

Ultra Low Capacitance ESD Protection Array

DESCRIPTION

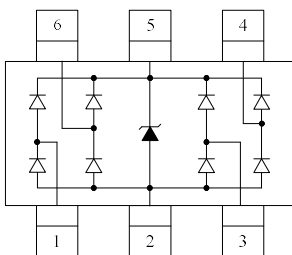
GESD0504F is an ultra-low capacitance Transient Voltage Suppressor (TVS) designed to protection for high-speed data interfaces. With typical capacitance of 0.20pF (I/O to I/O) only, GESD0504F is designed to protect parasitic-sensitive systems against over-voltage and over-current transient events. It complies with IEC 61000-4-2 (ESD), Level 4(±15KV air, ±8KV contact discharge), IEC61000-4-4 (electrical fast transient-EFT) (40A, 5/50ns), very fast charged device model (CDM) ESD and cable discharge event (CDE), etc.

GESD0504F uses small SOT-363 package. Each GESD0504F device can protect four high-speed data lines one Vcc line. The combined features of ultra-low capacitance, small size and high ESD robustness make GESD0504F ideal for high-speed data ports and high-frequency lines (e.g., HDMI & DVI) applications. The low clamping voltage of the GESD0504F guarantees a minimum stress on the protected IC.

ORDERING INFORMATION

- ✧ Device: GESD0504F
- ✧ Package: SOT-363
- ✧ Marking: F54
- ✧ Material: Halogen free
- ✧ Packing: Tape & Reel
- ✧ Quantity per reel: 3,000pcs

PIN CONFIGURATION



FEATURES

- ✧ Transient protection for high-speed data lines
 - IEC 61000-4-2(ESD) ±25KV(Air)
 - ±20KV(Contact)
 - IEC 61000-4-4(EFT)40A(5/50ns)
 - Cable Discharge Event(CDE)
- ✧ Package optimized for high-speed lines
- ✧ Small package(2.1mm*2.3mm*1.0mm)
- ✧ Protects four data lines and one Vcc line
- ✧ Low capacitance: 0.20pF (I/O to I/O)
- ✧ Low leakage current
- ✧ Low clamping voltage
- ✧ Each I/O pin can withstand over 1000 ESD strikes for ±8KV contact discharge

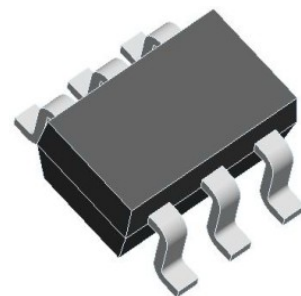
MACHANICAL DATA

- ✧ SOT-363 package
- ✧ Flammability Rating: UL 94V-0
- ✧ Terminal: Matte tin plated.
- ✧ Packaging: Tape and Reel
- ✧ High temperature soldering guaranteed:260°C/10s
- ✧ Reel size: 7 inch

APPLICATIONS

- ✧ Serial ATA
- ✧ MDDI Ports
- ✧ USB 2.0/3.0 Power and Data Line Protection
- ✧ Display Ports
- ✧ High Definition Multi-Media Interface (HDMI)
- ✧ Digital Visual Interface (DVI)

