

TPP25011 TPP25012

PROGRAMMABLE TRANSIENT VOLTAGE SUPPRESSOR AND CURRENT REGULATION

FEATURES

- UNIDIRECTIONAL FUNCTION
- PROGRAMMABLE BREAKDOWN VOLTAGE UP TO 250 V
- PROGRAMMABLE CURRENT LIMITATION FROM 40 mA TO 500 mA
- HIGH SURGE CURRENT CAPABILITY IPP = 30A 10/1000 µs
- AVAILABLE IN DIL 8 AND SO 8 PACKAGES



Dedicated to sensitive telecom equipment protection, this device can provide both voltage protection and current limitation with a very tight tolerance.

The breakdown voltage can be easily programmed by using an external zener diode.

A multiple protection mode can be also

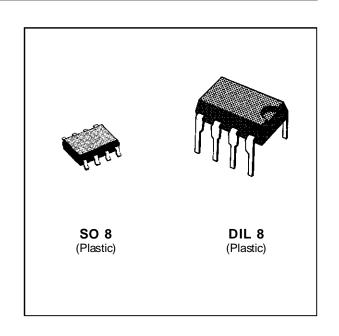
performed when using several zener diodes, providing to each line interface an optimized protection level.

The current limiting function is achieved with the use of a resistor between the gate and the cathode. The value of the resistor will determine

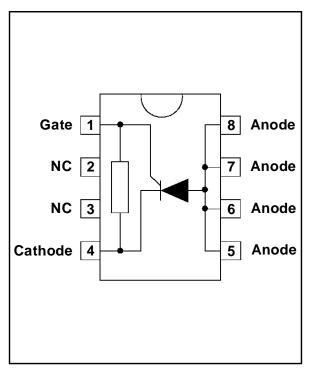
the level of the desired current.

IN ACCORDANCE WITH FOLLOWING STANDARDS:

CCITT K17 - K20	{	10/700 μs 5/310 μs	1.5 kV 38 A
VDE 0433	{	10/700 μs 5/200 μs	2 kV 50 A
CNET	{	0.5/700 μs 0.2/310 μs	1.5 kV 38 A

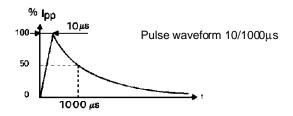


SCHEMATIC DIAGRAM



ABSOLUTE RATINGS (limiting values) (- 40° C \leq T_{amb} \leq +85 $^{\circ}$ C)

Symbol	Parameter	Value	Unit	
lpp	Peak pulse current	10/1000 μs 5/320 μs 2/10 μs	30 40 75	А
ITSM	Non repetitive surge peak on-state current tp = 10 ms tp = 1 s		5 3.5	А
di/dt	Critical rate of rise of on-state current Non repetitive		100	A/μs
dv/dt	Critical rate of rise of off-state voltage 67% VBR		5	KV/μs
T _{stg} Tj	Storage and operating junction temperature ran	- 40 to + 150 + 150	°C °C	

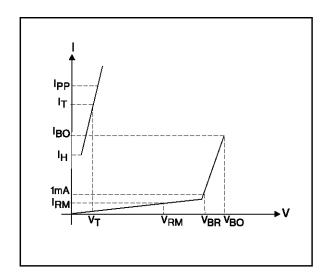


THERMAL RESISTANCES

Symbol	Parameter	Value	Unit	
R _{th} (j-a)	Junction-to-ambient	DIL 8 SO 8	125 171	°C/W °C/W

ELECTRICAL CHARACTERISTICS

Symbol	Parameter	
V _{RM}	Stand-off voltage	
V _{BR}	Breakdown voltage	
VBO	Breakover voltage	
lн	Holding current	
VT	On-state voltage @ IT	
IBO	Breakover current	
lpp	Peak pulse current	
VG	Gate voltage	
lG	Firing gate current	



OPERATION WITHOUT GATE ($0^{\circ}C \le T_{amb} \le 70^{\circ}C$)

