

### Small Signal Diode



#### Features

- ✧ Meet IEC61000-4-2 (ESD) ±15kV (air), ±8kV (contact)
- ✧ Meet IEC61000-4-4 (EFT) rating. 40A (5/50ns)
- ✧ Meet IEC61000-4-5 (Lightning) rating. 1A (8/20µs)
- ✧ 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 (DSON10) 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.

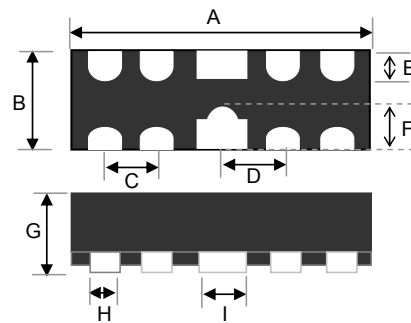
##### Maximum Ratings

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

##### Electrical Characteristics

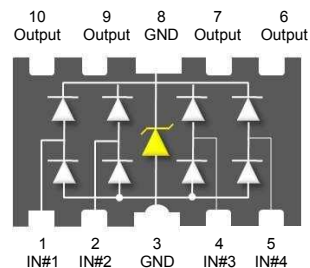
Type Number	Symbol	Min	Max	Units
Reverse Stand-Off Voltage	V <sub>RWM</sub>	-	5	V
Reverse Breakdown Voltage	I <sub>R</sub> = 1mA V <sub>(BR)</sub>	6	-	V
Reverse Leakage Current	V <sub>R</sub> = 5V I <sub>R</sub>	-	1	µA
Clamping Voltage	I <sub>PP</sub> = 1A V <sub>C</sub>	-	15	V
Junction Capacitance	V <sub>R</sub> =0V, f=1.0MHz C <sub>J</sub>	1 (Typ.)		pF

#### 2510P10 (DSON10)



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	0.5 BSC		0.02 BSC	
D	0.63BSC		0.025 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)

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Rating and Sharacteristic Curves

