

Small Signal Diode



Features

- ✧ Meet IEC61000-4-2 (ESD) $\pm 15\text{kV}$ (air), $\pm 8\text{kV}$ (contact)
- ✧ Meet IEC61000-4-4 (EFT) rating. 40A (5/50 μs)
- ✧ Meet IEC61000-4-5 (Lightning) rating. 1A (8/20 μs)
- ✧ Protects four high speed I/O lines
- ✧ Low capacitance: 0.5pF typical (I/O to I/O)
- ✧ Working Voltage : 5V
- ✧ Pb free version, RoHS compliant, and Halogen free

Mechanical Data

- ✧ Case : 2510P10 (DSO10) standard package, molded plastic
- ✧ Terminal: Matte tin plated, lead free, solderable per MIL-STD-202, Method 202 guaranteed
- ✧ High temperature soldering guaranteed: 260°C/10s
- ✧ Molding Compound Flammability Rating : UL 94V-O
- ✧ Weight : 15 mg (approximately)
- ✧ Marking Code : P524

Applications

- ✧ High Definition Multi-Media Interface (HDMI)
- ✧ Digital Visual Interface (DVI)
- ✧ PCI Express
- ✧ Serial ATA
- ✧ USB 3.0 Super speed interface

Ordering Information

Part No.	Package	Packing	Packing Code	Marking
TESDH5V0A	2510P10	3K / 7" Reel	RDG	P524

Maximum Ratings and Electrical Characteristics

Rating at 25°C ambient temperature unless otherwise specified.

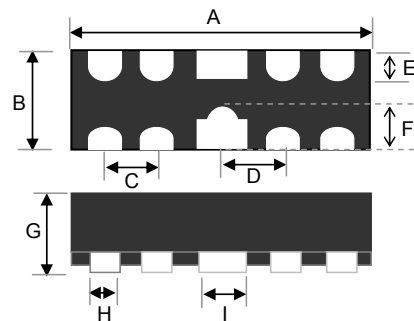
Maximum Ratings

Type Number	Symbol	Value	Units
Peak Pulse Power (tp=8/20 μs waveform)	P _{PP}	150	W
Peak Pulse Current (tp = 8/20 μs)	I _{PP}	1	A
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V _{ESD}	± 15 ± 8	kV
Junction and Storage Temperature Range	T _J , T _{STG}	-55 to + 150	°C

Electrical Characteristics

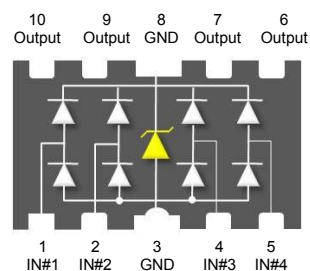
Type Number	Symbol	Min	Max	Units
Reverse Stand-Off Voltage	V _{RWM}	-	5	V
Reverse Breakdown Voltage	I _R = 1mA V _(BR)	6	-	V
Reverse Leakage Current	V _R = 5V I _R	-	1	uA
Clamping Voltage	I _{PP} = 1A V _C	-	15	V
Junction Capacitance	V _R =0V, f=1.0MHz C _J	1 (Typ.)		pF

2510P10 (DSO10)



Dimensions	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	2.40	2.60	0.094	0.102
B	0.90	1.10	0.035	0.043
C	0.02 BSC		0.50 BSC	
D	0.025 BSC		0.53 BSC	
E	0.30	0.43	0.01	0.02
F	0.45	0.55	0.02	0.02
G	0.50	0.65	0.020	0.026
H	0.15	0.25	0.006	0.010
I	0.35	0.45	0.014	0.018

Pin Configuration



Note : Output line (No internal connection)

