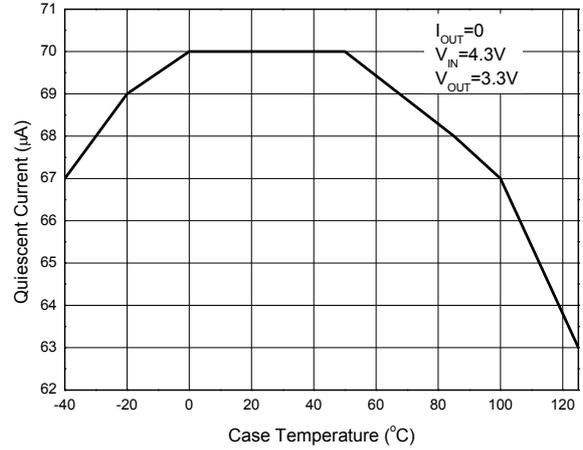


Figure 9. Quiescent Current vs. Case Temperature

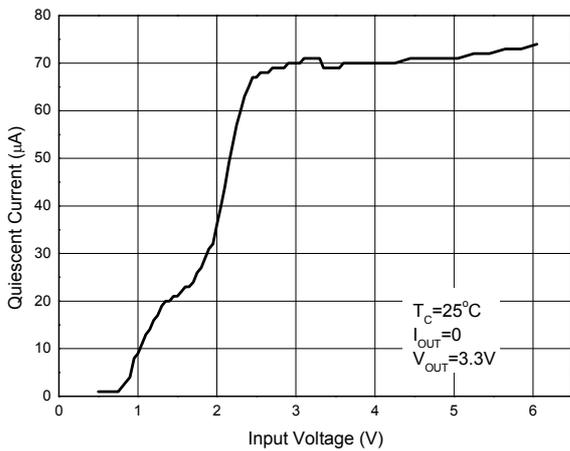


Figure 10. Quiescent Current vs. Input Voltage

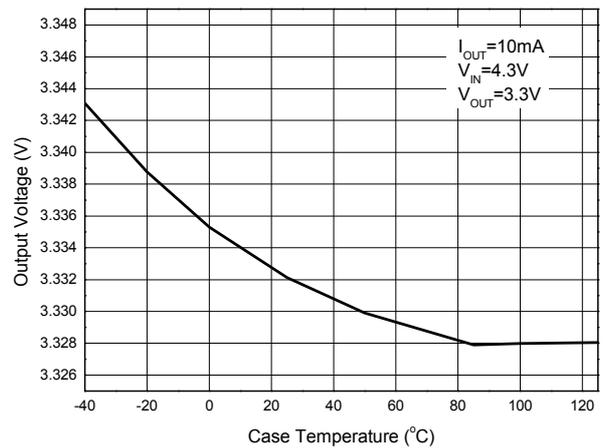


Figure 11. Output Voltage vs. Case Temperature



300mA HIGH SPEED, EXTREMELY LOW NOISE CMOS LDO REGULATOR AP2126

Typical Performance Characteristics (Continued)

