

SuperESD - SELC3Dxx1B

1. Description

The SELC3Dxx1B is a bidirectional TVS ESD protection arrays featuring low clamping voltage and ultra-low capacitance in a miniature SOD-323 package. The SELC3Dxx1B is rated to dissipate ESD strikes up to $\pm 25\text{kV}$ per the IEC 61000-4-2 international standard (more than level 4) and rated at 350 watts for an 8/20 μs waveshape. All these features ensure system level protection against transient events and make it suitable for interface such as USB and Ethernet 10/100/1000 Mbps.

2. Features

- IEC 61000-4-2 Level 4 ESD Protection
 - $\pm 25\text{kV}$ Contact Discharge
 - $\pm 25\text{kV}$ Air Discharge
- IEC 61000-4-4 EFT Protection
 - 40A (5/50ns)
- RoHS compliance
- Bidirectional configuration
- IO Capacitance: 0.8pF (Typical)
- Low clamping voltage
- 350W Peak pulse Power (8/20us)

3. Applications

- Interfaces
 - USB 2.0/1.1
 - GPIO
 - Ethernet 10/100/1000 Mbps
 - Audio
- End Equipment
 - Industrial and Serve Robots
 - Laptops and Desktops
 - TV and Monitors
 - Wearables

4. Ordering Information

Part Number	Package	Material	Packing		Quantity per reel		Flammability Rating	Reel Size
SELC3Dxx1B	SOD323	Halogen free	Tape & Reel		3,000 PCS		UL 94V-0	7 inches
Marking for the SELC3Dxx1B series								
V _{RWM}	3V	5V	8V	12V	15V	18V	24V	36V
Marking	CC	AC	BC	DC	EC	FC	HC	KC

Table-1 Ordering information

SEL3Dxx1B

Rev-2021-1

5. Pin Configuration and Functions

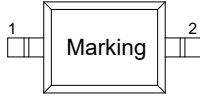
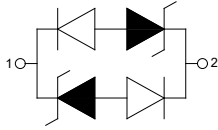
Pin	Name	Description	Outline	Circuit Diagram
1	IO	Connect to IO		
2	IO	Connect to IO		

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}	-	350	W
Peak pulse current (tp=8/20us)@25°C	I _{PP}		Refer to Table-5	A
ESD (IEC61000-4-2 air discharge) @25°C	V _{ESD}	-	± 25	kV
ESD (IEC61000-4-2 contact discharge) @25°C	V _{ESD}	-	± 25	kV
Junction temperature	T _J	-	125	°C
Operating temperature	T _{OP}	-40	85	°C
Storage temperature	T _{STG}	-55	150	°C
Lead temperature	T _L	-	260	°C

Table-3 Absolute Maximum rating

SELC3Dxx1B

Rev-2021-1

6.2. Electrical Characteristics

Symbol	Description
V_{RWM}	Rated reverse stand-off voltage
V_{BR}	Minimum breakdown voltage @ $I_T = 1mA$
V_{CL}	Clamping voltage
I_{PP}	Maximum peak pulse current
I_R	Reverse leakage current @ V_{RWM}
C_O	Typical line capacitance ($V_{IO}=0V$, $V_{P-P} = 30mV$, $f = 1MHz$)

