

1. Description

The ESD441DPLR(ES) is an low capacitance TVS designed to protect high speed data interface. It has been specifically designed to protect sensitive electronic components which are connected to data and transmission lines from over-stress caused by ESD. The ESD441DPLR(ES) incorporates one pair of low capacitance steering diodes plus a TVS diode.

2. Features

- IEC 61000-4-2 Level 4 ESD Protection
 - ±20kV Contact Discharge
 - ±20kV Air Discharge
- 60W Peak pulse Power (8/20us)
- Low clamping voltage
- Working voltage: 5V
- Low leakage current
- RoHS compliant
- Protecting one Uni-directional line
- Junction capacitance: 0.50pF Typ.

3. Applications

- USB 2.0/3.0
- 10/100/1000 Ethernet
- Monitors and Flat Panel Displays
- Notebook Computers
- SIM ports
- ATM interface

4. Ordering Information

Part Number	Package	Marking	Material	Packing	Quantity per reel	Flammability Rating	Reel Size
ESD441DPLR(ES)	DFN0603-2L	L5	Halogen free	Tape & Reel	10,000 PCS	UL 94V-0	7 inches

Table-1 Ordering information

5. Pin Configuration and Functions


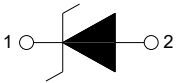
Pin	Name	Description	Outline	Circuit Diagram
1	IO	Connect to IO		
2	GND	Connect to GND		

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}	-	60	W
Peak pulse current (tp=8/20us)@25°C	I _{PP}		4.0	A
ESD (IEC61000-4-2 air discharge) @25°C	V _{ESD}	-	±20	kV
ESD (IEC61000-4-2 contact discharge) @25°C	V _{ESD}	-	±20	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

