

Low forward voltage TVS Transky™

Features

- High peak pulse power:
 - 600 W (10/1000 μ s)
 - 4000 W (8/20 μ s)
- Stand-off voltage 5 or 12 V
- Low forward voltage: 0.48 V @ 0.85 A @ 25 °C
- Low clamping factor V_{CL}/V_{BR}
- Fast response time
- Very thin package (1.0 mm overall component height)
- ECOPACK2® halogen-free package

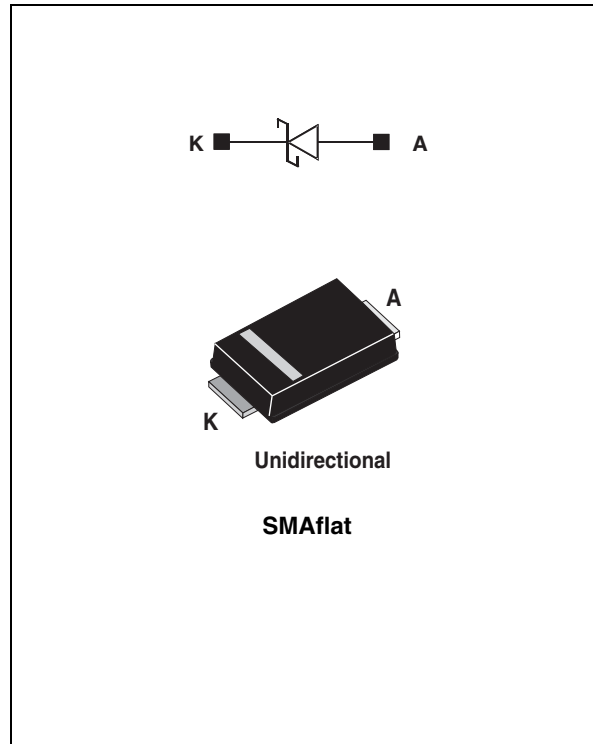
Complies with the following standards:

- IEC 61000-4-2 level 4:
 - 15 kV (air discharge)
 - 8 kV (contact discharge)
- MIL STD 883E- Method 3015-7: class 3C
 - Human body model

Description

The Transky is designed specifically for portable equipment and miniaturized electronic devices subject to ESD transient overvoltages.

The Transky combines the performance of a Transil™ or TVS (transient voltage supressor) and low forward voltage Schottky diode in a monolithic structure.



TM: Transky is a trademark of STMicroelectronics.

TM: Transil is a trademark of STMicroelectronics.

1 Characteristics

Table 1. Absolute ratings (limiting values at 25 °C, unless otherwise specified)

Symbol	Parameter		Value	Unit
V _{PP}	IEC 61000-4-2 standard	Air discharge Contact discharge	15 8	kV
P _{PP}	Peak pulse power dissipation ⁽¹⁾	T _{j initial} = T _{amb}	600	W
I _{FSM}	Non repetitive surge peak forward current	t _p = 10 ms T _j = T _{initial} = T _{amb}	25	A
T _{stg}	Storage temperature range		-65 to +175	°C
T _j	Operating junction temperature range		-40 to +175	°C

1. 10/1000 µs pulse waveform

Table 2. Thermal resistance

Symbol	Parameter	Value	Unit
R _{th(j-l)}	Junction to leads	20	°C/W

Table 3. Electrical characteristics - parameters (T_{amb} = 25 °C)

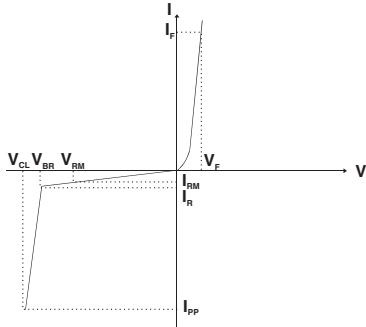
Symbol	Parameter	
V _{BR}	Breakdown voltage	
I _{RM}	Leakage current @ V _{RM}	
V _{RM}	Stand-off voltage	
V _{CL}	Clamping voltage	
R _d	Dynamic resistance	
I _{PP}	Peak pulse current	
C	Capacitance	

Table 4. Electrical characteristics - values (T_{amb} = 25 °C)

