1N6373 - 1N6381 Series (ICTE-5 - ICTE-36, MPTE-5 - MPTE-45)

1500 Watt Peak Power Mosorb™ Zener Transient Voltage Suppressors

Unidirectional*

Mosorb devices are designed to protect voltage sensitive components from high voltage, high–energy transients. They have excellent clamping capability, high surge capability, low zener impedance and fast response time. These devices are ON Semiconductor's exclusive, cost-effective, highly reliable Surmetic[™] axial leaded package and are ideally-suited for use in communication systems, numerical controls, process controls, medical equipment, business machines, power supplies and many other industrial/consumer applications, to protect CMOS, MOS and Bipolar integrated circuits.

Specification Features:

- Working Peak Reverse Voltage Range 5 V to 45 V
- Peak Power 1500 Watts @ 1 ms
- ESD Rating of Class 3 (>16 KV) per Human Body Model
- Maximum Clamp Voltage @ Peak Pulse Current
- Low Leakage < 5 µA Above 10 V
- Response Time is Typically < 1 ns

Mechanical Characteristics:

CASE: Void-free, transfer-molded, thermosetting plastic **FINISH:** All external surfaces are corrosion resistant and leads are readily solderable

MAXIMUM LEAD TEMPERATURE FOR SOLDERING PURPOSES:

230°C, 1/16" from the case for 10 seconds **POLARITY:** Cathode indicated by polarity band **MOUNTING POSITION:** Any

MAXIMUM RATINGS

Rating	Symbol	Value	Unit	
Peak Power Dissipation (Note 1.) @ $T_L \le 25^{\circ}C$	P _{PK}	1500	Watts	
Steady State Power Dissipation @ $T_L \le 75^{\circ}$ C, Lead Length = 3/8"	PD	5.0	Watts	
Derated above $T_L = 75^{\circ}C$		20	mW/°C	
Thermal Resistance, Junction-to-Lead	R_{\thetaJL}	20	°C/W	
Forward Surge Current (Note 2.) @ $T_A = 25^{\circ}C$	I _{FSM}	200	Amps	
Operating and Storage Temperature Range	T _J , T _{stg}	– 65 to +175	°C	

*Please see 1N6382 – 1N6389 (ICTE–10C – ICTE–36C, MPTE–8C – MPTE–45C) for Bidirectional Devices



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L = Assembly Location MPTE-xx = ON Device Code ICTE-xx = ON Device Code 1N63xx = JEDEC Device Code YY = Year WW = Work Week

ORDERING INFORMATION

Device	Package	Shipping			
MPTE-xx	Axial Lead	500 Units/Box			
MPTE-xxRL4	Axial Lead	1500/Tape & Reel			
ICTE-xx	Axial Lead	500 Units/Box			
ICTE-xxRL4	Axial Lead	1500/Tape & Reel			
1N63xx	Axial Lead	500 Units/Box			
1N63xxRL4*	Axial Lead	1500/Tape & Reel			

NOTES:

- 1. Nonrepetitive current pulse per Figure 5 and derated above $T_A = 25^{\circ}C$ per Figure 2.
- 1/2 sine wave (or equivalent square wave), PW = 8.3 ms, duty cycle = 4 pulses per minute maximum.

*1N6378 Not Available in 1500/Tape & Reel

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ELECTRICAL CHARACTERISTICS ($T_A = 25^{\circ}C$ unless otherwise noted, $V_F = 3.5 \text{ V}$ Max. @ I_F (Note 3.) = 100 A)

Symbol	Parameter						
I _{PP}	Maximum Reverse Peak Pulse Current						
V _C	Clamping Voltage @ IPP						
V _{RWM}	Working Peak Reverse Voltage						
I _R	Maximum Reverse Leakage Current @ V _{RWM}						
V _{BR}	Breakdown Voltage @ I _T						
Ι _Τ	Test Current						
ΘV_{BR}	Maximum Temperature Variation of VBR						
١ _F	Forward Current						
V _F	Forward Voltage @ I _F						



Uni–Directional TVS

JEDEC Device Device		V _{RWM} I _R @ (Note 4.) V _{RWM}		Breakdown Voltage			V _C @ I _{PP} (Note 6.)		V _C (Volts) (Note 6.)			
				V_{BR} (Note 5.) (Volts)			@ կ	v _c	I _{PP}	@ L	@ L	ΘV _{BR}
(ON Device) M	Marking	(Volts)	(μΑ)	Min	Nom	Max	(mA)	(Volts)	(A)	ше _т рр = 1 А	шенрр = 10 А	(mV/°C)
1N6373 (MPTE–5)	1N6373 MPTE–5	5.0	300	6.0	-	-	1.0	9.4	160	7.1	7.5	4.0
1N6374 (MPTE–8)	1N6374 MPTE–8	8.0	25	9.4	-	-	1.0	15	100	11.3	11.5	8.0
1N6375 (MPTE–10)	1N6375 MPTE–10	10	2.0	11.7	_	_	1.0	16.7	90	13.7	14.1	12
1N6376 (MPTE–12)	1N6376 MPTE–12	12	2.0	14.1	_	_	1.0	21.2	70	16.1	16.5	14
1N6377 (MPTE–15)	1N6377 MPTE–15	15	2.0	17.6	_	_	1.0	25	60	20.1	20.6	18
1N6378* (MPTE–18)	1N6378* MPTE–18	18	2.0	21.2	-	_	1.0	30	50	24.2	25.2	21
1N6379 (MPTE–22)	1N6379 MPTE–22	22	2.0	25.9	_	_	1.0	37.5	40	29.8	32	26
1N6380 (MPTE–36)	1N6380 MPTE–36	36	2.0	42.4	-	-	1.0	65.2	23	50.6	54.3	50
1N6381 (MPTE–45)	1N6381 MPTE–45	45	2.0	52.9	-	-	1.0	78.9	19	63.3	70	60
ICTE-5 ICTE-10 ICTE-12	ICTE–5 ICTE–10 ICTE–12	5.0 10 12	300 2.0 2.0	6.0 11.7 14.1	- - -	- - -	1.0 1.0 1.0	9.4 16.7 21.2	160 90 70	7.1 13.7 16.1	7.5 14.1 16.5	4.0 8.0 12
ICTE-15 ICTE-18 ICTE-22 ICTE-36	ICTE-15 ICTE-18 ICTE-22 ICTE-36	15 18 22 36	2.0 2.0 2.0 2.0	17.6 21.2 25.9	- - -		1.0 1.0 1.0 1.0	25 30 37.5 65.2	60 50 40 23	20.1 24.2 29.8 50.6	20.6 25.2 32 54.3	14 18 21 26

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted, V_F = 3.5 V Max. @ I_F (Note 3.) = 100 A)

NOTES:

3. Square waveform, PW = 8.3 ms, Non-repetitive duty cycle.

A transient suppressor is normally selected according to the maximum working peak reverse voltage (V_{RWM}), which should be equal to
or greater than the dc or continuous peak operating voltage level.

5. V_{BR} measured at pulse test current I_T at an ambient temperature of 25°C and minimum voltage in V_{BR} is to be controlled.

6. Surge current waveform per Figure 5 and derate per Figures 1 and 2.

*Not Available in the 1500/Tape & Reel