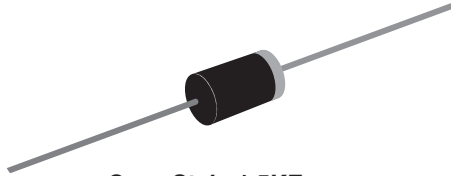


TRANSZORB® Transient Voltage Suppressors



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. 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
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- Find out more about Vishay's Automotive Grade Product requirements at: www.vishay.com/applications



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, commercial grade
Base P/NHE3 - RoHS compliant, automotive grade
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 ($T_A = 25\text{ °C}$ 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 $T_L = 75\text{ °C}$ (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 $T_A = 25\text{ °C}$ per fig. 2
⁽²⁾ 8.3 ms single half sine-wave, duty cycle = 4 pulses per minute maximum



ELECTRICAL CHARACTERISTICS (JEDEC REGISTERED DATA) ($T_A = 25\text{ }^\circ\text{C}$ 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 $I_{PP} = 1.0\text{ A}$ V_C (V)	MAXIMUM CLAMPING VOLTAGE AT $I_{PP} = 10\text{ A}$ 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	50.0	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) Automotive grade

RATINGS AND CHARACTERISTICS CURVES

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

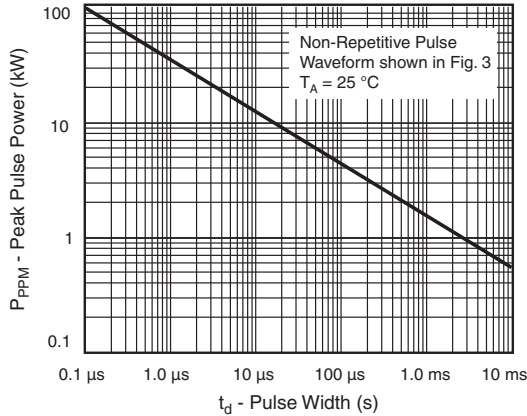


Figure 1. Peak Pulse Power Rating Curve

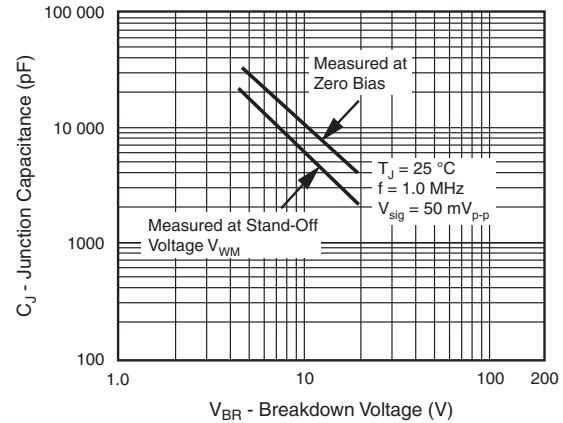


Figure 4. Typical Junction Capacitance Uni-Directional

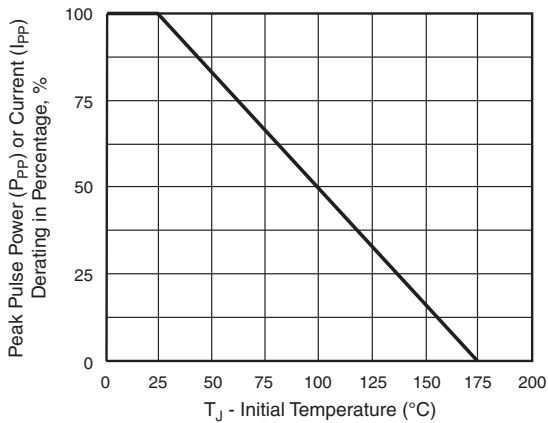


Figure 2. Pulse Power or Current vs. Initial Junction Temperature

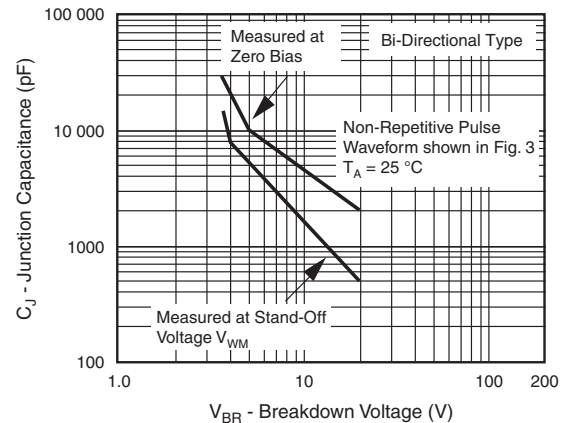


Figure 5. Typical Junction Capacitance Bi-Directional Type

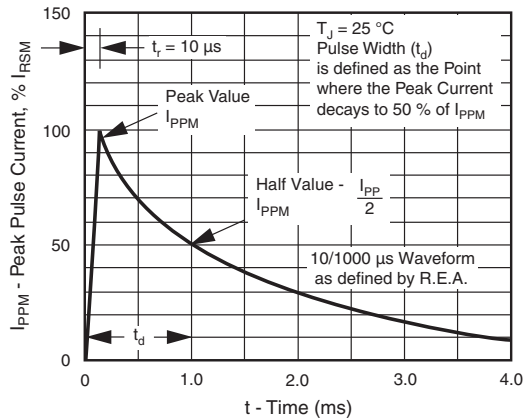


Figure 3. Pulse Waveform

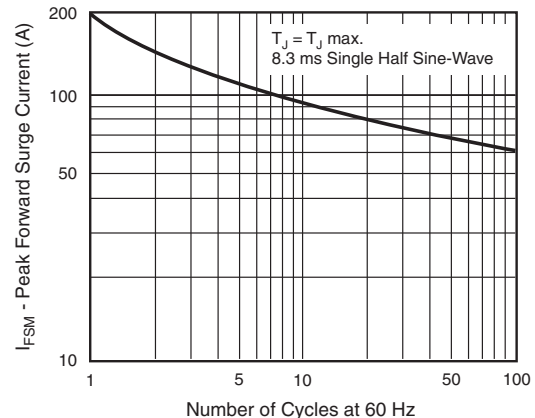


Figure 6. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only

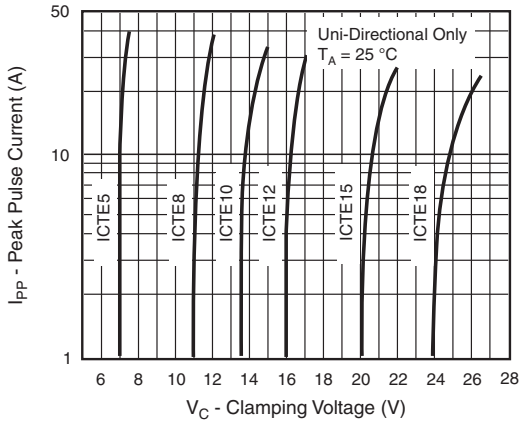


Figure 7. Typical Characteristics Clamping Voltage

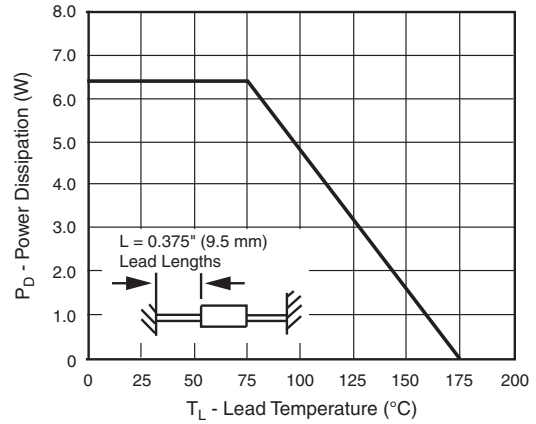
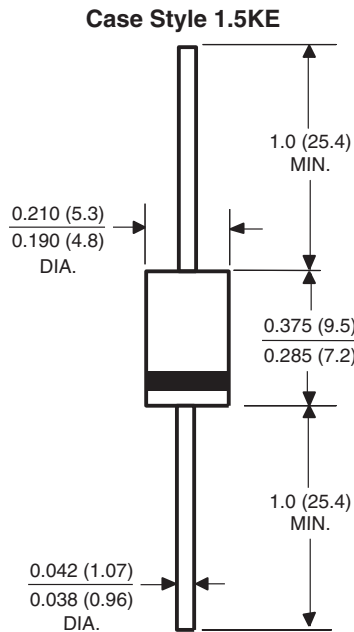


Figure 8. Power Derating Curve

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk and agree to fully indemnify and hold Vishay and its distributors harmless from and against any and all claims, liabilities, expenses and damages arising or resulting in connection with such use or sale, including attorneys fees, even if such claim alleges that Vishay or its distributor was negligent regarding the design or manufacture of the part. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.