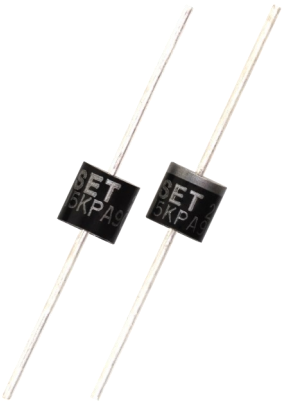
Description

Transient Voltage Suppressor (TVS) is a circuit protection component that either attenuates (reduces) or filters a transient voltage spike (overvoltage), TVS diodes provide critical protection by going into avalanche breakdown within no more than a few nanoseconds after a strike, clamping the transient voltage, and routing its current to the ground.



Functional Diagram



Bi-Directional

Features

- Excellent clamping capability
- Low profile package
- Glass passivated chip junction in P600 package
- 15 kW peak pulse power capability with a 10/1000 μS Waveform, repetition rate (duty cycle): 0.01%
- Typical failure mode is short from over-specified voltage or current
- IEC 61000-4-2 ESD 30 kV (Air), 30 kV (Contact)
- EFT protection of data lines in accordance with IEC 61000-4-4
- Very fast response time
- High temperature to reflow soldering guaranteed: 260 °C / 40 sec / 0.375", (9.5 mm) lead length, 5 lbs., (2.3 kg) tension
- Meet MSL level1, per J-STD-020
- ISO 16750-2 Test A 24V System(200V 4Ω 350ms 10C)

Applications

- Communication Equipment
- Security & Protection
- Industrial Control Equipment
- Power Supply
- Automotive Electronics
- New Energy
- Lightning Protection

Maximum Ratings and Characteristics

(Ratings at 25 °C ambient temperature unless otherwise specified.)

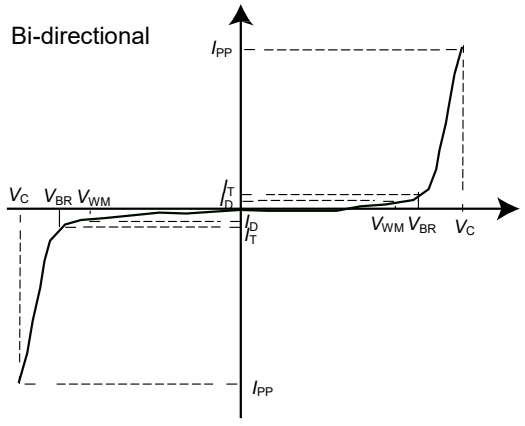
Parameter	Symbol	Value	Unit
Peak Power Dissipation(Fig.2)- with a 10/1000 μS waveform(1)	P_{PPM}	15	kW
Peak Power Dissipation on Infinite Heat Sink at T_L=75 °C	P_D	8.0	W
Peak Forward Surge Current,8.3 ms single half sinewave unidirectional only(2)	I_{FSM}	400	A
Operating Temperature Range	T_J	-55 to 175	°C
Storage Temperature Range	T_{STG}	-55 to 175	°C
Typical Thermal Resistance Junction to Lead	$R_{\theta JL}$	8.0	°C/W
Typical Thermal Resistance Junction to Ambient	$R_{\theta JA}$	40	°C/W

Notes
1. Non-repetitive current pulse, per Fig. 4 and derated above T_J (initial)=25 °C per Fig. 3.
2. Measured of 8.3 ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minute maximum.

Electrical Characteristics (T_A=25 °C unless otherwise noted)Table 1

Part Number	Breakdown Voltage V_{BR}@I_T		Test Current I_T	Reverse Stand-off Voltage V_R	Max. Reverse Leakage I_R@V_R	Max. Peak Pulse Current I_{PPM}	Maxi. Clamping Voltage V_C@I_{PPM}
	Min	Max					
	(V)		(mA)	(V)	(μA)	(A)	(V)
15KPA36CA	40.2	44.0	5.0	36.0	2.0	252.5	59.8

Notes:
1. Measured of 8.3 ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minute maximum.
2. V_F < 3.5 V for single die parts and V_F < 5.0 V for stacked-die parts.
3.For bidirectional type having V_R of 30 volts and less, the I_R should be doubled.



