

**Low Capacitance TVS Array**

**General Description**

SE0504 are surge rated diode arrays designed to protect high speed data interfaces. This series has been specifically designed to protect sensitive components which are connected to data and transmission lines from overvoltage caused by ESD (electrostatic discharge), CDE (Cable Discharge Events), and EFT (electrical fast transients).

The unique design incorporates surge rated, low capacitance steering diodes and a TVS diode in a single package. During transient conditions, the steering diodes direct the transient to either the positive side of the power supply line or to ground. The internal TVS diode prevents over-voltage on the power line, protecting any downstream components. The low capacitance array configuration allows the user to protect four high-speed data or transmission lines. The low inductance construction minimizes voltage overshoot during high current surges.

**Applications**

- USB 2.0
- USB OTG
- Monitors and Flat Panel Displays
- Digital Visual Interface (DVI)
- High-Definition Multimedia Interface (HDMI)
- Gigabit Ethernet
- SIM Ports
- IEEE 1394 Firewire Ports

**Features**

- Array of surge rated diodes with internal TVS Diode
- Small package (2.4 x 2.2mm) saves board space
- Protects up to four I/O lines & power line
- Low capacitance (<1pF) for high-speed interfaces
- No insertion loss to 2.0GHz
- Low leakage current and clamping voltage
- Low operating voltage: 5.0V
- Solid-state silicon-avalanche technology
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**IEC61000-4-2(ESD) 15kV(air), 8kV(Contact)**

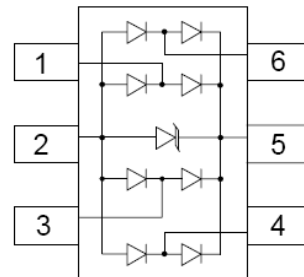
**IEC61000-4-4(EFT) 40A(5/50ns)**

**IEC61000-4-5(Surge)24A(8/20us),Level2(Line-Ground)& Level 2(Line- Line)**

**Functional diagram**



**SOT23-6**

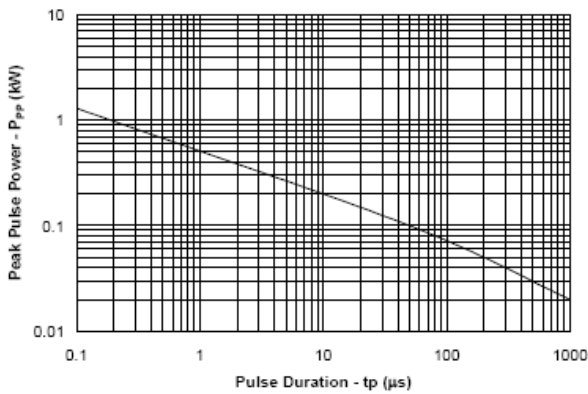


**Low Capacitance TVS Array**

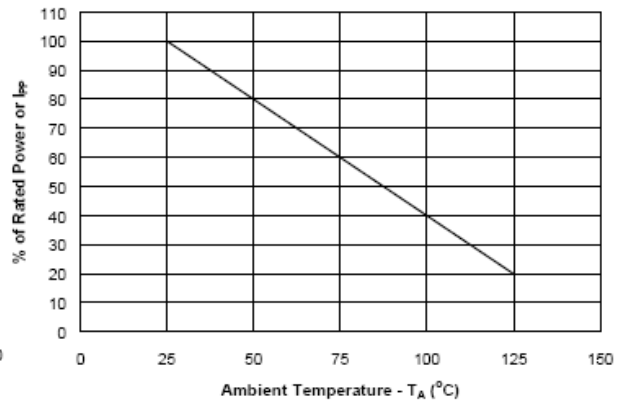
| Absolute Ratings           |  |      |      |             |           |         |                 |
|----------------------------|--|------|------|-------------|-----------|---------|-----------------|
| Symbol                     | Parameter                                |      |      | Value       | Units     |         |                 |
| $P_{PK}$                   | Peak Pulse Power ( $t_p = 8/20\mu s$ )   |      |      | 120         | W         |         |                 |
| $I_{PP}$                   | Peak Pulse Current ( $t_p = 8/20\mu s$ ) |      |      | 6           | A         |         |                 |
| $T_J$                      | Operating Temperature                    |      |      | -55 to +125 | °C        |         |                 |
| $T_{stg}$                  | Storage Temperature Range                |      |      | -55 to +150 | °C        |         |                 |
| Electrical Characteristics |  |      |      |             |           |         |                 |
| Part Numbers               | $V_{BR}$                                 |      |      | $I_T$       | $V_{RWM}$ | $I_R$   | C               |
|                            | Min.                                     | Typ. | Max. |             |           |         | Typ.<br>(Note1) |
|                            | V  | V    | V    | mA          | V         | $\mu A$ | pF              |
| SE0504                     | 6.0                                      | 6.6  | 7.2  | 1           | 5         | 3       | 0.6             |

