

SuperESD – PESD1LIN-ES

1. Description

The PESD1LIN-ES is Transient Voltage Suppressor that designed to protect components which are connected to data and transmission lines against electrostatic discharge (ESD), electrical fast transient (EFT), and lightning. All pins are rated to withstand 30kV ESD pulses using the IEC61000-4-2 air discharge method.

2. Features

- IEC 61000-4-2 Level 4 ESD Protection
 - $\pm 30\text{kV}$ Contact Discharge
 - $\pm 30\text{kV}$ Air Discharge
- 450W Peak pulse Power (8/20us)
- Low clamping voltage
- Working voltage: 15/24V
- Low leakage current
- RoHS compliant
- Protecting one bi-directional line
- Junction capacitance: 28pF Typ.

3. Applications

- LIN-bus protection
- Automotive applications

4. Ordering Information

Part Number	Package	Marking	Material	Packing	Quantity per reel	Flammability Rating	Reel Size
PESD1LIN-ES	SOD-323	AM	Halogen free	Tape & Reel	3,000 PCS	UL 94V-0	7 inches

Table-1 Ordering information

5. Pin Configuration and Functions

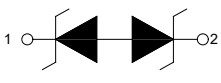
Pin	Name	Description	Outline	Circuit Diagram
1	IO1	Connect to IO		
2	IO2	Connect to IO		

Table-2 Pin configuration

6. Specification

6.1. Absolute Maximum rating

Over operating free-air temperature range (unless otherwise noted)

Parameters	Symbol	Min.	Max.	Unit
Peak pulse power (tp=8/20us)@25°C	P _{pk}	-	450	W
Peak pulse current (tp=8/20us, pin1 to 2)@25°C	I _{PP}	-	12.0	A
Peak pulse current (tp=8/20us, pin2 to 1)@25°C	I _{PP}	-	8.0	A
ESD (IEC61000-4-2 air discharge) @25°C	V _{ESD}	-	±30	kV
ESD (IEC61000-4-2 contact discharge) @25°C	V _{ESD}	-	±30	kV
Junction temperature	T _J	-	150	°C
Operating temperature	T _{OP}	-40	125	°C
Storage temperature	T _{STG}	-55	150	°C
Lead temperature	T _L	-	260	°C

Table-3 Absolute Maximum rating

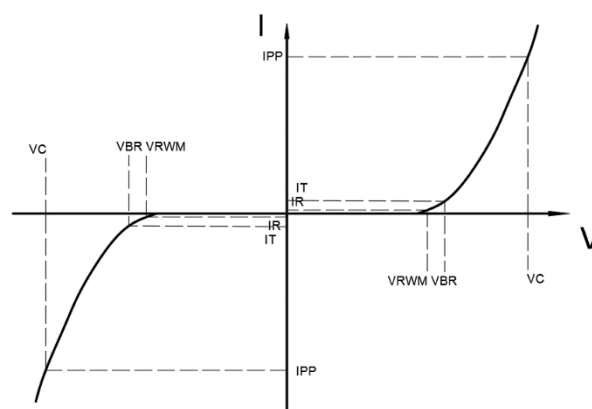
6.2. Electrical Characteristics

At TA = 25°C unless otherwise noted

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Stand-off Voltage	V_{RWM}	Pin1 to Pin2			15.0	V
		Pin2 to Pin1			24.0	V
Reverse Breakdown Voltage	V_{BR}	$I_T=1mA$, Pin1 to Pin2	16.5			V
		$I_T=1mA$, Pin2 to Pin1	26.0			V
Reverse Leakage Current	I_R	$V_{RWM}=15V$			1.0	μA
		$V_{RWM}=24V$			1.0	μA
Clamping Voltage	V_C	$I_{PP}=1A$; Pin1 to 2; $t_p=8/20\mu s$		20.0	22.0	V
		$I_{PP}=12A$; Pin1 to 2; $t_p=8/20\mu s$		26.0	28.0	V
		$I_{PP}=1A$; Pin2 to 1; $t_p=8/20\mu s$		32.0	35.0	V
		$I_{PP}=8A$; Pin2 to 1; $t_p=8/20\mu s$		45.0	48.0	V
Junction Capacitance	C_J	I/O to I/O; $V_R=0V$; $f=1MHz$		28	35	pF

Table-4 Electrical Characteristics

Symbol	Parameters
V_{RWM}	Peak Reverse Working Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}



