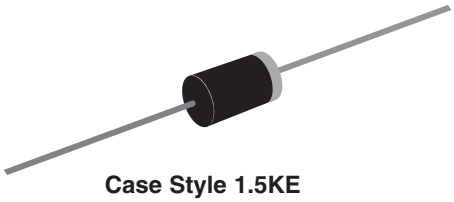
TRANSZORB® Transient Voltage Suppressors



Case Style 1.5KE

PRIMARY CHARACTERISTICS	
V_{WM}	5.0 V to 18 V
V_{BR} (uni-directional)	6.0 V to 21.2 V
V_{BR} (bi-directional)	9.2 V to 21.2 V
P_{PPM}	1500 W
P_D	6.5 W
I_{FSM}	200 A
T_J max.	175 °C
Polarity	Uni-directional, bi-directional
Package	1.5KE

DEVICES FOR BI-DIRECTION APPLICATIONS

For bi-directional types, use C suffix (e.g. ICTE18C). Electrical characteristics apply in both directions.

FEATURES

- Glass passivated chip junction
- Available in uni-directional and bi-directional
- 1500 W peak pulse power capability with a 10/1000 μs waveform, repetitive rate (duty cycle): 0.01 %
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- AEC-Q101 qualified
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

Pb e3 RoHS COMPLIANT

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 consumer, computer, industrial, and telecommunication.

MECHANICAL DATA

Case: Molded epoxy body over passivated junction
Molding compound meets UL 94 V-0 flammability rating
Base P/N-E3 - RoHS compliant and commercial grade
Base P/NHE3 - RoHS compliant and AEC-Q101 qualified

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
E3 suffix meets JESD 201 class 1A whisker test, HE3 suffix meets JESD 201 class 2 whisker test

Polarity: For uni-directional types the color band denotes cathode end, no marking on bi-directional types

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)

PARAMETER	SYMBOL	LIMIT	UNIT
Peak pulse power dissipation with a 10/1000 μs waveform [1] (fig. 1)	P_{PPM}	1500	W
Peak pulse current with a 10/1000 μs waveform [1] (fig. 3)	I_{PPM}	See next table	A
Power dissipation on infinite heatsink at T_L = 75 °C (fig. 8)	P_D	6.5	W
Peak forward surge current 8.3 ms single half sine-wave uni-directional only [2]	I_{FSM}	200	A
Maximum instantaneous forward voltage at 100 A for uni-directional only	V_F	3.5	V
Operating junction and storage temperature range	T_J, T_{STG}	- 55 to + 175	°C

Notes

(1) Non-repetitive current pulse, per fig. 3 and derated above T_A = 25 °C per fig. 2
(2) 8.3 ms single half sine-wave, duty cycle = 4 pulses per minute maximum

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ELECTRICAL CHARACTERISTICS (JEDEC REGISTERED DATA) (T_A = 25 °C unless otherwise noted)							
JEDEC TYPE NUMBER	GENERAL SEMICONDUCTOR PART NUMBER	STAND-OFF VOLTAGE V_{WM} (V)	MINIMUM BREAKDOWN VOLTAGE AT 1.0 mA V_{BR} (V)	MAXIMUM REVERSE LEAKAGE AT V_{WM} I_D (µA)	MAXIMUM CLAMPING VOLTAGE AT I_{PP} = 1.0 A V_C (V)	MAXIMUM CLAMPING VOLTAGE AT I_{PP} = 10 A V_C (V)	MAXIMUM PEAK PULSE CURRENT I_{PP} (A)
UNI-DIRECTIONAL TYPES							
1N6373 (2)	ICTE5 (2)	5.0	6.0	300	7.1	7.5	160
1N6374	ICTE8	8.0	9.4	25.0	11.3	11.5	100
1N6375	ICTE10	10.0	11.7	2.0	13.7	14.1	90
1N6376	ICTE12	12.0	14.1	2.0	16.1	16.5	70
1N6377	ICTE15	15.0	17.6	2.0	20.1	20.6	60
1N6378	ICTE18	18.0	21.2	2.0	24.2	25.2	50
BI-DIRECTIONAL TYPES							
1N6382	ICTE8C	8.0	9.4	50	11.4	11.6	100
1N6383	ICTE10C	10.0	11.7	2.0	14.1	14.5	90
1N6384	ICTE12C	12.0	14.1	2.0	16.7	17.1	70
1N6385	ICTE15C	15.0	17.6	2.0	20.8	21.4	60
1N6386	ICTE18C	18.0	21.2	2.0	24.8	25.5	50

