

## TQTHDA1XXXX Series

Small Surface Mount TVS Diode for ESD Protection

### Protection

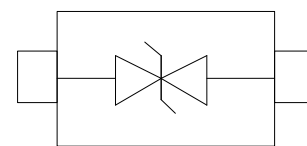
#### ● Description

The TQTHDA1XXXX is low capacitance transient voltage suppressor array for high speed data interface that designed to protect sensitive electronics from damage or latch-up due to ESD lightning, and other voltage induced transient events. All pins are rated to withstand 30kV ESD pulses using the IEC 61000-4-2 air discharge method, which can meet the requirement of level 4.

#### ● Feature

- 400W peak pulse power (TP = 8/20μs)
- SMA Package
- Working voltage: 5V-440V
- 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



SMA

#### ● 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

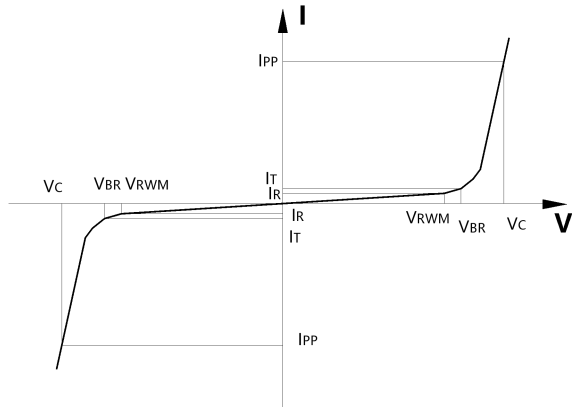
- Lead finish:100% matte Sn(Tin)
- Mounting position: Any
- Qualified max reflow temperature:260°C
- Device meets MSL 1 requirements
- Pure tin plating: 7 ~ 17 um

### Ordering Information

Device	Package	Qty per Reel	Reel Size
TQTHDA1XXXX	SMA	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 (8/20 $\mu$ S)	400	W
$T_{STG}$	Storage Temperature	-55/+150	°C
$T_J$	Operating Temperature	-55/+150	°C

## ● Electrical Characteristics @TA=25°C

Electrical Characteristics ( Tamb=25°C Unless Otherwise Specified)										
SMAJ PART NUMBER		MARKING CODE		$V_{RWM}$	$V_{BR}$ @ $I_T$ (V)		$I_T$	$I_R$ @ $V_{RWM}$	$V_C$ (Max)	$I_{PP}$ (Max) <sup>①</sup>
Uni-polar	Bi-polar	Uni	Bi	(V)	Min	Max	(mA)	( $\mu$ A)	(V)	(A)
TQTHDA115V0	TQTHDA125V0	HE	TE	5.0	6.40	7.35	10	800	9.2	43.5
TQTHDA116V0	TQTHDA126V0	HG	TG	6.0	6.67	7.89	10	800	10.3	38.8
TQTHDA116V5	TQTHDA126V5	HK	TK	6.5	7.22	8.30	10	500	11.2	35.7
TQTHDA117V0	TQTHDA127V0	HM	TM	7.0	7.78	8.95	10	200	12.0	33.3
TQTHDA117V5	TQTHDA127V5	HP	TP	7.5	8.33	9.58	1	100	12.9	31.0
TQTHDA118V0	TQTHDA128V0	HR	TR	8.0	8.89	10.23	1	50	13.6	29.4
TQTHDA118V5	TQTHDA128V5	HT	TT	8.5	9.44	10.82	1	20	14.4	27.8
TQTHDA119V0	TQTHDA129V0	HV	TV	9.0	10.0	11.5	1	10	15.4	26.0
TQTHDA1110V	TQTHDA1210V	HX	TX	10	11.1	12.8	1	5	17.0	23.5
TQTHDA1111V	TQTHDA1211V	HZ	TZ	11	12.2	14.0	1	5	18.2	22.0
TQTHDA1112V	TQTHDA1212V	IE	UE	12	13.3	15.3	1	5	19.9	20.1

