SuperESD – ESD05V88D-LC-ES

1. Description

The ESD05V88D-LC-ES is designed to protect voltage sensitive components form 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
  - ±20kV Contact Discharge
  - ±20kV Air Discharge
- 120W Peak pulse Power (8/20us)
- Low clamping voltage
- Working voltage: 5V
- Low leakage current
- RoHS compliant
- Protecting one bi-directional line
- Junction capacitance: 0.25pF 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
ESD05V88D-LC-ES	DFN1006-2L	JJ	Halogen free	Tape & Reel	10,000 PCS	UL 94V-0	7 inches

Table-1 Ordering information

5. Pin Configuration and Functions

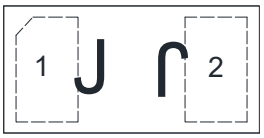
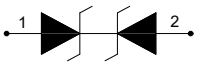
Pin	Name	Description	Outline	Circuit Diagram
1	IO1	Connect to IO		
2	IO2	Connect to IO		

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℃	P_{pk}	-	120	W
Peak pulse current (tp=8/20us)@25℃	I_{PP}		4.5	A
ESD (IEC61000-4-2 air discharge) @25℃	V_{ESD}	-	±20	kV
ESD (IEC61000-4-2 contact discharge) @25℃	V_{ESD}	-	±20	kV
Junction temperature	T_J	-	150	℃
Operating temperature	T_{OP}	-40	125	℃
Storage temperature	T_{STG}	-55	150	℃
Lead temperature	T_L	-	260	℃

Table-3 Absolute Maximum rating

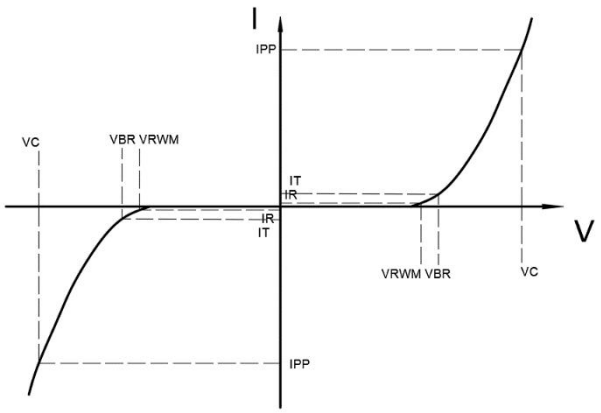
6.2. Electrical Characteristics

At TA = 25℃ unless otherwise noted

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Stand-off Voltage	V_{RWM}				5	V
Reverse Breakdown Voltage	V_{BR}	IT=1mA	6.5		9.0	V
Reverse Leakage Current	I_R	V_{RWM}=5V			1	uA
Clamping Voltage	V_C	I_{PP}=1A; tp=8/20us		12	15	V
Clamping Voltage	V_C	I_{PP}=3A; tp=8/20us		16	19	V
Clamping Voltage	V_C	I_{PP}=4.5A; tp=8/20us		22	25	V
Junction Capacitance	C_J	VR=0V; f=1MHz		0.25	0.32	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

