

NVMFD5853N, NVMFD5853NWF

Power MOSFET

40 V, 10 mΩ, 53 A, Dual N-Channel, Dual SO-8FL

Features

- Small Footprint (5x6 mm) for Compact Designs
- Low $R_{DS(on)}$ to Minimize Conduction Losses
- Low Capacitance to Minimize Driver Losses
- NVMFD5853NWF – Wettable Flanks Product
- AEC-Q101 Qualified and PPAP Capable
- This is a Pb-Free and Halogen-Free Device

MAXIMUM RATINGS ($T_J = 25^\circ\text{C}$ unless otherwise noted)

Parameter			Symbol	Value	Unit
Drain-to-Source Voltage			V_{DSS}	40	V
Gate-to-Source Voltage			V_{GS}	± 20	V
Continuous Drain Current $R_{\theta JC}$ (Notes 1, 2, 3)	Steady State	$T_C = 25^{\circ}\text{C}$	I_D	53	A
		$T_C = 100^{\circ}\text{C}$		37	
Power Dissipation $R_{\theta JC}$ (Notes 1, 2)		$T_C = 25^{\circ}\text{C}$	P_D	58	W
		$T_C = 100^{\circ}\text{C}$		29	
Continuous Drain Current $R_{\theta JA}$ (Notes 1, 2 & 3)	Steady State	$T_A = 25^{\circ}\text{C}$	I_D	12	A
		$T_A = 100^{\circ}\text{C}$		8.7	
Power Dissipation $R_{\theta JA}$ (Notes 1 & 2)		$T_A = 25^{\circ}\text{C}$	P_D	3.1	W
		$T_A = 100^{\circ}\text{C}$		1.6	
Pulsed Drain Current	$T_A = 25^{\circ}\text{C}$, $t_p = 10\text{ }\mu\text{s}$		I_{DM}	165	A
Operating Junction and Storage Temperature			T_J , T_{stg}	-55 to 175	$^{\circ}\text{C}$
Source Current (Body Diode)			I_S	53	A
Single Pulse Drain-to-Source Avalanche Energy ($T_J = 25^{\circ}\text{C}$, $I_{L(pk)} = 28.3\text{ A}$, $L = 0.1\text{ mH}$)			E_{AS}	40	mJ
Lead Temperature for Soldering Purposes (1/8" from case for 10 s)			T_L	260	$^{\circ}\text{C}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

THERMAL RESISTANCE MAXIMUM RATINGS (Note 1)

Parameter	Symbol	Value	Unit
Junction-to-Case – Steady State (Note 2)	$R_{\theta JC}$	2.6	$^\circ\text{C/W}$
Junction-to-Ambient – Steady State (Note 2)	$R_{\theta JA}$	48	

1. The entire application environment impacts the thermal resistance values shown, they are not constants and are only valid for the particular conditions noted.
2. Surface-mounted on FR4 board using a 650 mm², 2 oz. Cu pad.
3. Continuous DC current rating. Maximum current for pulses as long as 1 second are higher but are dependent on pulse duration and duty cycle.

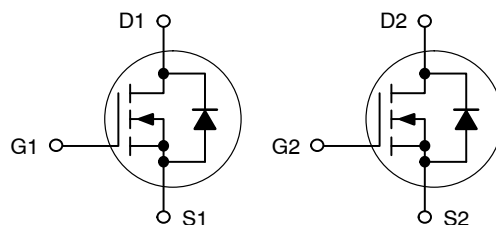


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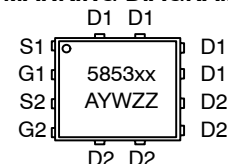
$V_{(BR)DSS}$	$R_{DS(on)}$ MAX	I_D MAX
40 V	10 mΩ @ 10 V	53 A

Dual N-Channel



DFN8 5x6
(SO8FL)
CASE 506BT

MARKING DIAGRAM



5853N = NVMFD5853N
5853WF = NVMFD5853NWF
A = Assembly Location
Y = Year
W = Work Week
ZZ = Lot Traceability

