

## Low Capacitance TVS Diode Array

### FEATURES:

- ✧ Protects two I/O lines
- ✧ Low clamping voltage
- ✧ Array of surge rated, low capacitance diodes
- ✧ Solid-state silicon-avalanche technology
- ✧ Low capacitance (1.5pF max.) for high-speed interfaces
- ✧ RoHS compliant

### MAIN APPLICATIONS

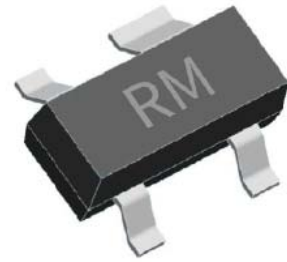
- ✧ ADSL lines
- ✧ I<sup>2</sup>C bus protection
- ✧ ISDN S/T interface
- ✧ Portable electronics
- ✧ WAN/LAN equipment
- ✧ Video line protection
- ✧ Microcontroller input protection
- ✧ T1/E1 secondary IC side protection

### PROTECTION SOLUTION TO MEET

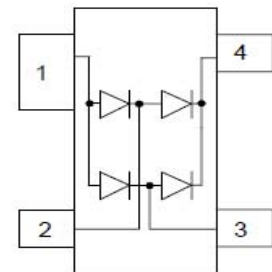
- ✧ IEC61000-4-2 (ESD) ±3kV (air), ±3kV (contact)
- ✧ IEC61000-4-2 (ESD) ±30kV (air), ±30kV (contact)  
Connect a TVS between Pin1 and Pin 4
- ✧ IEC61000-4-4 (EFT) 40A (5/50ns)
- ✧ IEC61000-4-5 (Lightning) 24A (8/20μs)

### MECHANICAL CHARACTERISTICS

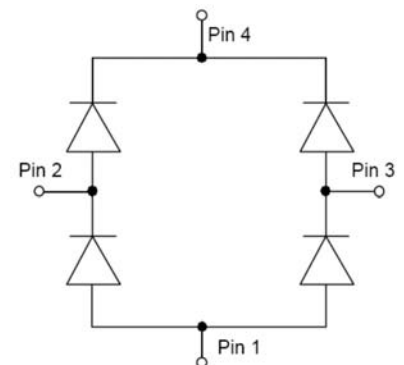
- ✧ Molding compound flammability rating: UL 94V-0
- ✧ Quantity per reel: 3, 000pcs
- ✧ Lead finish: lead free
- ✧ Marking code: R70



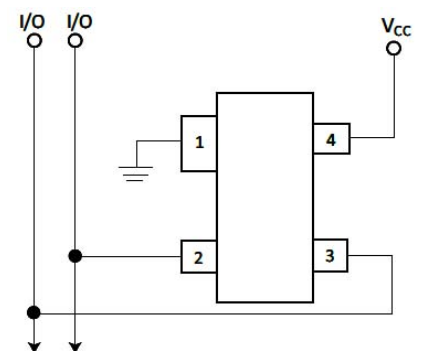
SOT-143



PIN Configuration



Circuit Diagram



Application Example



## Low Capacitance TVS Diode Array

### ABSOLUTE MAXIMUM RATINGS ( $T_A=25^{\circ}\text{C}$ , RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak pulse power dissipation on 8/20 $\mu\text{s}$ waveform	P <sub>PP</sub>	150	W
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact) Connect a TVS between Pin1 and Pin 4	V <sub>ESD</sub>	+/- 30 +/- 30	kV
Lead soldering temperature	T <sub>L</sub>	260 (10 sec.)	°C
Operating junction temperature range	T <sub>J</sub>	-55 to +125	°C
Storage temperature range	T <sub>STG</sub>	-55 to +150	°C

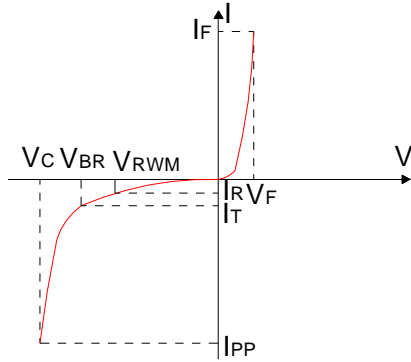
### ELECTRICAL CHARACTERISTICS ( $T_A=25^{\circ}\text{C}$ )

