

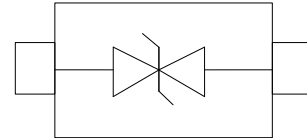
## TQTHDC1XXXX Series

Small Surface Mount TVS Diode for ESD Protection

### ● . Feature

- 3000W peak pulse power (TP = 8/20μs)
- SMC Package
- Working voltage: 5V-170V
- Low clamping voltage
- Low capacitance
- RoHS compliant transient protection for high speed data lines to IEC61000-4-2(ESD)±15kV(air),±8kV(contact)
- For surface mounted applications
- Reliable low cost construction utilizing molded plastic technique
- Response Time is Typically < 1 ns
- Uni-direction, less than 5.0ns for Bi-direction, form 0 Volts to BV min
- ESD Rating of above 16 kV per Human Body Model
- ESD Rating of above 30 kV (Contact Discharge) per IEC61000-4-2
- EFT (Electrical Fast Transients) Rating of 40 A per IEC61000-4-4
- Plastic material has UL flammability classification 94V-0
- Typical IR less than 1uA above 10V
- Meets MSL 1 Requirements
- Solid-state silicon avalanche technology
- ROHS compliant

### ● PIN configuration



Topview

### ● Applications

- USB 2.0 Power & Data Line Protection
- DVI & HDMI Port Protection
- Serial ATA Port Protection
- Mobile Handsets
- Digital Cameras and camcorders
- PDA & MP3 Players
- Digital TV and Set-top Boxes

### ● Mechanical data

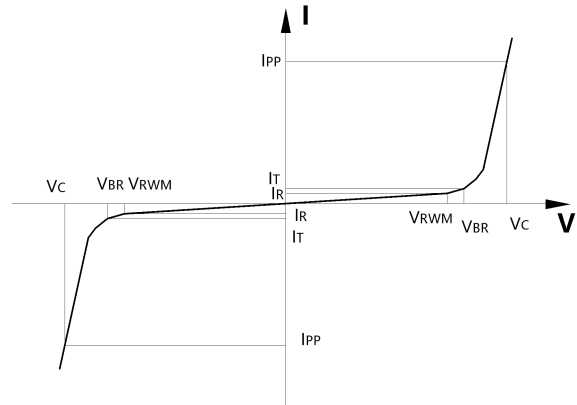
- Lead finish: 100% matte Sn(Tin)
- Mounting position: Any
- Qualified max reflow temperature: 260°C
- Device meets MSL 1 requirements
- Pure tin plating: 7 ~ 17 μm

### Ordering Information

Device	Package	Qty per Reel	Reel Size
TQTHDC1XXXX	SMC	500	7 Inch

- **Electronic Parameter**

Symbol	Parameter
$V_{RWM}$	Peak Reverse Working Voltage
$I_R$	Reverse Leakage Current @ $V_{RWM}$
$V_{BR}$	Breakdown Voltage @ $I_T$
$I_T$	Test Current
$I_{PP}$	Maximum Reverse Peak Pulse Current
$V_C$	Clamping Voltage @ $I_{PP}$
$P_{PP}$	Peak Pulse Power
$C$	Junction Capacitance



- **Absolute maximum rating @TA=25°C**

Symbol	Parameter	Value	Units
$P_{PP}$	Peak Pulse Power (8/20μS)	3000	W
$T_{STG}$	Storage Temperature	-55/+150	°C
$T_J$	Operating Temperature	-55/+150	°C

