EVVOSEMI®
THINK CHANGE DO

ESD TVS MOS LDO Diode Sensor DC-DC

Product Specification

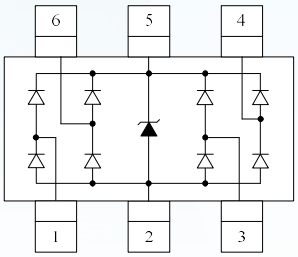
Domestic Part Number	ESD0504F
Overseas Part Number	ESD0504F
Equivalent Part Number	ESD0504F

Ultra Low Capacitance ESD Protection Array

DESCRIPTION

ESD0504F 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, ESD0504F 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.

ESD0504F uses small SOT-363 package. Each ESD0504F 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 ESD0504F ideal for high-speed data ports and high-frequency lines (e.g., HDMI & DVI) applications. The low clamping voltage of the ESD0504F guarantees a minimum stress on the protected IC.



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

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)

MACHANICAL DATA

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

ABSOLUTE MAXIMUM RATING

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

ELECTRICAL CHARACTERISTICS (Tamb=25°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 = 1mA Any I/O pin to GND	6.0		9.0	V
I_R	Reverse Leakage Current	V_{RWM} = 5V Any I/O pin to GND			1.0	μA
V_C	Clamping Voltage	I_{PP} = 1A, t_p = 8/20μs Any I/O pin to GND			10	V
		I_{PP} = 4A, t_p = 8/20μs Any I/O pin to GND			15	V
		I_{PP} = 8A, t_p = 8/20μs Vcc pin to GND			15	V
C_{ESD}	Parasitic Capacitance	V_R = 0V, f = 1MHz Between I/O and I/O		0.20	0.30	pF
		V_R = 0V, f = 1MHz Between I/O and GND		0.45	0.50	pF
		V_R = 0V, f = 1MHz 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

Fig 1 Power Derating Curve

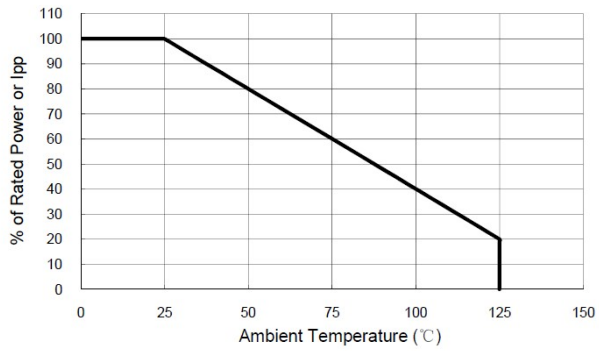


Fig 2 Clamping Voltage vs Peak Pulse Current

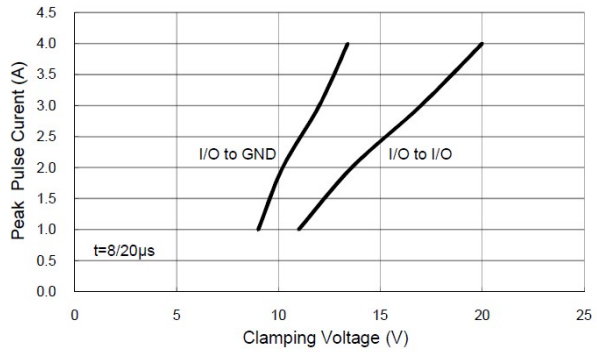


Fig 3 Voltage Sweeping of I/O to I/O

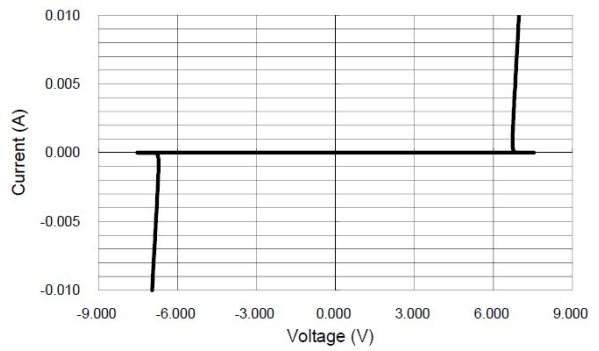


Fig 4 Voltage vs Capacitance

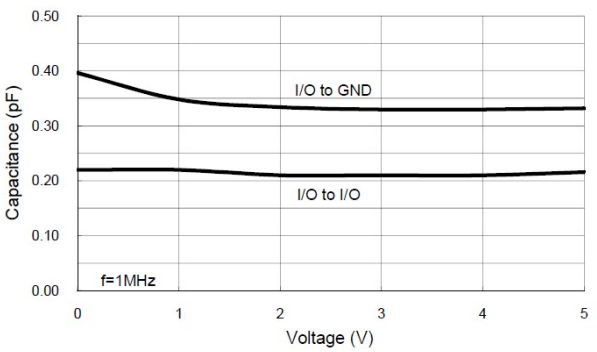


Fig 5 ESD Clamping of I/O to GND
(+8kV Contact per IEC 61000-4-2)

