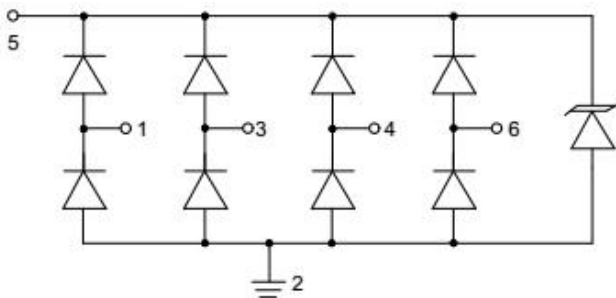


eGuard0504F Low Voltage TVS Diode Array



Circuit Diagram



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

Description

The eGuard0504F TVS diode is a low capacitance TVS(Transient Voltage Suppressor) device designed to protect sensitive components which are connected to data and transmission lines from overvoltage caused by transients electrostatic discharge(ESD), cable discharge events(CDE), and electrical fast transients(EFT). The eGuard0504F integrates low capacitance steering diode and a TVS diode in one single die. 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 to protect any downstream components.

This low capacitance array device allows the users to protect four high-speed data or transmission lines. The low inductance construction minimizes voltage overshoot during high current surges.

Features

- Transient protection for high-speed data lines
IEC 61000-4-2(ESD) $\pm 15KV$ (air), $\pm 8KV$ (contact)
IEC 61000-4-4(EFT) 40A (5/50ns)
- Array of surge rated diodes with internal TVS Diode
- Small package (2.4*2.2mm) saves board space
- Protects up to four I/O lines & power line
- Low capacitance(<3pF) for high-speed interface
- No insertion loss to 2.0GHz
- Low leakage current and clamping voltages
- Low operating voltage(5V)

Mechanical Characteristics

- SOT-363 package
- ROHS/WEEE Compliant
- Molding compound flammability rating: UL 94V-0
- Marking: F54
- Packaging: Tape and Reel

Maximum Ratings

Characteristics	Symbol	Max.	Units
Peak Pulse Power (tp=8/20us)	P _{PK}	150	Watts
Peak Pulse Current (tp=8/20us)	I _{PP}	6	A
ESD per IEC61000-4-2 (air)	V _{ESD}	15	KV
ESD per IEC61000-4-2 (contact)		8	
Operating Temperature	T _J	-55 to +125	°C
Storage Temperature	T _{STG}	-55 to +150	°C

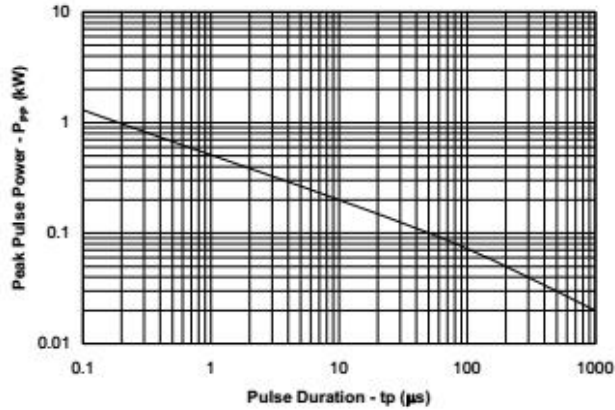
Electrical Characteristics

Characteristics	Symbol	Condition	Min.	Typ.	Max.	Units
Reverse Stand-Off Voltage	V _{RWM}				5	V
Reverse Breakdown Voltage	V _{BR}	I _t =1mA Pin 5 to 2	6			V
Reverse Leakage Current	I _R	V _{RWM} =5V, T=25°C Pin 5 to 2			3	uA
Clamping Voltage	V _C	I _{PP} =1A, tp=8/20us Any pin to pin2			15	V
Clamping Voltage	V _C	I _{PP} =6A, tp=8/20us Any pin to pin2			25	V
Junction Capacitance	C _j	V _R =0V, f=1MHz Any I/O pin to pin2			3	pF
		V _R =0V, f=1MHz Between I/O pins			1.5	pF

