Old Company Name in Catalogs and Other Documents

On April 1st, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

Renesas Electronics website: http://www.renesas.com

April 1st, 2010 Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (http://www.renesas.com)

Send any inquiries to http://www.renesas.com/inquiry.



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PHOTOCOUPLER PS2561B-1,PS2561BL-1 PS2561BL1-1,PS2561BL2-1

DIP PHOTOCOUPLER OPERATING AMBIENT TEMPERATURE 110°C

-NEPOC Series-

DESCRIPTION

The PS2561B-1 is an optically coupled isolator containing a GaAs light emitting diode and an NPN silicon phototransistor.

The PS2561B-1 is in a plastic DIP (Dual In-line Package) and the PS2561BL-1 is lead bending type (Gull-wing) for surface mount.

The PS2561BL1-1 is lead bending type for long creepage distance.

The PS2561BL2-1 is lead bending type for long creepage distance (Gull-wing) for surface mount.

FEATURES

- Operating ambient temperature: 110°C
- High Isolation voltage (BV = 5 000 Vr.m.s.)
- High collector to emitter voltage (VcEo = 80 V)
- High current transfer ratio (CTR = 200% TYP.)
- High-speed switching ($t_r = 3 \mu s$ TYP., $t_f = 5 \mu s$ TYP.)
- Ordering number of taping product: PS2561BL-1-F3 : 2 000 pcs/reel

: PS2561BL2-1-E3: 1 000 pcs/reel

Pb-Free product

<R> • Safety standards

<R>

UL approved: No. E72422

CSA approved: No. CA 101391 (CA5A, CAN/CSA-C22.2 60065, 60950)

BSI approved: No. 7112/7420

SEMKO approved: No. 903238

NEMKO approved: No. P09210868

DEMKO approved: No. 314999

FIMKO approved: No. FI 25119

DIN EN60747-5-2 (VDE0884 Part2) approved: No. 40008862 (Option)

APPLICATIONS

- Power supply
- Telephone/FAX.
- FA/OA equipment
- · Programmable logic controller

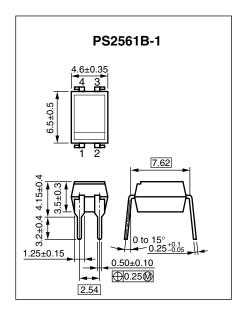
PIN CONNECTION
(Top View)

1. Anode
2. Cathode
3. Emitter
4. Collector

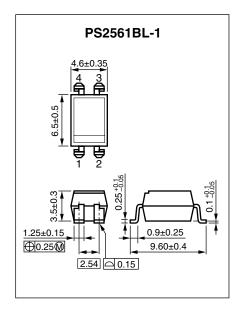
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<R> PACKAGE DIMENSIONS (UNIT: mm)

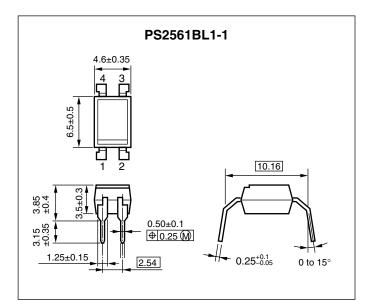
DIP Type



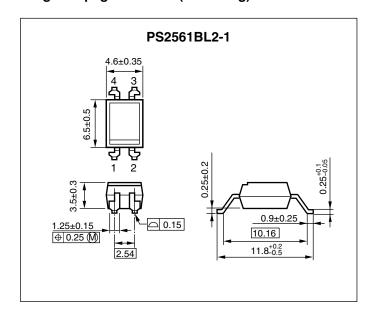
Lead Bending Type (Gull-Wing)



Long Creepage Distance



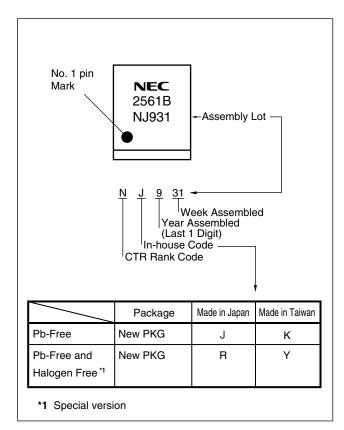
Long Creepage Distance (Gull-Wing)