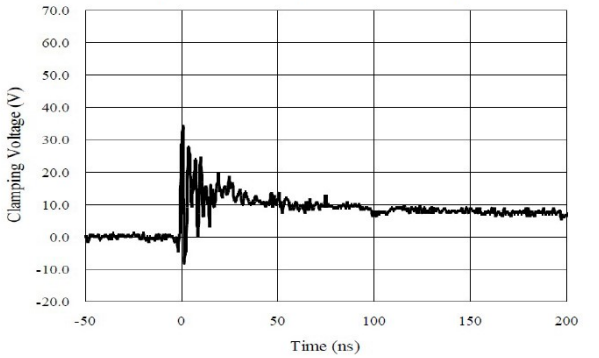
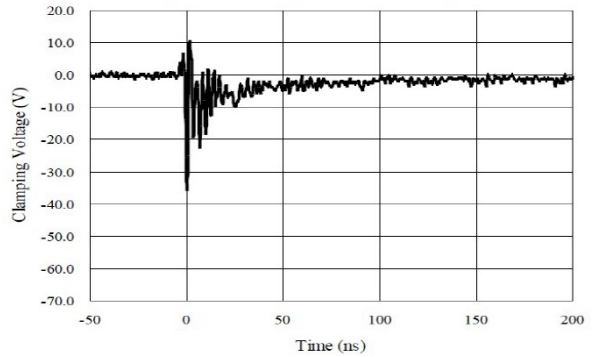
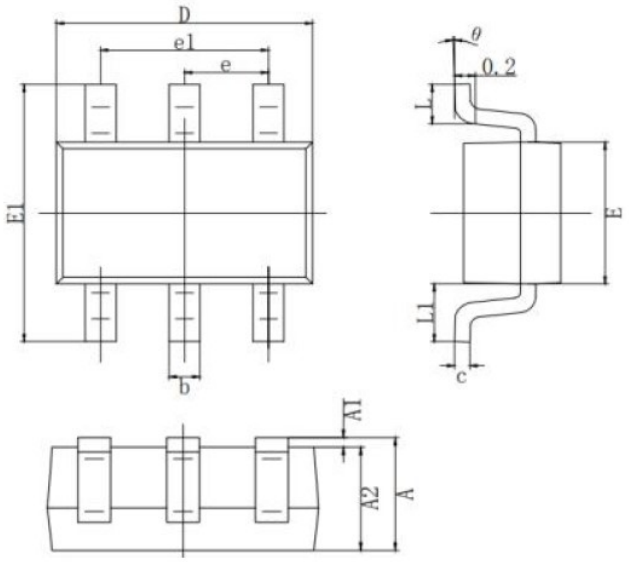


Fig 6 ESD Clamping of I/O to GND
(-8kV Contact per IEC 61000-4-2)

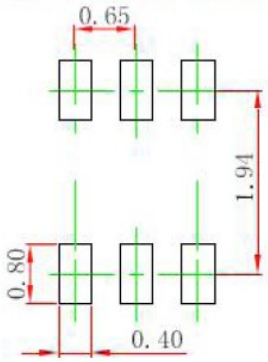


SOT-363 PACKAGE OUTLINE DIMENSIONS



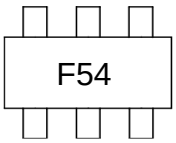
SYMBOL	MILLIMETER	
	MIN	MAX
A	0.900	1.100
A1	0.000	0.100
A2	0.900	1.000
b	0.150	0.350
c	0.080	0.150
D	2.000	2.200
E	1.150	1.350
E1	2.150	2.450
e	0.650 TYP.	
e1	1.200	1.400
L	0.525 REF.	
L1	0.260	0.460
θ	0°	8°

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



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

Marking



Ordering information

Order code	Package	Base qty	Delivery mode
ESD0504F	SOD-363	3000	Tape and reel

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