Performance Curve for Reference(T_A=25 °C unless otherwise noted)

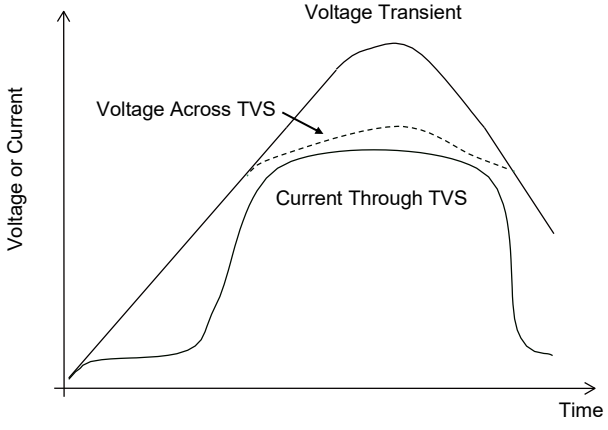


FIGURE 1 TVS Transients Clamping Waveform

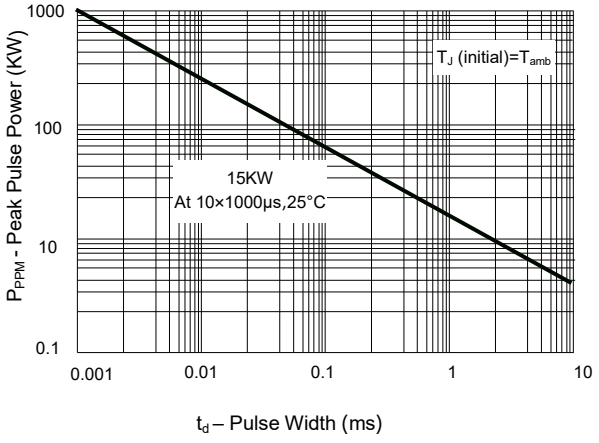


FIGURE 2 Peak Pulse Power Rating Curve

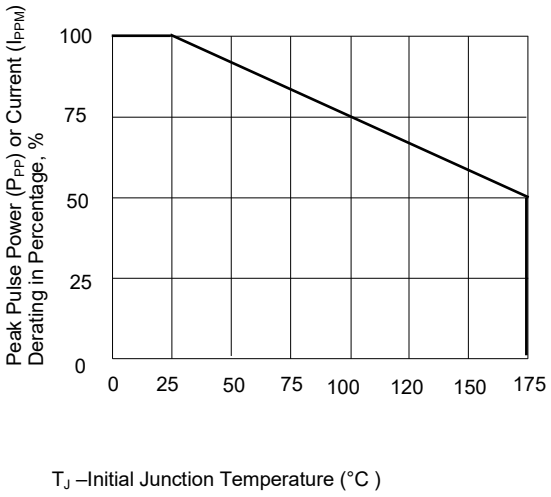


FIGURE 3 Peak Pulse Power Derating Curve

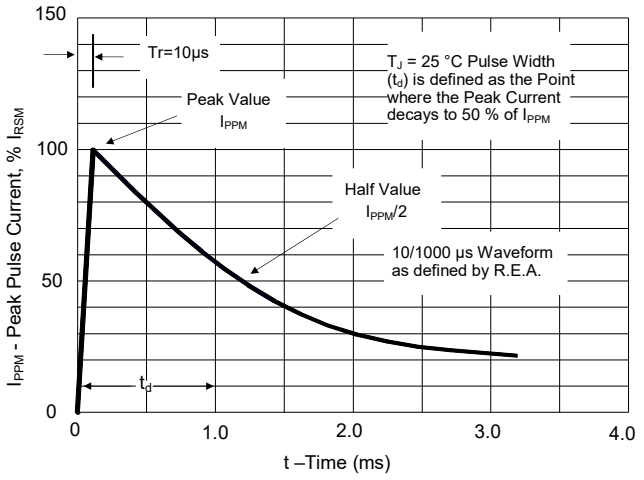


FIGURE 4 Pulse Waveform

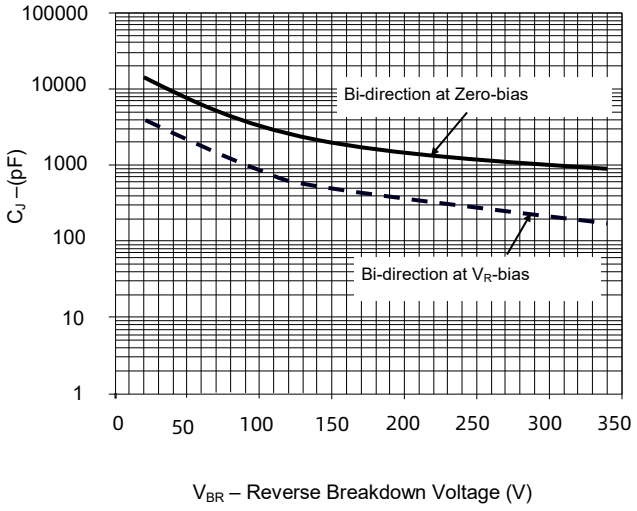


FIGURE 5 Typical Junction Capacitance

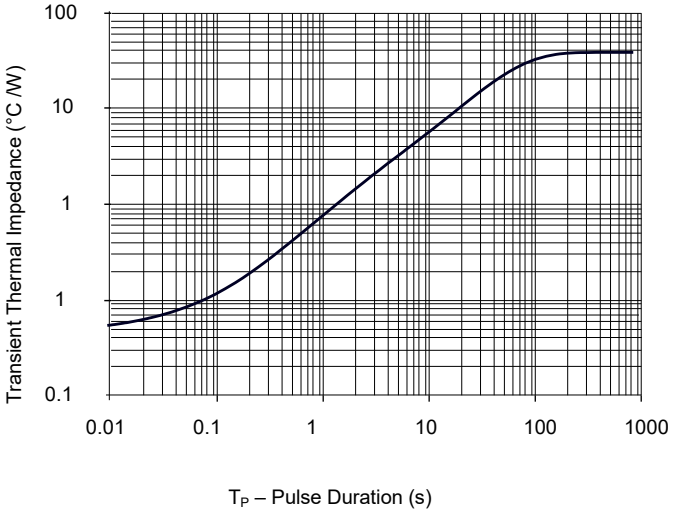


FIGURE 6 Typical Transient Thermal Impedance