<R> PHOTOCOUPLER CONSTRUCTION

Parameter	Unit (MIN.)		
Air Distance	7 mm		
Outer Creepage Distance	7 mm		
Inner Creepage Distance	4 mm		
Isolation Thickness	0.4 mm		

<R> MARKING EXAMPLE





<R> ORDERING INFORMATION

Part Number	Order Number	Solder Plating Specification	Packing Style	Safety Standard Approval	Application Part Number [™]
PS2561B-1	PS2561B-1-A	Pb-Free	Magazine case 100 pcs	Standard products	PS2561B-1
PS2561BL-1	PS2561BL-1-A			(UL, CSA, BSI,	
PS2561BL1-1	PS2561BL1-1-A			SEMKO, NEMKO,	
PS2561BL2-1	PS2561BL2-1-A			DEMKO, FIMKO	
PS2561BL-1-F3	PS2561BL-1-F3-A		Embossed Tape 2 000 pcs/reel	approved)	
PS2561BL2-1-E3	PS2561BL2-1-E3-A		Embossed Tape 1 000 pcs/reel		
PS2561B-1-V	PS2561B-1-V-A		Magazine case 100 pcs	DIN EN60747-5-2	
PS2561BL-1-V	PS2561BL-1-V-A			(VDE0884 Part2)	
PS2561BL1-1-V	PS2561BL1-1-V-A			approved	
PS2561BL2-1-V	PS2561BL2-1-V-A			(Option)	
PS2561BL-1-V-F3	PS2561BL-1-V-F3-A		Embossed Tape 2 000 pcs/reel		
PS2561BL2-1-V-E3	PS2561BL2-1-V-E3-A		Embossed Tape 1 000 pcs/reel		
PS2561B-1	PS2561B-1Y-A	Special version	Magazine case 100 pcs	Standard products	PS2561B-1
PS2561BL-1	PS2561BL-1Y-A	(Pb-Free and		(UL, CSA, BSI,	
PS2561BL1-1	PS2561BL1-1Y-A	Halogen Free)		SEMKO, NEMKO,	
PS2561BL2-1	PS2561BL2-1Y-A			DEMKO, FIMKO	
PS2561BL-1-F3	PS2561BL-1Y-F3-A		Embossed Tape 2 000 pcs/reel	approved)	
PS2561BL2-1-E3	PS2561BL2-1Y-E3-A		Embossed Tape 1 000 pcs/reel		
PS2561B-1-V	PS2561B-1Y-V-A		Magazine case 100 pcs	DIN EN60747-5-2	
PS2561BL-1-V	PS2561BL-1Y-V-A			(VDE0884 Part2)	
PS2561BL1-1-V	PS2561BL1-1Y-V-A			approved	
PS2561BL2-1-V	PS2561BL2-1Y-V-A			(Option)	
PS2561BL-1-V-F3	PS2561BL-1Y-V-F3-A		Embossed Tape 2 000 pcs/reel		
PS2561BL2-1-V-E3	PS2561BL2-1Y-V-E3-A		Embossed Tape 1 000 pcs/reel		

^{*1} For the application of the Safety Standard, following part number should be used.



ABSOLUTE MAXIMUM RATINGS (TA = 25°C, unless otherwise specified)

	Parameter	Symbol	Ratings	Unit
Diode	Reverse Voltage	VR	6	V
	Forward Current (DC)	lF	40	mA
	Power Dissipation Derating	⊿P₀/°C	1.5	mW/°C
	Power Dissipation	Po	150	mW
	Peak Forward Current ¹	IFP	1	Α
Transistor	Collector to Emitter Voltage	Vceo	80	V
	Emitter to Collector Voltage	VECO	7	V
	Collector Current	lc	50	mA
	Power Dissipation Derating	⊿Pc/°C	1.5	mW/°C
	Power Dissipation	Pc	150	mW
Isolation Voltage ²		BV	5 000	Vr.m.s.
Operating Ambient Temperature		TA	-55 to +110	°C
Storage Temperature		T _{stg}	-55 to +150	°C

^{*1} PW = 100 μ s, Duty Cycle = 1%

^{*2} AC voltage for 1 minute at $T_A = 25^{\circ}$ C, RH = 60% between input and output. Pins 1-2 shorted together, 3-4 shorted together.