Small Signal Diode

Rating and Sharacteristic Curves

FIG 1 Non-Repetitive Peak Pulse Power vs. Pulse Time

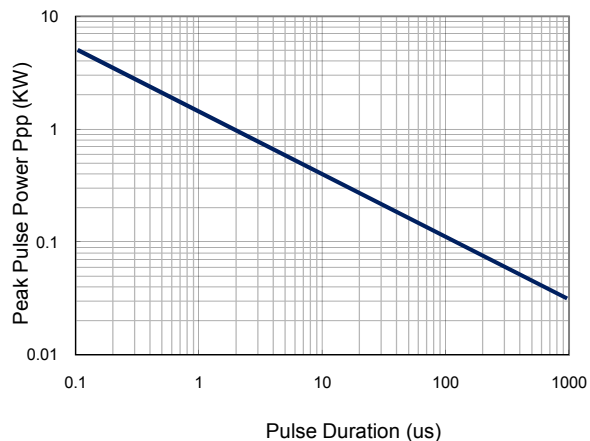


FIG 2 Pulse Waveform

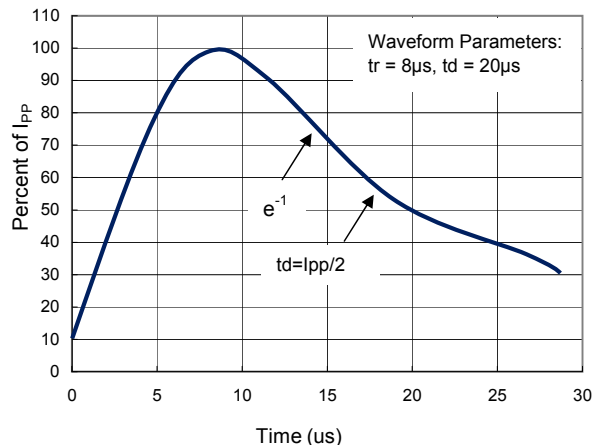


FIG 3 Admissible Power Dissipation Curve

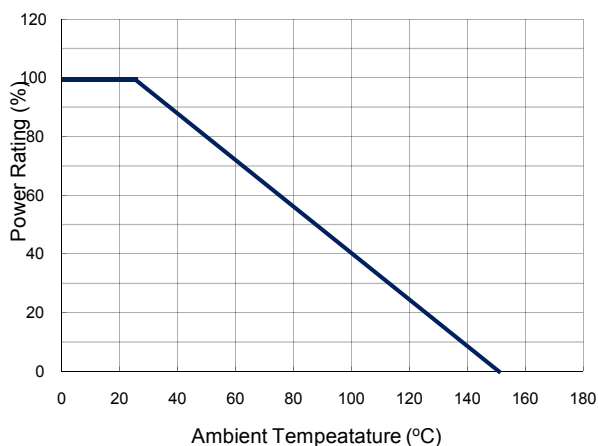


FIG 4 Typical Junction Capacitance

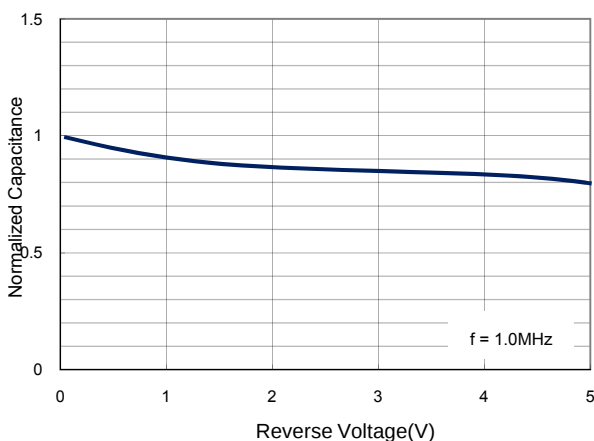


FIG 5 Clamping Voltage vs. Peak Pulse Current

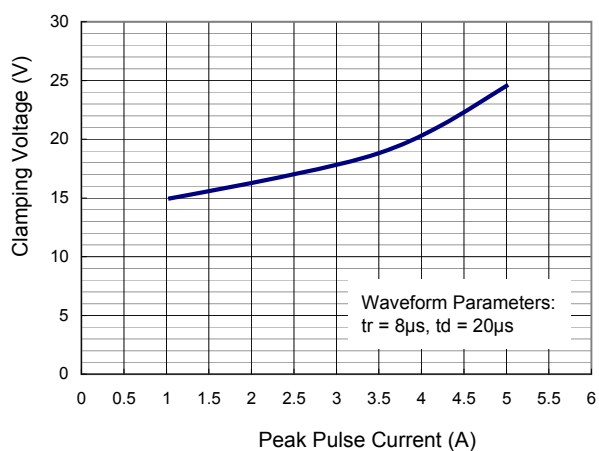
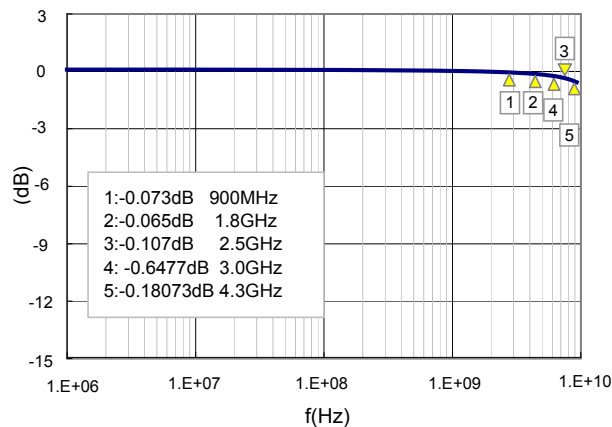