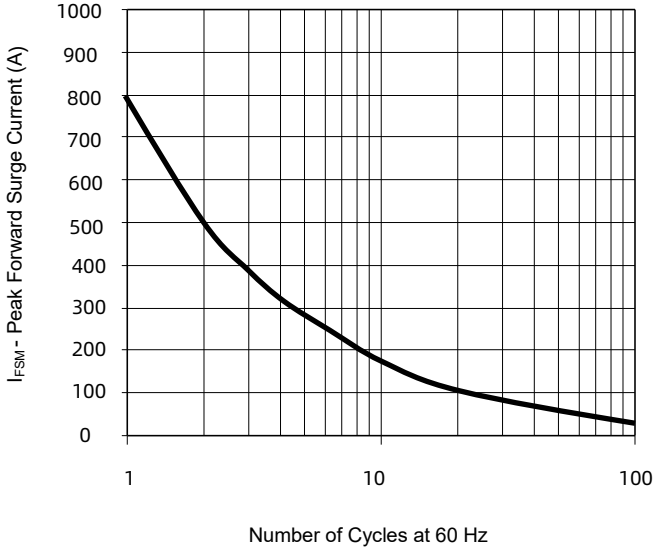


FIGURE 7 Maximum Non-Repetitive Forward Surge Current
Uni-Directional only

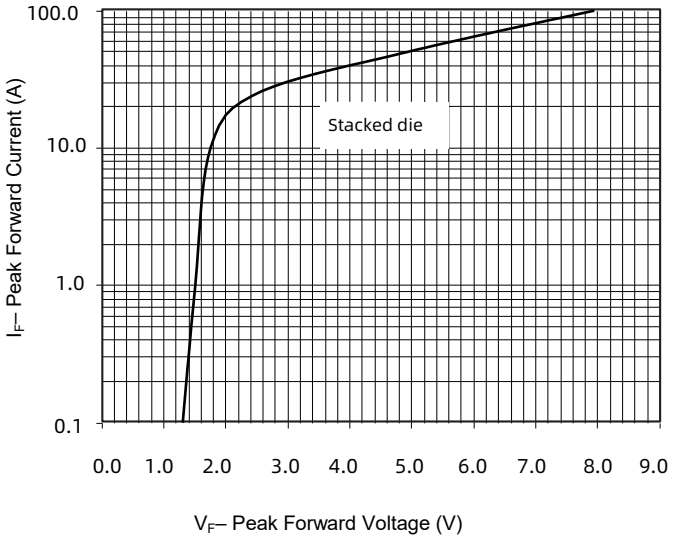
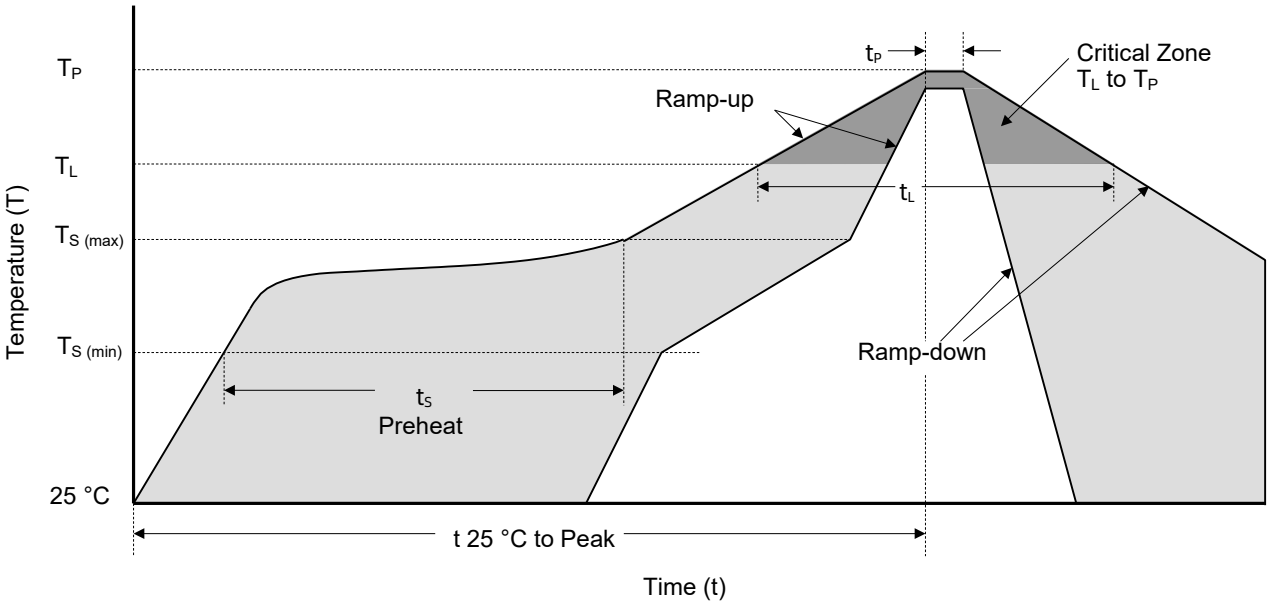


FIGURE 8 Peak Forward Drop vs Peak Forward Current
(Typical Values)

Soldering Parameters



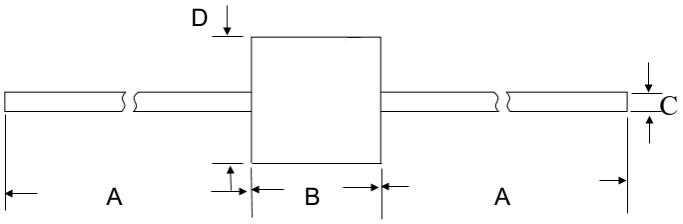
Reflowing Condition

Reflow Soldering Parameters		Lead-Free Assembly
Pre-heat	Temperature Min ($T_{S\ (min)}$)	150 °C
	Temperature Max ($T_{S\ (max)}$)	200 °C
	Time (min to max) (t_S)	60 ~ 120 seconds
Average Ramp Up Rate (Liquidus Temp (TL) to Peak		3 °C / second max.
T_S (max) to T_L Ramp-up Rate		3 °C / second max.
Reflow	Temperature (T_L) (Liquidus)	217 °C
	Time (min to max) (t_L)	60 ~ 150 seconds
Peak Temperature (T_P)		$260^{+0/-5}$ °C
Time of within 5 °C of Actual Peak Temperature (t_P)		20 ~ 40 seconds
Ramp-down Rate		6 °C / second max.
Time from 25 °C to Peak Temperature		8 Minutes max.
Do Not Exceed		260 °C

Flow/Wave Soldering (Solder Dipping)

Peak Temperature	260 °C+0 /- 5 °C
Dipping Time	10 seconds
Soldering Number	1 time

