

1. Description

The ESD5451Z-2-ES is designed to protect voltage sensitive components from damage or latch-up due to ESD. Excellent clamping capability, low leakage, and fast response time provide best in class protection on designs that are exposed to ESD for board level. Because of its small size and bi-directional design, it is ideal for use in cellular phones, MP3 players, and portable applications that require audio line protection.

2. Features

- IEC 61000-4-2 Level 4 ESD Protection
 - $\pm 30\text{kV}$ Contact Discharge
 - $\pm 30\text{kV}$ Air Discharge
- 96W Peak pulse Power (8/20us)
- Low clamping voltage
- Low leakage current
- Working voltage: 5.0V
- RoHS compliant
- Protecting one bi-directional line
- Junction capacitance: 15pF Typ

3. Applications

- Cellular handsets and accessories
- Portable Digital Assistants
- Notebooks & Handhelds
- Digital Cameras
- MP3 Players
- Peripherals

4. Ordering Information

Part Number	Package	Marking	Material	Packing	Quantity per reel	Flammability Rating	Reel Size
ESD5451Z-2-ES	DFN0603-2L	C5	Halogen free	Tape & Reel	10,000 PCS	UL 94V-0	7 inches

Table-1 Ordering information

5. Pin Configuration and Functions

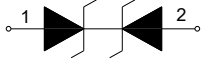
Pin	Name	Description	Outline	Circuit Diagram
1	IO1	Connect to IO	Note1 	
2	IO2	Connect to IO		

Table-2 Pin configuration

Note1:

This diagram is only an electrical schematic, and the actual pin size is based on POD.

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}	-	96	W
Peak pulse current (tp=8/20us)@25°C	I _{PP}		8	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

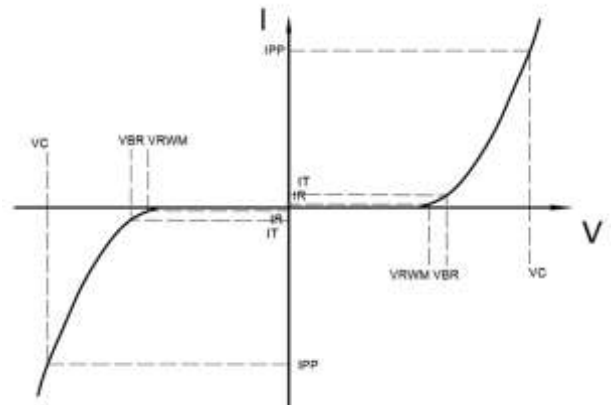
6.2. Electrical Characteristics

At TA = 25°C unless otherwise noted

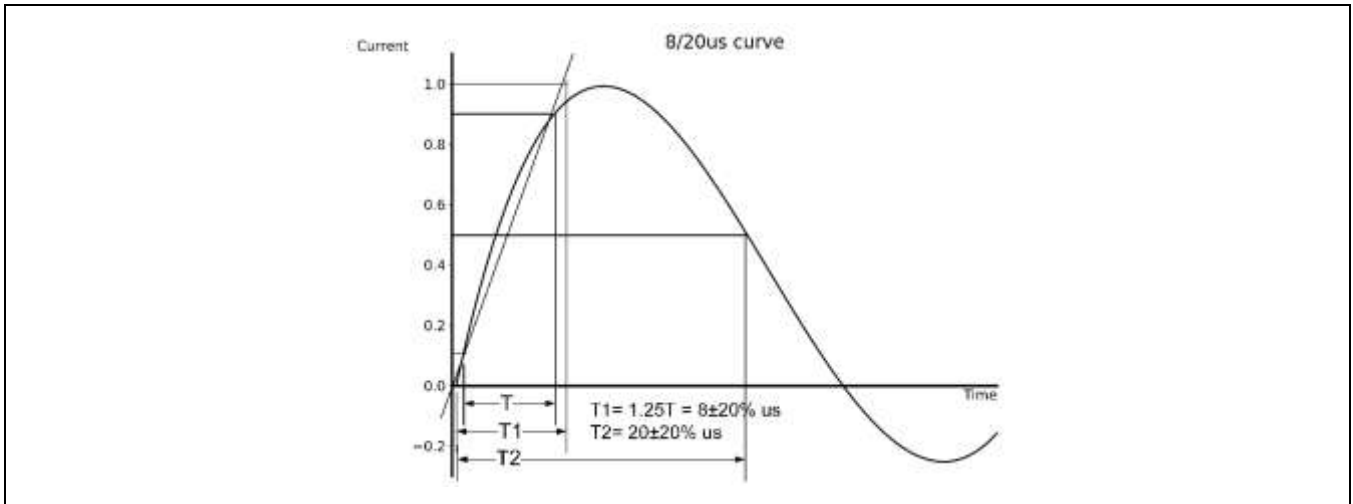
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Stand-off Voltage	V_{RWM}				5.0	V
Reverse Breakdown Voltage	V_{BR}	$I_T=1mA$	5.6			V
Reverse Leakage Current	I_R	$V_{RWM}=5V$			1.0	μA
Clamping Voltage	V_C	$I_{PP}=1A$; $t_p=8/20\mu s$		8.0	10.0	V
Clamping Voltage	V_C	$I_{PP}=8A$; $t_p=8/20\mu s$		10.0	12.0	V
Junction Capacitance	C_J	I/O to GND; $V_R=0V$; $f=1MHz$		15	20	pF