Notes

(1) "C" suffix indicates bi-directional

(2) ICTE5 and 1N6373 are not available as bi-directional

(3) Clamping factor: 1.33 at full rated power; 1.20 at 50 % rated power; clamping factor: the ratio of the actual V_C (clamping voltage) to the V_{BR} (breakdown voltage) as measured on a specific device

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
ICTE5-E3/54	0.968	54	1400	13" diameter paper tape and reel
ICTE5HE3/54 (1)	0.968	54	1400	13" diameter paper tape and reel

Note

(1) AEC-Q101 qualified

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RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

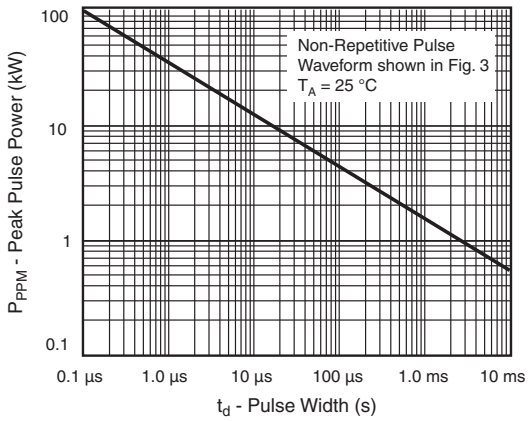

Fig. 1 - Peak Pulse Power Rating Curve

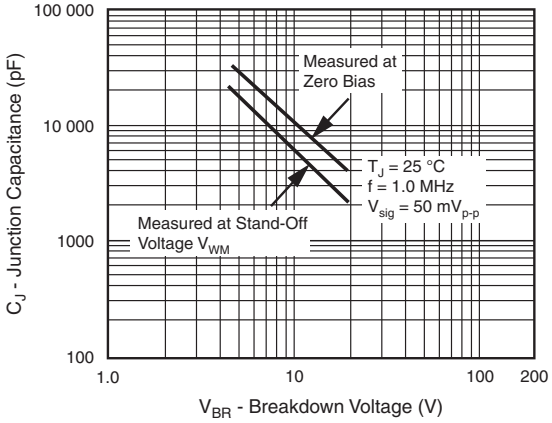

Fig. 4 - Typical Junction Capacitance Uni-Directional