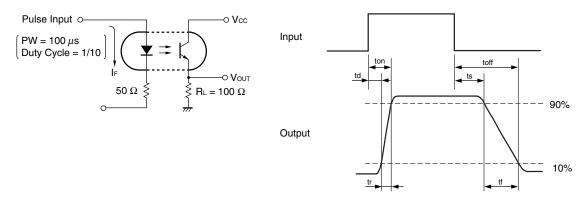
ELECTRICAL CHARACTERISTICS (TA = 25°C)

	Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Diode	Forward Voltage	VF	IF = 10 mA		1.17	1.4	V
	Reverse Current	lR	V _R = 5 V			5	μΑ
	Terminal Capacitance	Ct	V = 0 V, f = 1.0 MHz		50		pF
Transistor	Collector to Emitter Dark Current	ICEO	VcE = 48 V, IF = 0 mA			100	nA
Coupled	Current Transfer Ratio	CTR	IF = 5 mA, VCE = 5 V	100	200	400	%
	(Ic/I _F)*1		IF = 1 mA, VCE = 5 V	50	100		
	Collector Saturation Voltage	VCE (sat)	I _F = 10 mA, I _C = 2 mA			0.3	V
	Isolation Resistance	Ri-o	Vi-o = 1.0 kVpc	10 ¹¹			Ω
	Isolation Capacitance	C _{I-O}	V = 0 V, f = 1.0 MHz		0.5		pF
	Rise Time ^{*2}	tr	Vcc = 10 V, Ic = 2 mA, RL = 100 Ω		3		μs
	Fall Time ^{*2}	tf			5		

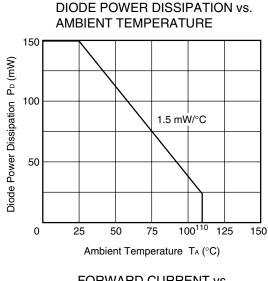
*1 CTR rank

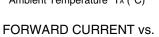
CTR Rank	CTR (%)	Conditions	
Q	100 to 200	IF = 5 mA, VcE = 5 V	
	50 and larger	IF = 1 mA, VcE = 5 V	
14/	130 to 260	I _F = 5 mA, V _{CE} = 5 V	
W	70 and larger	IF = 1 mA, VcE = 5 V	
D	100 to 300	IF = 5 mA, VcE = 5 V	
	50 and larger	IF = 1 mA, VcE = 5 V	
	200 to 400	IF = 5 mA, VcE = 5 V	
L	100 and larger	IF = 1 mA, VcE = 5 V	
N	100 to 400	IF = 5 mA, VcE = 5 V	
N	50 and larger	IF = 1 mA, VcE = 5 V	

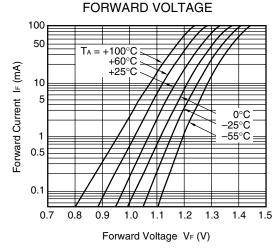
*2 Test circuit for switching time



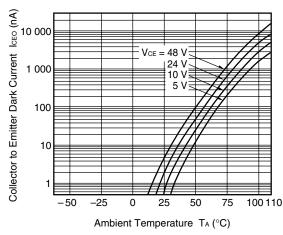
TYPICAL CHARACTERISTICS (TA = 25°C, unless otherwise specified)