Type	V _F max (I _F = 0.85 A)	I _{RM} max@V _{RM}			V _{BR} @ I _R ⁽¹⁾				V _{CL} @ I _{PP} 10/1000 µs		R _D ⁽²⁾ 10/1000 µs	V _{CL} @ I _{PP} 8/20 µs		R _D ⁽²⁾ 8/20 µs	αT ⁽³⁾
		25 °C	85 °C		min	typ	max		max			max			max
	V	µA (max)	V		V		mA	V	A	Ω	V	A	Ω		10-4/°C
SMTYF5.0A	0.48	10	500	5	6.40	6.74	7.07	10	9.2	68	0.029	13.4	298	0.021	5.7
SMTYF12A	0.48	20	1200	12	13.2	13.7	14.3	1	18.5	31	0.129	22.9	157	0.055	7.8

1. Pulse test: t_p < 50ms.

2. To calculate maximum clamping voltage at other surge currents, use the following formula

$$V_{CLmax} = R_D \times I_{PP} + V_{BRmax}$$

3. To calculate V_{BR} versus junction temperature, use the following formula:

$$V_{BR} @ T_j = V_{BR} @ 25\text{ °C} \times (1 + \alpha T \times (T_j - 25))$$

Figure 1. Definition of Ipp pulse

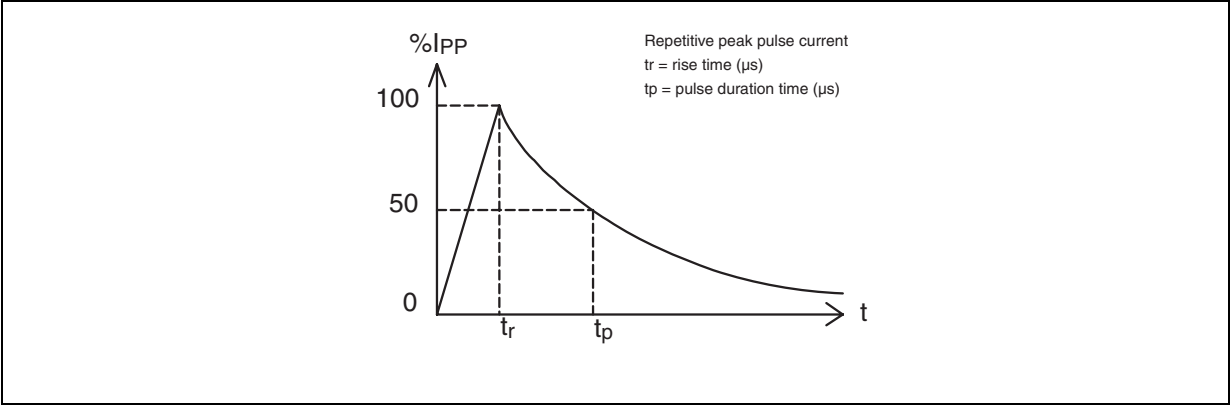


Figure 2. Relative peak power dissipation versus initial junction temperature

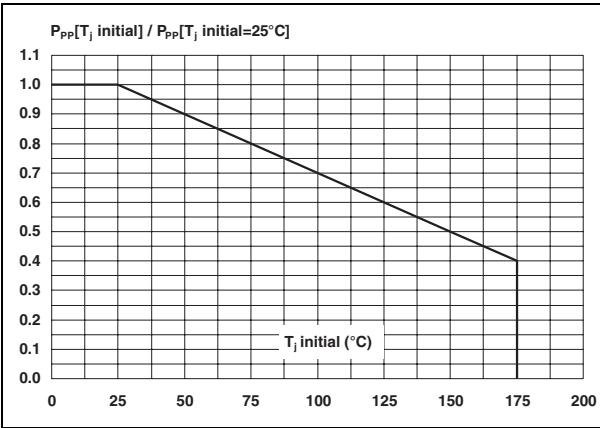


Figure 3. Peak pulse power versus exponential pulse duration ($T_j \text{ initial} = 25^{\circ}C$)

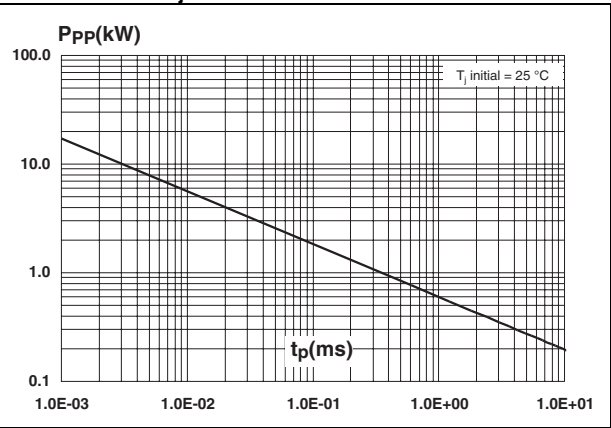


Figure 4. Clamping voltage versus peak pulse current (exponential waveform, maximum values)