ORDERING INFORMATION

Device	Package	Shipping†
NVMFD5853NT1G	DFN8 (Pb-Free)	1500 / Tape & Reel
NVMFD5853NWF1G	DFN8 (Pb-Free)	1500 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

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ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise specified)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Drain-to-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 250 μA	40			V
Drain-to-Source Breakdown Voltage Temperature Coefficient	V _{(BR)DSS} /T _J			41.5		mV/°C
Zero Gate Voltage Drain Current	I _{DSS}	V _{GS} = 0 V, V _{DS} = 40 V	T _J = 25°C		1.0	μA
			T _J = 125°C		100	
Gate-to-Source Leakage Current	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA

ON CHARACTERISTICS (Note 4)

Gate Threshold Voltage	V _{GS(TH)}	V _{GS} = V _{DS} , I _D = 250 μA	2.0		4.0	V
Threshold Temperature Coefficient	V _{GS(TH)} /T _J			-7.2		mV/°C
Drain-to-Source On Resistance	R _{DS(on)}	V _{GS} = 10 V, I _D = 15 A		8.4	10	mΩ
Forward Transconductance	g _{FS}	V _{DS} = 5 V, I _D = 15 A		44		S

CHARGES AND CAPACITANCES

Input Capacitance	C _{iss}	V _{GS} = 0 V, f = 1.0 MHz, V _{DS} = 25 V		1225		pF
Output Capacitance	C _{oss}			150		
Reverse Transfer Capacitance	C _{rss}			100		
Total Gate Charge	Q _{G(TOT)}	V _{GS} = 10 V, V _{DS} = 32 V, I _D = 15 A		24		nC
Threshold Gate Charge	Q _{G(TH)}			1.5		
Gate-to-Source Charge	Q _{GS}			5.2		
Gate-to-Drain Charge	Q _{GD}			6.6		
Plateau Voltage	V _{GP}			4.1		V

SWITCHING CHARACTERISTICS (Note 5)

Turn-On Delay Time	t _{d(on)}	V _{GS} = 10 V, V _{DS} = 20 V, I _D = 15 A, R _G = 2.5 Ω		9		ns
Rise Time	t _r			20		
Turn-Off Delay Time	t _{d(off)}			21		
Fall Time	t _f			3		

DRAIN-SOURCE DIODE CHARACTERISTICS

Forward Diode Voltage	V _{SD}	V _{GS} = 0 V, I _S = 15 A	T _J = 25°C		0.82	1.1	V
			T _J = 125°C		0.72		
Reverse Recovery Time	t _{RR}	V _{GS} = 0 V, dI _S /dt = 100 A/μs, I _S = 15 A		16		ns	
Charge Time	t _a			10			
Discharge Time	t _b			6			
Reverse Recovery Charge	Q _{RR}			9		nC	

