

# Transient Voltage Suppressor Diode

## **ICTE-12**

(ICTE5.0 thru ICTE15 Series)

Standoff-Voltage 5 to 15V

Peak Pulse Power 1500W

# DATASHEET

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OEM – General Semiconductor

Source: General Semiconductor Databook 1998

# ICTE5.0 THRU ICTE15C SERIES

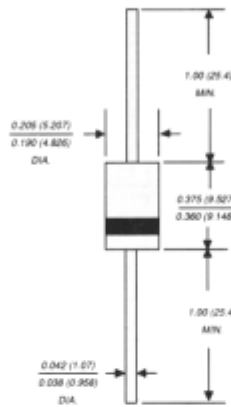
## TRANSIENT VOLTAGE SUPPRESSOR

Stand-off Voltage - 5.0 to 15 Volts Peak Pulse Power - 1500 Watts

### FEATURES

- ◆ Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- ◆ Glass passivated junction
- ◆ 1500W Peak pulse power capability with a 10/1000µs waveform, repetition rate (duty cycle): 0.05%
- ◆ Excellent clamping capability
- ◆ Low incremental surge resistance
- ◆ Fast response time: typically less than 1.0ps from 0 Volts to  $V_{(BR)}$  for unidirectional and 5.0ns for bidirectional
- ◆ Ideal for data and bus line applications
- ◆ High temperature soldering guaranteed: 265°C/10 seconds, 0.375" (9.5mm) lead length, 5lbs. (2.3 kg) tension

Case Style 1.5KE



Dimensions in inches and (millimeters)

### MECHANICAL DATA

**Case:** Molded plastic over a passivated junction  
**Terminals:** Plated Axial leads, solderable per MIL-STD-750, Method 2026  
**Polarity:** Color band denotes positive end (cathode) except for bidirectional types  
**Mounting Position:** Any  
**Weight:** 0.045 ounce, 1.2 grams

### MAXIMUM RATINGS AND CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

	SYMBOL	VALUE	UNITS
Peak pulse power dissipation with a 10/1000µs waveform (NOTE 1, FIG. 1)	PPPM	Minimum 1500	Watts
Steady state power dissipation, $T_L = 75^\circ\text{C}$ at lead lengths 0.375" (9.5mm)	$P_{M(AV)}$	5.0	Watts
Peak pulse current with a 10/1000µs waveform (NOTE 1, FIG. 3)	IPPM	SEE TABLE 1	Amps
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load for unidirectional only (JEDEC Method) (NOTE 2)	IFSM	200.0	Amps
Maximum instantaneous forward voltage at 100A for unidirectional only (NOTE 2)	$V_F$	3.5	Volts
Operating junction and storage temperature range	$T_J, T_{STG}$	-65 to +175	°C

**NOTES:**

- (1) Non-repetitive current pulse, per Fig. 3 and derated above  $T_A = 25^\circ\text{C}$  per Fig. 2  
 (2) 8.3ms single half sine-wave, duty cycle=4 pulses per minute maximum

**ELECTRICAL CHARACTERISTICS at 25°C (JEDEC REGISTERED DATA)**

JEDEC TYPE NUMBER	GENERAL INSTRUMENT PART NUMBER	STAND-OFF VOLTAGE $V_{WM}$ (VOLTS)	MINIMUM BREAKDOWN VOLTAGE at 1mA. $V_{BR}$ (VOLTS)	MAXIMUM REVERSE LEAKAGE at $V_{WM}$ $I_o$ ( $\mu$ A)	MAXIMUM CLAMPING VOLTAGE at $I_{PP} = 1.0A$ $V_c$ (VOLTS)	MAXIMUM CLAMPING VOLTAGE at $I_{PP} = 10A$ $V_c$ (VOLTS)	MAXIMUM PEAK PULSE CURRENT $I_{PP}$ (Amps)
1N6373	ICTE-5	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