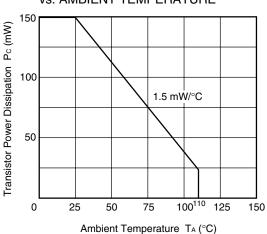




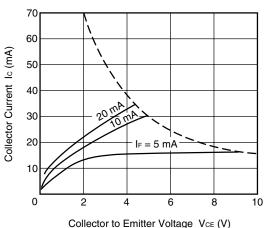
COLLECTOR TO EMITTER DARK CURRENT vs. AMBIENT TEMPERATURE



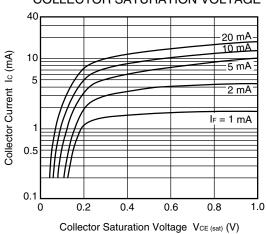
TRANSISTOR POWER DISSIPATION vs. AMBIENT TEMPERATURE



COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE

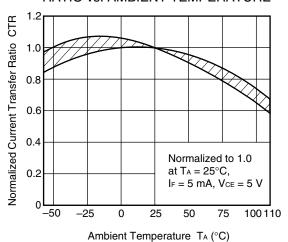


COLLECTOR CURRENT vs. **COLLECTOR SATURATION VOLTAGE**

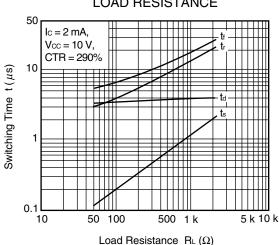


Remark The graphs indicate nominal characteristics.

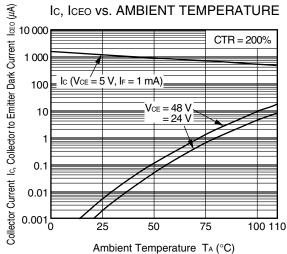
NORMALIZED CURRENT TRANSFER RATIO vs. AMBIENT TEMPERATURE



SWITCHING TIME vs. LOAD RESISTANCE

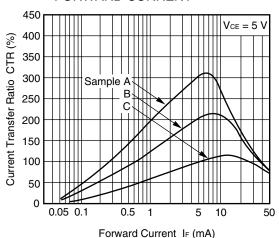


IC, ICEO VS. AMBIENT TEMPERATURE

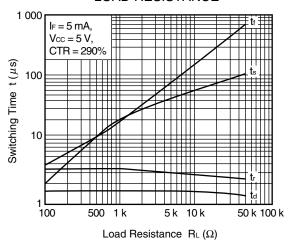


Remark The graphs indicate nominal characteristics.

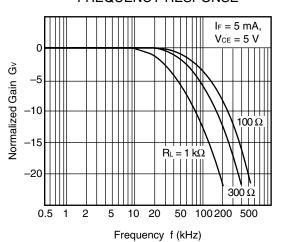
CURRENT TRANSFER RATIO vs. FORWARD CURRENT