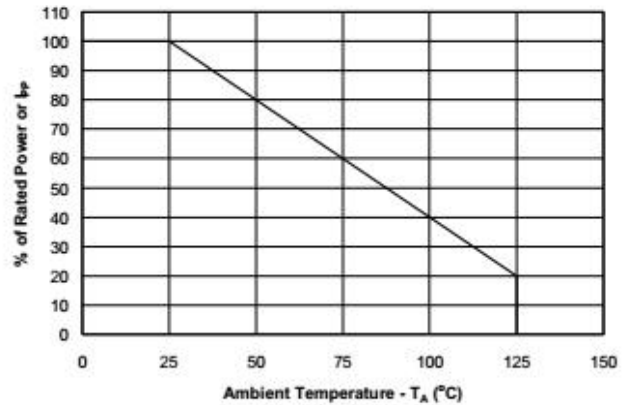
Note: I/O pins are pin 1, 3, 4, and 6

Ratings and Characteristics Curves

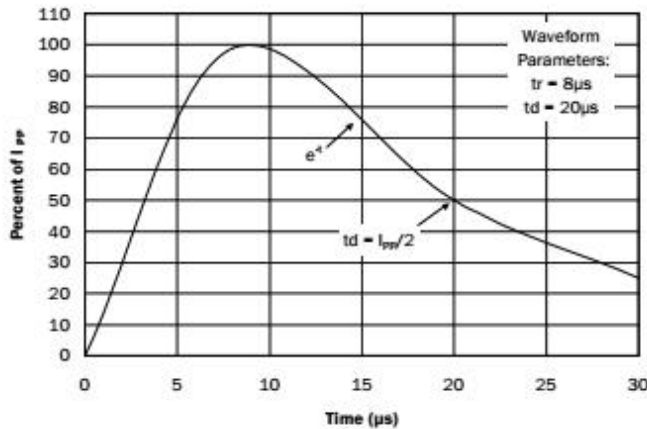
Non-Repetitive Peak Pulse Power vs. Pulse Time