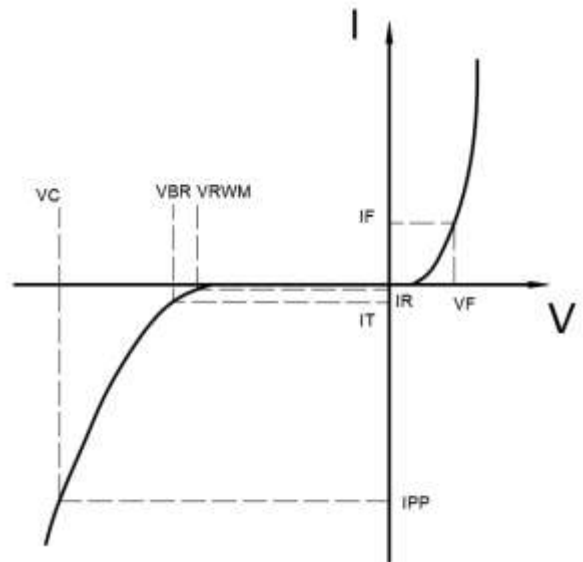
6.2. Electrical Characteristics

At TA = 25°C unless otherwise noted

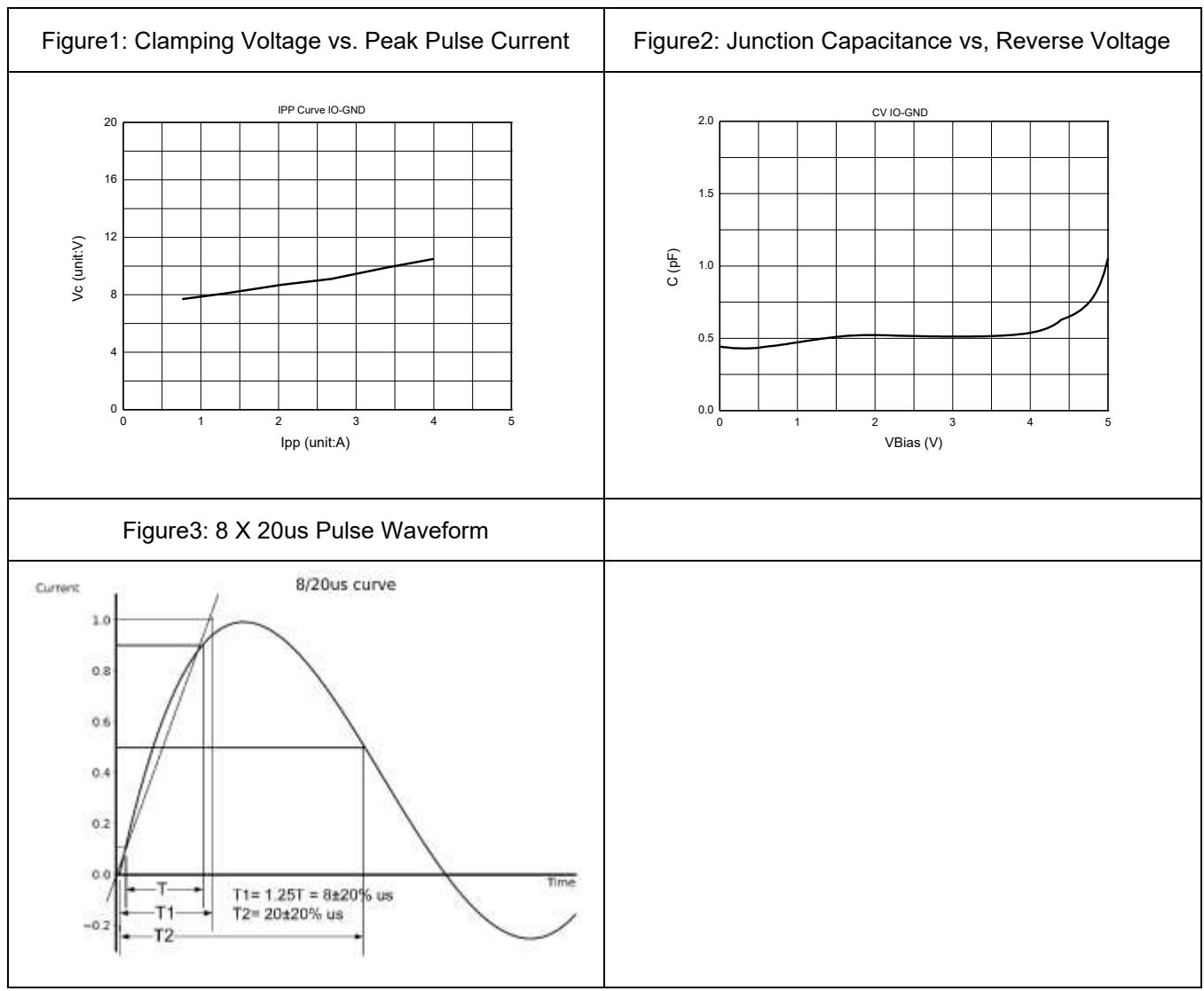
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Stand-off Voltage	V_{RWM}				5.0	V
Reverse Breakdown Voltage	V_{BR}	$I_T=1mA$	6.0			V
Reverse Leakage Current	I_R	$V_{RWM}=5V$			1.0	μA
Clamping Voltage	V_C	$I_{PP}=1A$; $t_p=8/20\mu s$		8.0	9.5	V
Clamping Voltage	V_C	$I_{PP}=4A$; $t_p=8/20\mu s$		10.5	13.0	V
Junction Capacitance	C_J	I/O to GND; $V_R=0V$; $f=1MHz$		0.5	0.6	pF

Table-4 Electrical Characteristics

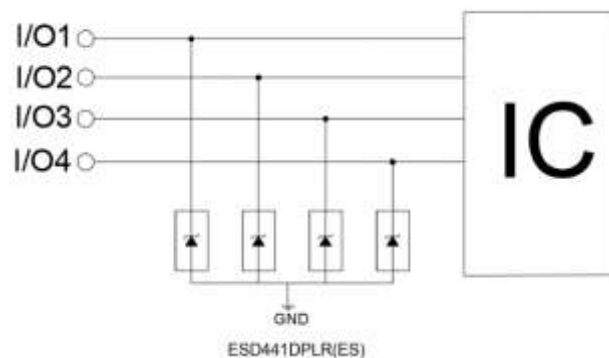
Symbol	Parameters
V_{RWM}	Peak Reverse Working Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
I_F	Forward Current
V_F	Forward Voltage @ I_F



