

SuperESD – TPD1E0B04DPYR(ES)

1. Description

The TPD1E0B04DPYR(ES) is designed to protect voltage sensitive components from ESD and transient voltage events. Excellent clamping capability, low leakage, and fast response time, make these parts ideal for ESD protection on designs where board space is at a premium.

2. Features

- IEC 61000-4-2 Level 4 ESD Protection
- Working voltage: 5V
- ±10kV Contact Discharge
- Low leakage current
- ±15kV Air Discharge
- RoHS compliant
- 60W Peak pulse Power (8/20us)
- Protecting one bi-directional line
- Low clamping voltage
- Junction capacitance: 0.2pF Typ.

3. Applications

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

4. Ordering Information

Part Number	Package	Marking	Material	Packing	Quantity per reel	Flammability Rating	Reel Size
TPD1E0B04DP YR(ES)	DFN1006 -2L	NL	Halogen free	Tape & Reel	10,000 PCS	UL 94V-0	7 inches

Table-1 Ordering information

5. Pin Configuration and Functions


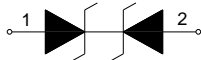
Pin	Name	Description	Outline	Circuit Diagram
1	IO1	Connect to IO		
2	IO2	Connect to IO		

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°C	P _{pk}	-	60	W
Peak pulse current (tp=8/20us) @25°C	I _{PP}		3.0	A
ESD (IEC61000-4-2 air discharge) @25°C	V _{ESD}	-	±15	kV
ESD (IEC61000-4-2 contact discharge) @25°C	V _{ESD}	-	±10	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

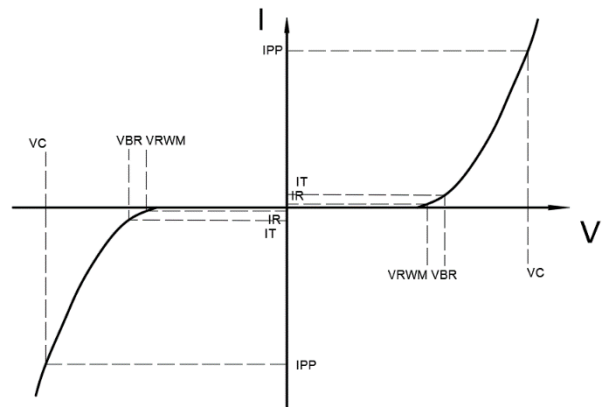
6.2. Electrical Characteristics

At TA = 25°C unless otherwise noted

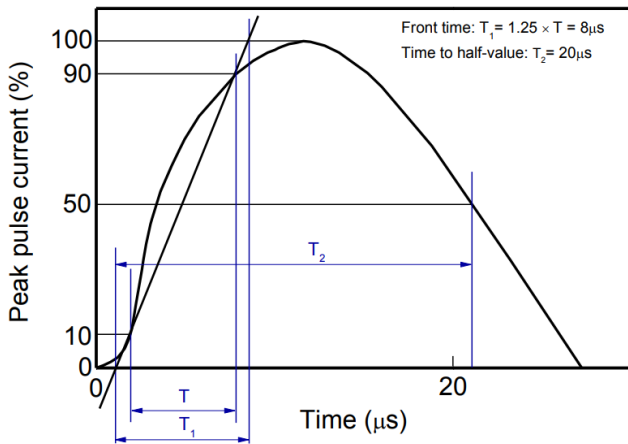
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Stand-off Voltage	V_{RWM}				5.0	V
Reverse Breakdown Voltage	V_{BR}	$I_T=1mA$	6.0			V
Reverse Leakage Current	I_R	$V_{RWM}=5V$			1.0	μA
Clamping Voltage	V_C	$I_{PP}=1A$; $t_p=8/20\mu s$		12.0	14.0	V
Clamping Voltage	V_C	$I_{PP}=3A$; $t_p=8/20\mu s$		18.0	20.0	V
Junction Capacitance	C_J	I/O to GND; $V_R=0V$; $f=1MHz$		0.2	0.3	pF

Table-4 Electrical Characteristics

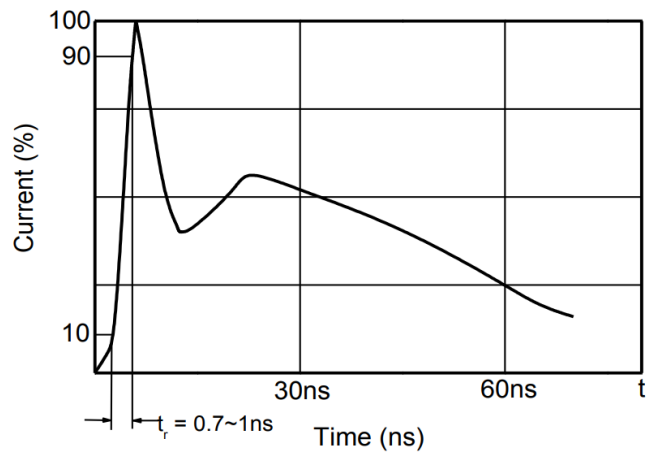
Symbol	Parameters
V_{RWM}	Peak Reverse Working Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}