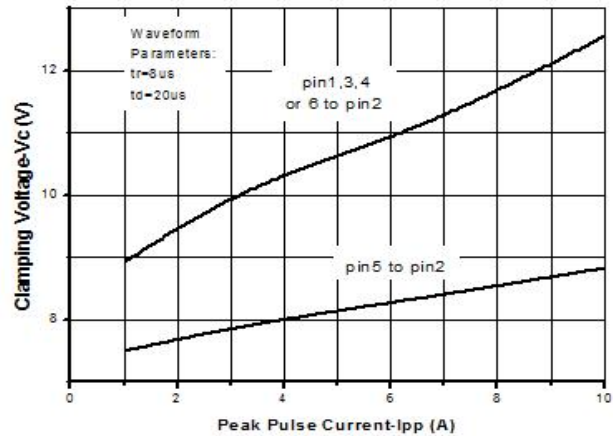
Power Derating Curve



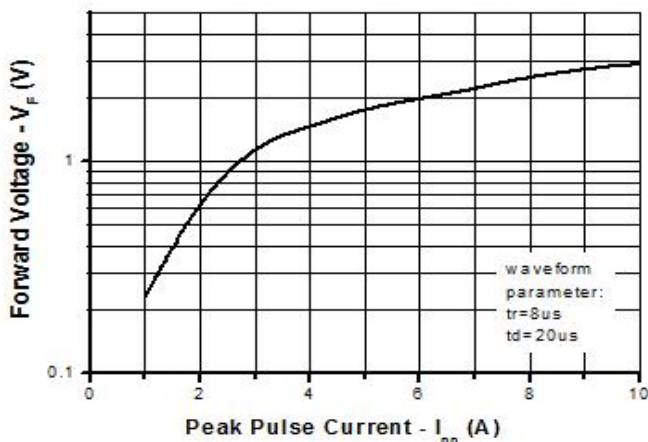
Pulse Waveform



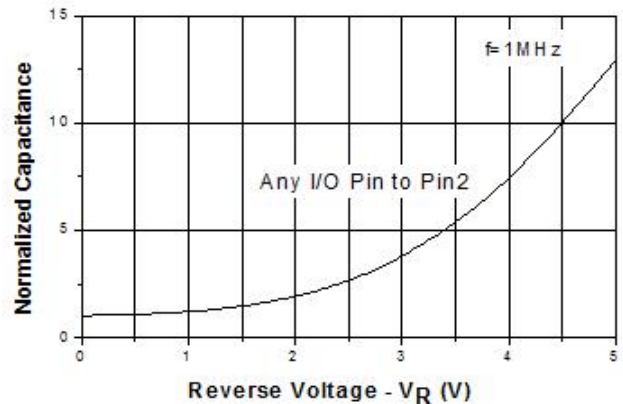
Clamping Voltage vs. Peak Pulse Current



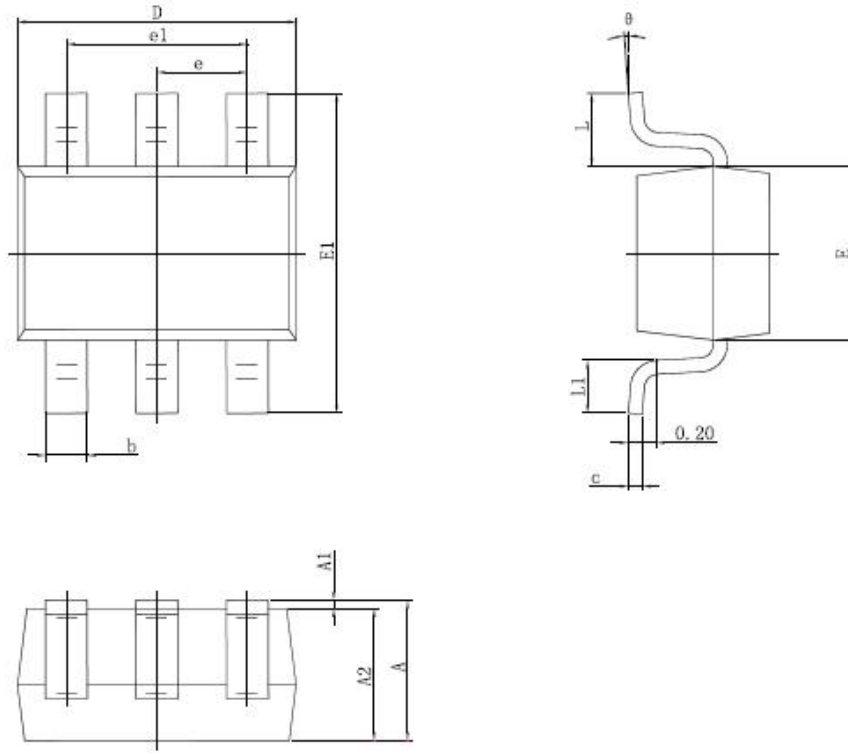
Forward Voltage vs. Peak Pulse Current



Capacitance vs. Reverse Voltage (Normalized to 0V)



Mechanical Dimensions

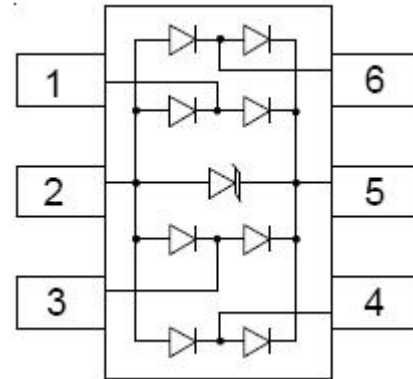


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.350	0.006	0.014
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP.		0.026 TYP.	
e1	1.200	1.400	0.047	0.055
L	0.525 REF.		0.021 REF.	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

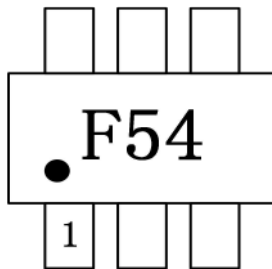
Circuit Diagram

The eGuard0504F TVS diode is designed to protect data lines by clamping them to a fixed reference. When the voltage on the protected line exceeds the reference voltage the steering diodes are forward biased, conducting the transient current away from the sensitive circuitry.

Data lines are connected at pins 1,3,4 and 6. Pin2 should be connected to a ground plane. The positive reference is connected at pin5. Pin5 can be connected to the positive supply rail(Vcc) or not connected according to the different reference.



Marking Diagram

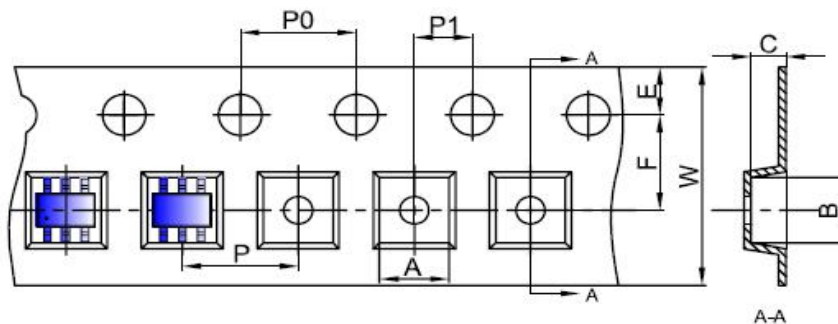


Ordering Information

Device	Package	Shipping
eGuard0504F	SOT-363	3000 pcs/reel

For information on tape and reel specifications, including part orientation and tape sizes, please refer to our tape and reel packaging specification.

Carrier Tape Specification



Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-363	2.25	2.55	1.20	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00
(Tolerance)	+/-0,05	+/-0,05	+/-0,05	+/-0,1	+/-0,1	+/-0,1	+/-0,1	+/-0,1	+/-0,1	+0,3/-0,1



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