



**UNIDIRECTIONAL P-GATE THYRISTOR
OVERVOLTAGE AND OVERCURRENT PROTECTOR**

TISP8250D Overvoltage and Overcurrent Protector

Telecommunication System 30 A 10/1000 Protector

**Ion-Implanted Breakdown Region
- Precise and Stable Voltage**

Device Name	V _{DRM} V	V _(BO) V
TISP8250D	250	340

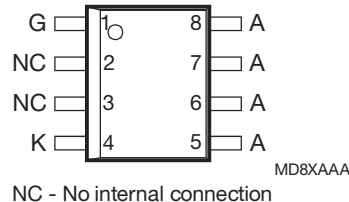
Rated for International Surge Wave Shapes

Wave Shape	Standard	I _{PPSM} A
2/10	GR-1089-CORE	75
0.5/700	CNET I 31-24	40
10/700	ITU-T K.20/21	40
10/1000	GR-1089-CORE	30

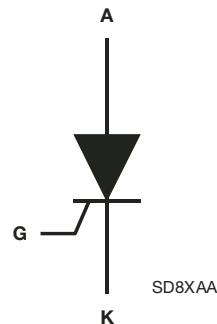
Functional Replacement for TPP25011

 **UL Recognized Component**

8-SOIC Package (Top View)



Device Symbol



Description

The TISP8250D is a P-gate reverse-blocking thyristor (SCR) designed for the protection of telecommunications equipment against overvoltages and overcurrents on the telephone line caused by lightning, a.c. power contact and induction. The fixed voltage and current triggered modes make the TISP8250D particularly suitable for the protection of ungrounded customer premise equipment. Connected across the d.c. side of a telephone set polarity bridge, in fixed voltage mode these devices can protect the ringer in the on-hook condition. In an off-hook condition, either the fixed voltage or current triggered modes can protect the following telephone electronics.

Without external gate activation, the TISP8250D is a fixed voltage protector. The maximum working voltage without clipping is 250 V and the protection voltage is 340 V. Lower values of protection voltage may be set by connecting an avalanche breakdown diode of less than 250 V between the TISP8250D gate and anode (see Figure 2.)

By connecting a small value resistor in series with the line conductor and connecting the TISP8250D gate cathode terminals in parallel with the resistor, conductor overcurrents can gate trigger the TISP8250D into conduction.

Overvoltages are initially clipped by breakdown clamping until the voltage rises to the breakover level, which causes the device to crowbar into a low-voltage on state. Overcurrents develop sufficient voltage across the external gate-cathode resistor to trigger the device into a low-voltage on state. This low-voltage on state causes the current resulting from the overstress to be safely diverted through the device. The high crowbar holding current prevents d.c. latchup as the diverted current subsides.

How To Order

Device	Package	Carrier	For Standard Termination Finish Order As	For Lead Free Termination Finish Order As	Marking Code	Standard Quantity
TISP8250D	8-SOIC	Embossed Tape Reeled	TISP8250DR	TISP8250DR-S	8250	2500
		Tube	TISP8250D	TISP8250D-S		1500

*RoHS Directive 2002/95/EC Jan 27 2003 including Annex
JULY 2000 - REVISED MARCH 2005
Specifications are subject to change without notice.
Customers should verify actual device performance in their specific applications.

TISP8250D Overvoltage and Overcurrent Protector

BOURNS®

Absolute Maximum Ratings, $T_A = 25\text{ }^\circ\text{C}$ (Unless Otherwise Noted)

Rating	Symbol	Value	Unit
Repetitive peak off-state voltage (see Note 1)	V_{DRM}	250	V
Non-repetitive peak impulse current (see Notes 2, 3 and 4) 2/10 μs (Telcordia GR-1089-CORE, 2/10 μs waveshape) 0.2/310 (CNET I 31-24, 0.5/700 μs waveshape) 5/310 μs (ITU-T K.20/21, 10/700 μs voltage waveshape) 5/310 μs (FTZ R12, 10/700 μs voltage waveshape) 10/1000 μs (Telcordia GR-1089-CORE, 10/1000 μs voltage waveshape)	I_{PPSM}	75 40 40 40 30	A
Non-repetitive peak on-state current, 50 Hz (see Notes 2, 3 and 4) 10 ms half sine wave 1 s rectified sine wave 1000 s rectified sine wave	I_{TSM}	5 3.5 0.7	A
Junction temperature	T_J	-40 to +150	$^\circ\text{C}$
Storage temperature range	T_{stg}	-65 to +150	$^\circ\text{C}$