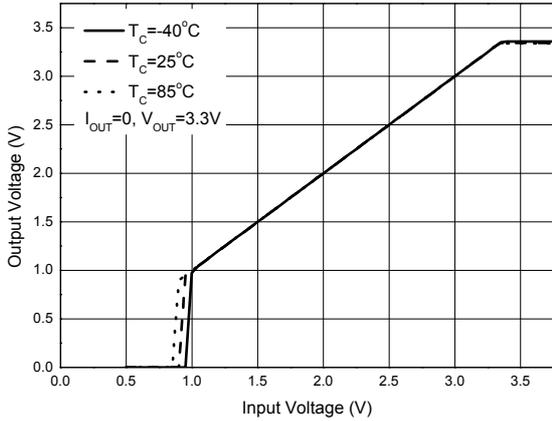


Figure 12. Output Voltage vs. Input Voltage

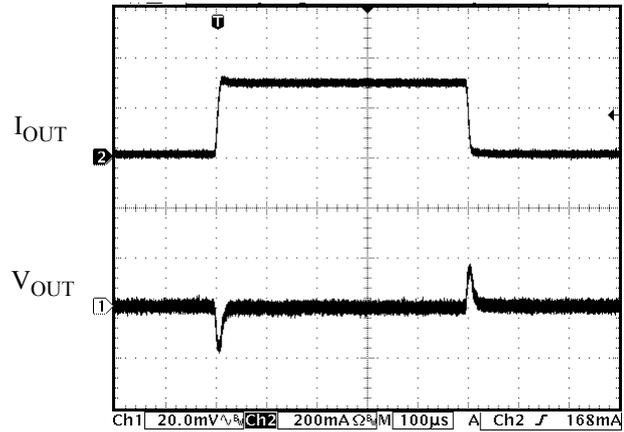


Figure 13. Load Transient
(Conditions: $C_{IN}=C_{OUT}=1\mu F$, $V_{IN}=4.4V$, $V_{OUT}=3.3V$, $I_{OUT}=10mA$ to $300mA$)

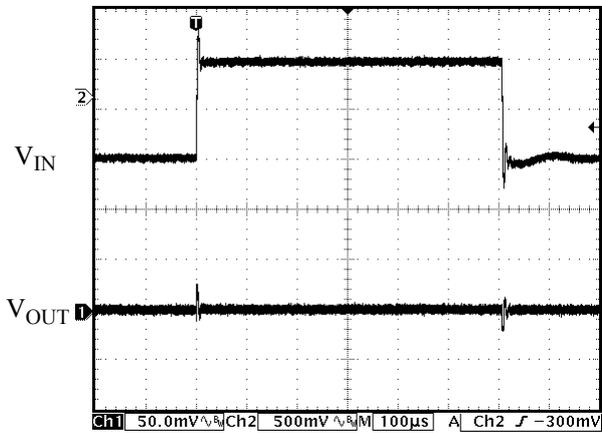


Figure 14. Line Transient
(Conditions: $I_{OUT}=30mA$, $C_{IN}=C_{OUT}=1\mu F$, $V_{IN}=4$ to $5V$, $V_{OUT}=3.3V$)

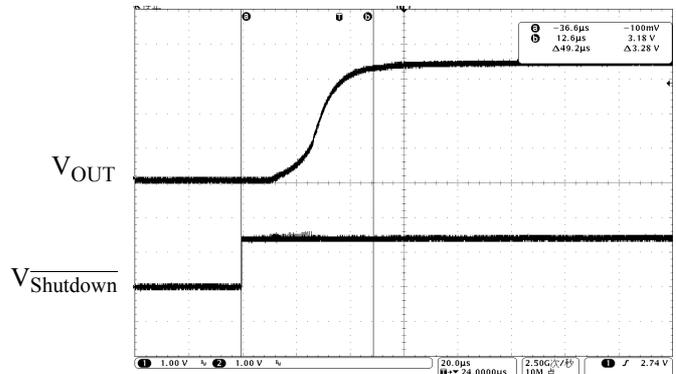


Figure 15. Soft Start Time
(Conditions: $I_{OUT}=0mA$, $C_{IN}=C_{OUT}=1\mu F$, $V_{Shutdown}=0$ to $2V$, $V_{OUT}=3.3V$)



Typical Performance Characteristics (Continued)