TQTHDA1113V	TQTHDA1213V	IG	UG	13	14.4	16.5	1	5	21.5	18.6
TQTHDA1114V	TQTHDA1214V	IK	UK	14	15.6	17.9	1	5	23.2	17.2
TQTHDA1115V	TQTHDA1215V	IM	UM	15	16.7	19.2	1	5	24.4	16.4
TQTHDA1116V	TQTHDA1216V	IP	UP	16	17.8	20.5	1	5	26.0	15.4
TQTHDA1117V	TQTHDA1217V	IR	UR	17	18.9	21.7	1	5	27.6	14.5
TQTHDA1118V	TQTHDA1218V	IT	UT	18	20.0	23.3	1	5	29.2	13.7
TQTHDA1120V	TQTHDA1220V	IV	UV	20	22.2	25.5	1	5	32.4	12.3
TQTHDA1122V	RQTHDA1222V	IX	UX	22	24.4	28.0	1	5	35.5	11.3
TQTHDA1124V	TQTHDA1224V	IZ	UZ	24	26.7	30.7	1	5	38.9	10.3
TQTHDA1126V	TQTHDA1226V	JE	VE	26	28.9	33.2	1	5	42.1	9.5
TQTHDA1128V	TQTHDA1228V	JG	VG	28	31.1	35.8	1	5	45.4	8.8
TQTHDA1130V	TQTHDA1230V	JK	VK	30	33.3	38.3	1	5	48.4	8.3
TQTHDA1133V	TQTHDA1233V	JM	VM	33	36.7	42.2	1	5	53.3	7.5
TQTHDA1136V	TQTHDA1236V	JP	VP	36	40.0	46.0	1	5	58.1	6.9
TQTHDA1140V	TQTHDA1240V	JR	VR	40	44.4	51.1	1	5	64.5	6.2
TQTHDA1143V	TQTHDA1243V	JT	VT	43	47.8	54.9	1	5	69.4	5.8
TQTHDA1160V	TQTHDA1260V	RK	WK	60	66.7	76.7	1	5	96.8	4.1
TQTHDA1164V	TQTHDA1264V	RM	WM	64	71.1	81.8	1	5	103	3.9
TQTHDA1170V	TQTHDA1270V	RP	WP	70	77.8	89.5	1	5	113	3.5
TQTHDA1175V	TQTHDA1275V	RR	WR	75	83.0	95.8	1	5	121	3.3
TQTHDA1178V	TQTHDA1278V	RT	WT	78	86.0	99.7	1	5	126	3.2
TQTHDA1185V	TQTHDA1285V	RV	WV	85	94.0	108.2	1	5	137	2.9
TQTHDA1190V	TQTHDA1290V	RX	WX	90	100	115.5	1	5	146	2.7
TQTHDA11100	TQTHDA12100	RZ	WZ	100	111	128.0	1	5	162	2.5
TQTHDA11110	TQTHDA12110	SE	XE	110	122	140.5	1	5	177	2.3
TQTHDA11120	TQTHDA12120	SG	XG	120	133	153.0	1	5	193	2.1
TQTHDA11130	TQTHDA12130	SK	XK	130	144	165.5	1	5	209	1.9
TQTHDA11150	TQTHDA12150	SM	XM	150	167	192.5	1	5	243	1.6
TQTHDA11160	TQTHDA12160	SP	XP	160	178	205.0	1	5	259	1.5
TQTHDA11170	TQTHDA12170	SR	XR	170	189	217.5	1	5	275	1.5
TQTHDA11180	TQTHDA12180	ST	XT	180	200	230.4	1	5	290	1.4
TQTHDA11190	TQTHDA12190	SV	XV	190	211	243.2	1	5	306	1.3
TQTHDA11200	TQTHDA12200	SX	XX	200	222	256.0	1	5	322	1.2
TQTHDA11210	TQTHDA12210	SZ	XZ	210	233	268.8	1	5	339	1.2
TQTHDA11220	TQTHDA12220	ZE	YE	220	244	281.6	1	5	355	1.1
TQTHDA11250	TQTHDA12250	ZG	YG	250	278	309.0	1	5	403	1.0
TQTHDA11300	TQTHDA12300	ZK	YK	300	333	371.0	1	5	484	0.8
TQTHDA11350	TQTHDA12350	ZM	YM	350	389	432.0	1	5	565	0.7
TQTHDA11400	TQTHDA12400	ZP	YP	400	444	494.0	1	5	645	0.6

TQTHDA11440	TQTHDA12440	ZR	YR	440	489	543.0	1	5	710	0.6
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- **Typical Performance Characteristics**