4. Pulse Test: pulse width = 300 μs, duty cycle ≤ 2%.

5. Switching characteristics are independent of operating junction temperatures.

TYPICAL CHARACTERISTICS

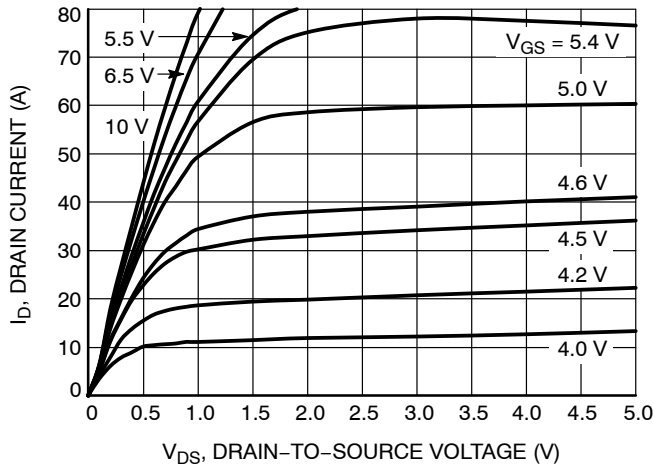


Figure 1. On-Region Characteristics

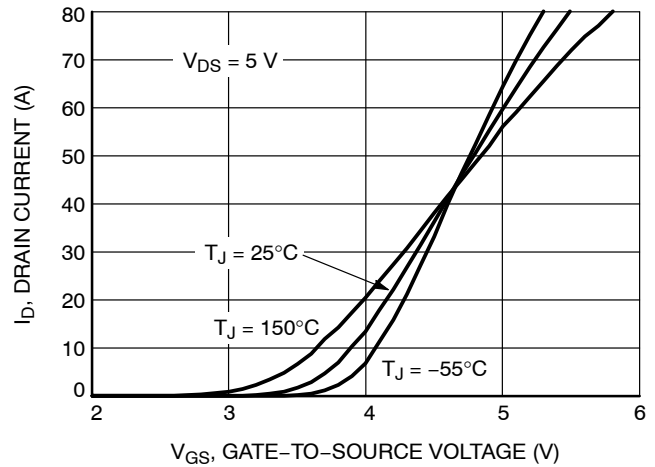


Figure 2. Transfer Characteristics

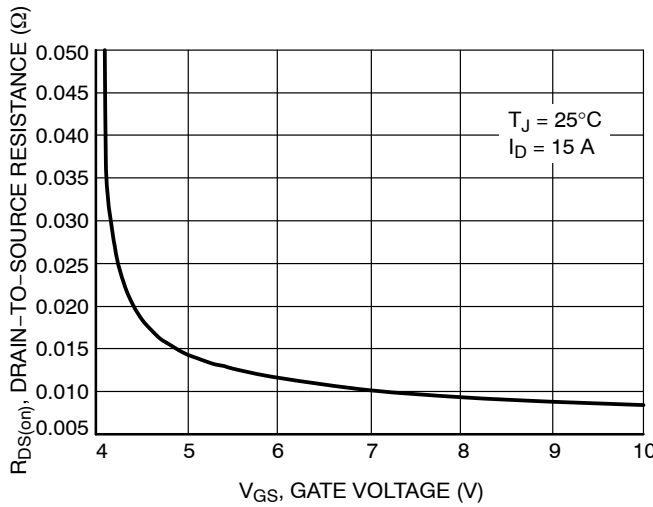


Figure 3. On-Resistance vs. Gate-to-Source Voltage