- NOTES: 1. For voltage values at lower temperatures, derate at 0.13 %/ $^\circ\text{C}$.
 2. Initially the device must be in thermal equilibrium, with $T_J = 25\text{ }^\circ\text{C}$.
 3. The surge may be repeated after the device returns to its initial conditions.
 4. EIA/JESD51-2 environment and EIA/JESD51-3 PCB with standard footprint dimensions connected with 5 A printed wiring track widths. Derate current values at -0.61 %/ $^\circ\text{C}$ for ambient temperatures above $25\text{ }^\circ\text{C}$.

Electrical Characteristics, $T_A = 25\text{ }^\circ\text{C}$ (Unless Otherwise Noted)

Parameter	Test Conditions	Min	Typ	Max	Unit
I_{DRM} Repetitive peak off-state current	$V_D = V_{\text{DRM}}$ $T_A = 25\text{ }^\circ\text{C}$ $T_A = 85\text{ }^\circ\text{C}$			5 10	μA
$V_{(\text{BO})}$ Breakover voltage	$dv/dt = 250\text{ V/ms}$, $R_{\text{SOURCE}} = 300\ \Omega$			340	V
$I_{(\text{BO})}$ Breakover current	$dv/dt = 250\text{ V/ms}$, $R_{\text{SOURCE}} = 300\ \Omega$	15		200	mA
I_H Holding current	$I_T = 5\text{ A}$, $di/dt = -30\text{ mA/ms}$	180			mA
V_{GK} Gate-cathode voltage	$I_G = 30\text{ mA}$	0.6		1.2	V
I_{GT} Gate trigger current	$V_{\text{AK}} = 100\text{ V}$			40	mA
I_D Off-state current	$V_D = 60\text{ V}$			5	μA
C_O Off-state capacitance	$f = 1\text{ MHz}$, $V_d = 1\text{ V rms}$, $V_D = 5\text{ V}$			100	pF

Thermal Characteristics, $T_A = 25\text{ }^\circ\text{C}$ (Unless Otherwise Noted)

Parameter	Test Conditions	Min	Typ	Max	Unit
$R_{\theta\text{JA}}$ Junction to ambient thermal resistance	EIA/JESD51-3 PCB, $I_T = I_{\text{TSM}(1000)}$ (see Note 5)			170	$^\circ\text{C/W}$

- NOTE 5. EIA/JESD51-2 environment and PCB has standard footprint dimensions connected with 5A rated printed wiring track widths.