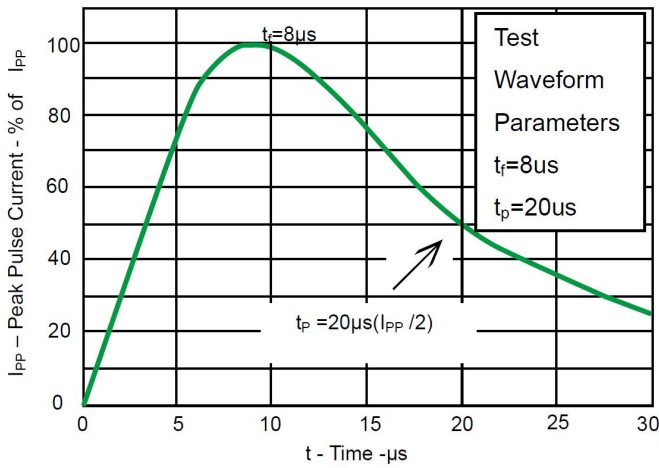


Fig 1. Pulse Waveform

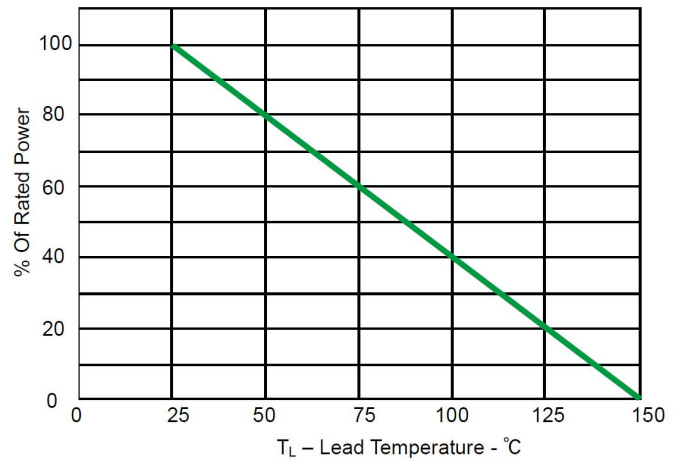
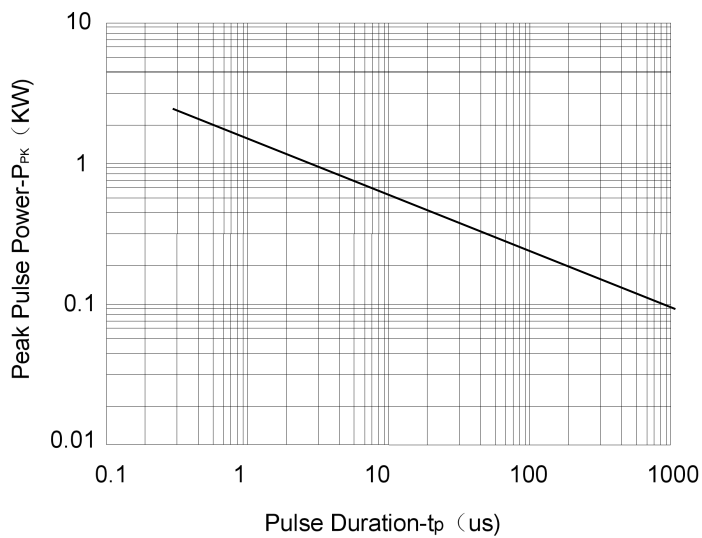


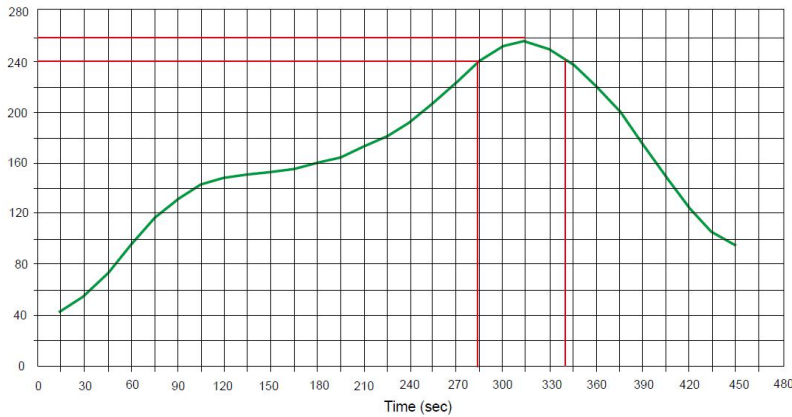
Fig 2. Power Derating Curve



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

## ● Solder Reflow Recommendation

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

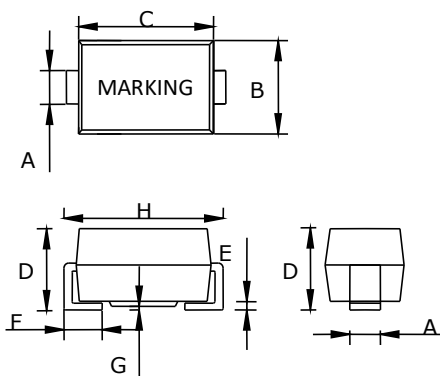


## ● Package Information

### Mechanical Data

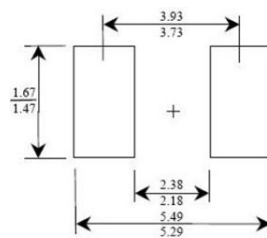
Case: SMA

Case Material: Molded Plastic. UL Flammability



DIM	Millimeters		
	Min	Nom	Max
A	1.35	1.50	1.80
B	2.50	2.67	2.90
C	3.90	4.40	5.10
D	1.90	2.25	2.45
E	0.05	0.200	0.203
F	0.76	1.14	1.52
G	-	-	0.203
H	4.80	5.0	5.30

### Recommended Pad outline



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