

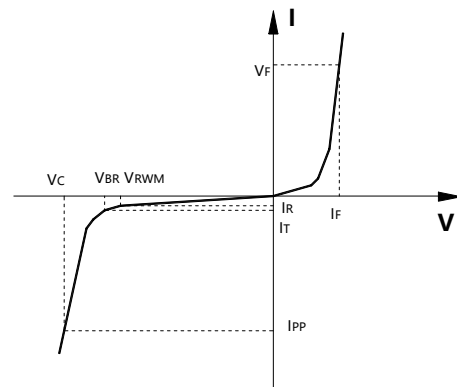
## TQTHDC2XXXX Series

Surface Mount Unidirectional and Bidirectional Transient Voltage Suppressors

### ● Features

- Voltage Range 12V-170V
- 5000W peak pulse power Dissipation
- 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 5uA above 20V
- Meets MSL 1 Requirements
- Solid-state silicon avalanche technology
- ROHS compliant

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



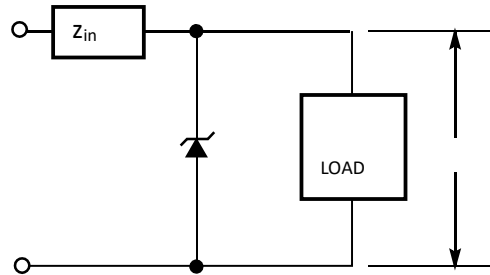
Maximum Ratings and Electrical Characteristics			
Characteristics	Symbols	Value	Units
Peak Power Dissipation At $T_J=25^\circ\text{C}$ . $T_p=1\text{ms}$ (Note 1.2)	$P_{PK}$	5000	W
Peak Forward Surge Current 8.3ms single half sine-wave super	$I_{FSM}$	300	A
Lead Soldering Temperature	$T_L$	260 (10 sec.)	$^\circ\text{C}$
Operating Temperature Range	$T_J$	-55/+155	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55/+175	$^\circ\text{C}$