7. Typical Characteristic



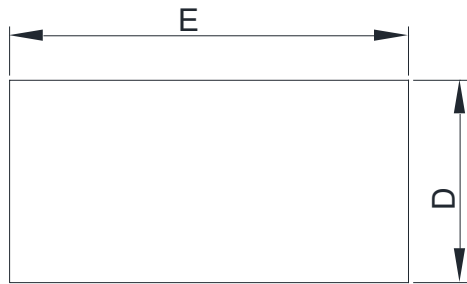
8. Typical Application



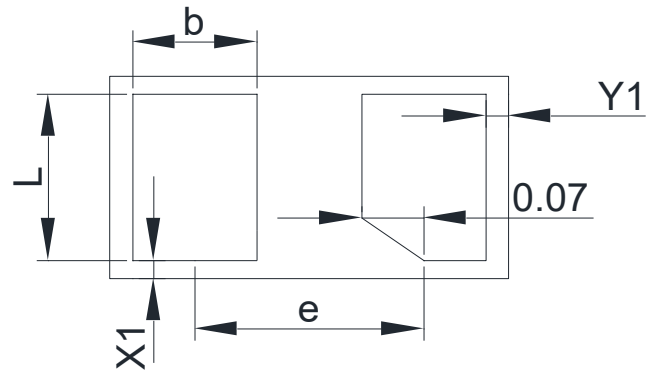
Typical Interface Application

9. Dimension (DFN0603-2L)

POD(A)



TOP VIEW



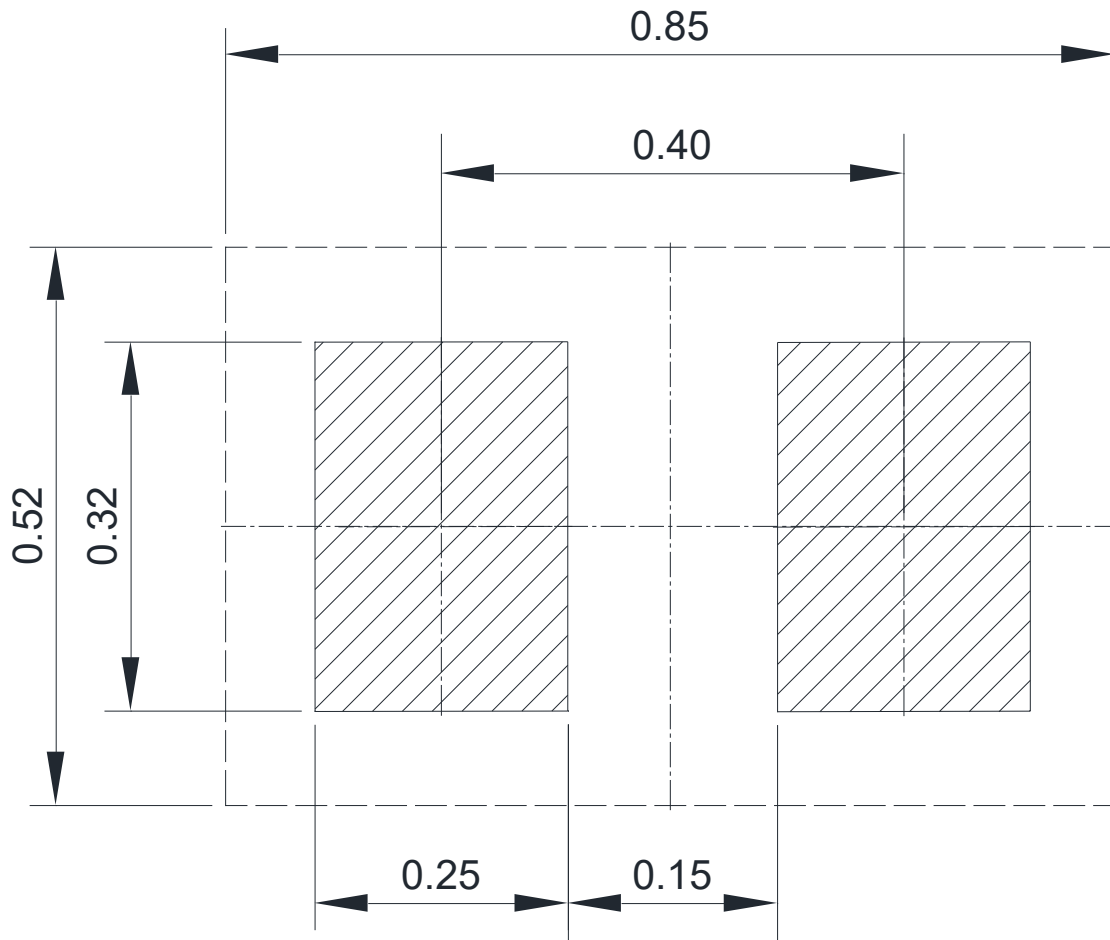
BOTTOM VIEW



SIDE VIEW

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



DIMENSIONS: MILLIMETERS

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