

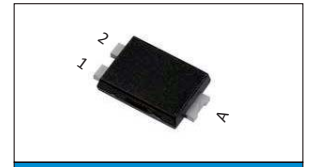


## TYPICAL APPLICATIONS

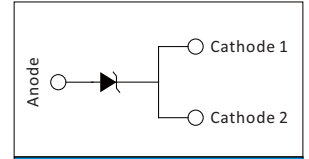
Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for automotive, consumer, computer, industrial, and telecommunication.

## FEATURES

- > Glass passivated chip
- > 1500 W peak pulse power capability with a 10/1000  $\mu$ s waveform, repetitive rate (duty cycle):0.01 %
- > High reliability application and automotive grade
- > AEC Q101 qualified
- > Low leakage
- > Unidirectional unit
- > Excellent clamping capability
- > Very fast response time
- > RoHS compliant



TO-277 PACKAGE



SCHEMATIC SYMBOL

## MAXIMUM RATINGS( $T_A=25^\circ\text{C}$ UNLESS OTHERWISE SPECIFIED)

PARAMETER	SYMBOL	VALUE	UNIT
Peak power dissipation with a 10/1000 $\mu$ s waveform(Fig.3) <sup>(1)(2)</sup>	$P_{PPM}$	1500	W
Peak pulse current with a 10/1000 $\mu$ s waveform(Fig.1) <sup>(1)</sup>	$I_{PPM}$	See Next Table	A
Peak forward surge current, 8.3 ms single half sine-wave <sup>(2)</sup>	$I_{FSM}$	200	A
Maximum instantaneous forward voltage at 100 A <sup>(3)</sup>	$V_F$	3.5	V
Operating junction and storage temperature range	$T_J, T_{STG}$	-55 ~ +150	$^\circ\text{C}$

**Note:**

- (1) Non-repetitive current pulse, per fig. 3 and derated above  $T_A = 25^\circ\text{C}$  per fig. 2
- (2) Measured on 8.3 ms single half sine-wave, or equivalent square wave, duty cycle = 4 pulses per minute maximum
- (3) Pulse test: 300  $\mu$ s pulse width, 1 % duty cycle



ELECTRICAL CHARACTERISTICS( $T_A=25^{\circ}\text{C}$  UNLESS OTHERWISE SPECIFIED)

PART NUMBER	DEVICE MARKING CODE	BREAKDOWN VOLTAGE $V_{BR}$ @ $I_T$			MAXIMUM REVERSE LEAKAGE	WORKING PEAK REVERSE VOLTAGE	MAXIMUM REVERSE SURGE CURRENT	MAXIMUM CLAMPING VOLTAGE
		Min.(V)	Max.(V)	$I_T$ (mA)	$I_R$ @ $V_{RWM}$ ( $\mu\text{A}$ )	$V_{RWM}$ (V)	$I_{PP}$ (A)	$V_C$ @ $I_{PP}$ (V)
TPC6.8A	6V8A	6.45	7.14	1	1500	5.80	143.0	10.5
TPC7.5A	7V5A	7.13	7.88	1	500	6.40	133.0	11.3
TPC8.2A	8V2A	7.79	8.61	1	200	7.02	124.0	12.1
TPC9.1A	9V1A	8.65	9.55	1	50	7.78	112.0	13.4
TPC10A	10A	9.50	10.50	1	20	8.55	103.0	14.5
TPC11A	11A	10.50	11.60	1	5	9.40	96.2	15.6
TPC12A	12A	11.40	12.60	1	2	10.2	89.8	16.7
TPC13A	13A	12.40	13.70	1	2	11.1	82.4	18.2
TPC15A	15A	14.30	15.80	1	1	12.8	70.8	21.2
TPC16A	16A	15.20	16.80	1	1	13.6	66.7	22.5
TPC18A	18A	17.10	18.90	1	1	15.3	59.5	25.2
TPC20A	20A	19.00	21.00	1	1	17.1	54.2	27.7
TPC22A	22A	20.90	23.10	1	1	18.8	49.0	30.6
TPC24A	24A	22.80	25.20	1	1	20.5	45.2	33.2
TPC27A	27A	25.70	28.40	1	1	23.1	40.0	37.5
TPC30A	30A	28.50	31.50	1	1	25.6	36.2	41.4
TPC33A	33A	31.40	34.70	1	1	28.2	32.8	45.7
TPC36A	36A	34.20	37.80	1	1	30.8	30.1	49.9
TPC39A	39A	37.10	41.00	1	1	33.3	27.8	53.9
TPC43A	43A	40.90	45.20	1	1	36.8	25.3	59.3
TPC47A	47A	44.70	49.40	1	1	40.2	23.1	64.8
TPC51A	51A	48.50	53.60	1	1	43.6	21.4	70.1

**Note:**

- (1)  $V_{BR}$  measured after  $I_T$  applied for 300  $\mu\text{s}$ ,  $I_T$  = square wave pulse or equivalent
- (2) Surge current waveform per fig. 3 and derated per fig. 2
- (3) To calculate  $V_{BR}$  vs. junction temperature, use the following formula:  $V_{BR}$  at  $T_j$  =  $V_{BR}$  at  $25^{\circ}\text{C}$  x  $(1 + \alpha T \times (T_j - 25))$