Current

8/20us curve

Time

T

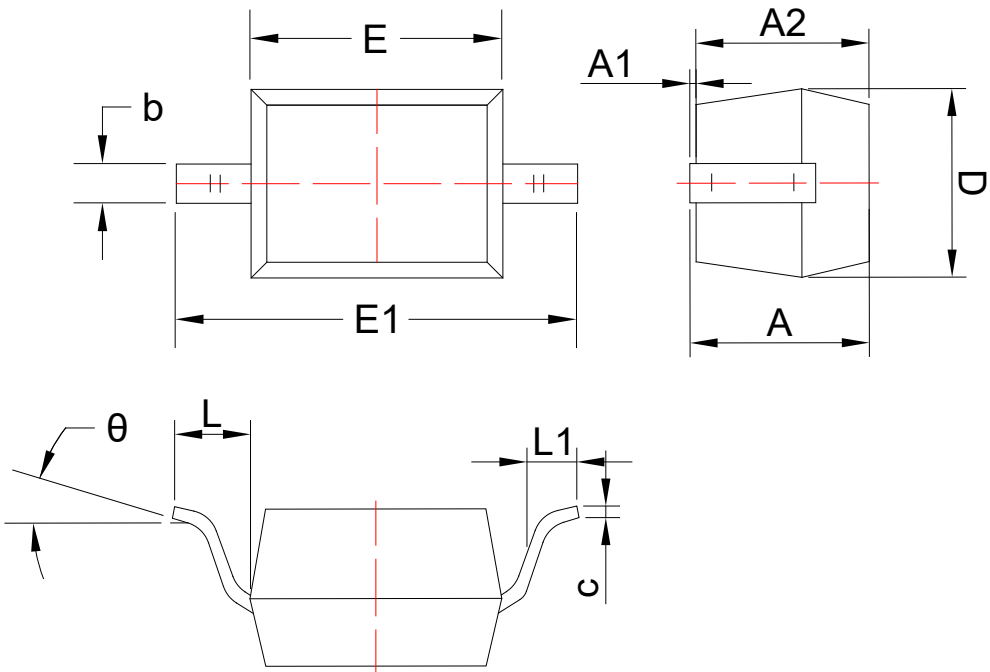
$T_1 = 1.25T = 8 \pm 20\% \text{ us}$

$T_2 = 20 \pm 20\% \text{ us}$

The diagram illustrates the internal circuitry of a LIN node connector. It features a LIN transceiver with three pins: BAT, LIN, and GND. The BAT pin is connected to a capacitor C_{BAT} and a power application (e.g., electro motor, inductive loads). The LIN pin is connected to a capacitor $C_{MASTER/SLAVE}$ and a LIN node connector. The GND pin is connected to a common ground. The LIN node connector has two pins, 1 and 2, which are connected to a 24V diode and a 15V diode, respectively. The diodes are labeled PESD1LIN-ES. The connector is also connected to a power application (e.g., voltage regulator and microcontroller).

Copyright© ElecSuper Incorporated

9. Dimension (SOD-323)



Symbol	Dimensions in Millimeters	
	Min.	Max.
A	0.80	1.00
A1	0.00	0.14
A2	0.66	0.97
b	0.25	0.35
c	0.08	0.18
D	1.20	1.40
E	1.55	1.80
E1	2.50	2.80
L	0.475REF	
L1	0.25	0.40
θ	0°	8°

DISCLAIMER

ELECSUPER PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, SAFETY INFORMATION, AND OTHER RESOURCES "AS IS" AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with ElecSuper products. You are solely responsible for

- (1) selecting the appropriate ElecSuper products for your application;
- (2) designing, validating and testing your application;
- (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements.

These resources are subject to change without notice. ElecSuper grants you permission to use these resources only for development of an application that uses the ElecSuper products described in the resource. Other reproduction and display of these resources are prohibited. No license is granted to any other ElecSuper intellectual property right or to any third party intellectual property right. ElecSuper disclaims responsibility for, and you will fully indemnify ElecSuper and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources. ElecSuper's products are provided subject to ElecSuper's Terms of Sale or other applicable terms available either on www.elecsuper.com or provided in conjunction with such ElecSuper products. ElecSuper's provision of these resources does not expand or otherwise alter ElecSuper's applicable warranties or warranty disclaimers for ElecSuper products.