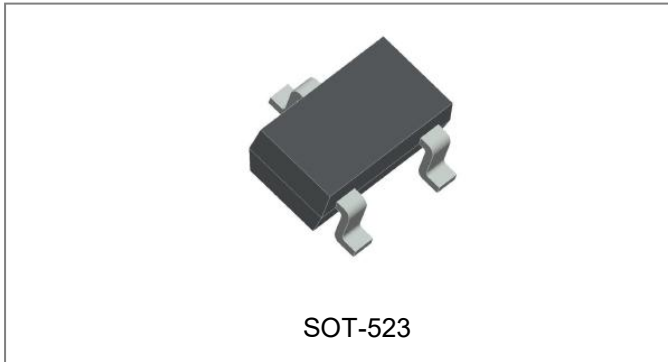


eGuard0502B Ultra Low Capacitance TVS Diode Array



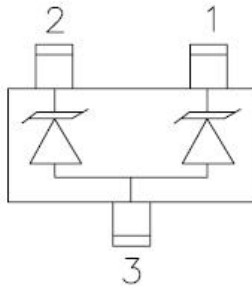
Description

The eGuard0502B is ultra low capacitance TVS arrays designed to protect high speed data interfaces. This series has been specifically designed to protect sensitive components which are connected to high-speed data and transmission lines from over voltage caused by ESD (electrostatic discharge), CDE (Cable Discharge Events), and EFT (electrical fast transients).

The eGuard0502B has a typical capacitance of only 0.50pF (pin 1 to 2). This means it can be used on circuits operating in excess of 3GHz without signal attenuation. They may be used to meet the ESD immunity requirements of IEC 61000-4-2, Level 4 ($\pm 15\text{kV}$ air, $\pm 8\text{kV}$ contact discharge). Each device can be configured to protect 1 bidirectional line or two unidirectional lines.

These devices are in a small SOT-523 package. They are designed for use in applications where board space is at a premium.

Circuit Diagram



Applications

- High Definition Multi-Media Interface (HDMI)
- Mobile Display Digital Interface (MDDI)
- RF/Antenna Circuits
- USB 2.0 & Firewire Ports
- GaAs Photodetector Protection
- HBT Power Amp Protection
- Infiniband Transceiver Protection

Mechanical Characteristics

- SOT-523 package
- RoHS/WEEE Compliant
- Molding compound flammability rating: UL 94V-0
- Packaging: Tape and Reel per EIA 481

Features

- Transient protection for high-speed data lines to IEC 61000-4-2 (ESD) $\pm 15\text{kV}$ (air), $\pm 8\text{kV}$ (contact)
- IEC 61000-4-4 (EFT) 40A (5/50ns)
- Designed to replace polymer TVS
- Protects up to two I/O lines
- Ultra-Low capacitance ($< 1\text{pF}$)
- No insertion loss to $> 3.0\text{GHz}$
- Low profile ($< 1\text{mm}$)
- Low leakage current and clamping voltage
- Low operating voltage: 5.0V

Maximum Ratings

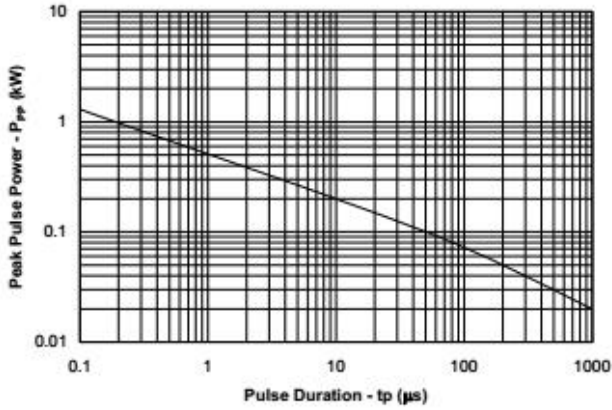
Characteristics	Symbol	Max.	Units
Peak Pulse Power (tp=8/20us)	P _{PK}	125	Watts
Peak Pulse Current (tp=8/20us)	I _{PP}	5	A
ESD per IEC61000-4-2 (air)	V _{ESD}	15	KV
ESD per IEC61000-4-2 (contact)		8	
Operating Temperature	T _J	-55 to +125	°C
Storage Temperature	T _{STG}	-55 to +150	°C

