

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)

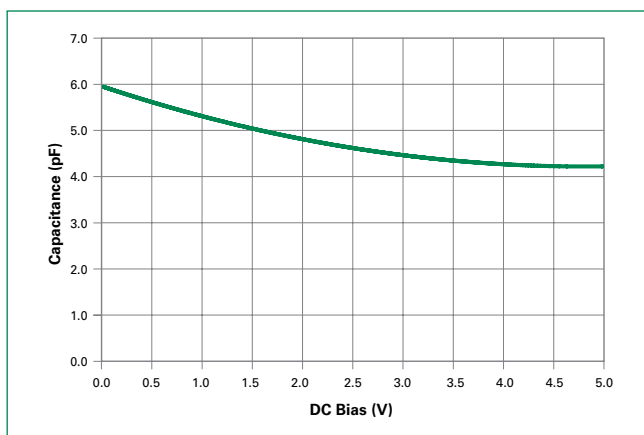
| Parameter | Symbol | Test Conditions | Min | Typ | Max | Units |
|---------------------------------------|------------|------------------------------------------------|----------|-----|-----|----------|
| Reverse Voltage Drop ¹ | V_R | $I_R=1mA$ | 6.0 | | 9.5 | V |
| Reverse Standoff Voltage ¹ | V_{RWM} | $I_R\leq 1\mu A$ | | | 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.

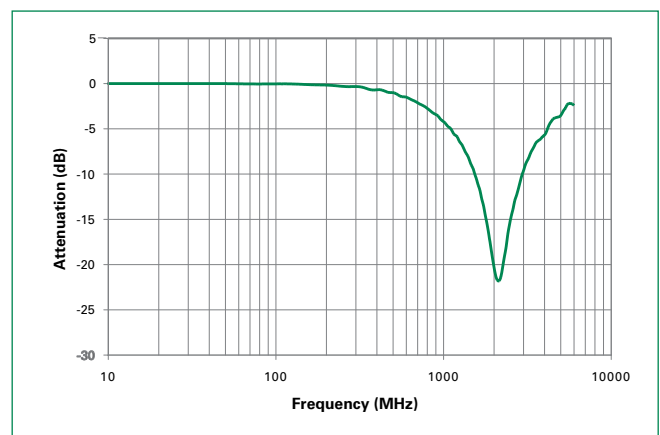
² Parameter is guaranteed by design and/or device characterization.

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

Capacitance vs. Reverse Bias



Insertion Loss (S21)

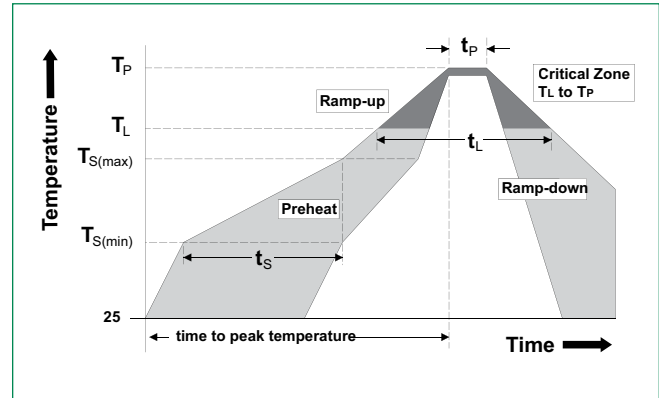


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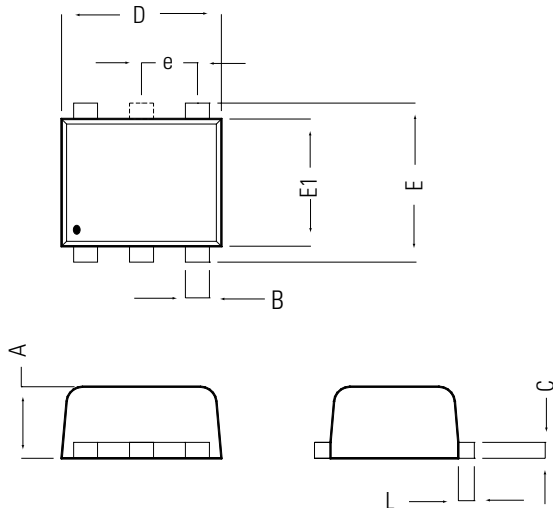
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Soldering Parameters

| | | |
|------------------------------------------------------------------------|------------------------------------|-------------------------|
| 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 |