PACKAGE OUTLINE



ABSOLUTE MAXIMUM RATING

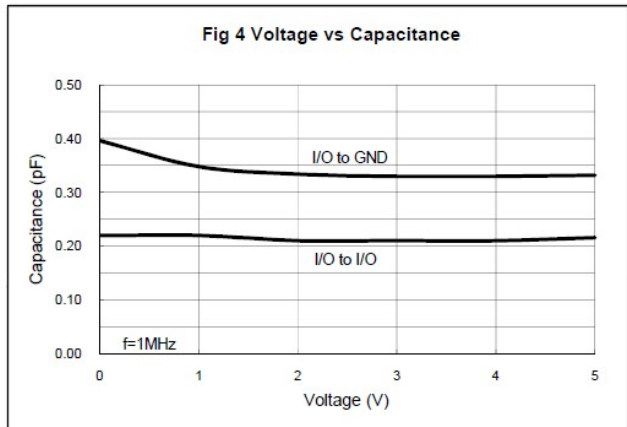
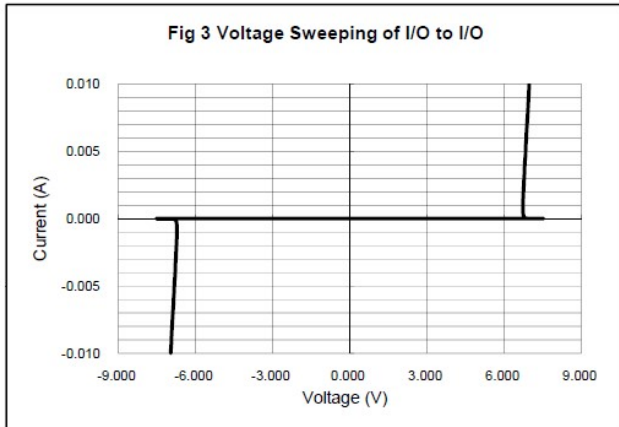
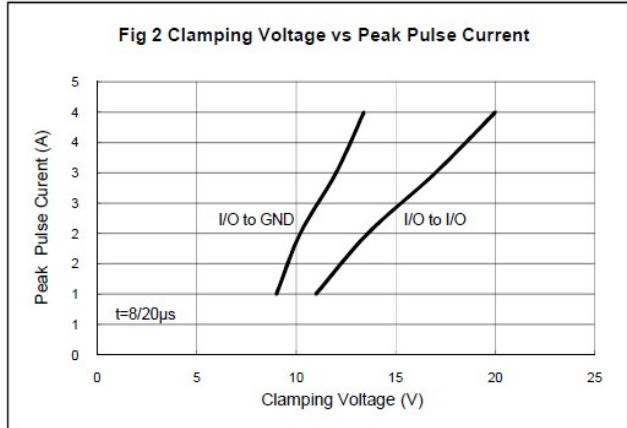
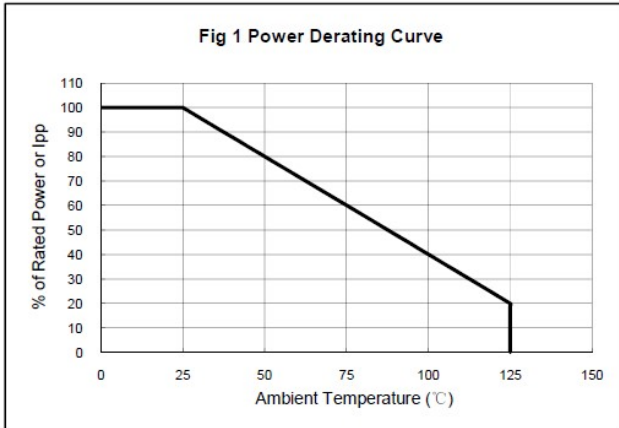
| Symbol | Parameter | Value | Units |
|-----------|---------------------------------|----------|--------------|
| P_{PP} | Peak Pulse Power (8/20 μ s) | 60 | W |
| V_{ESD} | ESD per IEC 61000-4-2 (Air) | ± 25 | kV |
| | ESD per IEC 61000-4-2 (Contact) | ± 20 | |
| T_{OPT} | Operating Temperature | -55/+125 | $^{\circ}$ C |
| T_{STG} | Storage Temperature | -55/+150 | $^{\circ}$ C |

ELECTRICAL CHARACTERISTICS (Tamb=25 $^{\circ}$ C)