Note 1: I/O pins are pin 1, 3, 4, and 6

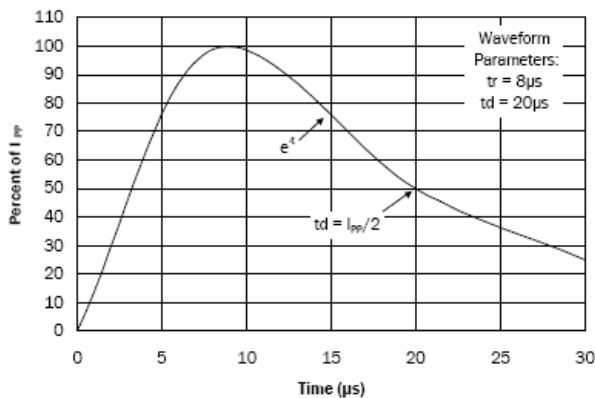
**Typical Characteristics**



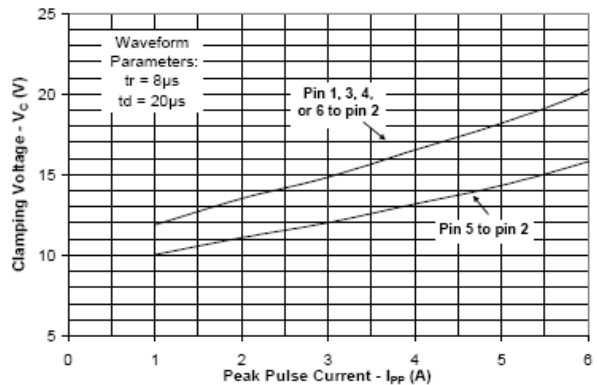
**Fig1. Non-Repetitive Peak Pulse Power vs. Pulse Time**



**Fig2. Power Derating Curve**

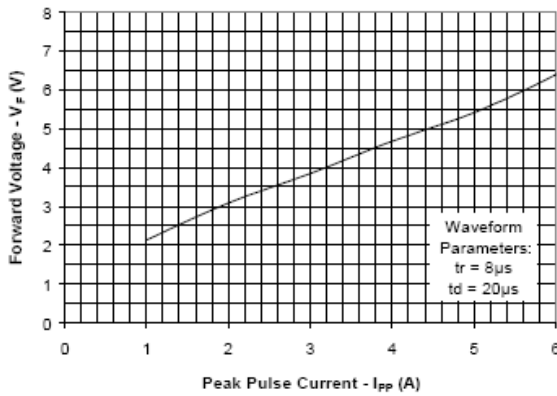


**Fig3. Pulse Waveform**

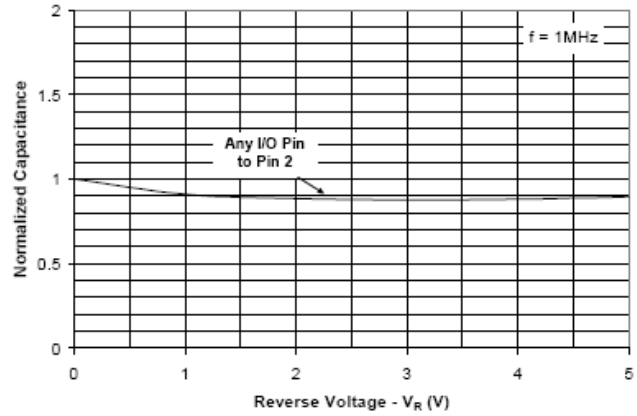


**Fig4. Clamping Voltage vs. Peak Pulse Current**

**Low Capacitance TVS Array**

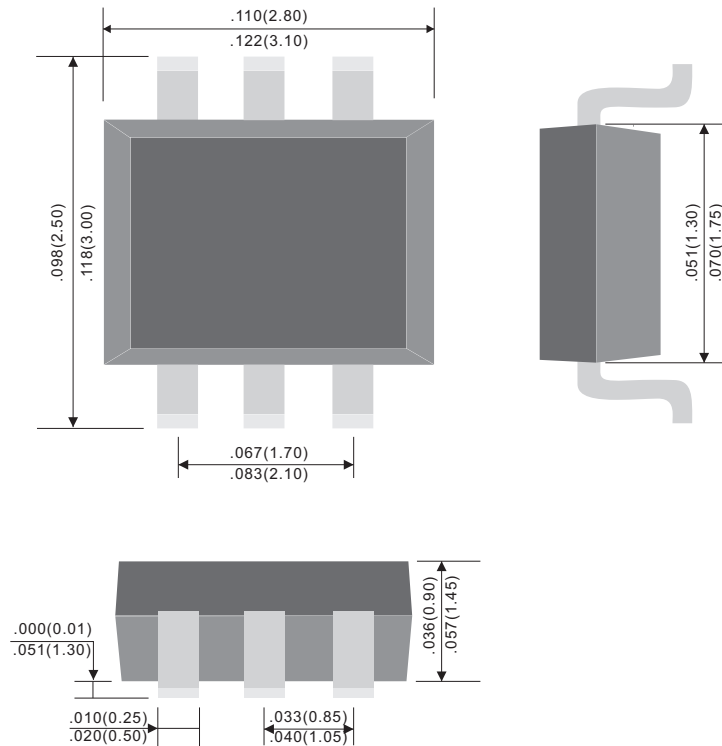


**Fig5. Forward Voltage vs. peak Pulse Current**



**Fig6. Capacitance vs. Reverse Voltage (Normalized to 0V)**

**SOT-23-6 Mechanical Data**



Dimensions in inches and (millimeters)

**Marking**

| Type number | Marking code |
|-------------|--------------|
| SE0504      | F 54         |