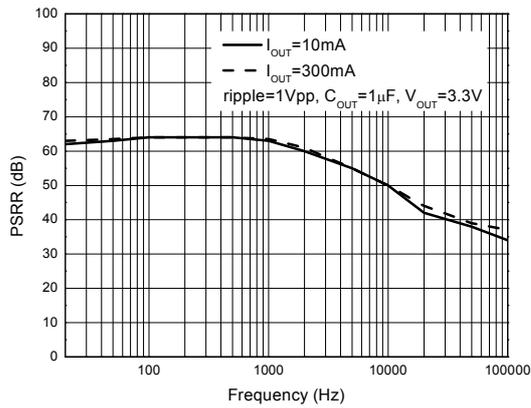
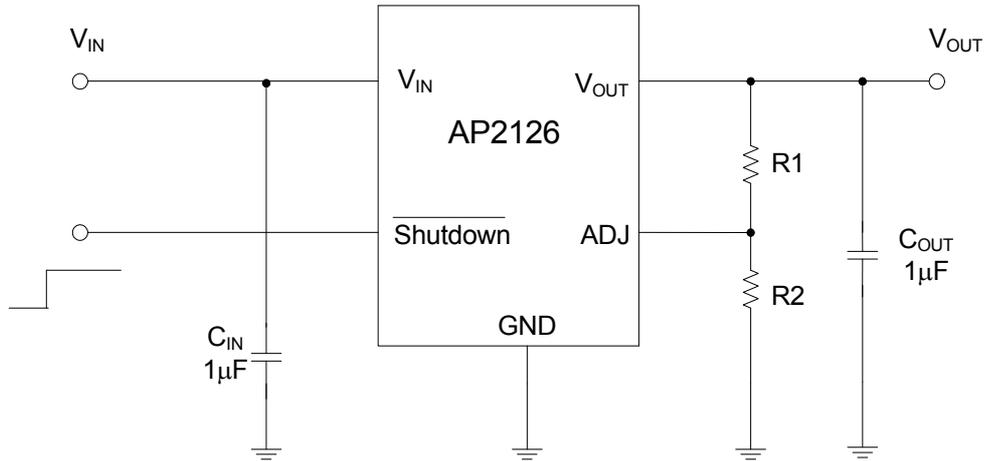


Figure 16. PSRR vs. Frequency

Typical Application



$$V_{OUT} = 1.25 * (1 + R1/R2) \text{ V}$$

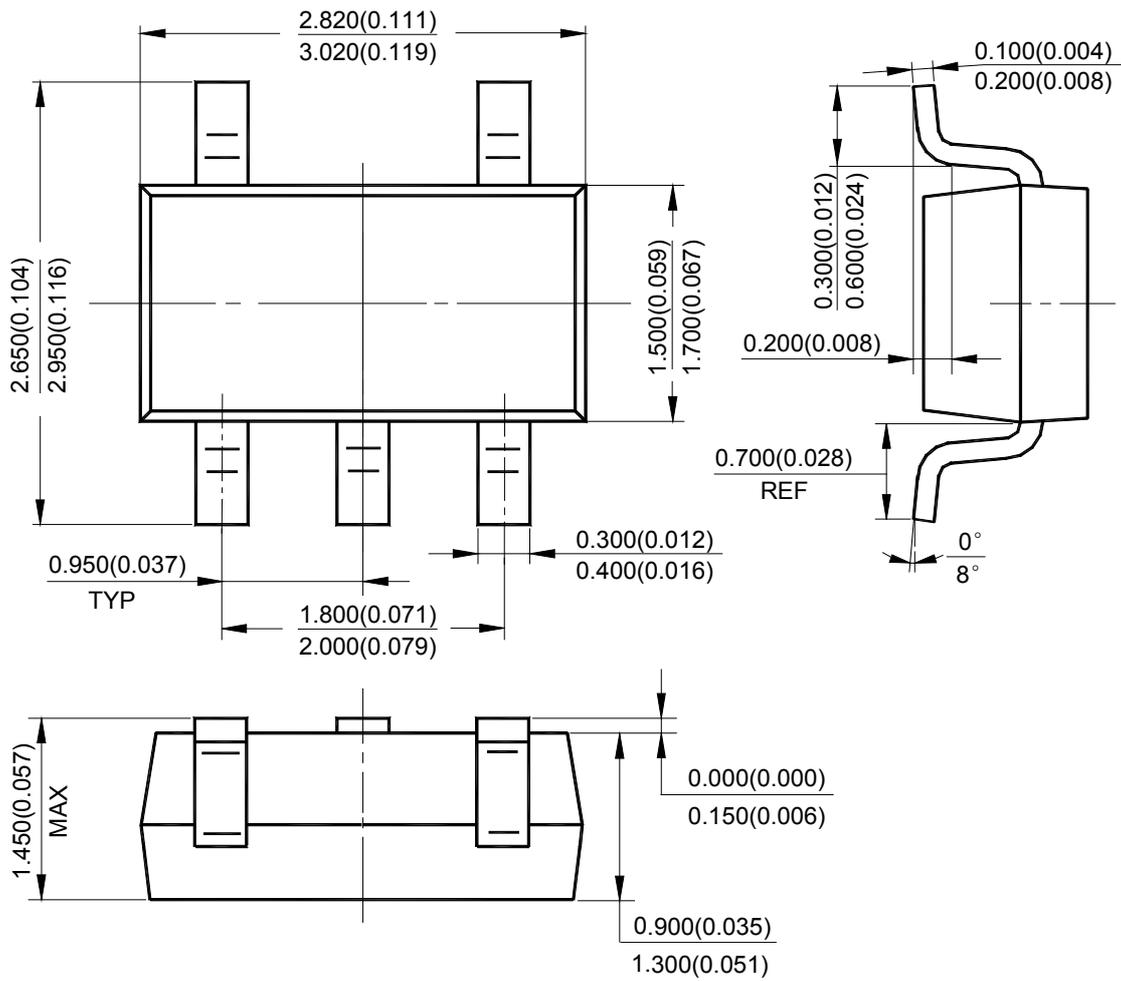
Figure 17. Typical Application of AP2126



