

## Small Signal Product

### Bi-directional ESD Protection Diode

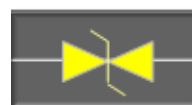
#### FEATURES

- Meet IEC61000-4-2 (ESD)  $\pm 15\text{kV}$  (air),  $\pm 8\text{kV}$  (contact)
- Designed for mounting on small surface
- Protects one Bi-directional I/O line
- Moisture sensitivity level 1
- Working Voltage : 5V, 12V, 24V
- Pb free version and RoHS compliant
- Packing code with suffix "G" means green compound (halogen-free)


**1005**


#### MECHANICAL DATA

- Case: 1005 small outline plastic package
- Terminal : Gold plated, solder per MIL-STD-705, method 2026 guaranteed
- High temperature soldering guaranteed :  $260^{\circ}\text{C}/10\text{s}$
- Weight:  $6 \pm 0.5\text{ mg}$



#### APPLICATIONS

- Cell Phone Handsets and Accessories
- Notebooks, Desktops, and Servers
- Keypads, Side Keys, USB 2.0, LCD Displays
- Portable Instrumentation
- Touch Panel

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS (T <sub>A</sub> =25°C unless otherwise noted)				
PARAMETER		SYMBOL	VALUE	UNIT
Peak Pulse Power (tp=8/20μs waveform)	TESDL5V0	P <sub>PP</sub>	75	W
	TESDL12V		25	
	TESDL24V		47	
ESD per IEC 61000-4-2 (Air)		V <sub>ESD</sub>	± 15	KV
ESD per IEC 61000-4-2 (Contact)			± 8	
Junction and Storage Temperature Range		T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

PARAMETER			SYMBOL	MIN	MAX	UNIT
Reverse Stand-Off Voltage	TESDL5V0		$V_{RWM}$	-	5	V
	TESDL12V			-	12	
	TESDL24V			-	24	
Reverse Breakdown Voltage	TESDL5V0	$I_R = 1\text{ mA}$	$V_{(BR)}$	5.1	-	V
	TESDL12V			13	-	
	TESDL24V			25	-	
Reverse Leakage Current	TESDL5V0	$V_R = 5\text{ V}$	$I_R$	-	2	$\mu\text{A}$
	TESDL12V	$V_R = 12\text{ V}$				
	TESDL24V	$V_R = 24\text{ V}$				
Clamping Voltage	TESDL5V0	$I_{PP} = 1\text{ A}$	$V_C$	-	9.8	V
		$I_{PP} = 5\text{ A}$		-	15	
Clamping Voltage	TESDL12V	$I_{PP} = 1\text{ A}$	$V_C$	-	25	V
		$I_{PP} = 5\text{ A}$		-	33	
Clamping Voltage	TESDL24V	$I_{PP} = 1\text{ A}$	$V_C$	-	47	V
		$I_{PP} = 5\text{ A}$		-	51	
Junction Capacitance	TESDL5V0	$V_R = 0\text{ V}$	$C_J$	15		pF
	TESDL12V	$f = 1.0\text{ MHz}$		12		
	TESDL24V			10		

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### RATINGS AND CHARACTERISTICS CURVES

(T<sub>A</sub>=25°C unless otherwise noted)