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Reverse working voltage	V <sub>RWM</sub>				70	V
Reverse breakdown voltage	V <sub>BR</sub>	I <sub>T</sub> =50 $\mu\text{A}$	85			V
Reverse leakage current	I <sub>R</sub>	V <sub>RWM</sub> =70V			1	$\mu\text{A}$
Forward clamping voltage	V <sub>C</sub>	I <sub>PP</sub> =1A, t <sub>P</sub> =8/20 $\mu\text{s}$		1.0	1.5	V
		I <sub>PP</sub> =10A, t <sub>P</sub> =8/20 $\mu\text{s}$		3.0	4.0	
		I <sub>PP</sub> =24A, t <sub>P</sub> =8/20 $\mu\text{s}$		7.0	9.0	
Junction capacitance	C <sub>J</sub>	V <sub>RWM</sub> =0V, f =1MHz Between I/O pins and Ground		0.55	1.5	pF
		V <sub>RWM</sub> =0V, f=1MHz Between I/O pins		0.4	0.75	

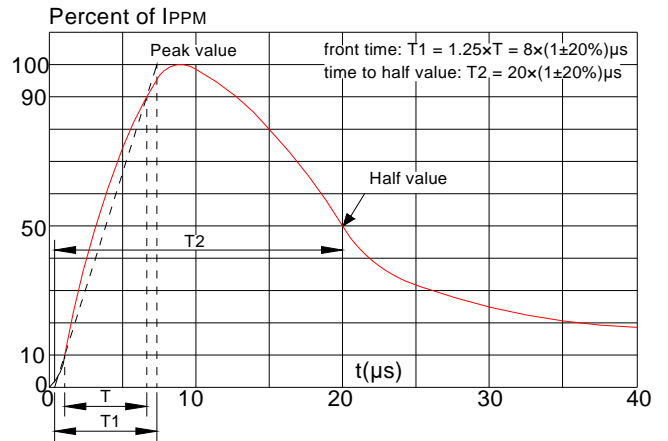
## Low Capacitance TVS Diode Array

### RATINGS AND V-I CHARACTERISTICS CURVES ( $T_A=25^\circ\text{C}$ , unless otherwise noted)

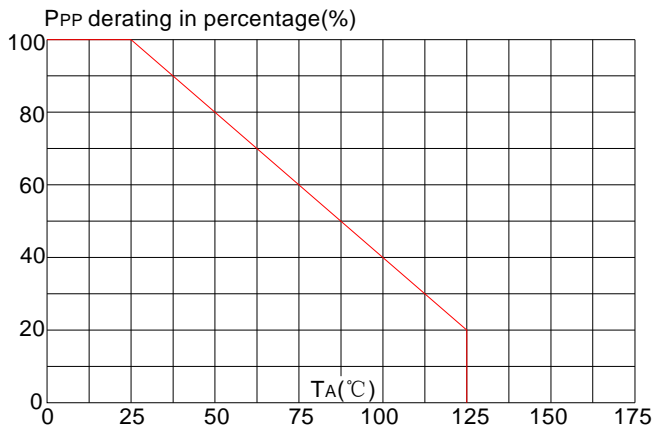
**FIG.1: V- I curve characteristics (Uni-directional)**



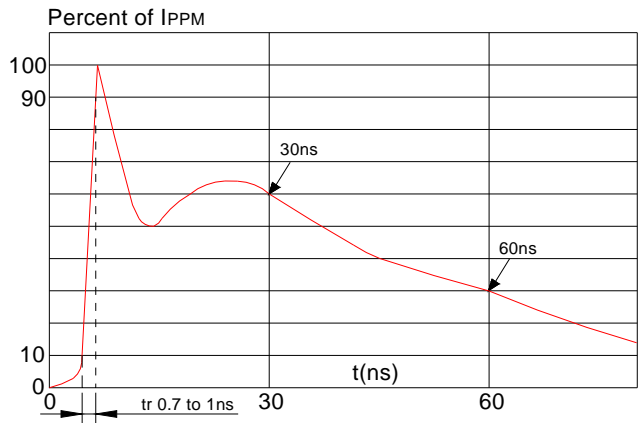
**FIG.2: Pulse waveform (8/20 $\mu\text{s}$ )**