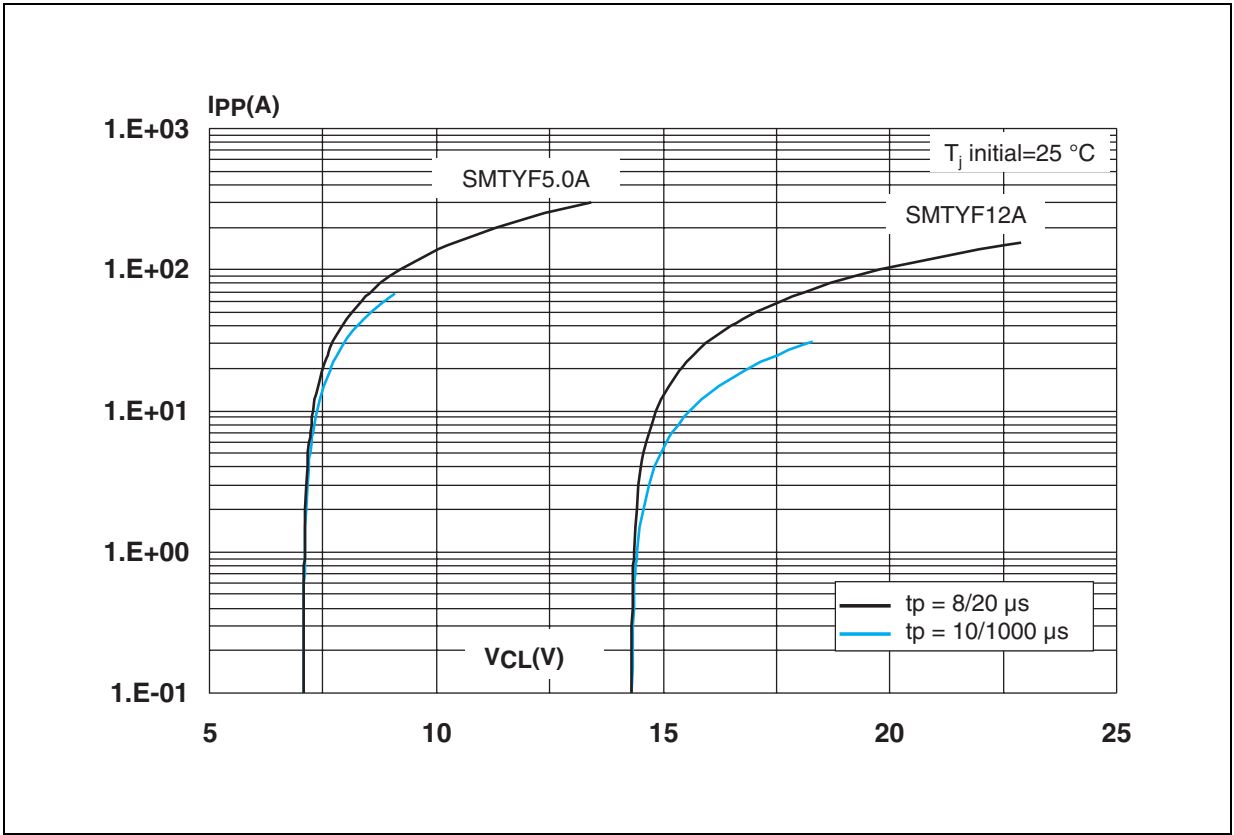


Figure 5. Junction capacitance versus reverse applied voltage (typical values)

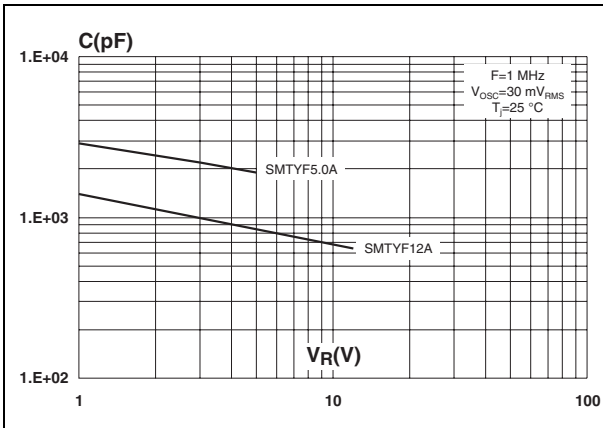


Figure 6. Forward voltage drop versus forward current (typical values)