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

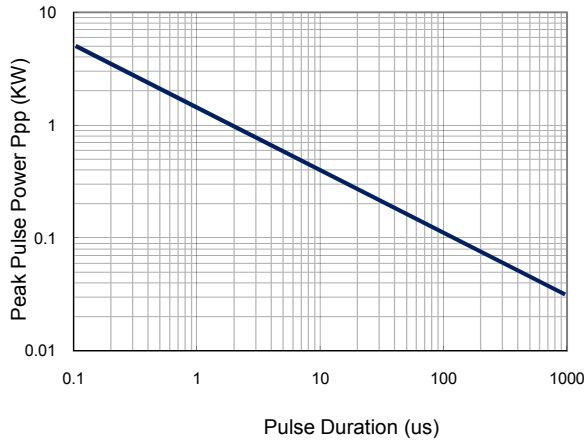


FIG 2 Pulse Waveform

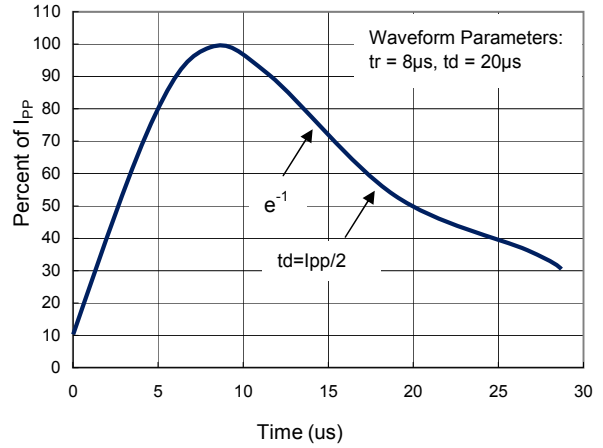


FIG 3 Admissible Power Dissipation Curve

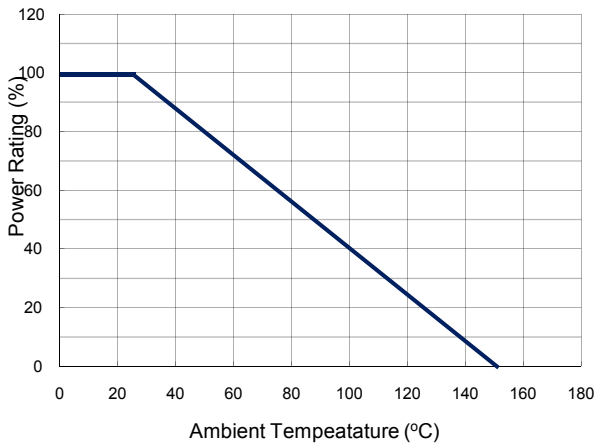


FIG 4 Typical Junction Capacitance

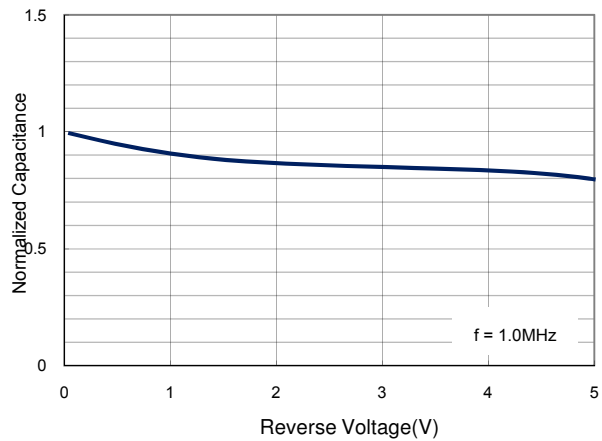


FIG 5 Clamping Voltage vs. Peak Pulse Current

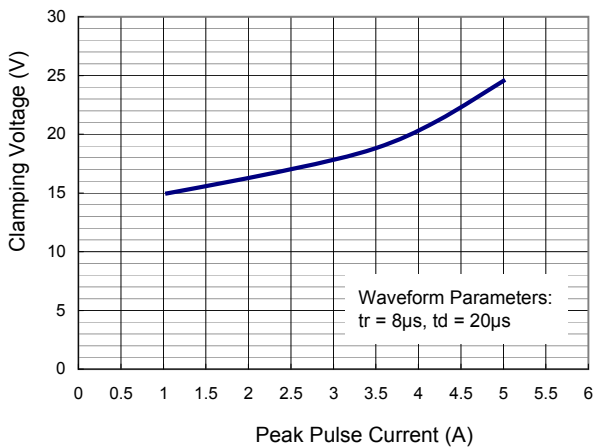
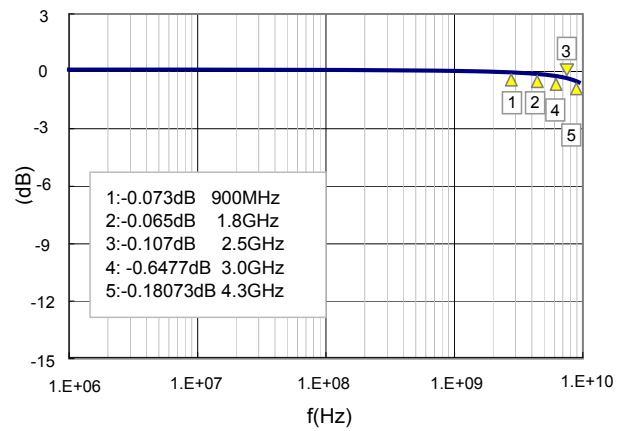