Figure1: Clamping Voltage vs. Peak Pulse Current

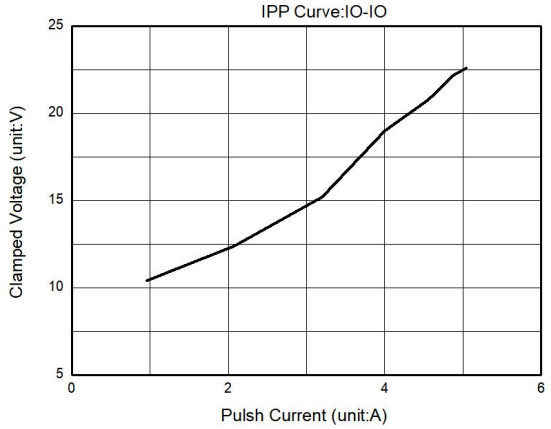


Figure2: Junction Capacitance vs. Reverse Voltage

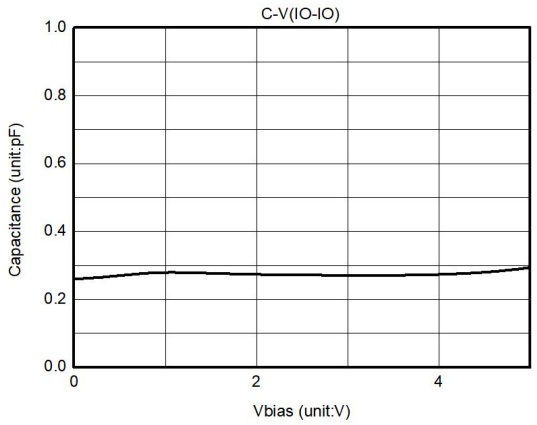


Figure3: 8 X 20us Pulse Waveform

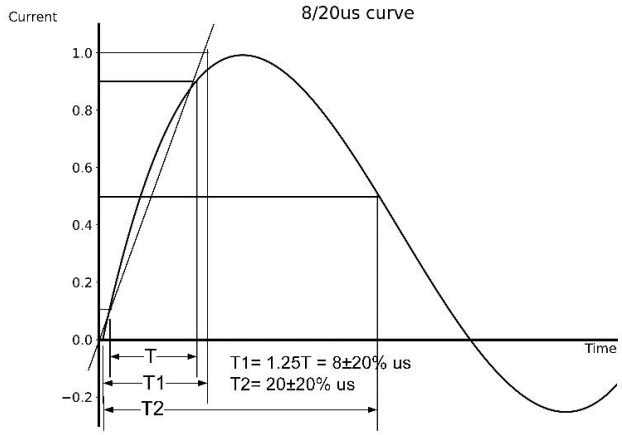