Electrical Characteristics(T=25°C unless otherwise specified)

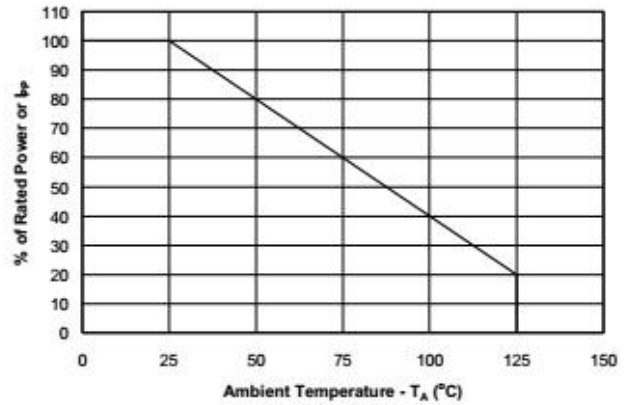
Characteristics	Symbol	Condition	Min.	Typ.	Max.	Units
Reverse Stand-Off Voltage	V _{RWM}	Pin 1 or Pin 2 to Pin 3 and Between Pins 1 and 2	-	-	5	V
Reverse Breakdown Voltage	V _{BR}	@ I _t =1mA Pin 1 or Pin 2 to Pin 3 and Between Pins 1 and 2	6	-	-	V
Reverse Leakage Current	I _R	@V _{RWM} = 5V, T = 25 °C Pin 1 or Pin 2 to Pin 3 and Between Pins 1 and 2	-	-	1	µA
Clamping Voltage	V _C	@I _{PP} = 1A, tp=8/20µs Pin 1 and Pin 2	-	-	15	V
Clamping Voltage	V _C	@I _{PP} = 5A, tp=8/20µs Pin 1 or Pin 2 to Pin 3	-	-	22	V
Clamping Voltage	V _C	@I _{PP} = 5A, tp=8/20µs Pin 1 to Pin 2	-	-	25	V
Junction Capacitance	C _j	@V _R = 0V, f _{sig} = 1MHz Pin 1 to Pin 2	-	0.6	0.9	pF
Junction Capacitance	C _j	@V _R = 0V, f _{sig} = 1MHz Pin 1 or Pin 2 to Pin 3	-	-	1.2	pF

Ratings and Characteristics Curves

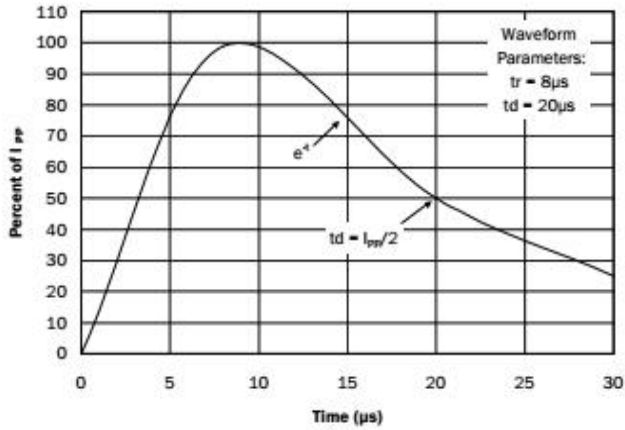
Non-Repetitive Peak Pulse Power vs. Pulse Time