RATINGS AND CHARACTERISTICS CURVES ( $T_A=25^\circ\text{C}$  UNLESS OTHERWISE NOTED)

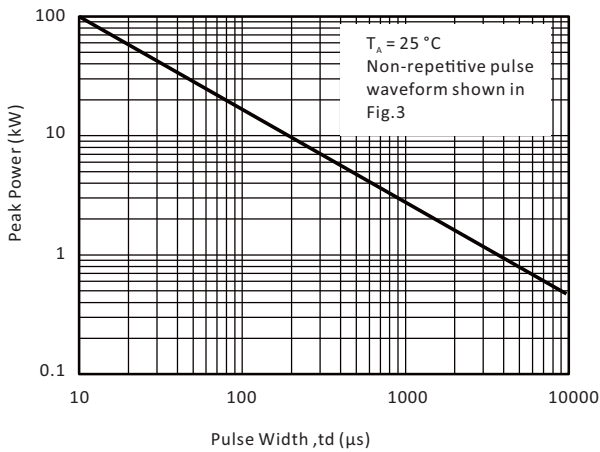


Fig. 1 - Peak Pulse Power Rating Curve

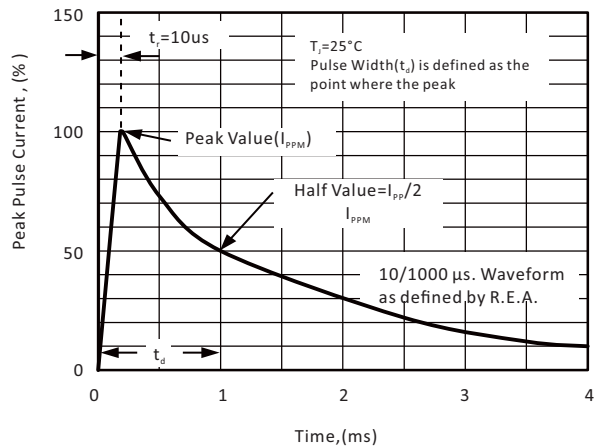


Fig. 3 - Pulse Waveform

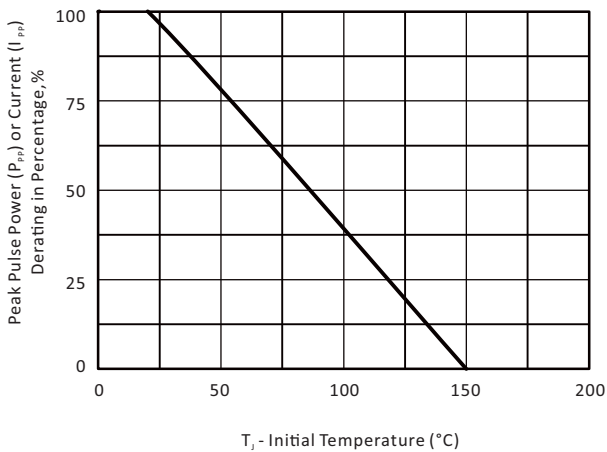


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

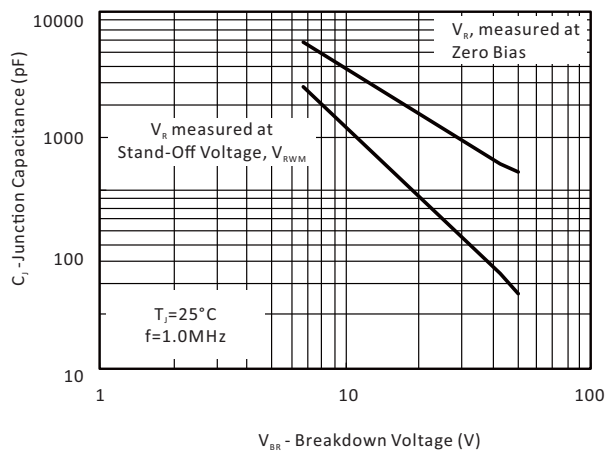


Fig. 4 - Typical Junction Capacitance



TO-277 PACKAGE DIMENSIONS

DIM	MILLIMETERS		INCHES	
	Min.	Max.	Min.	Max.
A	4.25	4.35	0.167	0.172
B	3.25	3.45	0.128	0.136
C	6.85	7.15	0.269	0.282
D	6.05	6.15	0.238	0.243
E	1.10	1.30	0.044	0.052
F	2.10 Typ.		0.083 Typ.	
G	0.25	0.35	0.009	0.014
H	1.00	1.20	0.039	0.048

RECOMMENDED PAD LAYOUT DIMENSIONS

DIM	MILLIMETERS	INCHES
	Typ.	Typ.
A	5.35	0.211
B	3.60	0.142
C	0.70	0.028
D	1.85	0.073
E	1.50	0.059
F	4.30	0.169
G	2.10	0.083

ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
TPCxxA-13	TO-277	5000PCS	13"