Figure4: Power derating vs. Ambient temperature

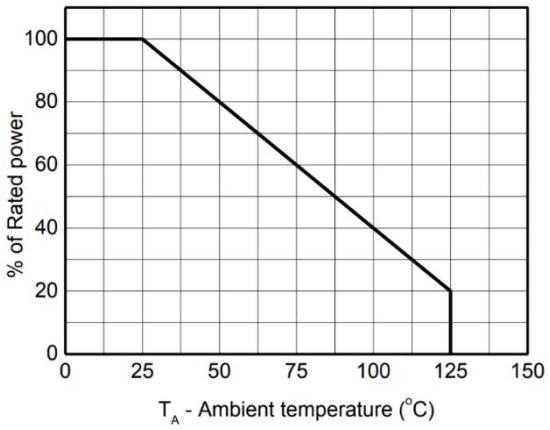


Figure5: Peak Pulse Power vs. Pulse Time

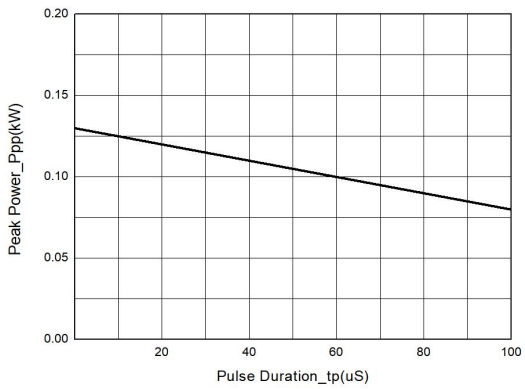
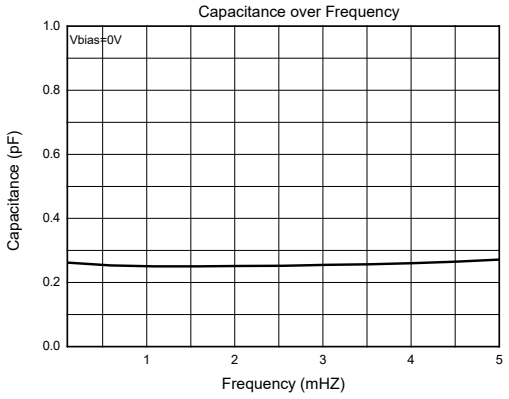
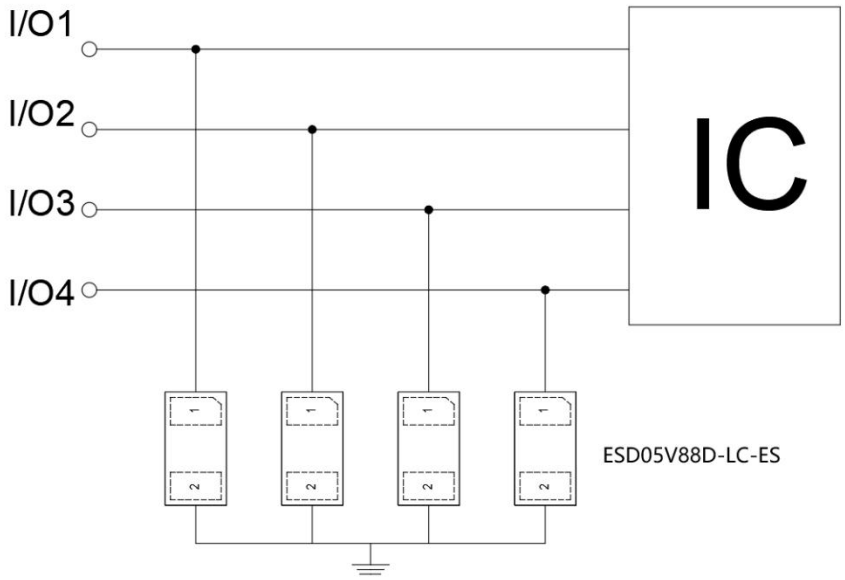


