

SP1004 Series

5pF 8kV Bidirectional TVS Array

Absolute Maximum Ratings

Symbol	Parameter	Value	Units
I_{PP}	Peak Pulse Current ($t_p=8/20\mu s$)	2.0	A
T_{OP}	Operating Temperature	-40 to 125	°C
T_{STOR}	Storage Temperature	-55 to 150	°C

Caution: Stresses above those listed in "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress only rating and operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied.

Thermal Information

Parameter	Rating	Units
Storage Temperature Range	-55 to 150	°C
Maximum Junction Temperature	150	°C
Maximum Lead Temperature (Soldering 20-40s)	260	°C

Electrical Characteristics (TOP=25°C)

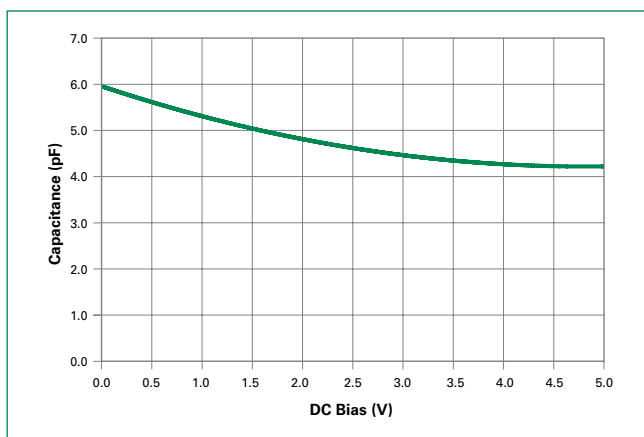
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Reverse Voltage Drop ¹	V_R	$I_R=1mA$	6.0		9.5	V
Reverse Standoff Voltage ¹	V_{RWM}	$I_R\leq 1\mu A$			6.0	V
Reverse Leakage Current ¹	I_{LEAK}	$V_R=5V$			0.1	μA
Clamp Voltage ²	V_C	$I_{PP}=1A, t_p=8/20\mu s$		10		V
		$I_{PP}=2A, t_p=8/20\mu s$		12		V
Dynamic Resistance	R_{DYN}	$(V_{C2} - V_{C1}) / (I_{PP2} - I_{PP1})$		2.0		Ω
ESD Withstand Voltage ^{1,2}	V_{ESD}	IEC 61000-4-2 (Contact Discharge) ³	± 8			kV
		IEC 61000-4-2 (Air Discharge)	± 15			kV
Diode Capacitance ^{1,2}	C_D	Reverse Bias=0V		6	7	pF
		Reverse Bias=1.5V		5	6	pF

Note: ¹ Parameter specified with pin 2 grounded externally.

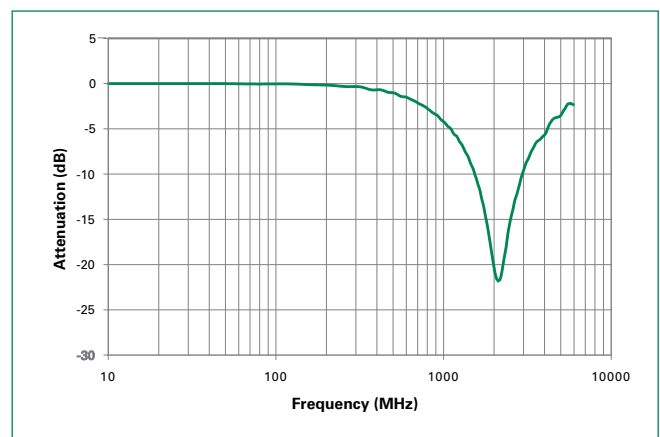
² Parameter is guaranteed by design and/or device characterization.

³ Capable of withstanding >1,000 pulses at 1s intervals.

Capacitance vs. Reverse Bias



Insertion Loss (S21)

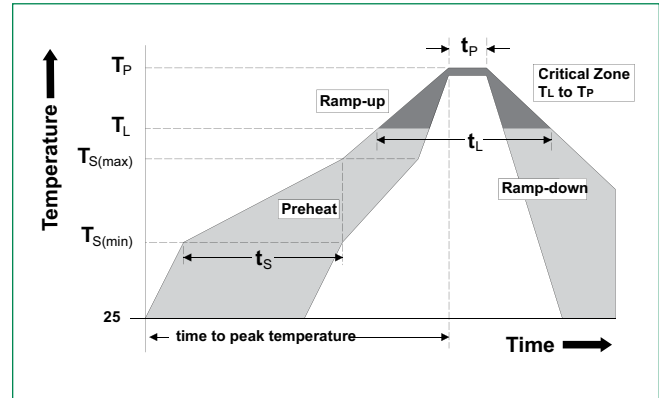


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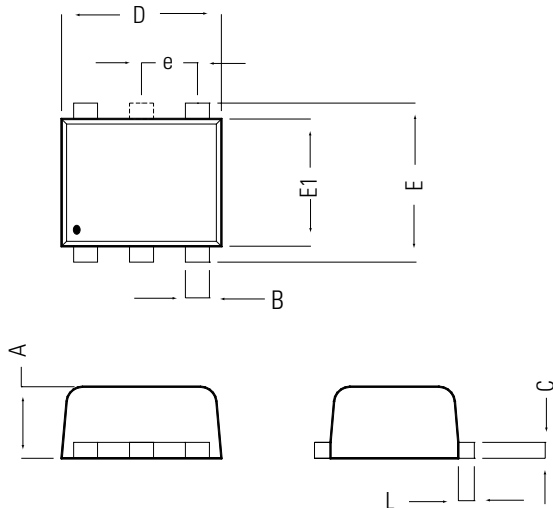
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Soldering Parameters

Reflow Condition	Pb – Free assembly	
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/second max	
$T_{s(max)}$ to T_L - Ramp-up Rate	3°C/second max	
Reflow	- Temperature (T_L) (Liquidus)	217°C
	- Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_p)	260 ^{+0/-5} °C	
Time within 5°C of actual peak Temperature (t_p)	20 – 40 seconds	
Ramp-down Rate	6°C/second max	
Time 25°C to peak Temperature (T_p)	8 minutes Max.	
Do not exceed	260°C	



Package Dimensions – SOT953



Symbol	SOT953			
	Millimeters		Inches	
	Min	Max	Min	Max
A	0.44	0.5	0.170	0.020
B	0.10	0.20	0.004	0.008
c	0.05	0.15	0.002	0.006
D	0.95	1.05	0.037	0.041
E	0.95	1.05	0.037	0.041
E1	0.75	0.85	0.029	0.033
e	0.35 BSC		0.014 BSC	
L	0.05	0.15	0.002	0.006