## Electrical Characteristics ( T<sub>amb</sub>=25 °C Unless Otherwise Specified)

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)	(µA)	(V)	(A)
TQTHDC2112V	TQTHDC2212V	5HEE	5IEE	12	13.3	15.3	10	800	19.9	252
TQTHDC2113V	TQTHDC2213V	5HEG	5IEG	13	14.4	16.5	10	500	21.5	233
TQTHDC2114V	TQTHDC2214V	5HEK	5IEK	14	15.6	17.9	10	200	23.2	216
TQTHDC2115V	TQTHDC2215V	5HEM	5IEM	15	16.7	19.2	1	100	24.4	205
TQTHDC2116V	TQTHDC2216V	5HEP	5IEP	16	17.8	20.5	1	50	26.0	193
TQTHDC2117V	TQTHDC2217V	5HER	5IER	17	18.9	21.7	1	20	27.6	181
TQTHDC2118V	TQTHDC2218V	5HET	5IET	18	20.0	23.3	1	10	29.2	172
TQTHDC2120V	TQTHDC2220V	5HEV	5IEV	20	22.2	25.5	1	5	32.4	155
TQTHDC2122V	TQTHDC2222V	5HEX	5IEX	22	24.4	28.0	1	5	35.5	141
TQTHDC2124V	TQTHDC2224V	5HEZ	5IEZ	24	26.7	30.7	1	5	38.9	129
TQTHDC2126V	TQTHDC2226V	5HFE	5IFE	26	28.9	33.2	1	5	42.1	119
TQTHDC2128V	TQTHDC2228V	5HFG	5IFG	28	31.1	35.8	1	5	45.4	110
TQTHDC2130V	TQTHDC2230V	5HFK	5IFK	30	33.3	38.3	1	5	48.4	103
TQTHDC2133V	TQTHDC2233V	5HFM	5IFM	33	36.7	42.2	1	5	53.3	93.9
TQTHDC2136V	TQTHDC2236V	5HFP	5IFP	36	40.0	46.0	1	5	58.1	86.1
TQTHDC2140V	TQTHDC2240V	5HFR	5IFR	40	44.4	51.1	1	5	64.5	77.6
TQTHDC2143V	TQTHDC2243V	5HFT	5IFT	43	47.8	54.9	1	5	69.4	72.1
TQTHDC2145V	TQTHDC2245V	5HFV	5IFV	45	50.0	57.5	1	5	72.7	68.8
TQTHDC2148V	TQTHDC2248V	5HFX	5IFX	48	53.3	61.3	1	5	77.4	64.7
TQTHDC2151V	TQTHDC2251V	5HFZ	5IFZ	51	56.7	65.2	1	5	82.4	60.7
TQTHDC2154V	TQTHDC2254V	5HGE	5IGE	54	60.0	69.0	1	5	87.1	57.5
TQTHDC2158V	TQTHDC2258V	5HGG	5IGG	58	64.4	74.1	1	5	93.6	53.5
TQTHDC2160V	TQTHDC2260V	5HGK	5IGK	60	66.7	76.7	1	5	96.8	51.7
TQTHDC2164V	TQTHDC2264V	5HGM	5IGM	64	71.1	81.8	1	5	103	48.6
TQTHDC2170V	TQTHDC2270V	5HGP	5IGP	70	77.8	89.5	1	5	113	44.3
TQTHDC2175V	TQTHDC2275V	5HGR	5IGR	75	83.0	95.8	1	5	121	41.4
TQTHDC2178V	TQTHDC2278V	5HGT	5IGT	78	86	99.7	1	5	126	39.7
TQTHDC2185V	TQTHDC2285V	5HGV	5IGV	85	94	108.2	1	5	137	36.5
TQTHDC2190V	TQTHDC2290V	5HGX	5IGX	90	100	115.5	1	5	146	34.3
TQTHDC21100	TQTHDC22100	5HGZ	5IGZ	100	111	128.0	1	5	162	30.9
TQTHDC21110	TQTHDC22110	5HHE	5IHE	110	122	140.5	1	5	177	28.3
TQTHDC21120	TQTHDC22120	5HHG	5IHG	120	133	153.0	1	5	193	26.0
TQTHDC21130	TQTHDC22130	5HHK	5IHK	130	144	165.5	1	5	209	24.0
TQTHDC21150	TQTHDC22150	5HHM	5IHM	150	167	192.5	1	5	243	20.6

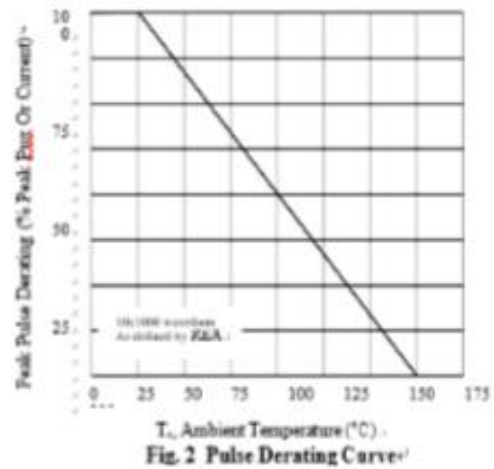
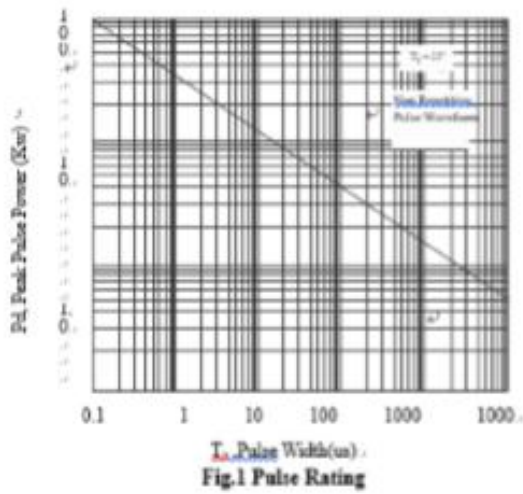
TQTHDC21160	TQSTHDC22160	5HHP	5IHP	160	178	205.0	1	5	259	19.3
TQTHDC21170	TQTHDC22170	5HHR	5IHR	170	189	217.5	1	5	275	18.2

