eGuard0524P

Technical Data
Data Sheet N1680 REV.-

Green Products

Description - e*Guard*™

The eGuard0524P* is an ultra low capacitance TVS (Transient Voltage Suppressor) array designed to protect sensitive semiconductor components from electrical overstress when interfaced to high-speed data lines. The ultra low capacitance (0.35pF typical I/O to I/O) of the eGuard0524P ensures negligible signal attenuation at data rates up to 3.5GHz. The solid-state construction ensures fast clamping of electrical overstress transients resulting from ESD (electrostatic discharge), EFT (Electrical Fast Transients) or CDE (Cable Discharge Events).

In addition to ultra low capacitance, the eGuard0524P provides superior surge current capability and excellent voltage clamping performance. The surge current capability (8x20µs) is rated at 7A; approximately 33% higher than industry norms. Furthermore, the tight clamping ratio (V_C/V_{RWM}) of 1.9 (typical at 1A) ensures harmful transients are clamped quickly and close to the normal working voltage of the circuit. The super tight clamping ratio is 30% better than industry norms and ensures superior protection of sensitive integrated circuits.

The eGuard0524P is designed to protect up to four data lines. It is packaged in a RoHS/WEEE compliant, 10 pin DFN that has a very low package profile of 0.5mm (nominal). The combination of ultra low capacitance, high surge capability, tight clamping ratio and low package profile make the eGuard0524P the ideal choice for today's ESD sensitive, space constrained applications.

Features

- ESD protection in accordance with:
  IEC 61000-4-2 (ESD) ±17kV (air), ±12kV (contact)
  IEC 61000-4-5 (lightning) 7A (8/20µs)
  IEC 61000-4-4 (EFT) 40A (5/50ns)
- Tight clamping ratio, V_C/V_{RWM}, ensures superior protection
- High reverse surge current, I_{PP}, capability
- Low idle current minimizes standby power consumption
- Low profile DFN package
- Package design optimized for high speed lines
- Flow-Through design
- Protects four I/O lines
- Low capacitance: 0.35pF typical (I/O to I/O)
- Low operating voltage: 5V
- Solid-state silicon-avalanche technology

Mechanical Characteristics

- DFNWB2.5×1-10L 10-pin package
- RoHS/WEEE Compliant
- Lead Pitch: 0.5mm
- Lead finish: Pure Sn
- Marking: Marking Code
- Packaging: Tape and Reel

Applications

- High Definition Multi-Media Interface (HDMI)
- Digital Visual Interface (DVI)
- DisplayPort ™ Interface
- MDDI Ports
- PCI Express
- eSATA Interfaces

* The e***Guard*** logo is a trademark of SMC Diode Solutions - Sangdest Microelectronics (Nanjing) Co.

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Ordering Information:

Device	Package	Shipping
eGuard0524P	DFNWB2.5×1-10L (Pb-Free)	3000pcs / reel

For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification.

Maximum Ratings @T_A=25°C unless otherwise specified

Parameter	Symbol	Value	Unit
Peak Pulse Current (tp=8/20μs)	I_{PP}	7	A
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V_{ESD}	±17 ±12	kV
Operating Junction Temperature Range	T_J	-55 to + 150	°C
Storage Temperature Range	T_{STG}	-55 to + 150	°C

Electrical Characteristics:

Characteristics	Symbol	Condition	Min.	Typ.	Max.	Units
Reverse Stand-Off Voltage	V_{RWM}	Any I/O pin to ground	-	-	5	V
Reverse Breakdown Voltage	V_{BR}	@ I_t=1mA Any I/O pin to ground	6	-	-	V
Forward Voltage Drop	V_F	@ I_F=1mA, T = 25 ℃	-	-	0.9	V
Reverse Leakage Current	I_R	@V_{RWM} = 5V, T = 25 ℃ Any I/O pin to ground	-	0.5	1	μA
Clamping Voltage	V_C	@I_{PP} = 1A, tp=8/20μs Any I/O pin to ground	-	9.5	10.5	V
Clamping Voltage	V_C	@I_{PP} = 7A, tp=8/20μs Any I/O pin to ground	-	-	17	V
Junction Capacitance	C_j	@V_R = 0V, f_{SIG} = 1MHz Between I/O pins	-	0.35	0.4	pF
Junction Capacitance	C_j	@V_R = 0V, f_{SIG} = 1MHz Any I/O pin to ground	-	0.65	0.8	pF