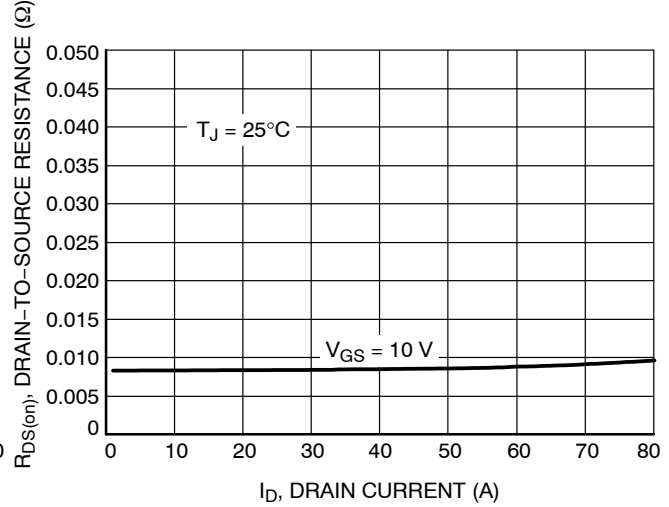


Figure 4. On-Resistance vs. Drain Current and Gate Voltage

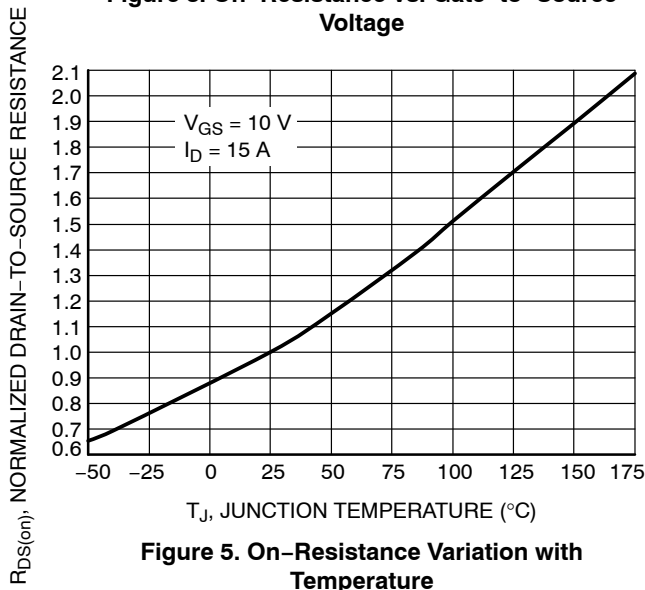


Figure 5. On-Resistance Variation with Temperature

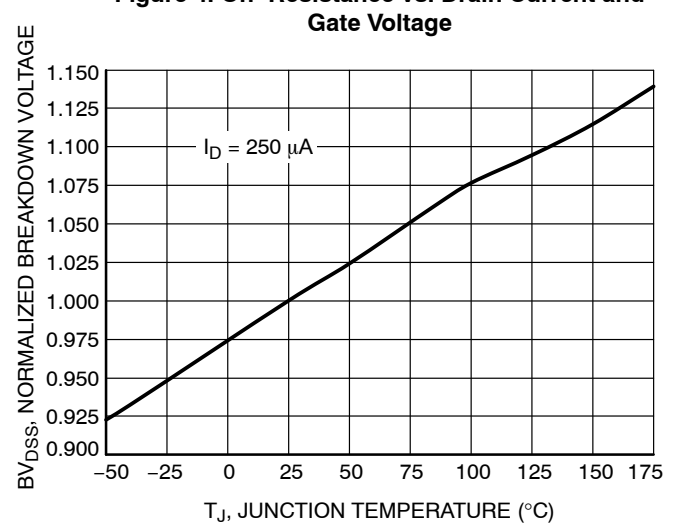


Figure 6. Breakdown Voltage Variation with Temperature

TYPICAL CHARACTERISTICS

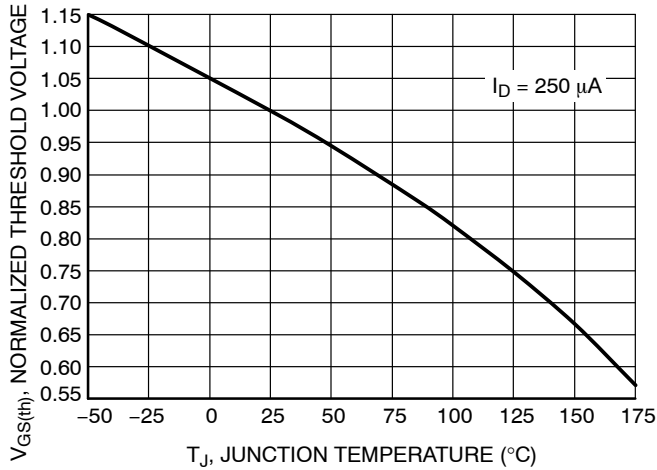


Figure 7. Threshold Voltage Variation with Temperature