FIG 6 Insertion Loss



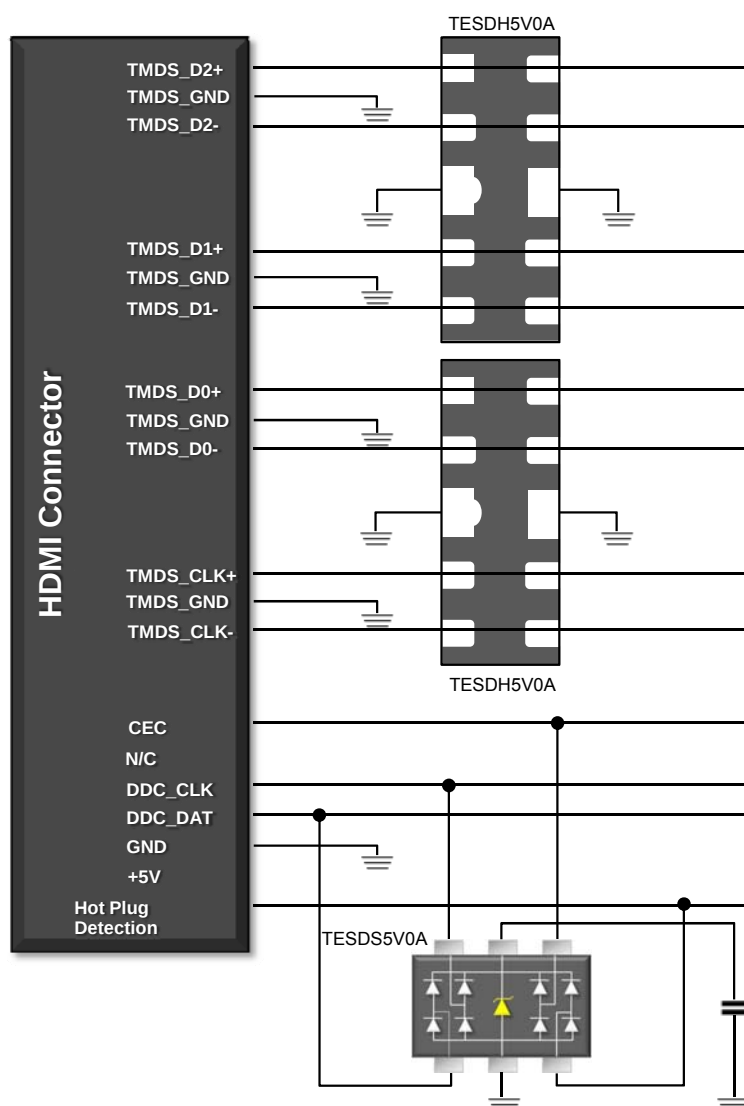
Small Signal Diode

Applications Information

- ✧ Designed for protection of high-speed interfaces such as HDMI
- ✧ Ultra low capacitance between the pairs while being rated to handle $>\pm 8\text{kV}$ ESD contact discharges and $>\pm 15\text{kV}$ air discharge
- ✧ Each device is in a leadless package that is less than 1.1mm wide
- ✧ Designed such that the traces flow straight through the device, The narrow package and flow-through design reduces discontinuities and minimizes impact on signal integrity
- ✧ TESDH5V0A is ultra low capacitance ESD protection array 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 overvoltage caused by ESD, CDE (Cable Discharge Events), and EFT (electrical fast transients)
- ✧ The combination of small size, low capacitance, and high level of ESD protection makes them a flexible solution for applications of high speed interface, ex HDMI, DisplayPort™, MDDI, and eSATA interfaces.