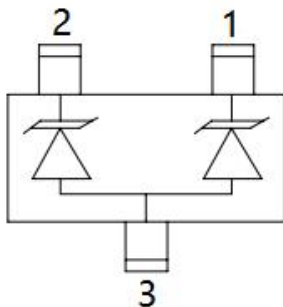
Power Derating Curve



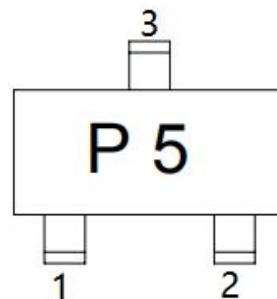
Pulse Waveform



Pin Configuration



Marking Diagram

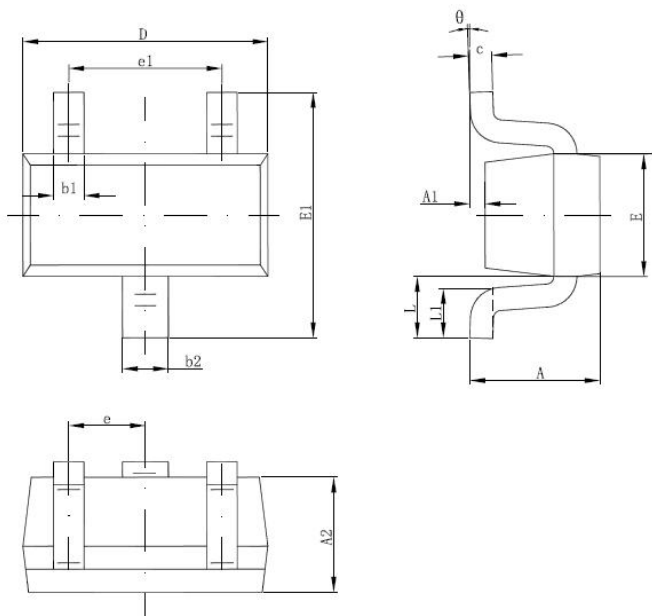


Ordering Information

Device	Package	Shipping
eGuard0502B	SOT-523	3000 pcs/reel

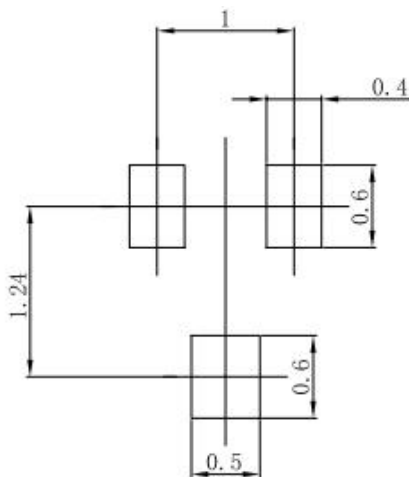
For information on tape and reel specifications, including part orientation and tape sizes, please refer to our tape and reel packaging specification.

Mechanical Dimensions SOT-523

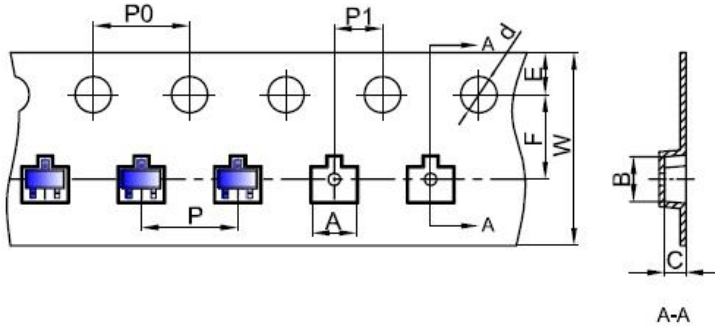


SYMBOL	Millimeters		Inches	
	MIN.	MAX.	MIN.	MAX.
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.700	0.900	0.028	0.035
E1	1.450	1.750	0.057	0.069
e	0.500 TYP.		0.020 TYP.	
e1	0.900	1.100	0.035	0.043
L	0.400 REF.		0.016 REF.	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

Soldering Pad Layout (Millimeters)



Carrier Tape Specification SOT-523



SYMBOL	Millimeters	
	Min.	Max.
A	1.80	1.90
B	1.80	1.90
C	0.825	0.925
d	1.40	1.60
E	1.65	1.85
F	3.40	3.60
P	3.90	4.10
P0	3.90	4.10
P1	1.90	2.10
W	7.90	8.30

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