$V_{BR}$ : \*Test current (I<sub>r</sub>) 12 10mA

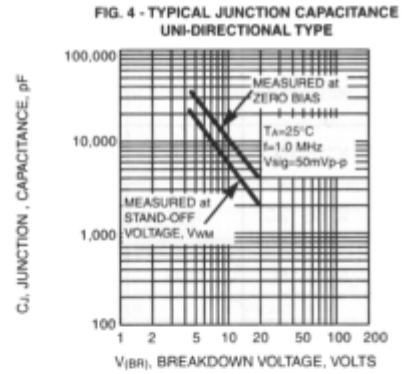
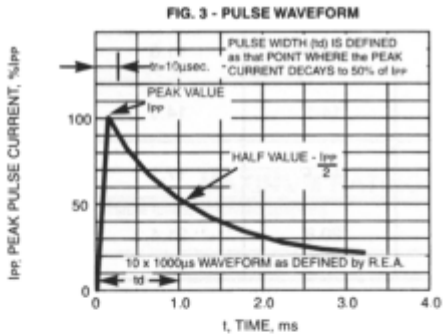
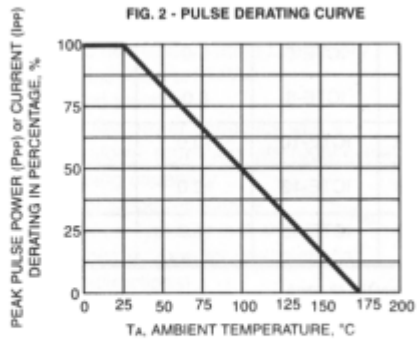
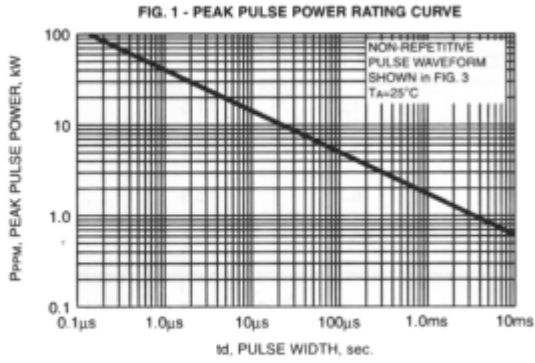
**ELECTRICAL CHARACTERISTICS AT 25°C (JEDEC REGISTERED DATA)**

JEDEC TYPE NUMBER	GENERAL INSTRUMENT PART NUMBER	STAND-OFF VOLTAGE $V_{WM}$ (VOLTS)	MINIMUM** BREAKDOWN VOLTAGE at 1.0mA. $V_{BR}$ (VOLTS)	MAXIMUM REVERSE LEAKAGE at $V_{WM}$ $I_o$ ( $\mu$ A)	MAXIMUM CLAMPING VOLTAGE at $I_{PP} = 1A$ $V_c$ (VOLTS)	MAXIMUM CLAMPING VOLTAGE at $I_{PP} = 10A$ $V_c$ (VOLTS)	MAXIMUM PEAK PULSE CURRENT $I_{PP}$ (Amps)
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

**NOTES:**

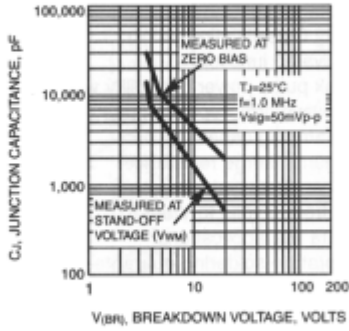
- (1) \* C \* Suffix indicates bidirectional
- (2) ICTE-5 and 1N6373 are not available as bidirectional
- (3) The minimum breakdown voltage as shown takes into consideration the  $\pm 1$  Volt tolerance normally specified for power supply regulation on most integrated circuit manufacturers data sheets. 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  $I_o$  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.

**RATINGS AND CHARACTERISTIC CURVES ICTE5.0 THRU ICTE15C SERIES**

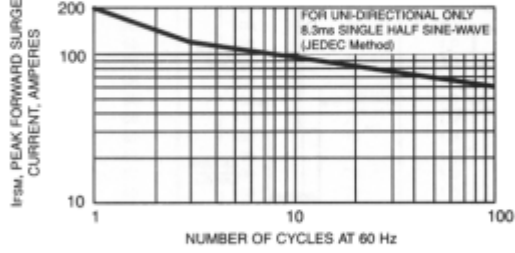


**RATINGS AND CHARACTERISTIC CURVES ICTE5.0 THRU ICTE15C SERIES**

**FIG. 5 - TYPICAL JUNCTION CAPACITANCE  
BIDIRECTIONAL TYPE**



**FIG. 6 - MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT**



**FIG. 7 - TYPICAL CHARACTERISTIC CLAMPING VOLTAGE**