Table-4 Electrical Characteristics

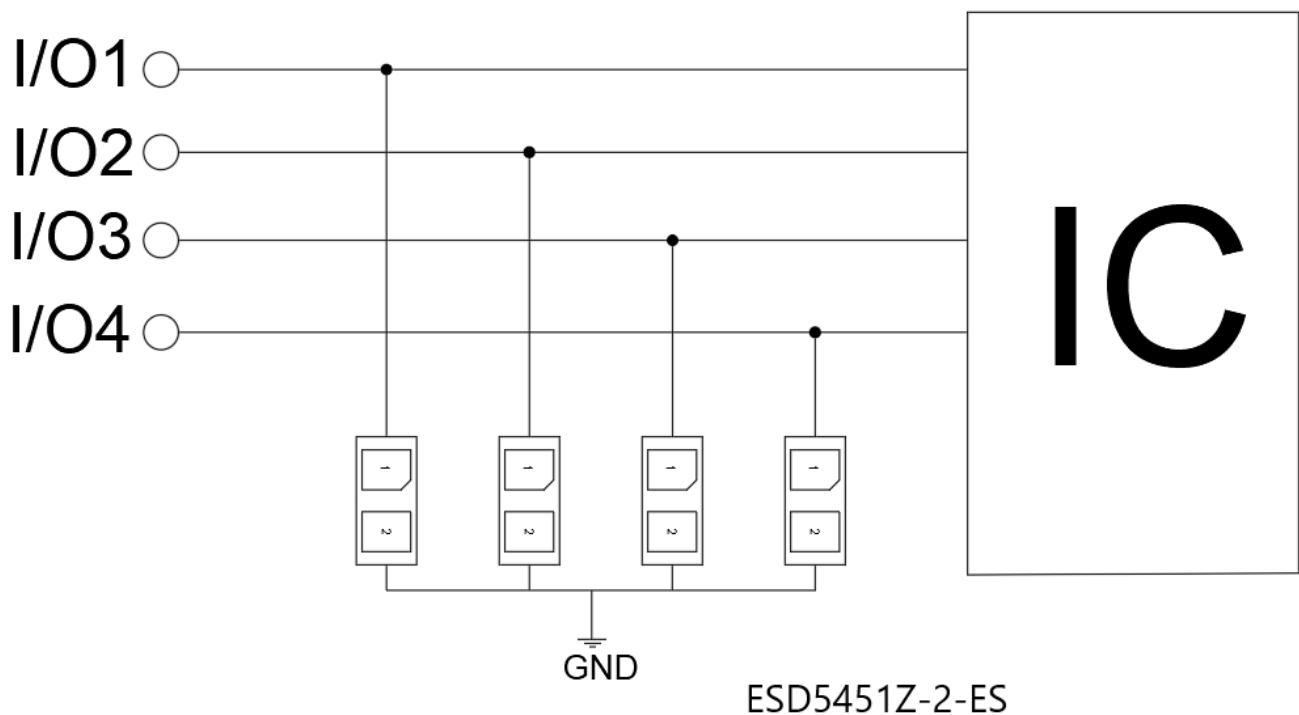
Symbol	Parameters
V_{RWM}	Peak Reverse Working Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}