FIG 6 Insertion Loss

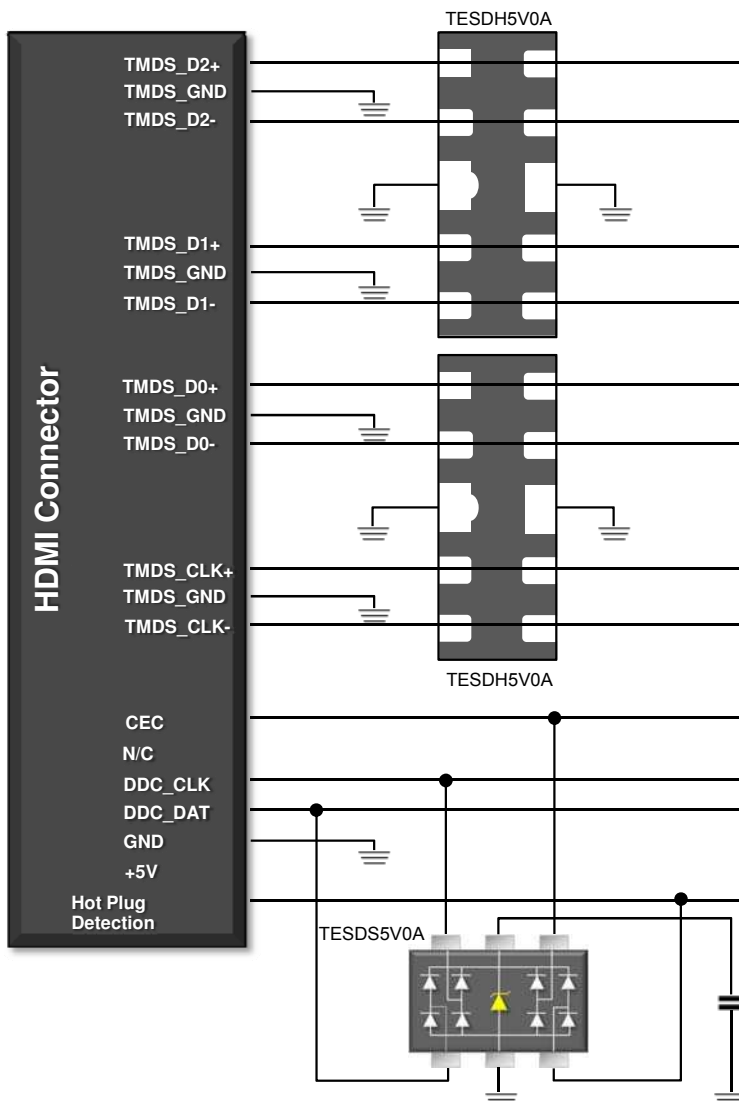


**Small Signal Diode**
**Applications Information**

- ◇ 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.

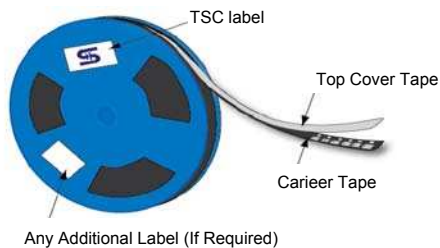
**Circuit Board Layout Recommendations for HDMI application**

- ◇ 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

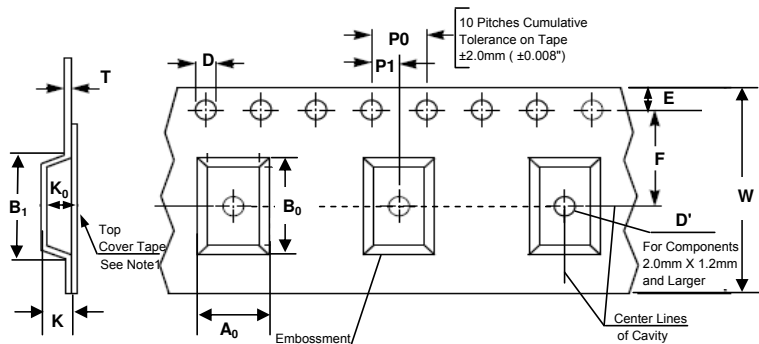


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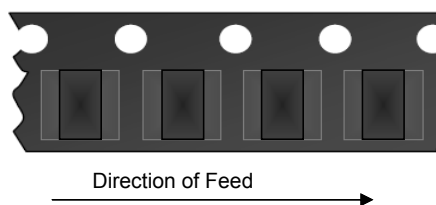
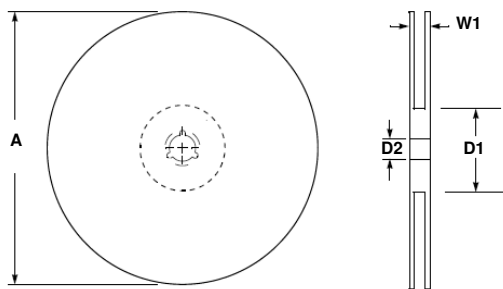
### Tape & Reel specification



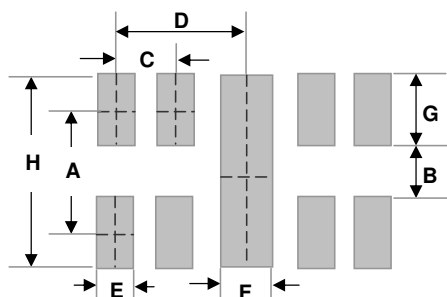
Item	Symbol	Dimension (mm)
Carrier depth	K	1.22 Max.
Sprocket hole	D	1.50 +0.10
Reel outside diameter	A	180 ± 1
Reel inner diameter	D1	50 Min.
Feed hole width	D2	13.0 ± 0.5
Sprocket hole position	E	1.75 ± 0.10
Sprocket hole pitch	P0	4.00 ± 0.10
Embossment center	P1	2.00 ± 0.10
Overall tape thickness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



For Machine Reference Only  
Including Draft and RADLL  
Concentric Around B<sub>0</sub>



### 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<sub>0</sub>, B<sub>0</sub>, and K<sub>0</sub> 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<sub>1</sub> 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.