Figure6: Capacitance over Frequency



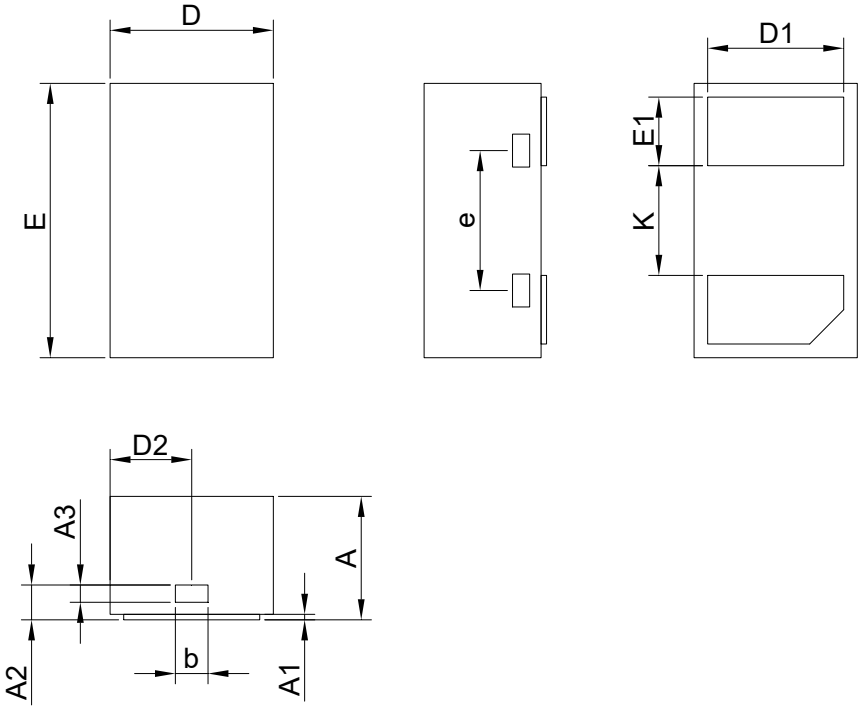
8. Typical Application



Typical Interface Application

9. Dimension (DFN1006-2L)

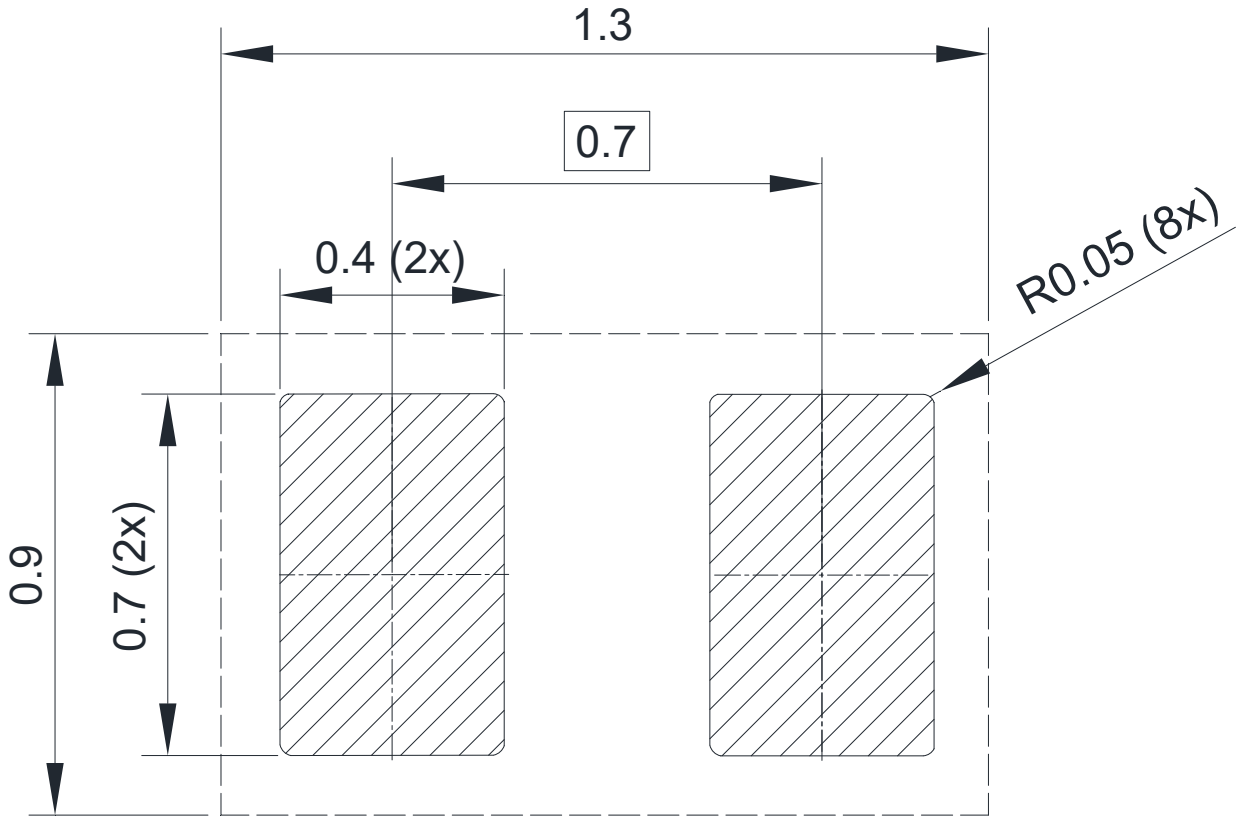
POD(Q)



Units in millimeters

Symbol	Min.	Nom.	Max.	Symbol	Min.	Nom.	Max.
A	0.350	0.450	0.550	D1	0.400	0.500	0.600
A1	0.000	0.020	0.050	D2	0.200	0.300	0.400
A2	0.077	0.127	0.207	E	0.900	1.000	1.100
A3	0.013	0.063	0.113	E1	0.150	0.250	0..350
b	0.070	0.120	0.200	e	0.360	0.410	0.460
D	0.500	0.600	0.700	k	0.300	0.400	0.500

10. Recommended Soldering Footprint



DIMENSIONS: MILLIMETERS

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