Parameter Measurement Information

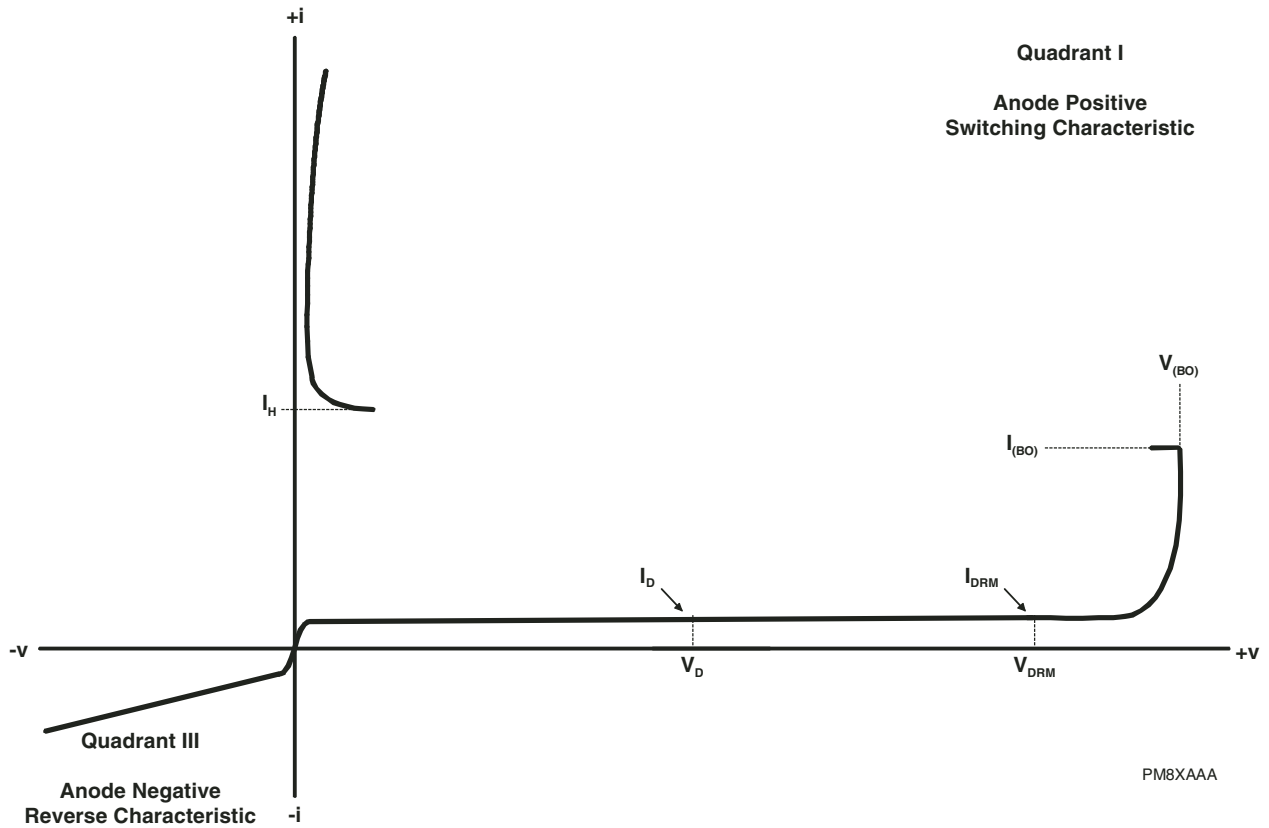


Figure 1. Voltage-Current Characteristic for A and K Terminals
All Measurements are Referenced to the K Terminal

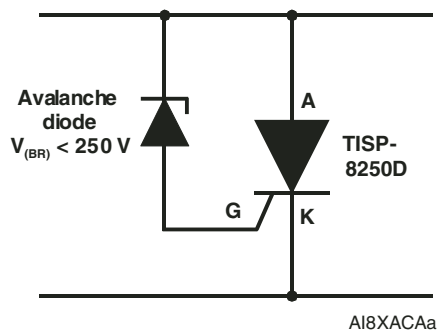


Figure 2. Overvoltage Protection Circuit

Bourns Sales Offices

Region	Phone	Fax
The Americas:	+1-951-781-5500	+1-951-781-5700
Europe:	+41-41-7685555	+41-41-7685510
Asia-Pacific:	+886-2-25624117	+886-2-25624116

Technical Assistance

Region	Phone	Fax
The Americas:	+1-951-781-5500	+1-951-781-5700
Europe:	+41-41-7685555	+41-41-7685510
Asia-Pacific:	+886-2-25624117	+886-2-25624116

www.bourns.com

Bourns® products are available through an extensive network of manufacturer's representatives, agents and distributors. To obtain technical applications assistance, a quotation, or to place an order, contact a Bourns representative in your area.



Reliable Electronic Solutions

"TISP" is a trademark of Bourns, Ltd., a Bourns Company, and is Registered in U.S. Patent and Trademark Office.
"Bourns" is a registered trademark of Bourns, Inc. in the U.S. and other countries.

COPYRIGHT© 2004, BOURNS, INC. LITHO IN U.S.A. e 12/04/TSP0410



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.