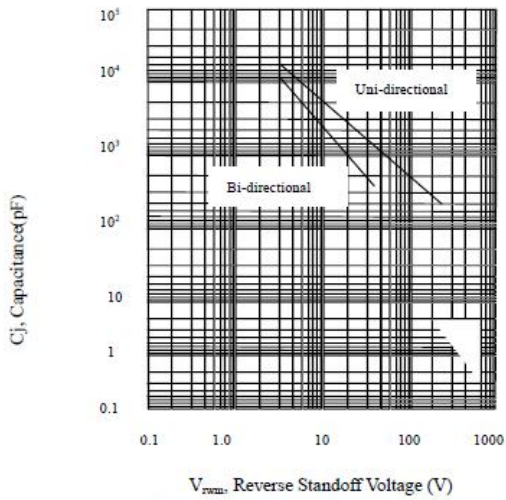
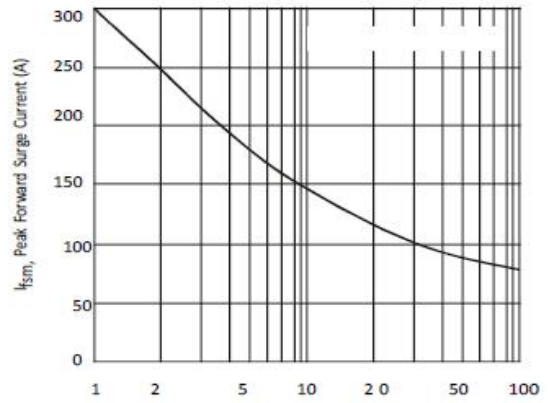
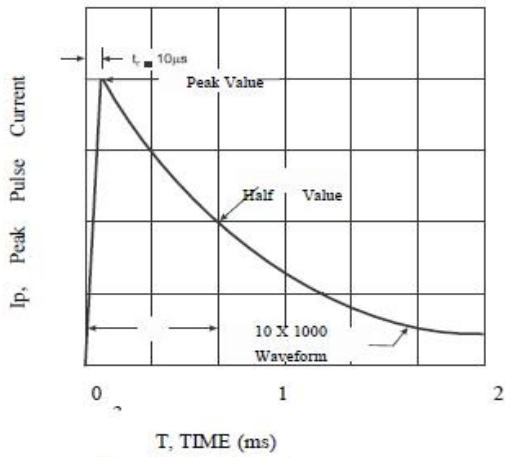
● **Typical Protection Circuit**



**Typical Electrical Characteristics Applications**

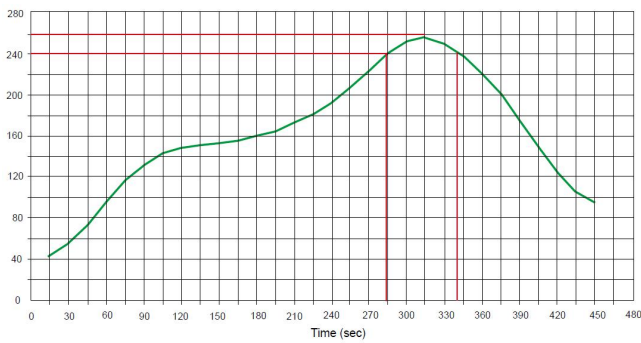
**Rating and Characteristics Curves**





● **Solder Reflow Recommendation**

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



- **Package Information**

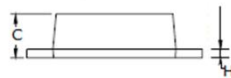
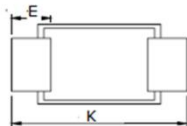
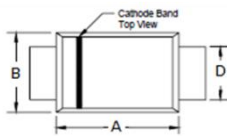
### Ordering Information

Device	Package	Qty per Reel	Reel Size
TQTHDC2XXXX	SMC	500	7 Inch

### Mechanical Data

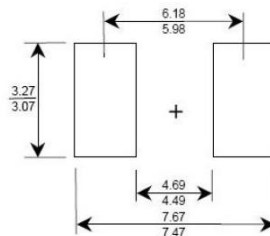
Case: SMC

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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