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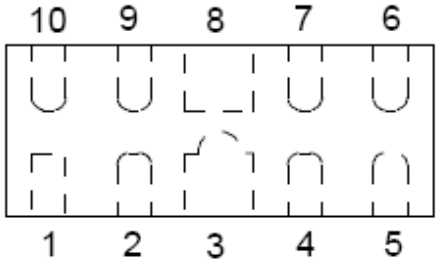
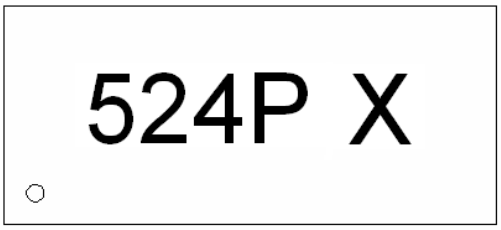
Pin Configuration



Pin	Identification
1, 2, 4, 5	Input Lines
6, 7, 9, 10	Output Lines (No Internal Connection)
3, 8	Ground

Marking Diagram:



Where 524P is eGuard0524P

524P = Part name
X = Marking code for date code

Cautions: Molding resin
Epoxy resin UL:94V-0

Part Name Information

eGuard 05 24 P

Suffix
P = Ultra-low Capacitance

Number of lines
24=2Ground/4Data Lines

Max Stand-off Voltage
05=5V_{RWM} (Volts)

