

## TQELD212XXX Series

Bidirectional Ultralow Capacitance TVS ARRAY

### ● Description

The TQELD212XXX is ultra low capacitance transient voltage suppressor arrays, designed to protect applications such as portable electronics and SMART phones. At higher operating frequencies or faster edge rates, insertion loss and signal integrity are a major concern. This series offers an ultra low capacitance and low leakage current in a miniature SOD-323 package.

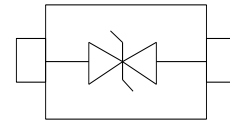
### ● Feature

- 350W peak pulse power ( $t_P = 8/20\mu s$ )
- SOD-323 Package
- Working voltage: 3.3V, 5V, 8V, 12V, 15V, 24V
- Low clamping voltage
- Low capacitance
- RoHS compliant transient protection for high speed data
- IEC61000-4-2(ESD)  $\pm 30kV$ (air),  $\pm 30kV$ (contact)

### ● 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

### ● PIN configuration



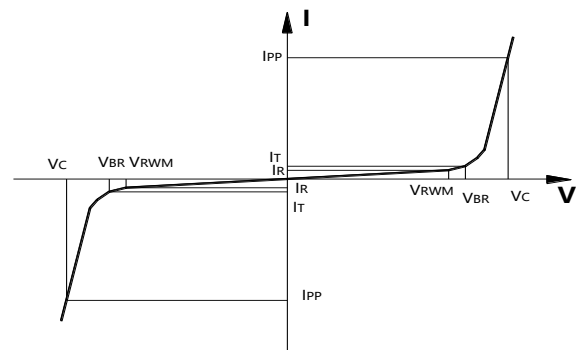
SOD-323

### ● Applications

- Hand-Held Portable Applications
- Networking and Telecom (Ethernet 10/100/1000 Base T)
- USB Interface
- Automotive Electronics
- Serial and Parallel Ports
- Notebooks, Desktops, Servers

### ● 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  $\mu m$
- Pin flatness:  $\leq 3mil$



## Absolute maximum rating @TA=25°C

Parameter	Symbol	Value	Unit
Peak Pulse Power (tp=8/20µs waveform)	P <sub>PPP</sub>	350	Watts
ESD Rating per IEC61000-4-2:	Contact Air	30 30	KV
Lead Soldering Temperature	T <sub>L</sub>	260 (10 sec.)	°C
Operating Temperature Range	T <sub>J</sub>	-55 ~ 150	°C
Storage Temperature Range	T <sub>STG</sub>	-55 ~ 150	°C
Lead Solder Temperature – Maximum (10 Second Duration)	T <sub>L</sub>	260	°C

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

\*Other voltages may be available upon request.

1. Non-repetitive current pulse, per Figure 1.

## Electrical Characteristics @TA=25°C

Device	Marking	V <sub>RWM</sub> (V)	I <sub>R</sub> @ V <sub>RWM</sub> (µA)	V <sub>BR</sub> @ 1 mA	V <sub>C1</sub>	I <sub>pp</sub> @8/20us	Capacitance		P <sub>PK</sub> (W)
				(Volts)	@ 1 A	(Amps)	@ V <sub>R</sub> = 0 V, 1 MHz (pF)		
				Min	(V)	Max.	Typ	Max.	
TQELD2123V3	CC	3.3	5	4	7.5	20	0.8	1.5	350
TQELD2125V0	AC	5	1	6	9.8	17	0.8	1.5	350
TQELD2128V0	BC	8	1	8.5	13.6	15	0.8	1.5	350
TQELD21212V	DC	12	1	13.3	17.8	11	0.8	1.5	350
TQELD21215V	EC	15	1	16.7	23.5	10	0.8	1.5	350
TQELD21224V	HC	24	1	26.7	38	6	0.8	1.5	350