TYPE	IRM @	[₽] V _{RM}	VBR	@ I _R	V _{BO}	@	lво	lн	VT	С
	max		min		max	min note 1	max	min note 1	max note 2	max note 3
	μ Α	٧	٧	mA	V	mA	mA	mA	٧	pF
TPP250	6	60	250	1	340	15	200	180	5	100

OPERATION WITH GATE ($T_{amb} = 25^{\circ}C$)

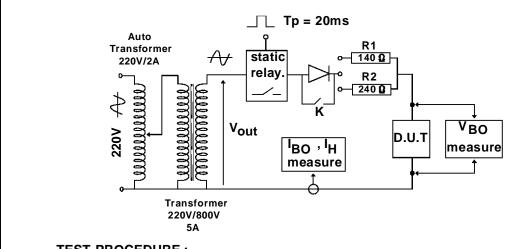
Types	V _{GN} (② I _{GN} =30 mA	IG		
	min	max	min	max	
	not	te 4	V _A - C = 100 V		
	V	V	mA	mA	
TPP250	1.05	1.35	5	40	

Note 1 : See the reference test circuit for $I_{\text{H}},\,I_{\text{BO}}$ and V_{BO} parameters.

Note 2: Square pulse $T_P = 500\mu s - I_T = 1A$. Note 3: $V_R = 5 V$, F = 1MHz. Note 4: V_{GN} limits are given at the typical I_{GN} value.



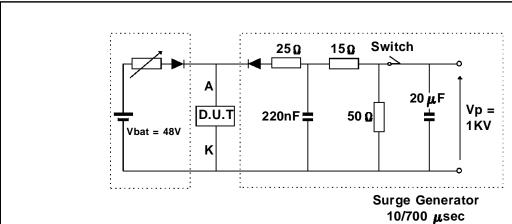
REFERENCE TEST CIRCUIT FOR IH, IBO and VBO parameters:



TEST PROCEDURE:

- Pulse Test duration (Tp = 20ms):
 - For Bidirectional devices = Switch K is closed
 - For Unidirectional devices = Switch K is open.
- Vour Selection
 - Device with V_{BR} ≤ 150 Volt
 - Vout = 250 Vrms, $R_1 = 140 \Omega$.
 - Device with $V_{BR} \ge 150 \text{ Volt}$
 - $V_{OUT} = 480 V_{RMS}$, $R_2 = 240 \Omega$.

FUNCTIONAL HOLDING CURRENT (IH) TEST CIRCUIT = GO - NOGO TEST.



Vp = 1KV / Ipp = 25A

This is a GO-NOGO Test which allows to confirm the holding current (IH) level in a functional test circuit. This test can be performed if the reference test circuit can't be implemented.

TEST PROCEDURE:

- 1) Adjust the current level at the I_H value by short circuiting the AK of the D.U.T.
 - 2) Fire the D.U.T with a surge Current : lpp = 25A, $10/700 \mu s$.
 - 3) The D.U.T will come back to the OFF-State within a duration of 50 ms max.

APPLICATION CIRCUIT

Overvoltage protection and current limitation

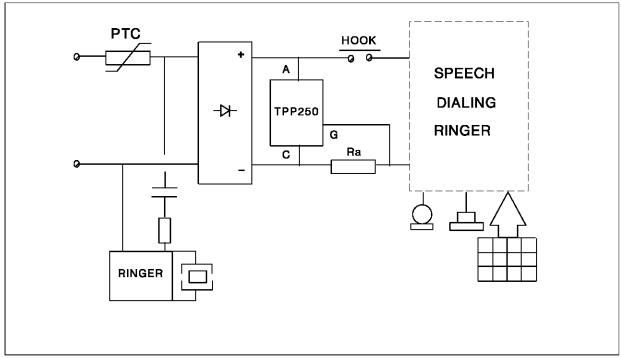
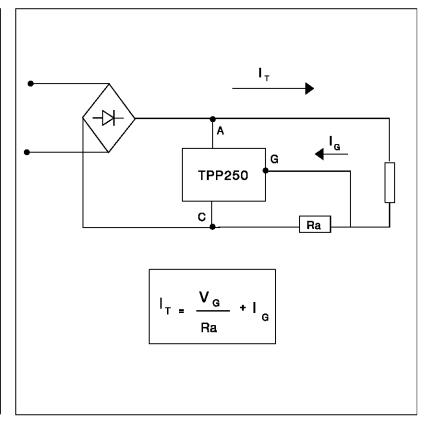
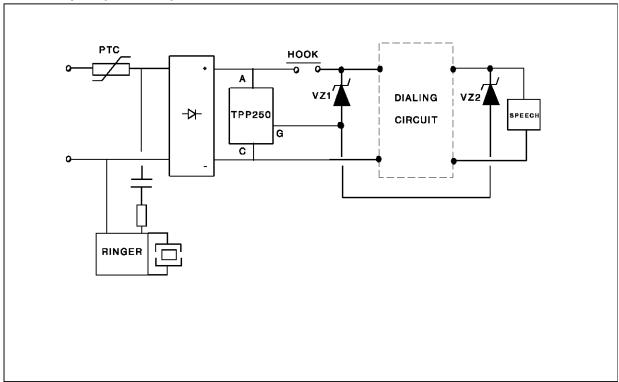