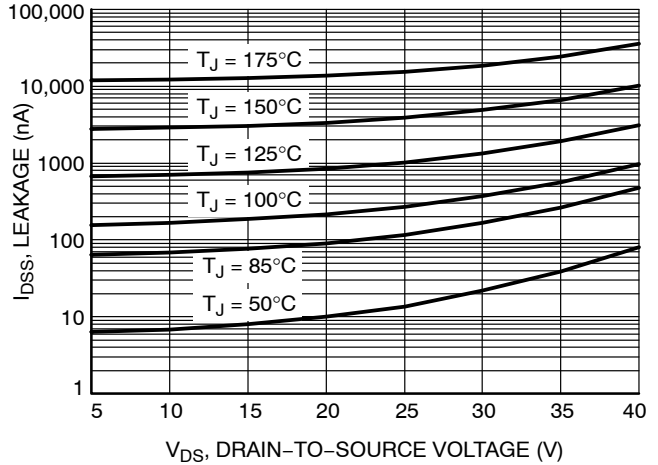


Figure 8. Drain-to-Source Leakage Current vs. Voltage

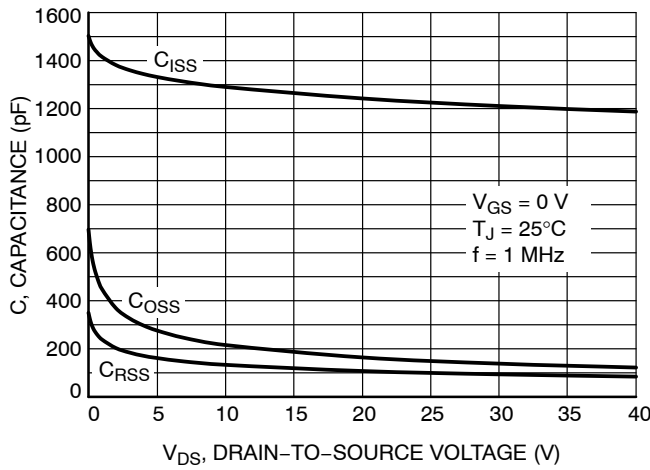


Figure 9. Capacitance Variation

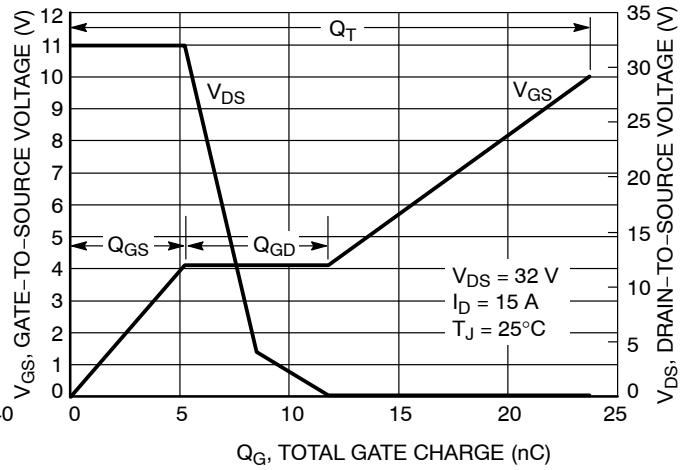


Figure 10. Gate-to-Source and Drain-to-Source Voltage vs. Total Charge

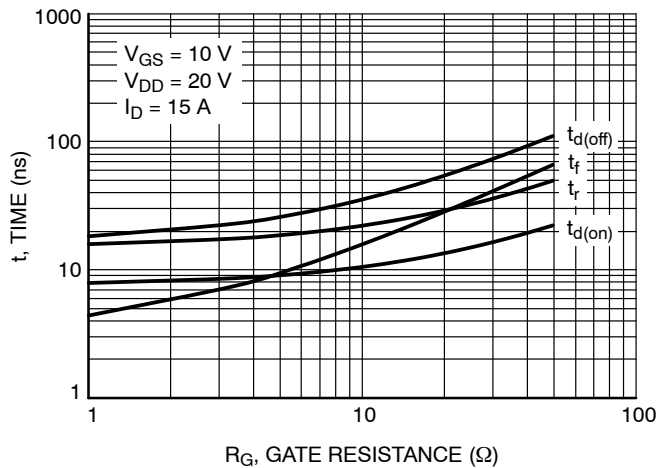


Figure 11. Resistive Switching Time Variation vs. Gate Resistance