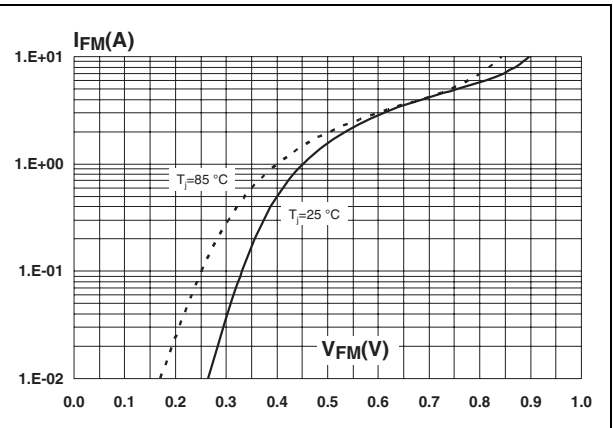


Figure 7. Average power dissipation versus ambient temperature

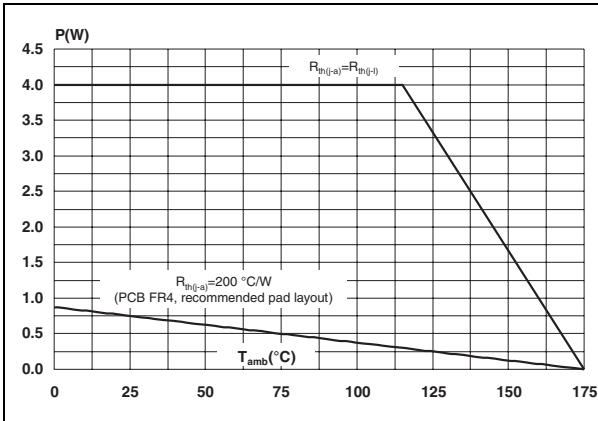


Figure 8. Relative variation of thermal impedance junction to ambient versus pulse duration (printed circuit board FR4, $S_{Cu} = 1 \text{ cm}^2$)

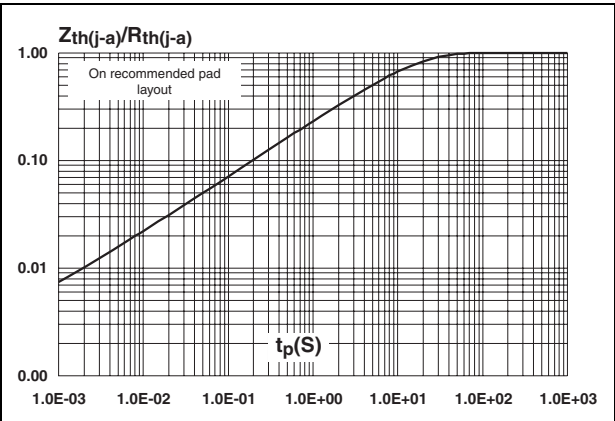


Figure 9. Thermal resistance junction to ambient versus copper surface under each lead (printed circuit board FR4, copper thickness = 35 μm)

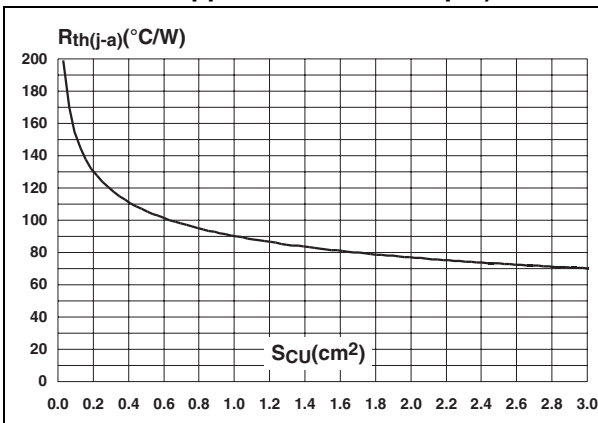
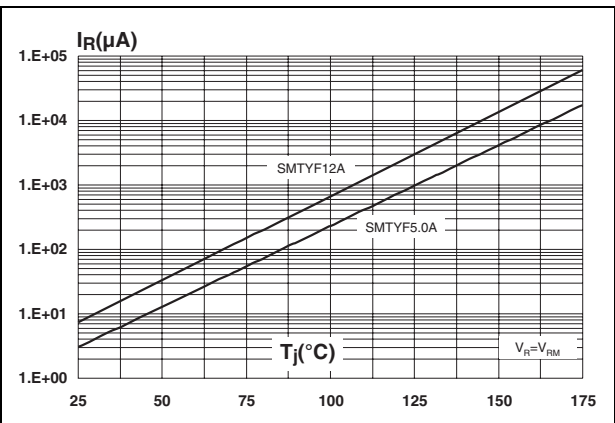