● **Electrical Characteristics @TA=25**

**Electrical Characteristics ( Tamb=25°C Unless Otherwise Specified)**

SMDJ PART NUMBER		MARKING CODE		V <sub>RWM</sub>	V <sub>BR</sub> @ I <sub>T</sub> (V)		I <sub>T</sub>	I <sub>R</sub> @ V <sub>RWM</sub>	V <sub>C</sub> (Max)	I <sub>PP</sub> (Max) <sup>①</sup>
Uni-polar	Bi-polar	Uni	Bi	(V)	Min	Max	(mA)	(uA)	(V)	(A)
TQTHDC115V0	TQTHDC125V0	HDE	IDE	5.0	6.40	7.35	10	800	9.2	326.1
TQTHDC116V0	TQTHDC126V0	HDG	IDG	6.0	6.67	7.89	10	800	10.3	291.3
TQSTHDC116V5	TQTHDC126V5	HDK	IDK	6.5	7.22	8.30	10	500	11.2	267.9
TQTHDC117V0	TQTHDC127V0	HDM	IDM	7.0	7.78	8.95	10	200	12.0	250.0
TQTHDC117V5	TQTHDC127V5	HDP	IDP	7.5	8.33	9.58	1	100	12.9	232.6
TQTHDC118V0	TQTHDC128V0	HDR	IDR	8.0	8.89	10.23	1	50	13.6	220.6
TQTHDC118V5	TQTHDC128V5	HDT	IDT	8.5	9.44	10.82	1	20	14.4	208.3
TQTHDC119V0	TQTHDC129V0	HDV	IDV	9.0	10.0	11.5	1	10	15.4	194.8
TQTHDC1110V	TQTHDC1210V	HDX	IDX	10	11.1	12.8	1	5	17.0	176.5
TQTHDC111V	TQTHDC1211V	HDZ	IDZ	11	12.2	14.0	1	5	18.2	164.8
TQTHDC1112V	TQTHDC1212V	HEE	IEE	12	13.3	15.3	1	5	19.9	150.8
TQTHDC113V	TQTHDC1213V	HEG	IEG	13	14.4	16.5	1	5	21.5	139.5
TQTHDC1114V	TQTHDC1214V	HEK	IEK	14	15.6	17.9	1	5	23.2	129.3
TQTHDC1115V	TQTHDC1215V	HEM	IEM	15	16.7	19.2	1	5	24.4	123.0
TQTHDC1116V	TQTHDC1216V	HEP	IEP	16	17.8	20.5	1	5	26.0	115.4
TQTHDC1117V	TQTHDC1217V	HER	IER	17	18.9	21.7	1	5	27.6	108.7
TQTHDC1118V	TQTHDC1218V	HET	IET	18	20.0	23.3	1	5	29.2	102.7
TQTHDC1120V	TQTHDC1220V	HEV	IEV	20	22.2	25.5	1	5	32.4	92.6
TQTHDC1122V	TQTHDC1222V	HEX	IEX	22	24.4	28.0	1	5	35.5	84.5
TQTHDC1124V	TQTHDC1224V	HEZ	IEZ	24	26.7	30.7	1	5	38.9	77.1
TQTHDC1126V	TQTHDC1226V	HFE	IFE	26	28.9	33.2	1	5	42.1	71.3
TQTHDC1128V	TQTHDC1228V	HFG	IFG	28	31.1	35.8	1	5	45.4	66.1
TQTHDC1130V	TQTHDC1230V	HFK	IFK	30	33.3	38.3	1	5	48.4	62.0
TQTHDC1133V	TQTHDC1233V	HFM	IFM	33	36.7	42.2	1	5	53.3	56.3
TQTHDC1136V	TQTHDC1236V	HFP	IFP	36	40.0	46.0	1	5	58.1	51.6
TQTHDC1140V	TQTHDC1240V	HFR	IFR	40	44.4	51.1	1	5	64.5	46.5
TQTHDC1143V	TQTHDC1243V	HFT	IFT	43	47.8	54.9	1	5	69.4	43.2
TQTHDC1145V	TQTHDC1245V	HFV	IFV	45	50.0	57.5	1	5	72.7	41.3
TQTHDC1148V	TQTHDC1248V	HFX	IFX	48	53.3	61.3	1	5	77.4	38.8
TQTHDC1151V	TQTHDC1251V	HFZ	IFZ	51	56.7	65.2	1	5	82.4	36.4
TQTHDC1154V	TQTHDC1254V	HGE	IGE	54	60.0	69.0	1	5	87.1	34.4
TQTHDC1158V	TQTHDC1258V	HGG	IGG	58	64.4	74.1	1	5	93.6	32.1
TQTHDC1160V	TQTHDC1260V	HGK	IGK	60	66.7	76.7	1	5	96.8	31.0
TQTHDC1164V	TQTHDC1264V	HGM	IGM	64	71.1	81.8	1	5	103	29.1
TQTHDC1170V	TQTHDC1270V	HGP	IGP	70	77.8	89.5	1	5	113	26.5