**FIG.3: Pulse derating curve**



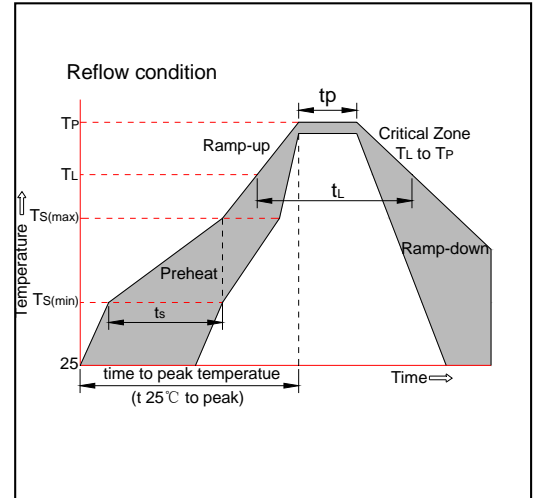
**FIG.4: ESD clamping (contact)**



## Low Capacitance TVS Diode Array

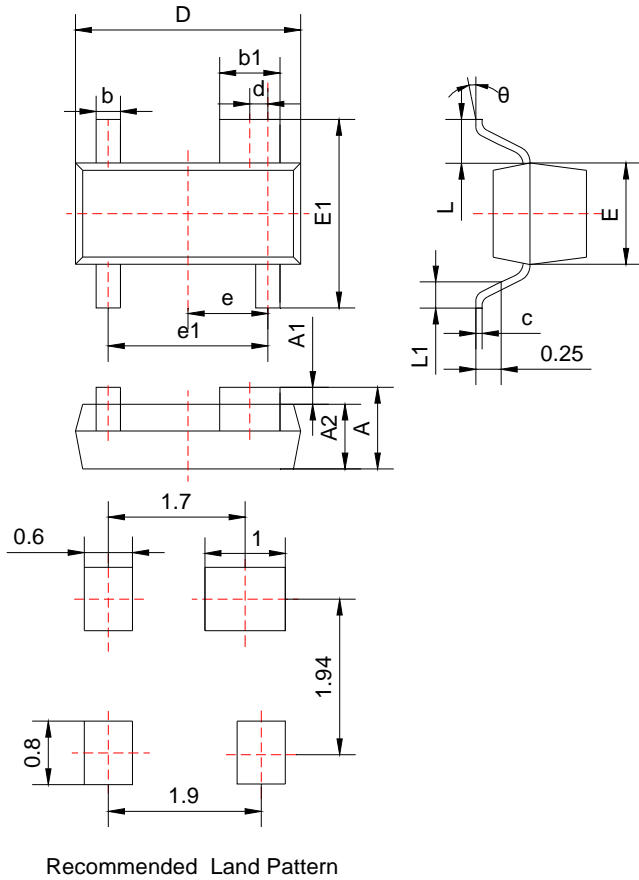
### SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see figure at right)
Pre Heat	-Temperature Min ( $T_{s(min)}$ )	+150°C
	-Temperature Max( $T_{s(max)}$ )	+200°C
	-Time (Min to Max) ( $t_s$ )	60-180 secs.
Average ramp up rate (Liquidus Temp ( $T_L$ ) to peak)		3°C/sec. Max
$T_{s(max)}$ to $T_L$ - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature( $T_L$ )(Liquidus)	+217°C
	-Temperature( $t_L$ )	60-150 secs.
Peak Temp ( $T_p$ )		+260(+0/-5)°C
Time within 5°C of actual Peak Temp ( $t_p$ )		20-40secs.
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp ( $T_p$ )		8 min. Max
Do not exceed		+260°C



## Low Capacitance TVS Diode Array

### PACKAGE MECHANICAL DATA



Symbol	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	0.90	1.00	1.15	0.035	0.039	0.045
A1	0.00	0.065	0.10	0.000	0.003	0.004
A2	0.90	1.00	1.10	0.035	0.039	0.043
b	0.30	0.40	0.50	0.012	0.016	0.020
b1	0.75	0.81	0.90	0.030	0.032	0.035
c	0.05	0.10	0.15	0.002	0.004	0.006
D	2.70	2.90	3.10	0.106	0.114	0.122
d	0.20Typ.			0.008Typ.		
E	1.10	1.30	1.50	0.043	0.051	0.059
E1	2.20	2.40	2.60	0.087	0.094	0.102
e	0.95Typ.			0.037Typ.		
e1	1.80	1.90	2.00	0.071	0.075	0.079
L	0.55Typ.			0.022Typ.		
L1	0.30	0.40	0.50	0.012	0.016	0.020
θ	0°	-	8°	0°	-	8°