Figure 10. Leakage current versus junction temperature (typical values)



2 Package information

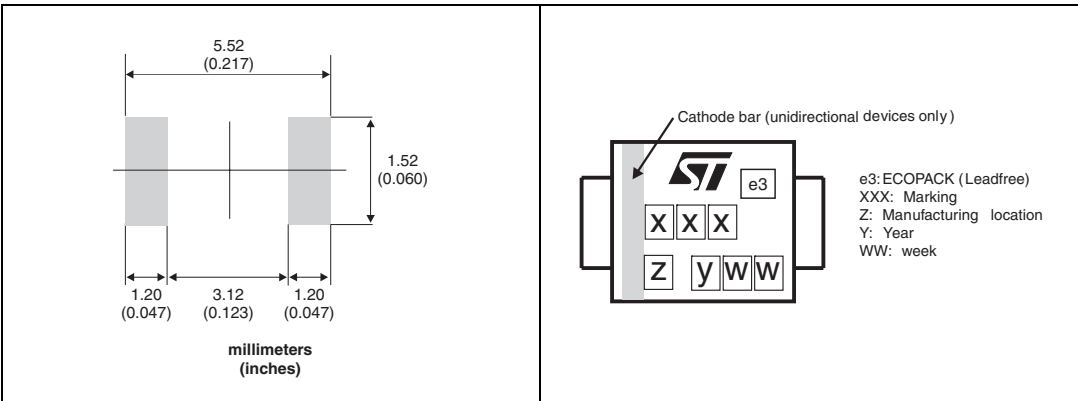
- Case: JEDEC DO-221AC molded plastic over Planar junction
- Terminals: Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity: Band indicates cathode
- Flammability: Epoxy rated UL94V-0
- RoHS package

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a lead-free second level interconnect. The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at www.st.com.

Table 5. SMAflat dimensions

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	0.90		1.10	0.035		0.043
b	1.25		1.65	0.049		0.065
c	0.15		0.40	0.006		0.016
D	2.25		2.95	0.088		0.116
E	4.80		5.60	0.189		0.220
E1	3.95		4.60	0.156		0.181
L	0.75		1.50	0.030		0.059
L1		0.50			0.019	
L2		0.50			0.019	

Figure 11. SMAflat footprint dimensions **Figure 12. Marking information optimized for SMAflat⁽¹⁾**



1. SMA footprint may also be used.

3 Ordering information

Table 6. Ordering information

Order code	Marking	Package	Weight	Base qty	Delivery mode
SMTYF5.0A	YF5.0	SMAflat	0.035 g	10 000	Tape and reel
SMTYF12A	YF12				

4 Revision history

Table 7. Document revision history

Date	Revision	Description of changes
04-Sep-2008	1	First issue

Please Read Carefully:

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST's terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

UNLESS OTHERWISE SET FORTH IN ST'S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

UNLESS EXPRESSLY APPROVED IN WRITING BY AN AUTHORIZED ST REPRESENTATIVE, ST PRODUCTS ARE NOT RECOMMENDED, AUTHORIZED OR WARRANTED FOR USE IN MILITARY, AIR CRAFT, SPACE, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS, NOR IN PRODUCTS OR SYSTEMS WHERE FAILURE OR MALFUNCTION MAY RESULT IN PERSONAL INJURY, DEATH, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE. ST PRODUCTS WHICH ARE NOT SPECIFIED AS "AUTOMOTIVE GRADE" MAY ONLY BE USED IN AUTOMOTIVE APPLICATIONS AT USER'S OWN RISK.

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.

Information in this document supersedes and replaces all information previously supplied.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

© 2008 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

www.st.com



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.