TQTHDC1175V	TQTHDC1275V	HGR	IGR	75	83.0	95.8	1	5	121	24.8
TQTHDC1178V	TQTHDC1278V	HGT	IGT	78	86.0	99.7	1	5	126	23.8
TQTHDC1185V	TQTHDC1285V	HGV	IGV	85	94.0	108.2	1	5	137	21.9
TQTHDC1190V	TQTHDC1290V	HGX	IGX	90	100	115.5	1	5	146	20.5
TQTHDC11100	TQTHDC12100	HGZ	IGZ	100	111	128.0	1	5	162	18.5
TQTHDC11110	TQTHDC12110	HHE	IHE	110	122	140.5	1	5	177	16.9
TQTHDC11120	TQTHDC12120	HHG	IHG	120	133	153.0	1	5	193	15.5
TQTHDC11130	TQTHDC12130	HHK	IHK	130	144	165.5	1	5	209	14.4
TQTHDC11150	TQTHDC12150	HHM	IHM	150	167	192.5	1	5	243	12.3
TQTHDC11160	TQTHDC12160	HHP	IHP	160	178	205.0	1	5	259	11.6
TQTHDC11170	TQTHDC12170	HHR	IHR	170	189	217.5	1	5	275	10.9

● **Typical Performance Characteristics**

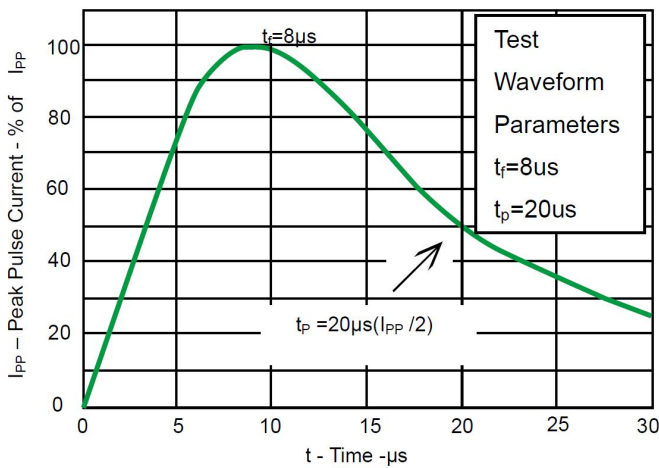