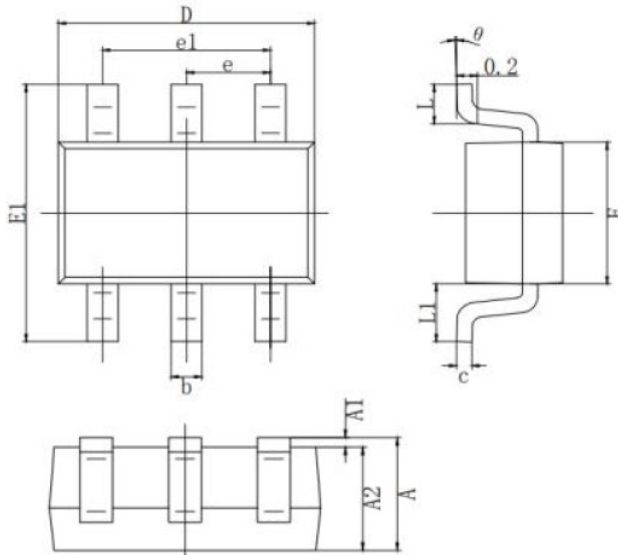
| Symbol | Parameter | Test Condition | Min | Typ | Max | Units |
|-----------|---------------------------|--|-----|------|------|---------|
| V_{RWM} | Reverse Working Voltage | Any I/O pin to GND | | | 5.0 | V |
| V_{BR} | Reverse Breakdown Voltage | $I_T = 1\text{mA}$ Any I/O pin to GND | 6.0 | | 9.0 | V |
| I_R | Reverse Leakage Current | $V_{RWM} = 5\text{V}$ Any I/O pin to GND | | | 1.0 | μ A |
| V_C | Clamping Voltage | $I_{PP} = 1\text{A}$, $t_p = 8/20\mu\text{s}$ Any I/O pin to GND | | | 10 | V |
| | | $I_{PP} = 4\text{A}$, $t_p = 8/20\mu\text{s}$ Any I/O pin to GND | | | 15 | V |
| | | $I_{PP} = 8\text{A}$, $t_p = 8/20\mu\text{s}$ Vcc pin to GND | | | 15 | V |
| C_{ESD} | Parasitic Capacitance | $V_R = 0\text{V}$, $f = 1\text{MHz}$ Between I/O and I/O | | 0.20 | 0.30 | pF |
| | | $V_R = 0\text{V}$, $f = 1\text{MHz}$ Between I/O and GND | | 0.45 | 0.50 | pF |
| | | $V_R = 0\text{V}$, $f = 1\text{MHz}$ Between Vcc and GND | | 0.80 | | pF |

Note: I/O Pins are pin 1,3,4,6. Pin 5 is Vcc. Pin 2 is GND.

ELECTRICAL CHARACTERISTICS CURVE

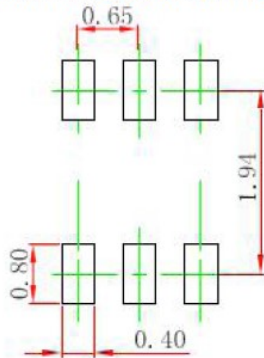


SOT-363 PACKAGE OUTLINE DIMENSIONS



| SYMBOL | MILLIMETER | |
|----------|------------|-------|
| | MIN | MAX |
| A | 0.900 | 1.100 |
| A1 | 0.000 | 0.100 |
| A2 | 0.900 | 1.000 |
| b | 0.150 | 0.350 |
| c | 0.080 | 0.150 |
| D | 2.000 | 2.200 |
| E | 1.150 | 1.350 |
| E1 | 2.150 | 2.450 |
| e | 0.650 TYP. | |
| e1 | 1.200 | 1.400 |
| L | 0.525 REF. | |
| L1 | 0.260 | 0.460 |
| θ | 0° | 8° |

Recommended land dimensions for SOT-363. Electrode patterns for PCBs



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: ± 0.05 mm.
3. The pad layout is for reference purposes only.