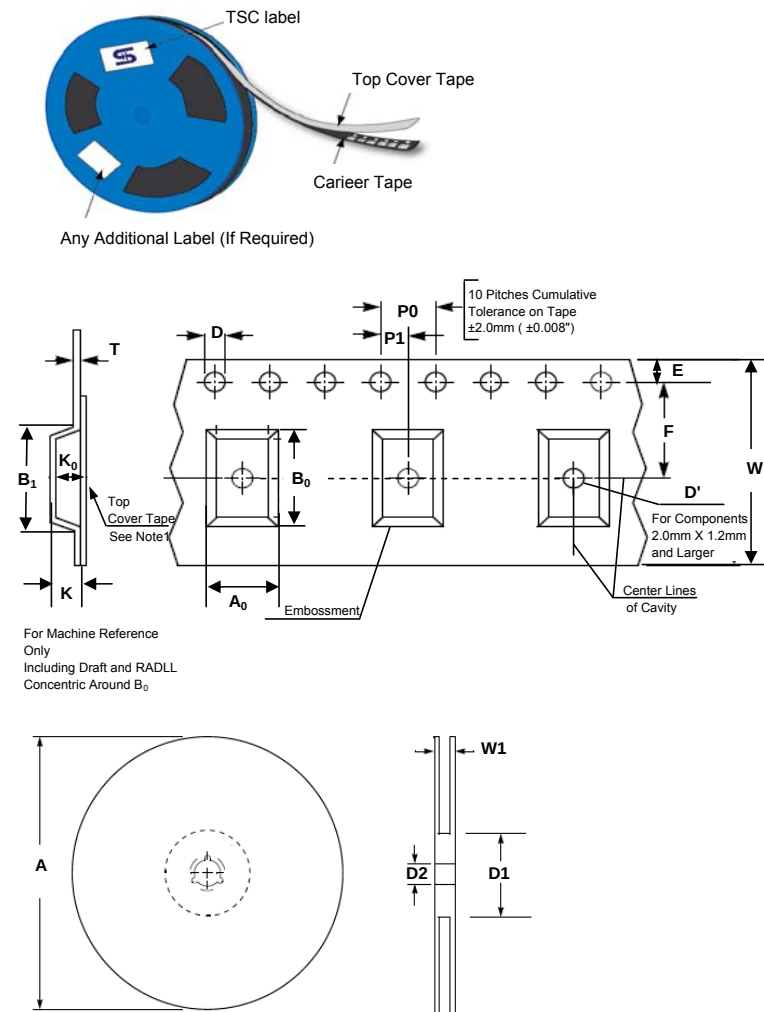
Circuit Board Layout Recommendations for HDMI application

- ✧ The PCB traces are used to connect the pin pairs for each line (pin 1 to pin 10, pin 2 to pin 9, pin 4 to pin 7, pin 5 to pin 6)
- ✧ Signal line enters at pin 1 and exits at Pin 10 and the PCB trace connects pin 1 and 10 together. Ground is connected at pins 3 and 8.
- ✧ One large ground pad should be used in lieu of two separate pads

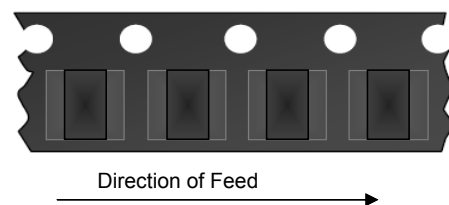


Small Signal Diode

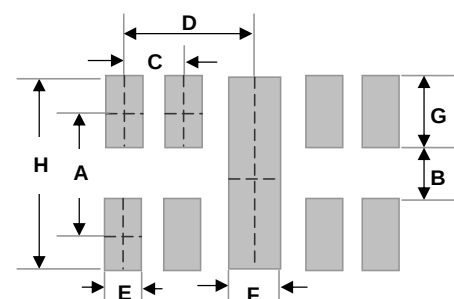
Tape & Reel specification



Item	Symbol	Dimension (mm)
Carrier depth	K	1.22 Max.
Sprocket hole	D	1.50 +0.10
Reel outside diameter	A	180 ± 1
Reel inner diameter	D1	50 Min.
Feed hole width	D2	13.0 ± 0.5
Sprocket hole position	E	1.75 ± 0.10
Sprocket hole pitch	P0	4.00 ± 0.10
Embossment center	P1	2.00 ± 0.10
Overall tape thickness	T	0.6 Max.
Tape width	W	8.30 Max.
Reel width	W1	14.4 Max.



Suggested PAD Layout



Dimensions	Unit (inch)	Unit (mm)
A	0.034	0.88
B	0.008	0.20
C	0.020	0.50
D	0.039	1.00
E	0.008	0.20
F	0.016	0.40
G	0.027	0.68
H	0.061	1.55

Note 1: A_0 , B_0 , and K_0 are determined by component size. The clearance between the components and the cavity must be within 0.05 mm min. to 0.5 mm max. The component cannot rotate more than 10° within the determined cavity.

Note 2: If B_1 exceeds 4.2 mm (0.165") for 8 mm embossed tape, the tape may not feed through all tape feeders.

Note 3: The suggested land pattern dimensions have been provided for reference only, as actual pad layouts may vary depending on application.