Fig. 1 Non-Repetitive Peak Pulse Power VS. Pulse Time

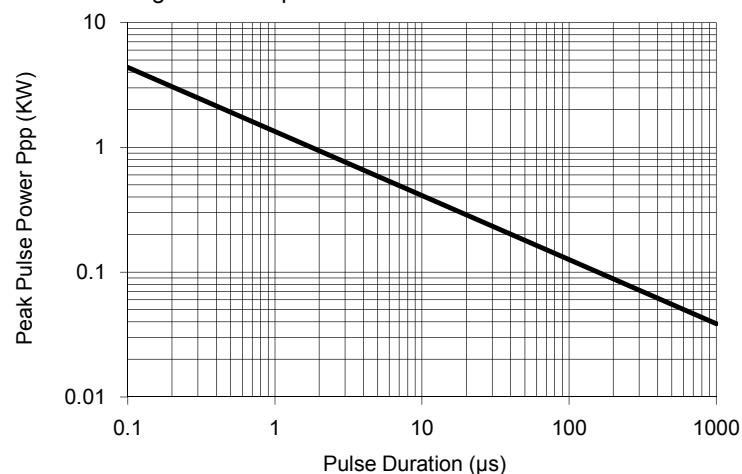


Fig. 2 Pulse Waveform

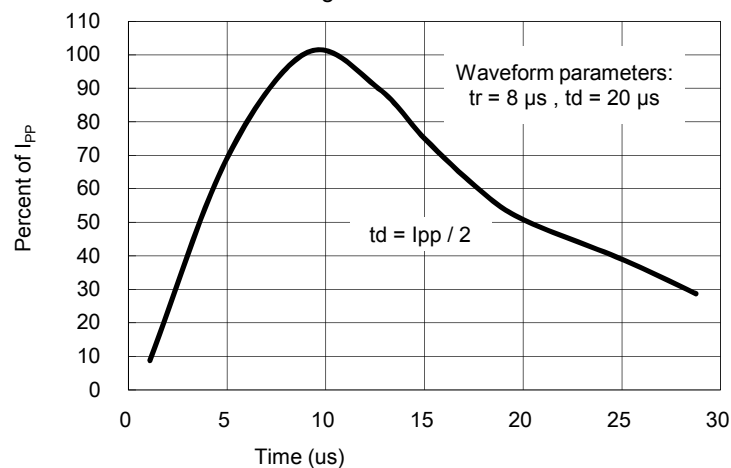


Fig. 3 Admissible Power Dissipation Curve

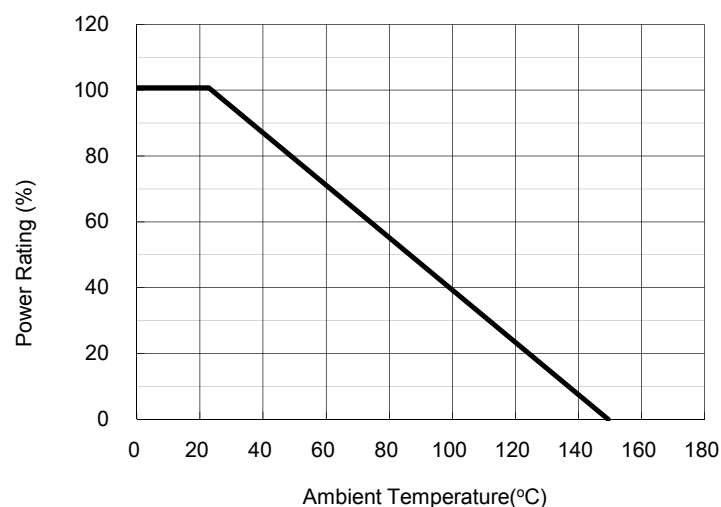


Fig. 4 Typical Junction Capacitance

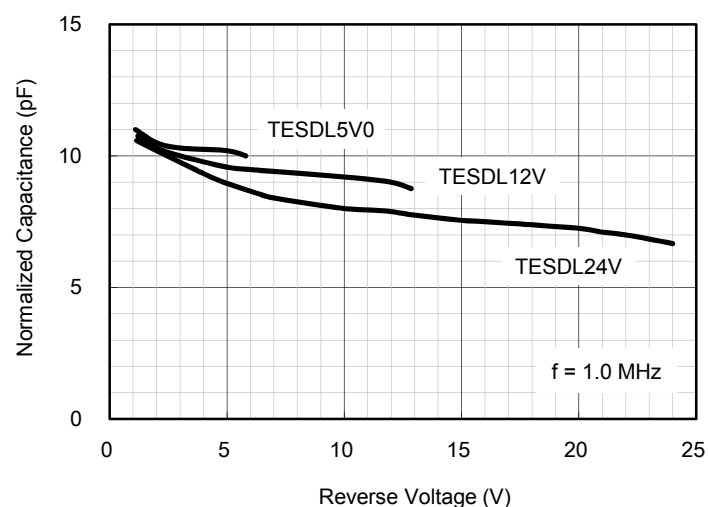
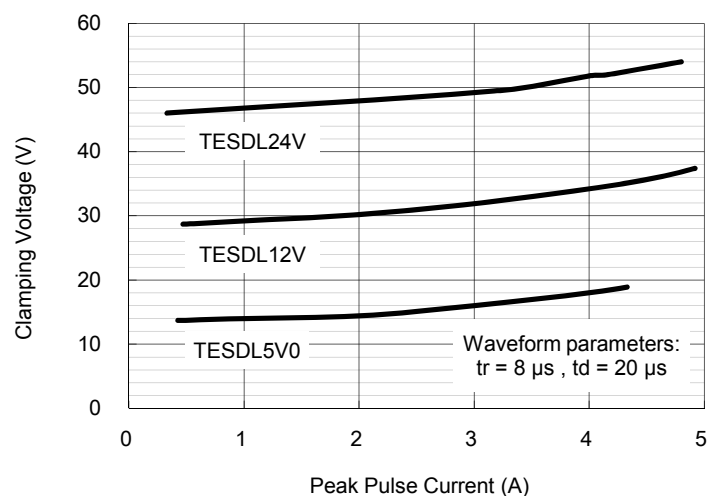
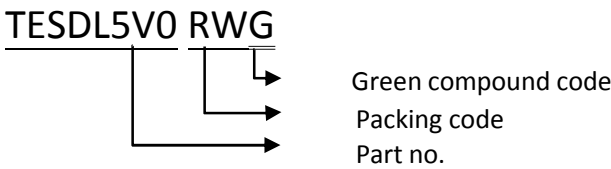