## ● Typical Performance Characteristics

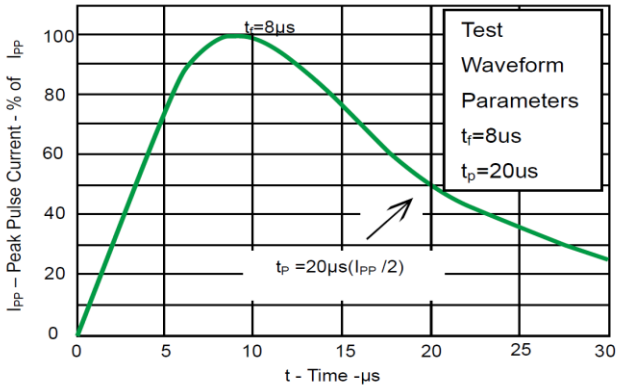


Fig 1. Pulse Waveform

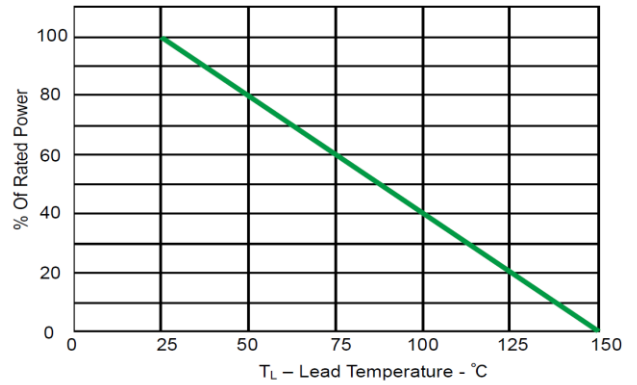
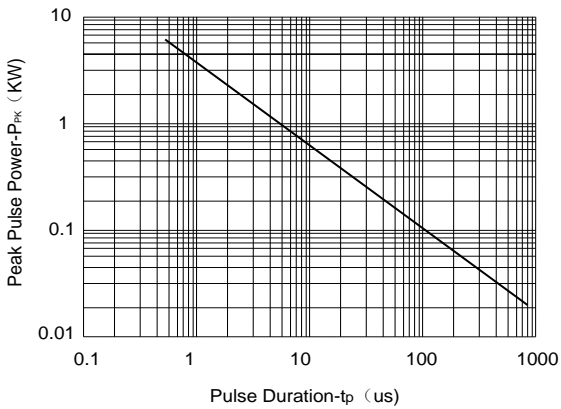


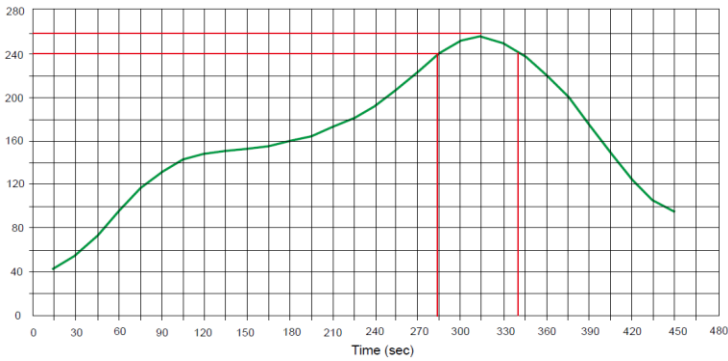
Fig 2. Power Derating Curve



Non-Repetitive Peak Pulse Power vs. Pulse Time

## ● Solder Reflow Recommendation

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



## ● Package Information

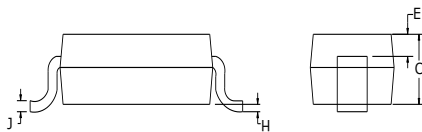
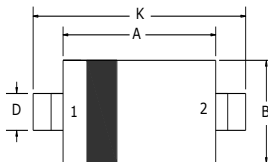
### Ordering Information

Device	Package	Qty per Reel	Reel Size
TQELD212XXX	SOD-323	3000	7 Inch

## Mechanical Data

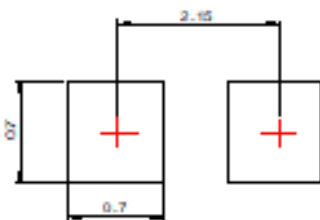
Case: SOD-323

Case Material: Molded Plastic. UL Flammability



Dim	Millimeters	
	Min	Max
A	1.60	1.80
B	1.2	1.40
C	0.80	0.90
D	0.25	0.35
E	0.15REF	
H	0	0.10
J	0.08	0.15
K	2.50	2.70

## Recommended Pad outline



## DISCLAIMER

TECH CHIP RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. TECH CHIP DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICIENCE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

THE GRAPHS PROVIDED IN THIS DOCUMENT ARE STATISTICAL SUMMARIES BASED ON A LIMITED NUMBER OF SAMPLES AND ARE PROVIDED FOR INFORMATIONAL PURPOSE ONLY. THE PERFORMANCE CHARACTERISTICS LISTED IN THEM ARE NOT TESTED OR GUARANTEED. IN SOME GRAPHS, THE DATA PRESENTED MAY BE OUTSIDE THE SPECIFIED OPERATING RANGE (E.G., OUTSIDE SPECIFIED POWER SUPPLY RANGE ) AND THEREFORE OUTSIDE THE WARRANTED RANGE.