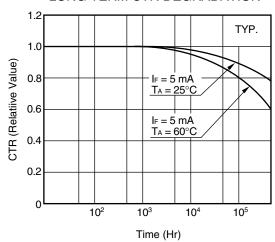
SWITCHING TIME vs. LOAD RESISTANCE



FREQUENCY RESPONSE

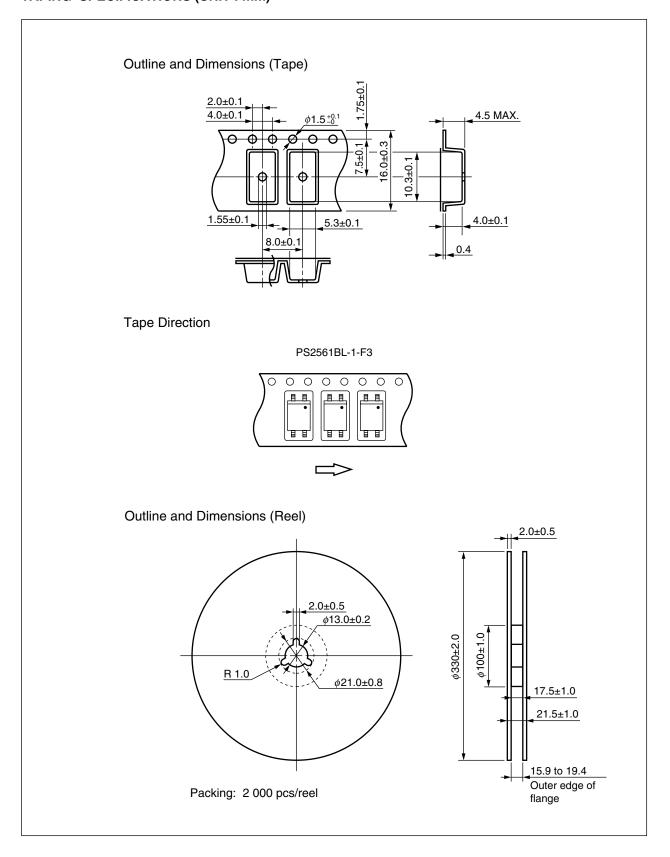


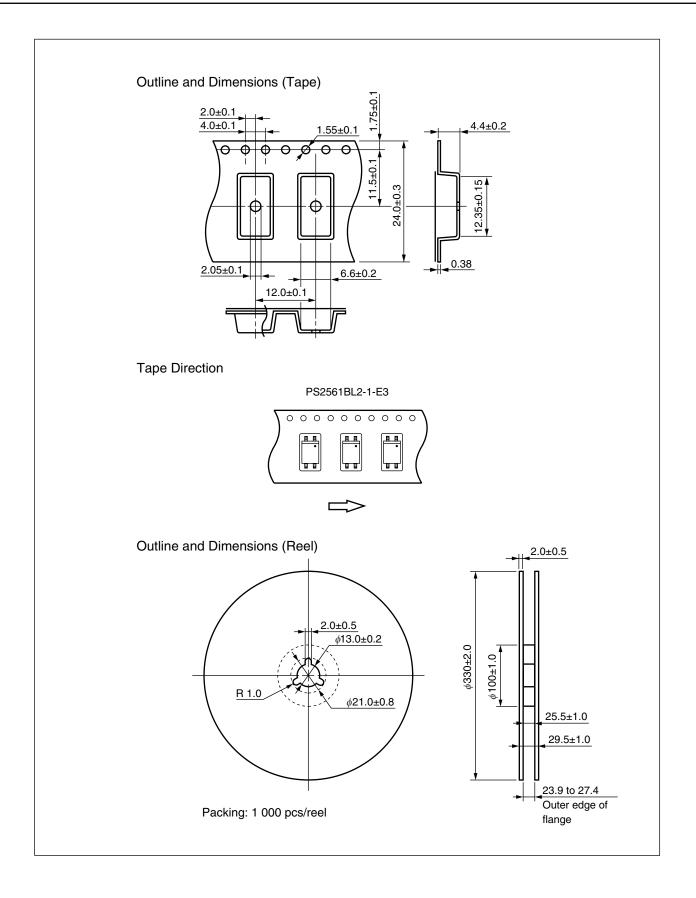
LONG TERM CTR DEGRADATION



Remark The graph indicates nominal characteristics.

<R> TAPING SPECIFICATIONS (UNIT: mm)







NOTES ON HANDLING

1. Recommended soldering conditions

(1) Infrared reflow soldering

Peak reflow temperature
 260°C or below (package surface temperature)

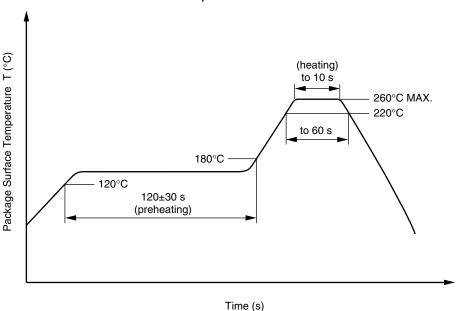
Time of peak reflow temperature
 Time of temperature higher than 220°C
 10 seconds or less
 60 seconds or less

Time to preheat temperature from 120 to 180°C 120±30 s
 Number of reflows Three

Flux
 Rosin flux containing small amount of chlorine (The flux with a

maximum chlorine content of 0.2 Wt% is recommended.)

Recommended Temperature Profile of Infrared Reflow



(2) Wave soldering

• Temperature 260°C or below (molten solder temperature)

• Time 10 seconds or less

• Preheating conditions 120°C or below (package surface temperature)

Number of times
 One (Allowed to be dipped in solder including plastic mold portion.)