TVS Arrays Product

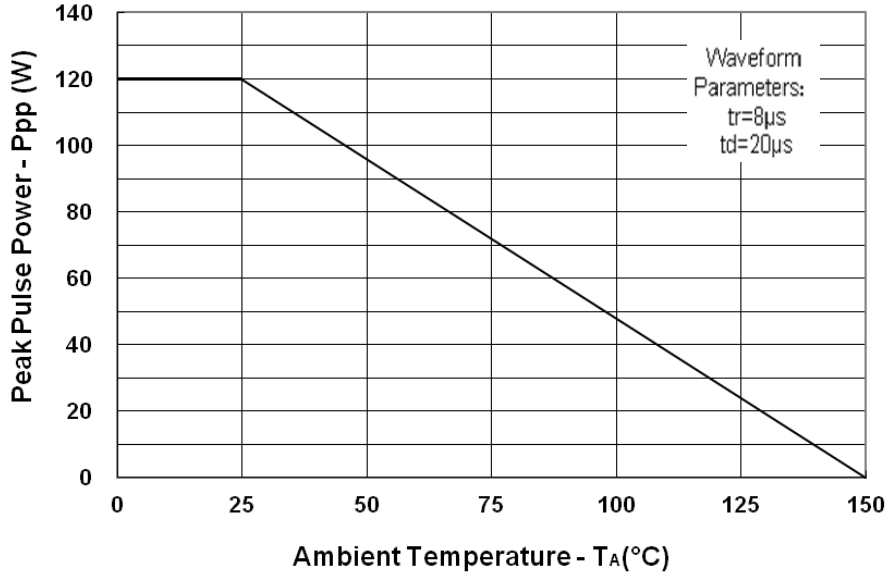


Fig.1 Power Derating Curve

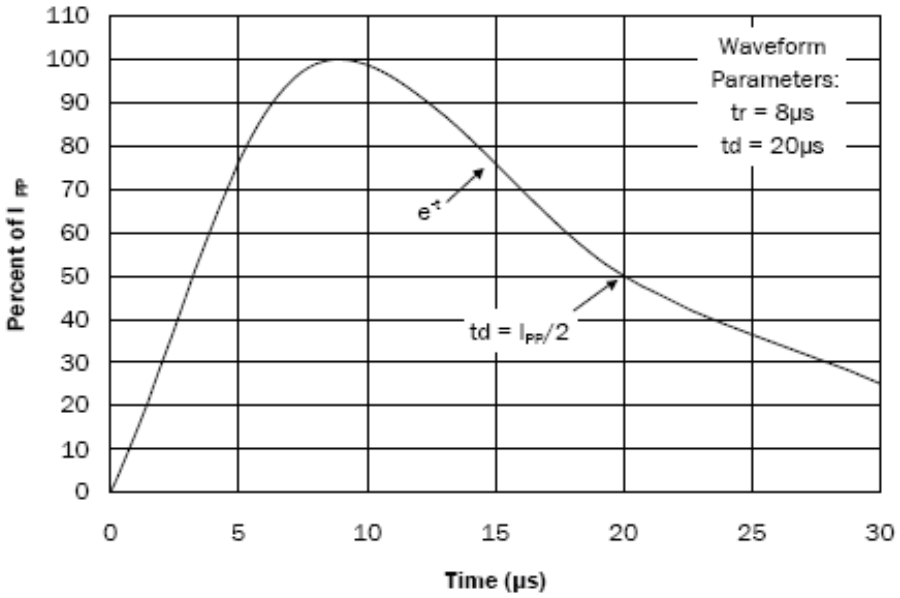


Fig.2 Pulse Waveform

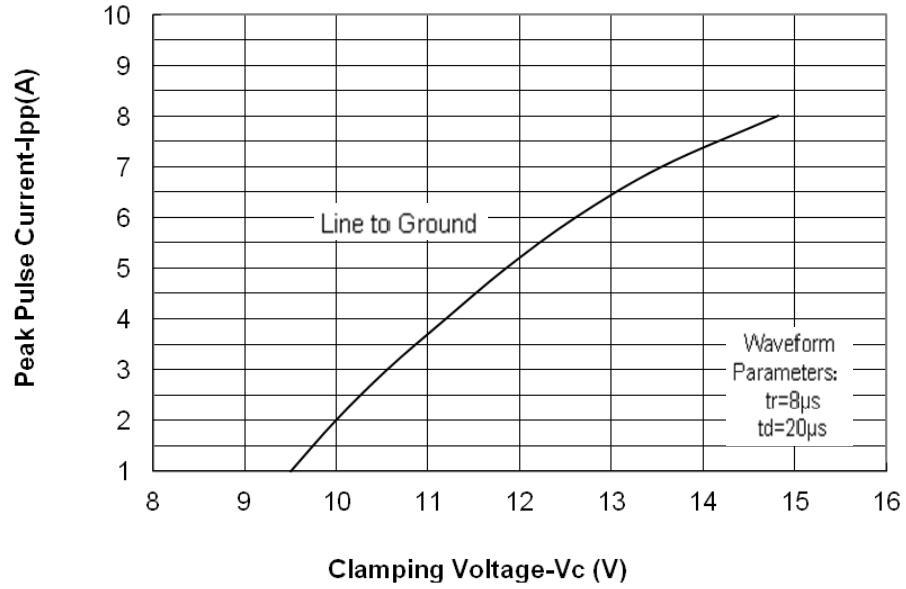


Fig. 3 Clamping Voltage vs. Peak Pulse Current

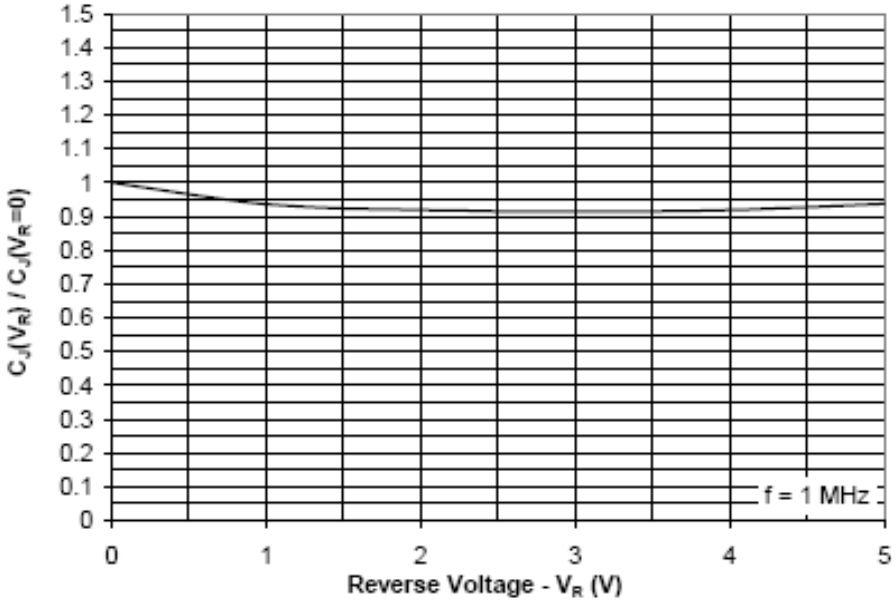
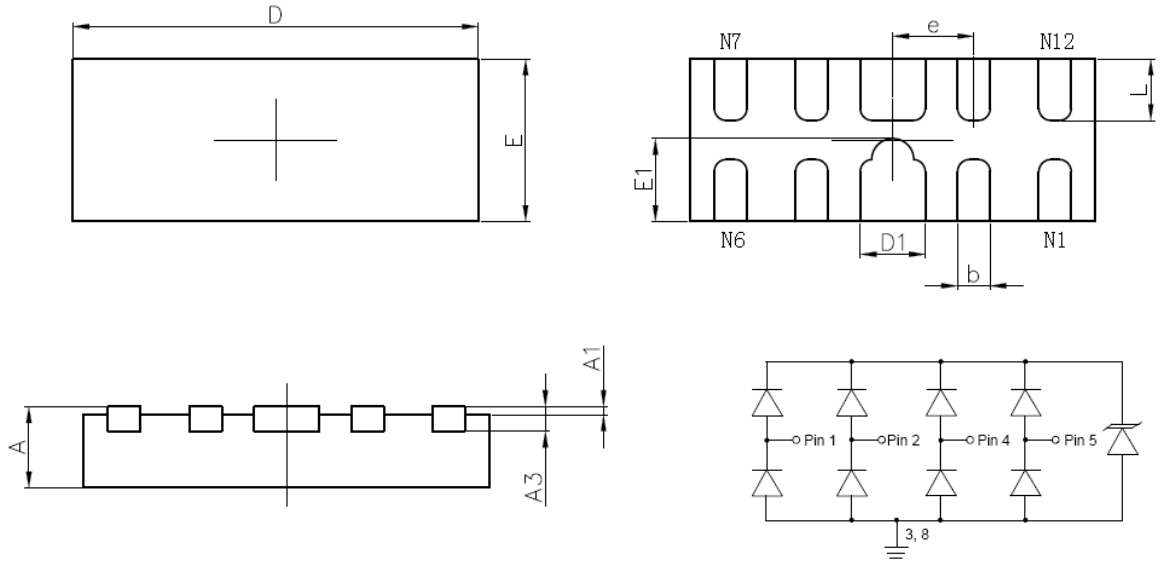


Fig. 4 Normalized Capacitance vs. Reverse Voltage

Mechanical Dimensions (In mm/Inches):



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.450	0.550	0.018	0.022
A1	0.000	0.050	0.000	0.002
A3	0.150REF.		0.006REF.	
D	2.424	2.576	0.095	0.101
E	0.924	1.076	0.036	0.042
D1	0.300	0.500	0.012	0.020
E1	0.410	0.610	0.016	0.024
k	—	—	—	—
b	0.150	0.250	0.006	0.010
e	0.500TYP.		0.020TYP.	
L	0.304	0.456	0.012	0.018

DFNWB2.5×1-10L

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