Fig. 5 Clamping Voltage VS. Peak Pulse Current



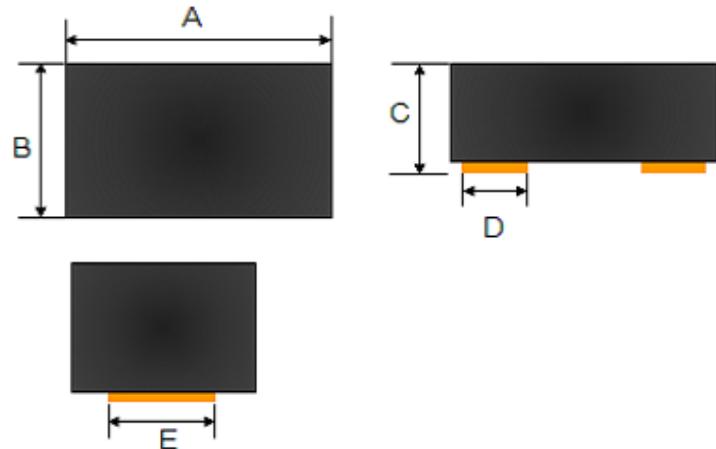
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ORDER INFORMATION (EXAMPLE)



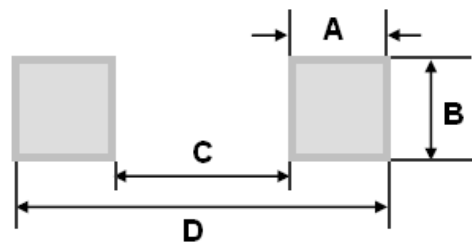
PACKAGE OUTLINE DIMENSIONS

**1005**



DIM.	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	2.40	2.60	0.094	0.102
B	1.10	1.30	0.043	0.051
C	0.70	0.90	0.028	0.035
D	0.50 (Typ.)		0.020 (Typ.)	
E	1.00 (Typ.)		0.040 (Typ.)	

SUGGEST PAD LAYOUT



DIM.	Unit (mm)	Unit (inch)
	Typ.	Typ.
A	0.70	0.028
B	1.30	0.051
C	1.30	0.051
D	2.70	0.106

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

MARKING

Part No.	Marking
TESDL5V0	E05
TESDL12V	E12
TESDL24V	E24

## Small Signal Product

### APPLICATION INFORMATION

- Designed to protect one data, I/O, or power supply line
- Designed to protect sensitive electronics from damage or latch-up due to ESD
- Designed to replace multilayer varistors (MLVs) in portable applications
- Features large cross-sectional area junctions for conducting high transient currents
- Offers superior electrical characteristics such as lower clamping voltage and no device degradation when compared to MLVs
- The combination of small size and high ESD surge capability makes them ideal for use in portable applications

### CIRCUIT BOARD LAYOUT RECOMMENDATIONS

- Good circuit board layout is critical for the suppression of ESD induced transients
- Place the ESD Protection Diode near the input terminals or connectors to restrict transient coupling
- Minimize the path length between the ESD Protection Diode and the protected line
- Minimize all conductive loops including power and ground loops
- The ESD transient return path to ground should be kept as short as possible
- Never run critical signals near board edges
- Use ground planes whenever possible

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