• Flux Rosin flux containing small amount of chlorine (The flux with a maximum chlorine

content of 0.2 Wt% is recommended.)

(3) Soldering by soldering iron

Peak temperature (lead part temperature) 350°C or below
 Time (each pins) 3 seconds or less

Flux
 Rosin flux containing small amount of chlorine (The flux with a

maximum chlorine content of 0.2 Wt% is recommended.)

- (a) Soldering of leads should be made at the point 1.5 to 2.0 mm from the root of the lead.
- (b) Please be sure that the temperature of the package would not be heated over 100°C.

(4) Cautions

Fluxes

Avoid removing the residual flux with freon-based and chlorine-based cleaning solvent.

2. Cautions regarding noise

Be aware that when voltage is applied suddenly between the photocoupler's input and output or between corrector-emitters at startup, the output transistor may enter the on state, even if the voltage is within the absolute maximum ratings.

3. Measurement conditions of current transfer ratios (CTR), which differ according to photocoupler

Check the setting values before use, since the forward current conditions at CTR measurement differ according to product.

When using products other than at the specified forward current, the characteristics curves may differ from the standard curves due to CTR value variations or the like. Therefore, check the characteristics under the actual operating conditions and thoroughly take variations or the like into consideration before use.

USAGE CAUTIONS

- 1. Protect against static electricity when handling.
- 2. Avoid storage at a high temperature and high humidity.



<R> SPECIFICATION OF VDE MARKS LICENSE DOCUMENT

Parameter	Symbol	Spec.	Unit
Climatic test class (IEC 60068-1/DIN EN 60068-1)		55/100/21	
Dielectric strength			
maximum operating isolation voltage	UIORM	890	V _{peak}
Test voltage (partial discharge test, procedure a for type test and random test) $U_{pr}=1.5\times U_{IORM},\ P_d<5\ pC$	Upr	1 335	V_{peak}
Test voltage (partial discharge test, procedure b for all devices)	U_pr	1 669	V_{peak}
$U_{pr} = 1.875 \times U_{IORM}, P_d < 5 pC$			
Highest permissible overvoltage	Utr	8 000	V_{peak}
Degree of pollution (DIN EN 60664-1 VDE0110 Part 1)		2	
Comparative tracking index (IEC 60112/DIN EN 60112 (VDE 0303 Part 11))	СТІ	175	
Material group (DIN EN 60664-1 VDE0110 Part 1)		III a	
Storage temperature range	T _{stg}	-55 to +150	°C
Operating temperature range	TA	-55 to +100	°C
Isolation resistance, minimum value			
V _{IO} = 500 V dc at T _A = 25°C	Ris MIN.	10 ¹²	Ω
V _{IO} = 500 V dc at T _A MAX. at least 100°C	Ris MIN.	10 ¹¹	Ω
Safety maximum ratings (maximum permissible in case of fault, see thermal derating curve)			
Package temperature	Tsi	175	°C
Current (input current I _F , Psi = 0)	Isi	400	mA
Power (output or total power dissipation)	Psi	700	mW
Isolation resistance			
V _{IO} = 500 V dc at T _A = Tsi	Ris MIN.	10°	Ω

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M8E0904E

Caution

GaAs Products

This product uses gallium arsenide (GaAs).

GaAs vapor and powder are hazardous to human health if inhaled or ingested, so please observe the following points.

- Follow related laws and ordinances when disposing of the product. If there are no applicable laws and/or ordinances, dispose of the product as recommended below.
 - Commission a disposal company able to (with a license to) collect, transport and dispose of materials that contain arsenic and other such industrial waste materials.
- 2. Exclude the product from general industrial waste and household garbage, and ensure that the product is controlled (as industrial waste subject to special control) up until final disposal.
- Do not burn, destroy, cut, crush, or chemically dissolve the product.
- Do not lick the product or in any way allow it to enter the mouth.

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PS2561BL-1-A PS2561BL1-1-A PS2561BL-1-F3-A PS2561B-1-A



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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