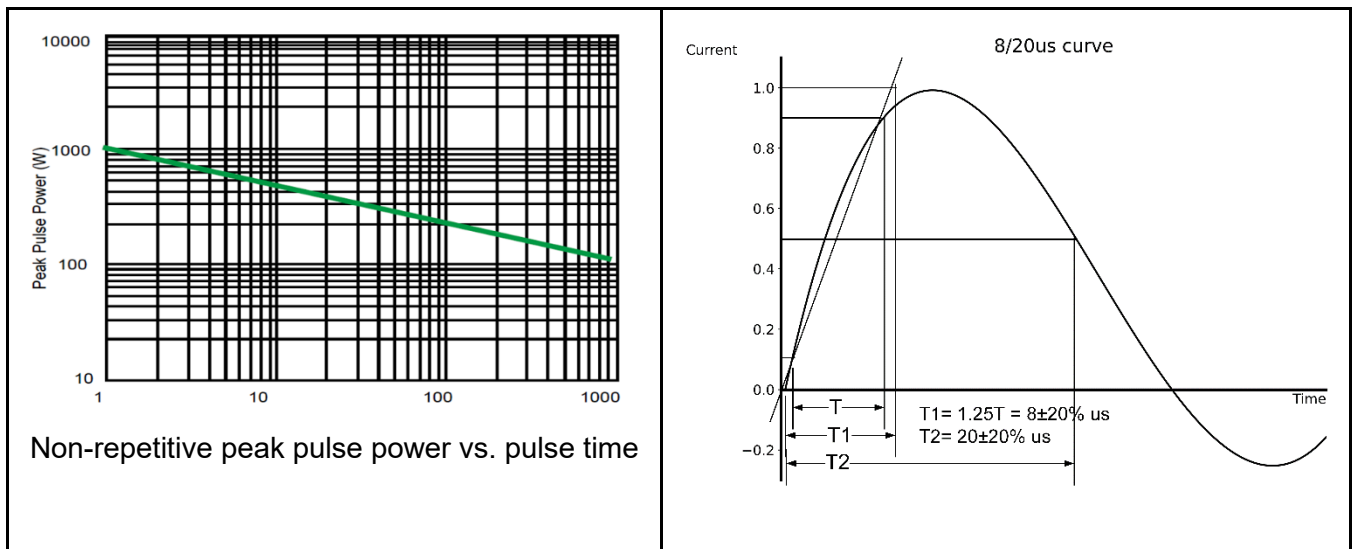
Table-4 Parameters Description

At $T_A = 25^{\circ}C$ unless otherwise noted

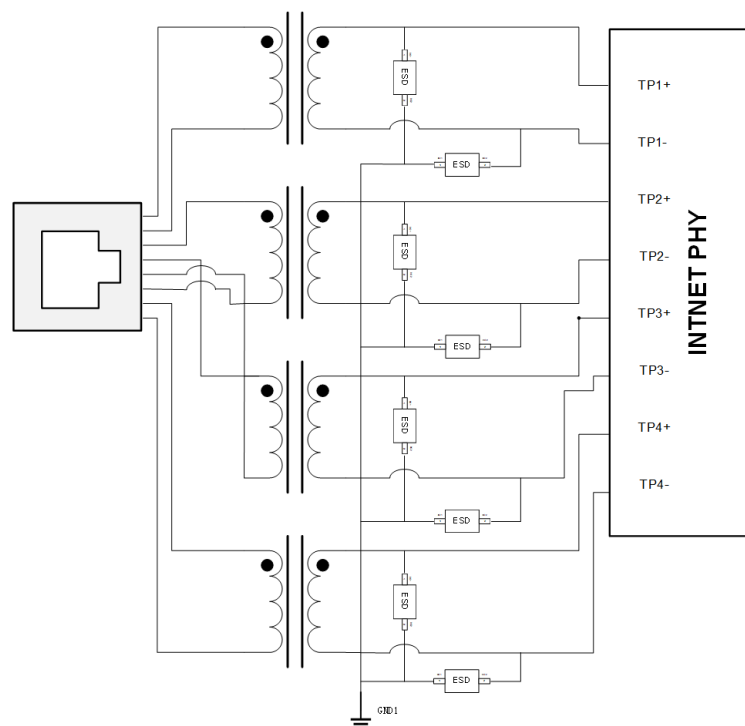
Part Number	V_{RWM}	V_{BR}	$V_{CL}@I=1A$	I_{PP}	$V_{CL}@I=I_{PP}$	I_R	C_O
	(V)	(V)	(V)	(A)	(V)	(uA)	(pF)
SELC3D3V1B	3.3	4.5	8.5	19.0	20.0	1.0	0.8
SELC3D5V1B	5.0	6.5	9.5	18.0	21.0	1.0	0.8
SELC3D8V1B	8.0	8.5	12.0	14.0	25.0	1.0	0.8
SELC3D12V1B	12.0	13.3	19.0	9.0	35	1.0	0.8
SELC3D15V1B	15.0	16.5	24	7.0	45	1.0	0.8
SELC3D18V1B	18.0	20.0	30	6.0	50	1.0	0.8
SELC3D24V1B	24.0	26.0	34	5.0	55	1.0	0.8
SELC3D36V1B	36.0	38.0	55	3.0	70	1.0	0.8