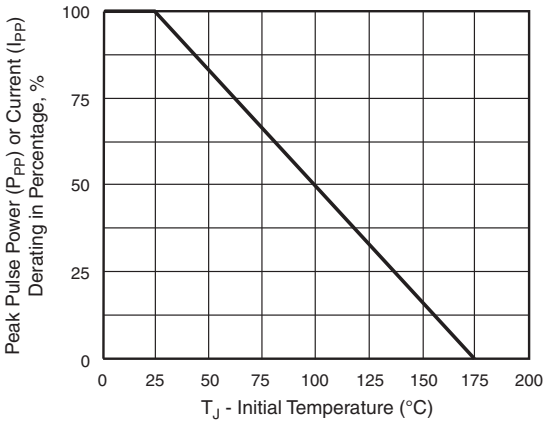

Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

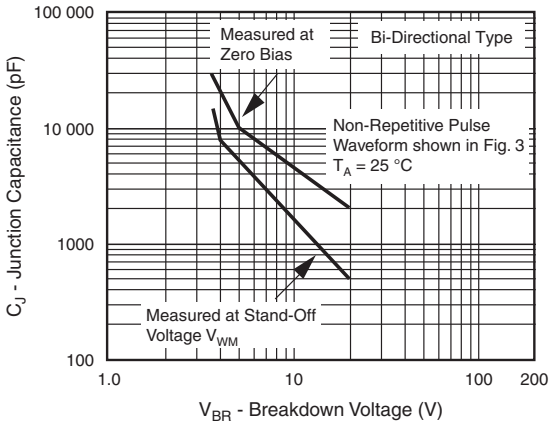

Fig. 5 - Typical Junction Capacitance

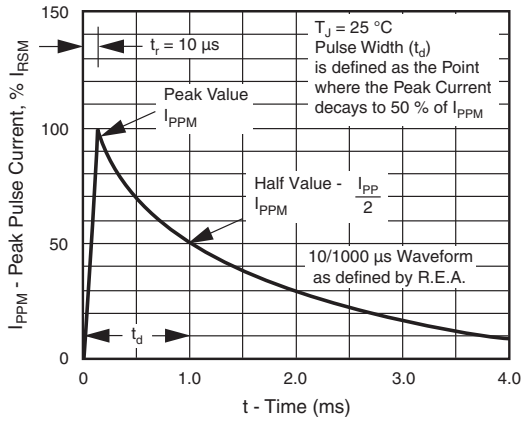

Fig. 3 - Pulse Waveform

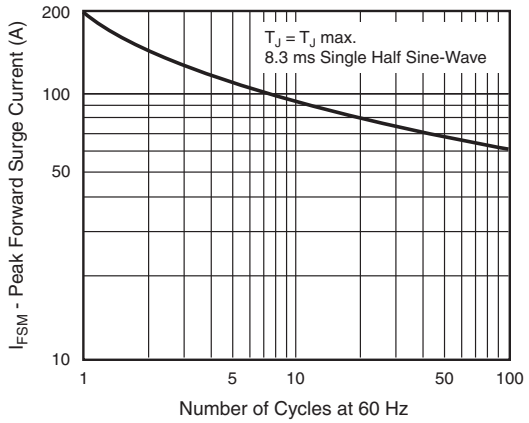

Fig. 6 - Maximum Non-Repetitive Forward Surge Current
Uni-Directional Only

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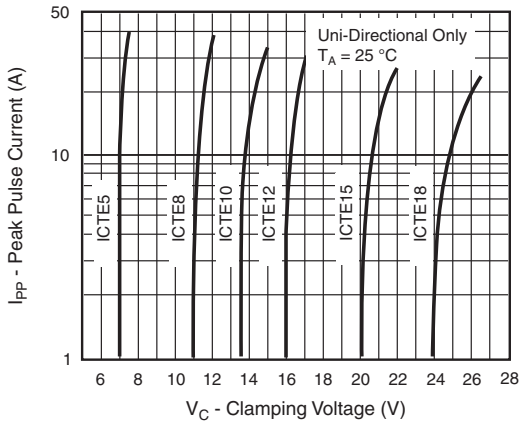


Fig. 7 - Typical Characteristics Clamping Voltage

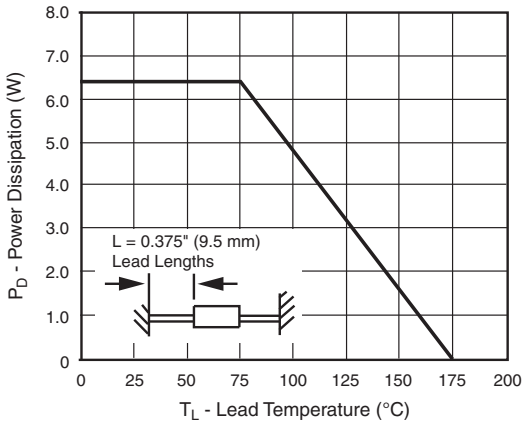
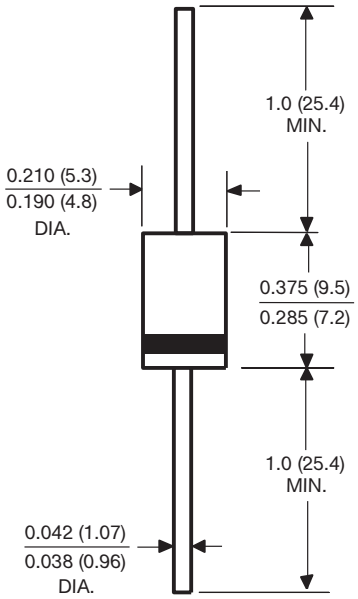


Fig. 8 - Power Derating Curve

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

Case Style 1.5KE



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