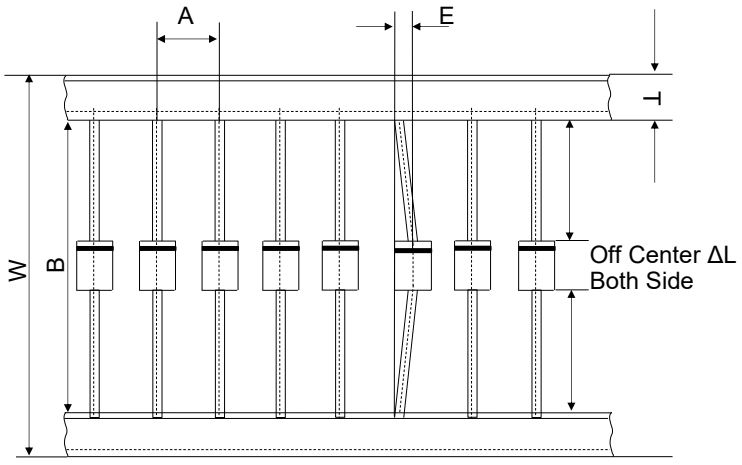
Package Outline Dimensions (P600)

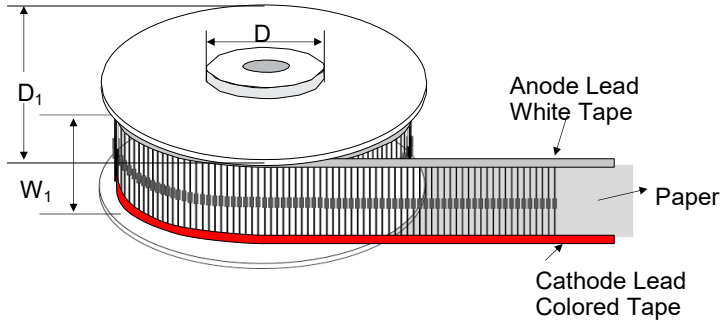


P600

Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	25.40	-	1.000	-
B	8.60	9.10	0.340	0.360
C	1.22	1.36	0.048	0.054
D	8.60	9.10	0.340	0.360

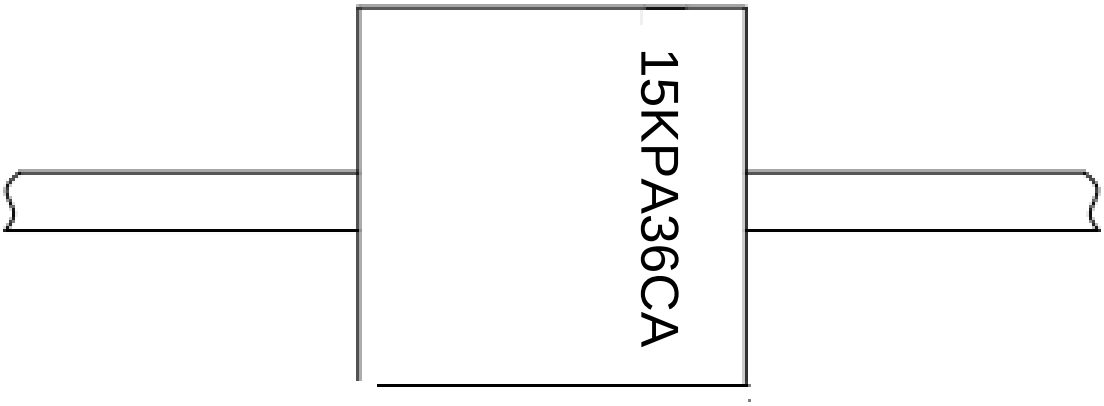
Packaging Information

Tape	Symbol	Millimeters	Inches
	A	10±0.5	0.394+/-0.020
	B	53.0+2.0/-1.0	2.063+0.079/-0.039
	E	1.2	0.047
	W	65.0	2.56
	T	6.0	0.236
	ΔL	0.7Max.	0.028Max.

Tape & Reel (T/R)	Symbol	Millimeters	Inches
	D	330	13.0
	D_1	76.2	3.0
	W_1	69.85	2.75

Part Number	Component Package	QTY's (Reel)	Package Option
15KPA36CA	P600	800 PCS	Tape & Reel

Marking codes



Note

(1)"15KPA36CA" is device code,fixed.