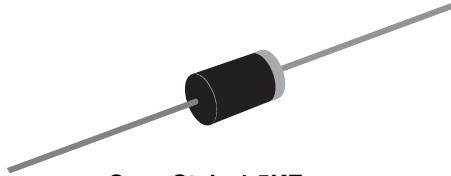


## TRANSZORB® Transient Voltage Suppressors



Case Style 1.5KE

PRIMARY CHARACTERISTICS	
$V_{WM}$	5.0 V to 18 V
$P_{PPM}$	1500 W
$P_D$	6.5 W
$I_{FSM}$	200 A
$T_J \text{ max.}$	175 °C

### DEVICES FOR BI-DIRECTION APPLICATIONS

For bi-directional types, use C suffix (e.g. ICTE-18C).  
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  $\mu\text{s}$  waveform, repetitive rate (duty cycle): 0.01 %
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- Solder dip 260 °C, 40 s
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



### 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, commercial grade  
Base P/NHE3 - RoHS compliant, high reliability/automotive grade (AEC Q101 qualified)

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD22-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 ( $T_A = 25\text{ °C}$ unless otherwise noted)			
PARAMETER	SYMBOL	LIMIT	UNIT
Peak pulse power dissipation with a 10/1000 $\mu\text{s}$ waveform <sup>(1)</sup> (Fig. 1)	$P_{PPM}$	1500	W
Peak pulse current with a 10/1000 $\mu\text{s}$ waveform <sup>(1)</sup> (Fig. 3)	$I_{PPM}$	See next table	A
Power dissipation on infinite heatsink at $T_L = 75\text{ °C}$ (Fig. 8)	$P_D$	6.5	W
Peak forward surge current 8.3 ms single half sine-wave uni-directional only <sup>(2)</sup>	$I_{FSM}$	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  $T_A = 25\text{ °C}$  per Fig. 2

(2) 8.3 ms single half sine-wave, duty cycle = 4 pulses per minute maximum



<b>ELECTRICAL CHARACTERISTICS (JEDEC REGISTERED DATA)</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)							
JEDEC TYPE NUMBER	GENERAL SEMICONDUCTOR PART NUMBER	STAND-OFF VOLTAGE $V_{WM}$ (V)	MINIMUM <sup>(3)</sup> BREAKDOWN VOLTAGE AT 1.0 mA $V_{BR}$ (V)	MAXIMUM REVERSE LEAKAGE AT $V_{WM}$ $I_D$ ( $\mu\text{A}$ )	MAXIMUM CLAMPING VOLTAGE AT $I_{PP} = 1.0\text{ A}$ $V_C$ (V)	MAXIMUM CLAMPING VOLTAGE AT $I_{PP} = 10\text{ A}$ $V_C$ (V)	MAXIMUM PEAK PULSE CURRENT $I_{PP}$ (A)
<b>UNI-DIRECTIONAL TYPES</b>							
1N6373 <sup>(2)</sup>	ICTE-5 <sup>(2)</sup>	5.0	6.0	300	7.1	7.5	160
1N6374	ICTE-8	8.0	9.4	25.0	11.3	11.5	100
1N6375	ICTE-10	10.0	11.7	2.0	13.7	14.1	90
1N6376	ICTE-12	12.0	14.1	2.0	16.1	16.5	70
1N6377	ICTE-15	15.0	17.6	2.0	20.1	20.6	60
1N6378	ICTE-18	18.0	21.2	2.0	24.2	25.2	50
<b>BI-DIRECTIONAL TYPES</b>							
1N6382	ICTE-8C	8.0	9.4	50.0	11.4	11.6	100
1N6383	ICTE-10C	10.0	11.7	2.0	14.1	14.5	90
1N6384	ICTE-12C	12.0	14.1	2.0	16.7	17.1	70
1N6385	ICTE-15C	15.0	17.6	2.0	20.8	21.4	60
1N6386	ICTE-18C	18.0	21.2	2.0	24.8	25.5	50