Table-5 Electrical Characteristics for All Series

7. Typical Characteristic

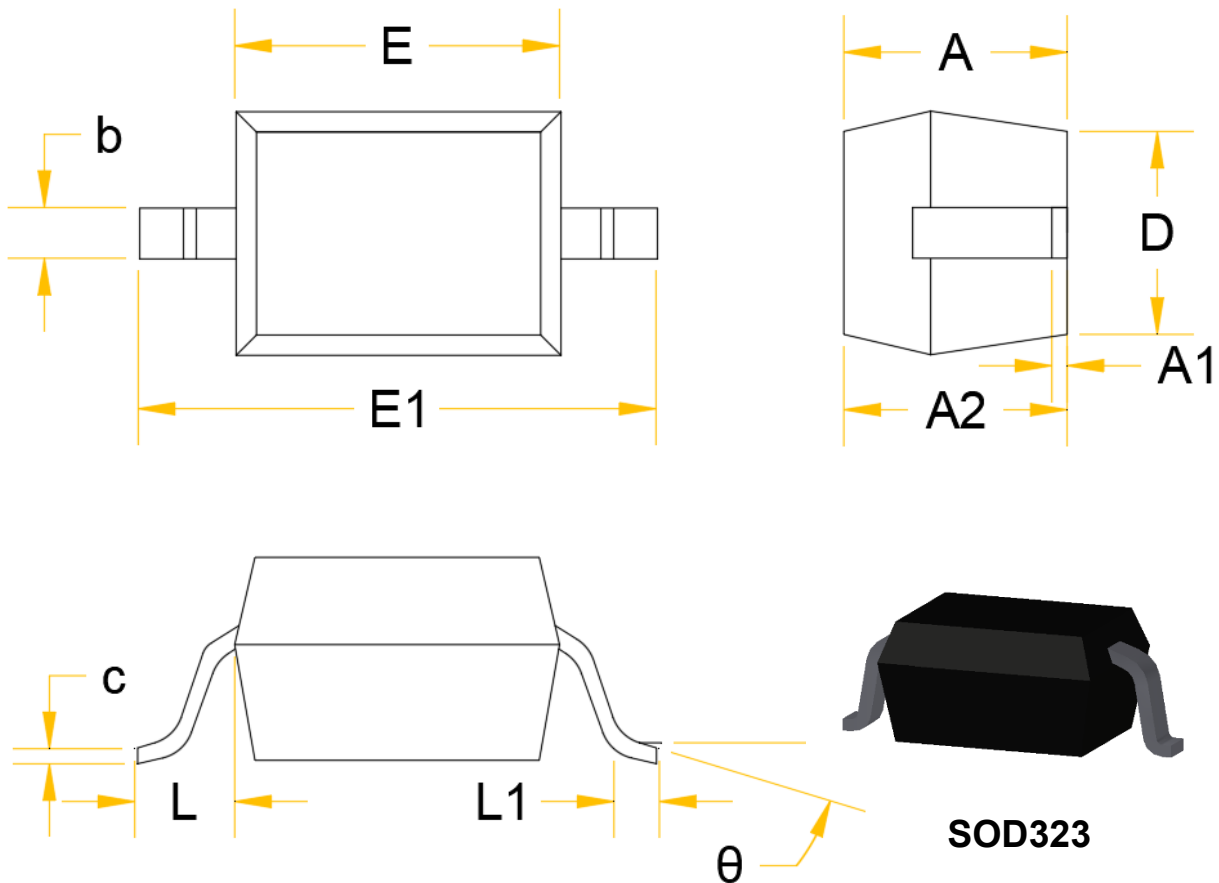


8. Typical Application



Pic-3 Typical Internet 1G Interface Application

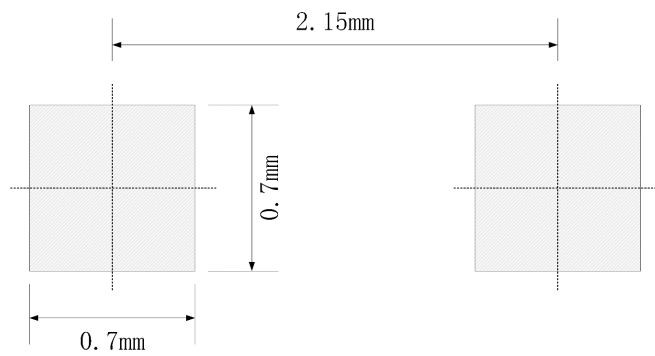
9. Dimension



Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min.	Max.	Min.	Max.
A		1.000		0.039
A1	0.000	0.100	0.000	0.004
A2	0.800	0.900	0.031	0.035
b	0.250	0.350	0.010	0.014
C	0.080	0.150	0.003	0.006
D	1.200	1.400	0.047	0.055
E	1.600	1.800	0.063	0.071
E1	2.550	2.750	0.100	0.108
L	0.475REF		0.019REF	
L1	0.250	0.400	0.010	0.016
θ	0°	8°	0°	8°

Table-6 product dimensions

10. Recommended Land Pattern

**Note:**

1. Controlling dimension: in millimeters
2. General tolerance: $\pm 0.05\text{mm}$
3. The pad layout is for reference only
4. Unit: mm

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.