Mechanical Dimensions

SOT-23-5

Unit: mm(inch)





BCD Semiconductor Manufacturing Limited

<http://www.bcdsemi.com>

IMPORTANT NOTICE

BCD Semiconductor Manufacturing Limited reserves the right to make changes without further notice to any products or specifications herein. BCD Semiconductor Manufacturing Limited does not assume any responsibility for use of any its products for any particular purpose, nor does BCD Semiconductor Manufacturing Limited assume any liability arising out of the application or use of any its products or circuits. BCD Semiconductor Manufacturing Limited does not convey any license under its patent rights or other rights nor the rights of others.

MAIN SITE

- Headquarters

BCD Semiconductor Manufacturing Limited

No. 1600, Zi Xing Road, Shanghai Zizhu Science-based Industrial Park, 200241, China
Tel: +86-21-24162266, Fax: +86-21-24162277

- Wafer Fab

Shanghai SIM-BCD Semiconductor Manufacturing Co., Ltd.

800 Yi Shan Road, Shanghai 200233, China
Tel: +86-21-6485 1491, Fax: +86-21-5450 0008

REGIONAL SALES OFFICE

Shenzhen Office

Shanghai SIM-BCD Semiconductor Manufacturing Co., Ltd., Shenzhen Office

Unit A Room 1203, Skyworth Bldg., Gaoxin Ave. 1.S., Nanshan District, Shenzhen, China
Tel: +86-755-8826 7951
Fax: +86-755-8826 7865

Taiwan Office

BCD Semiconductor (Taiwan) Company Limited

4F, 298-1, Rui Guang Road, Nei-Hu District, Taipei, Taiwan
Tel: +886-2-2656 2808
Fax: +886-2-2656 2806

USA Office

BCD Semiconductor Corp.

30920 Huntwood Ave. Hayward, CA 94544, USA
Tel : +1-510-324-2988
Fax: +1-510-324-2788



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)

Факс: 8 (812) 320-02-42

Электронная почта: org@eplast1.ru

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.