**Notes:**

- (1) "C" Suffix indicates bi-directional
- (2) ICTE-5 and 1N6373 are not available as bi-directional
- (3) The minimum breakdown voltage as shown takes into consideration the  $\pm 1\text{ V}$  tolerance normally specified for power supply regulation on most integrated circuit manufacturers data sheets. Please consult factory for devices that require reduced clamping voltages where tighter regulated power supply voltages are employed
- (4) 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

<b>ORDERING INFORMATION</b> (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
ICTE-5-E3/54	0.968	54	1400	13" diameter paper tape and reel
ICTE-5HE3/54 <sup>(1)</sup>	0.968	54	1400	13" diameter paper tape and reel

**Note:**

- (1) Automotive grade AEC Q101 qualified

## RATINGS AND CHARACTERISTICS CURVES

( $T_A = 25\text{ }^\circ\text{C}$  unless otherwise noted)

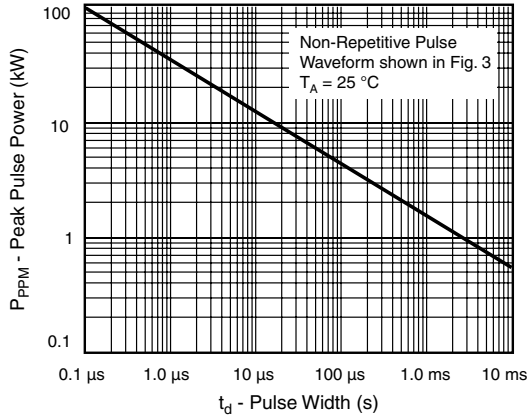


Figure 1. Peak Pulse Power Rating Curve

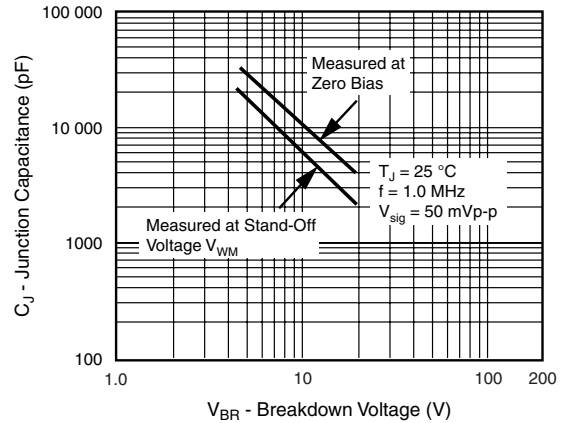


Figure 4. Typical Junction Capacitance Uni-Directional

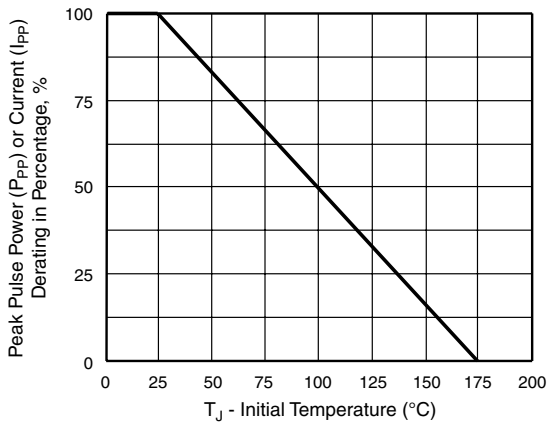


Figure 2. Pulse Power or Current vs. Initial Junction Temperature

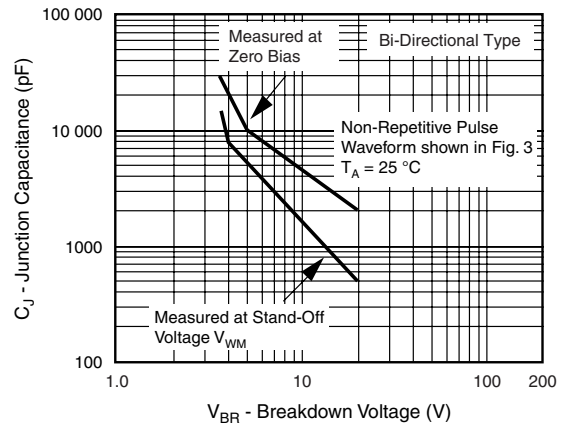


Figure 5. Typical Junction Capacitance Bi-Directional Type

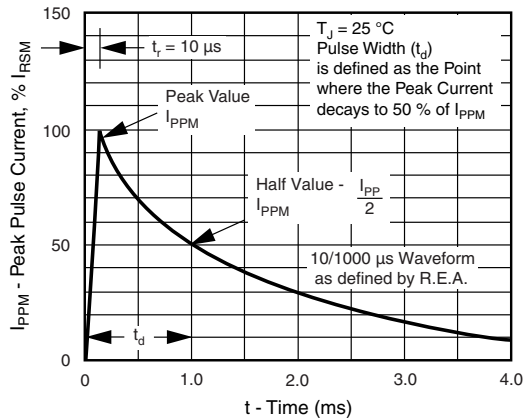


Figure 3. Pulse Waveform

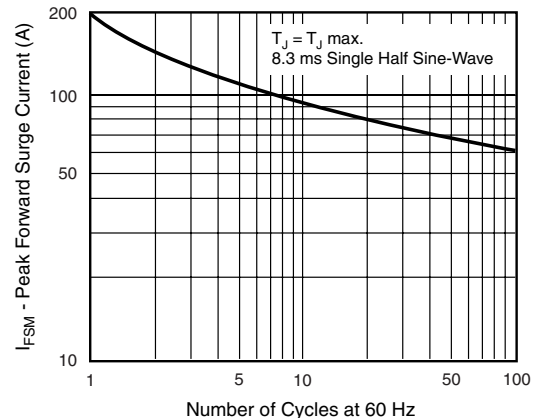


Figure 6. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only

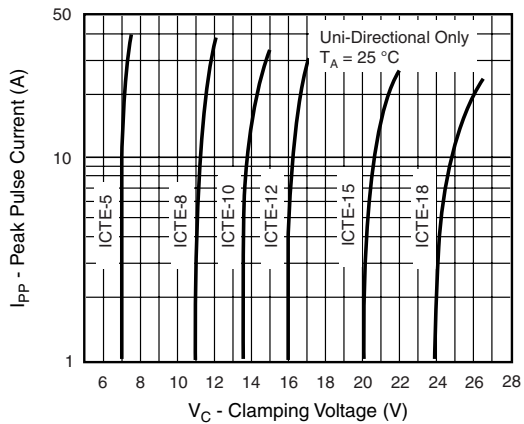


Figure 7. Typical Characteristics Clamping Voltage

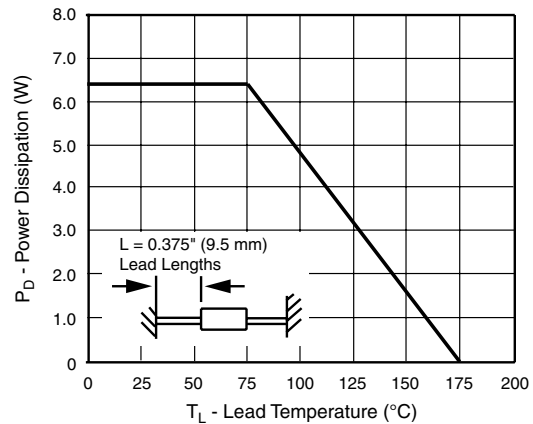
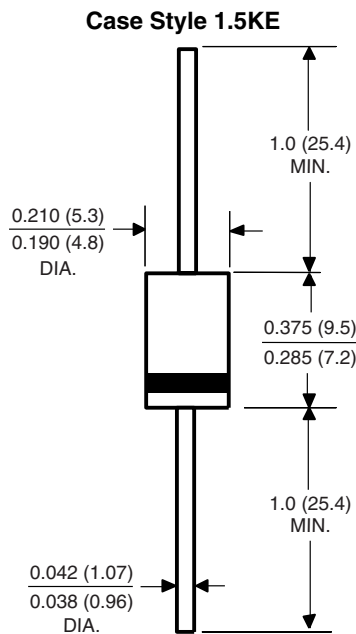


Figure 8. Power Derating Curve

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)





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