7. Typical Characteristic



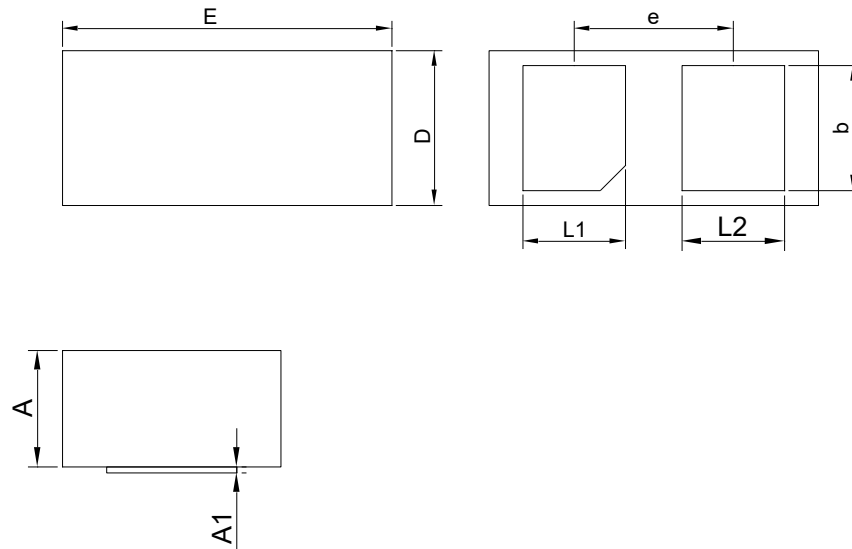
8. Typical Application



Typical Interface Application

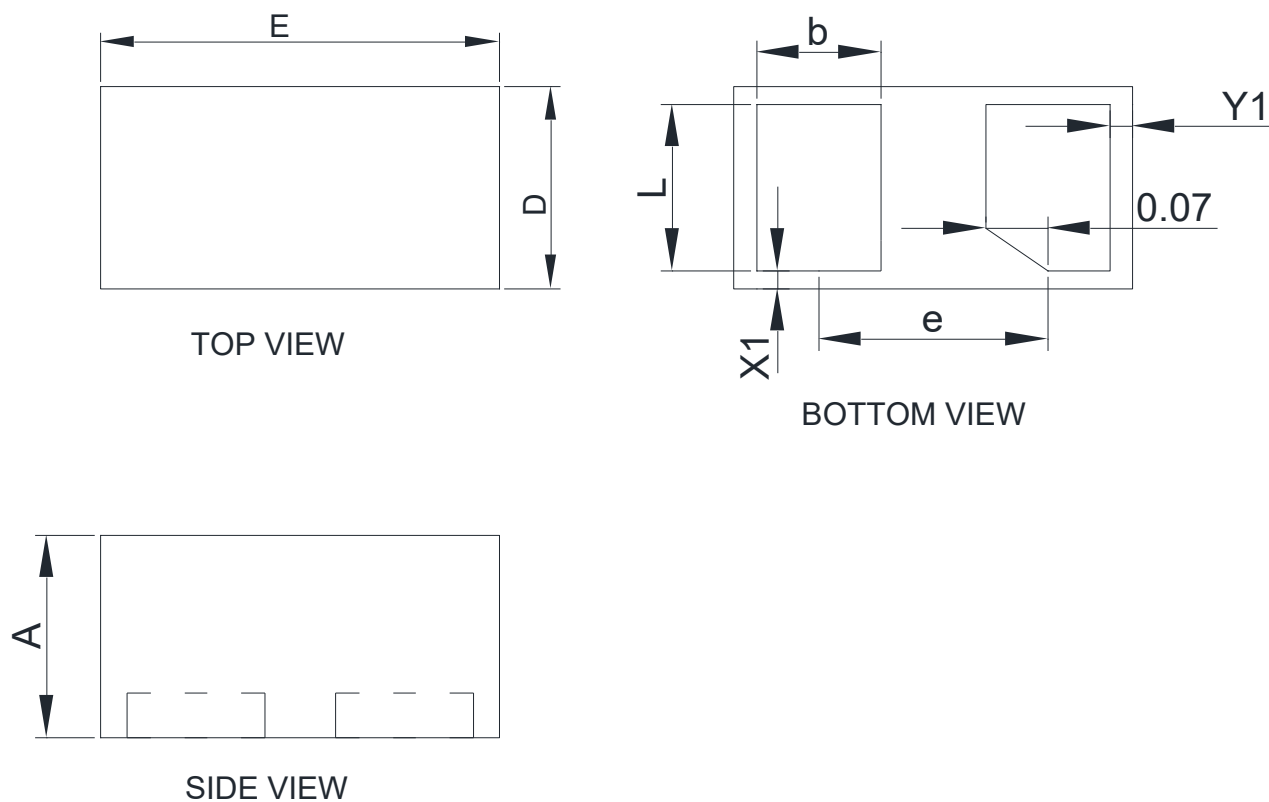
9. Dimension (DFN0603-2L)

POD A(D)