Table below gives the tolerance of the limited current I_T for each standardized resistor value.

CURRENT TOLERANCE				
$egin{array}{c} {\sf R} \\ {\Omega} \\ {\sf (}\pm{\sf 5\%)} \end{array}$	lT mA min	lT mA max		
3.00 3.30 3.60 3.90 4.30 4.70 5.10 5.60 6.20 6.80 7.50 8.20 9.10 10.10 11.00 12.00 13.00 15.00 16.00 18.00 20.00 22.00 24.00 27.00	338 308 283 261 238 218 201 184 166 152 138 127 115 104 96 88 82 72 68 61 55 50 47	514 471 435 404 370 342 319 294 269 249 229 213 196 181 169 158 149 135 129 119 111		



Ground key telephone set protection

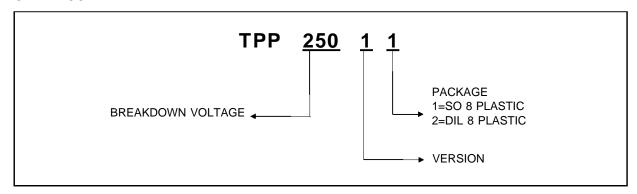


PROTECTION MODES:

OFF HOOK = Ringer circuit protection is insured with breakdown voltage at 250 V.

ON HOOK = In dialing mode and in conversation mode, the breakdown voltage of TPP250 can be adapted at different levels with two zener diodes.

ORDER CODE

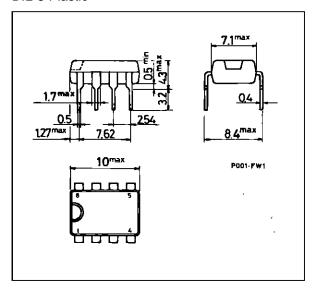


MARKING

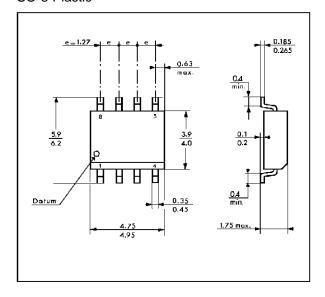
Package	Туре	Marking
SO 8	TPP25011	TPP250
DIL 8	TPP25012	TPP250

PACKAGE MECHANICAL DATA (in millimeters)

DIL 8 Plastic

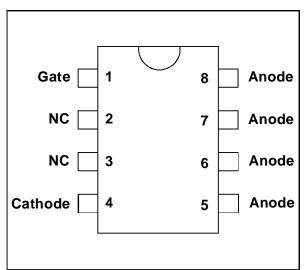


SO 8 Plastic

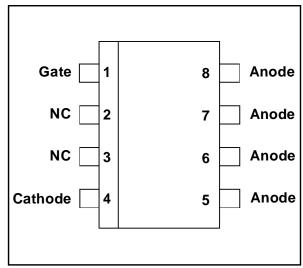


CONNECTION DIAGRAM

DIL 8 Plastic



SO 8 Plastic



Packaging: Products supplied in antistatic tubes.

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