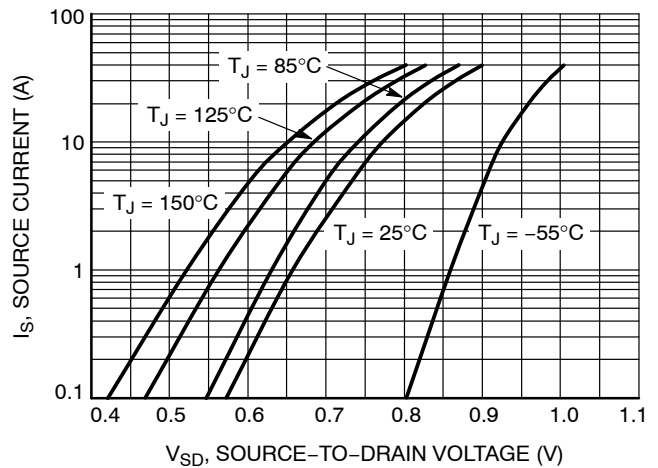


Figure 12. Diode Forward Voltage vs. Current

TYPICAL CHARACTERISTICS

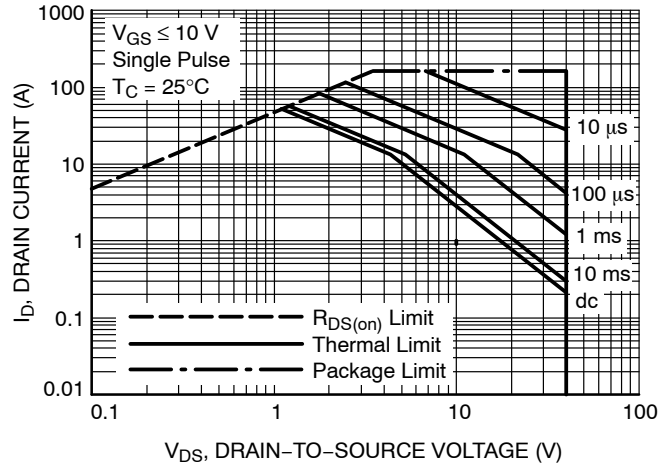


Figure 13. Maximum Rated Forward Biased Safe Operating Area

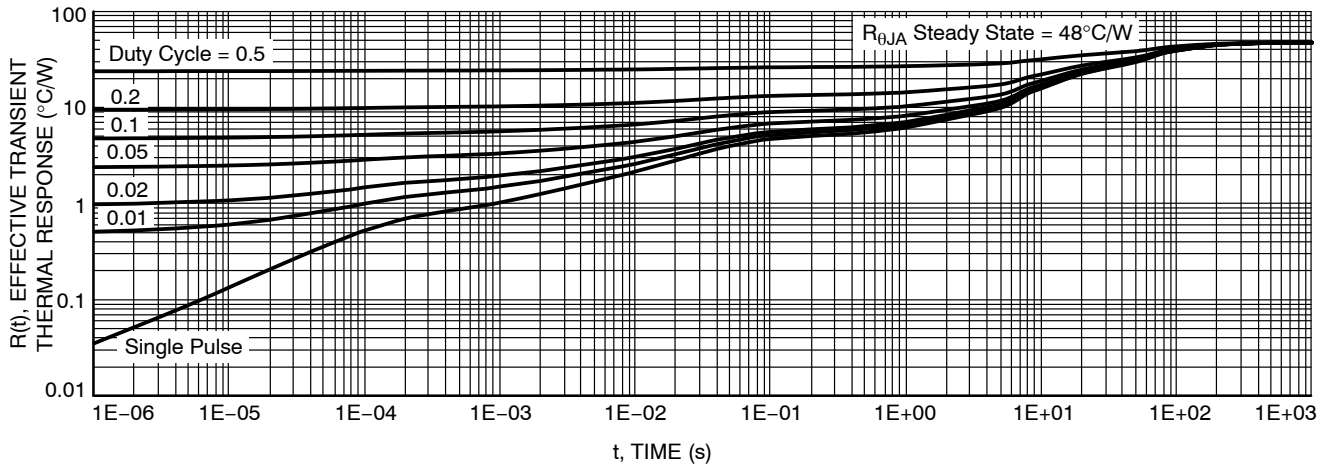


Figure 14. Thermal Impedance (Junction-to-Ambient)



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

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