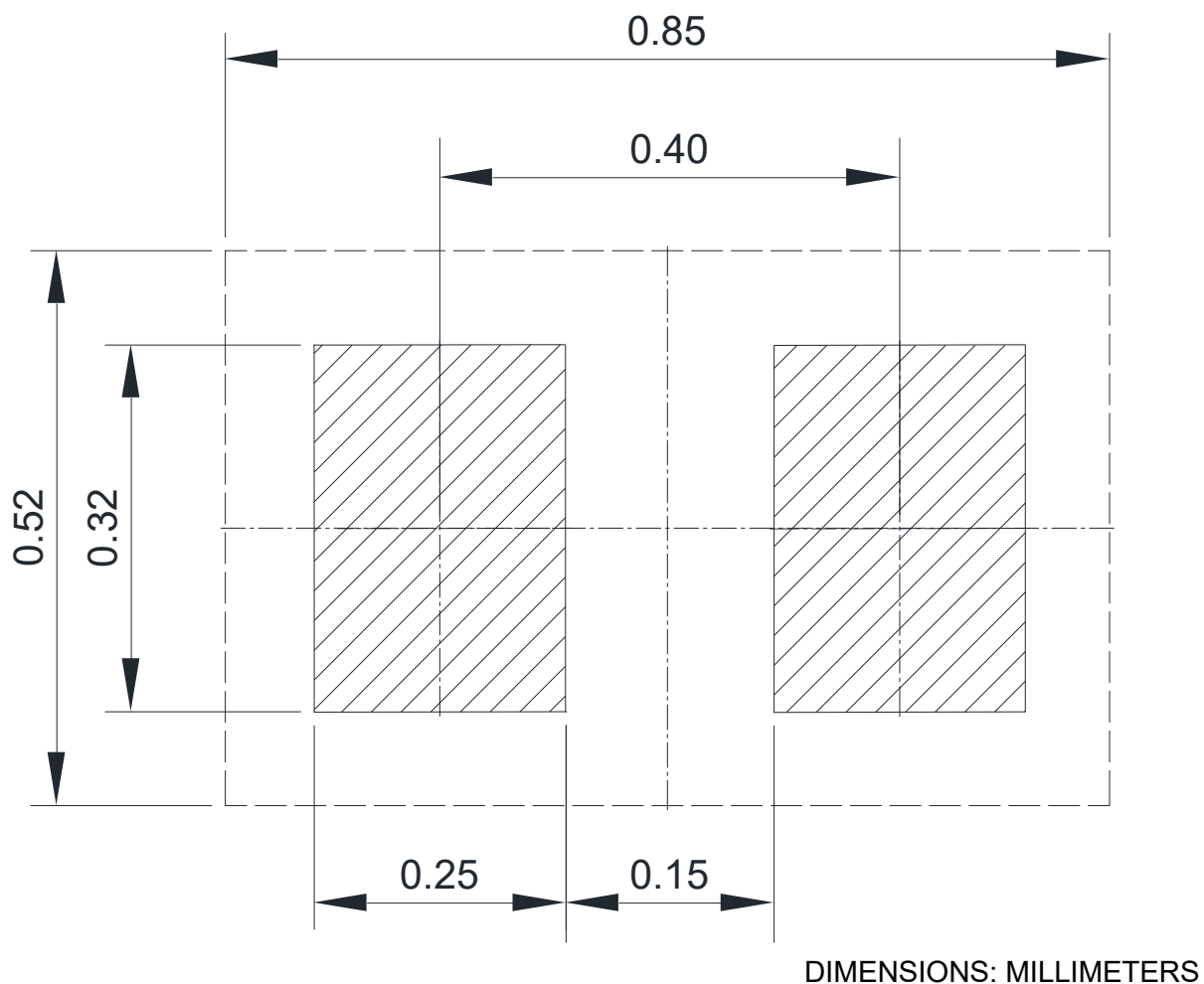
COMMON DIMENSIONS CUNITS MEASURE=MILLIMETER							
SYMBOL	MIN	MID	MAX	SYMBOL	MIN	MID	MAX
A	0.27	0.31	0.35	e	0.33	0.35	0.37
D	0.28	0.30	0.35	L1/L2	0.16	0.18	0.20
E	0.57	0.60	0.65	A1	0.00	-	0.015
b	0.22	0.24	0.26				

POD B(A)



COMMON DIMENSIONS CUNITS MEASURE=MILLIMETER							
SYMBOL	MIN	MID	MAX	SYMBOL	MIN	MID	MAX
A	0.280	0.300	0.320	e		0.340	
D	0.250	0.300	0.350	L	0.205	0.230	0.255
E	0.550	0.600	0.650	X1	0.010		0.070
b	0.165	0.190	0.215	Y1	0.010		0.070

10. Recommended Soldering Footprint



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