Fig 1. Pulse Waveform

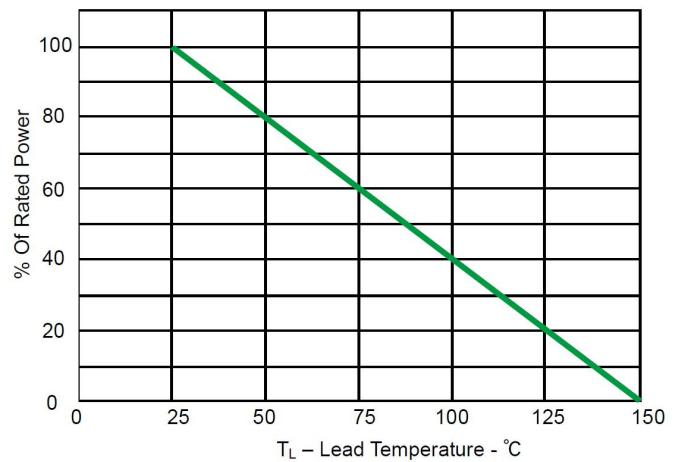
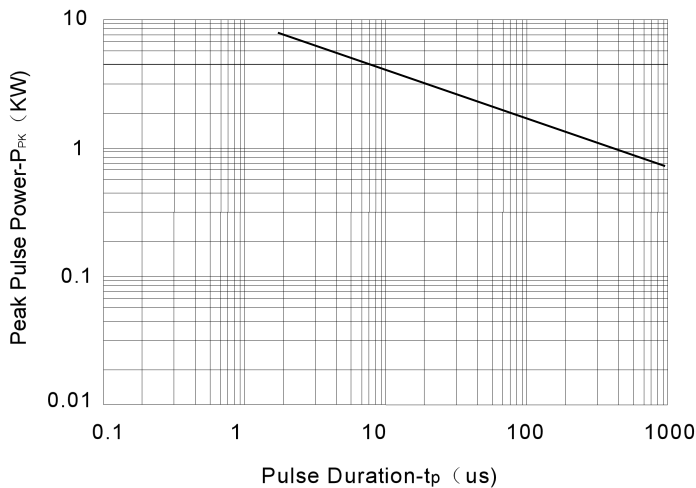


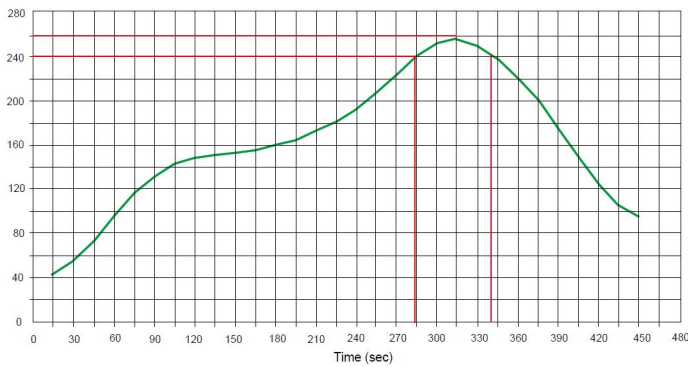
Fig 2. Power Derating Curve



**Non-Repetitive Peak Pulse Power vs. Pulse Time**

## ● Solder Reflow Recommendation

Peak Temp=257°C, Ramp Rate=0.802deg. °C/sec

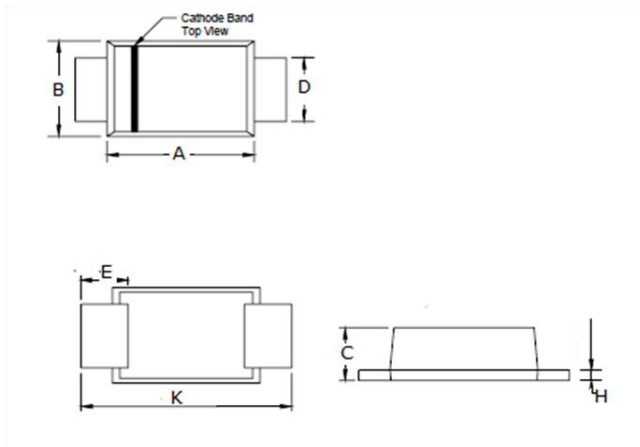


## ● Package Information

### Mechanical Data

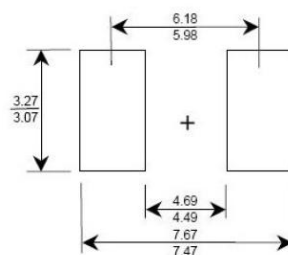
Case: SMC

Case Material: Molded Plastic. UL Flammability



DMI	Millimeters	
	Min	Max
A	2.75	3.25
B	5.50	6.20
C	6.50	7.11
D	2.10	2.70
E	0.051	0.203
F	0.90	1.52
G	-	0.203
H	7.40	8.40

## Recommended Pad outline



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