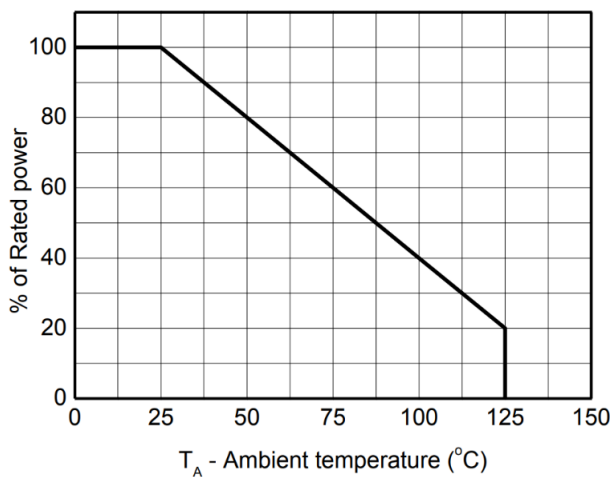
7. Typical Characteristic



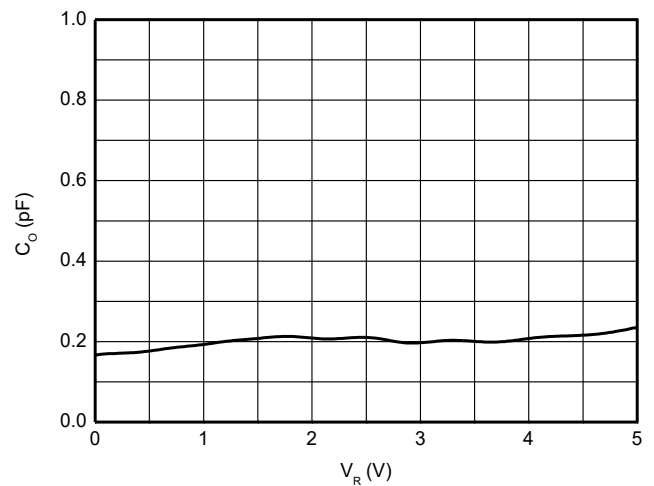
8/20μs waveform per IEC61000-4-5



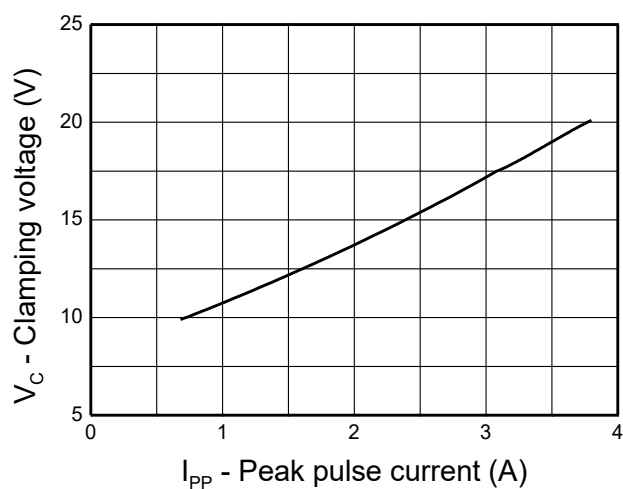
Contact discharge current waveform per IEC61000-4-2



Power derating vs. Ambient temperature



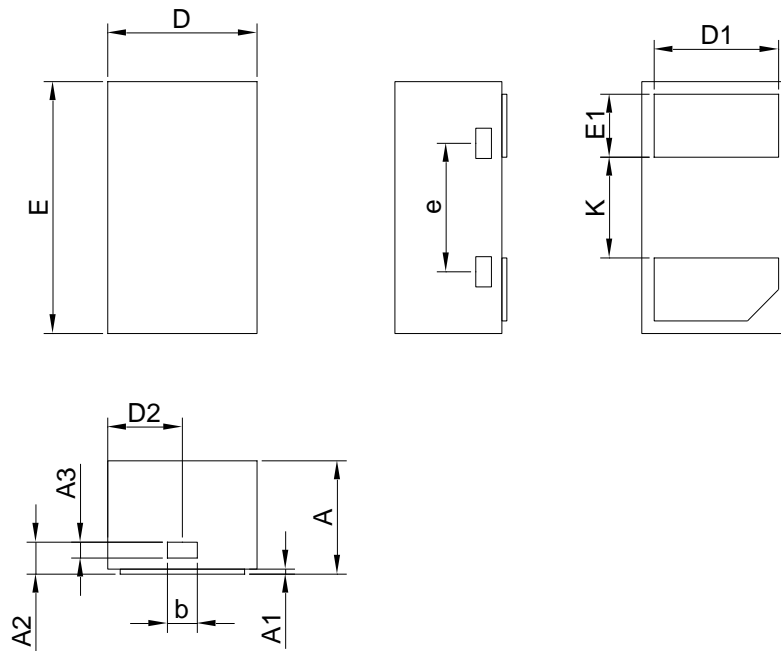
Capacitance vs. Reverse voltage



Clamping voltage vs. Peak pulse current

8. Dimension (DFN1006-2L)

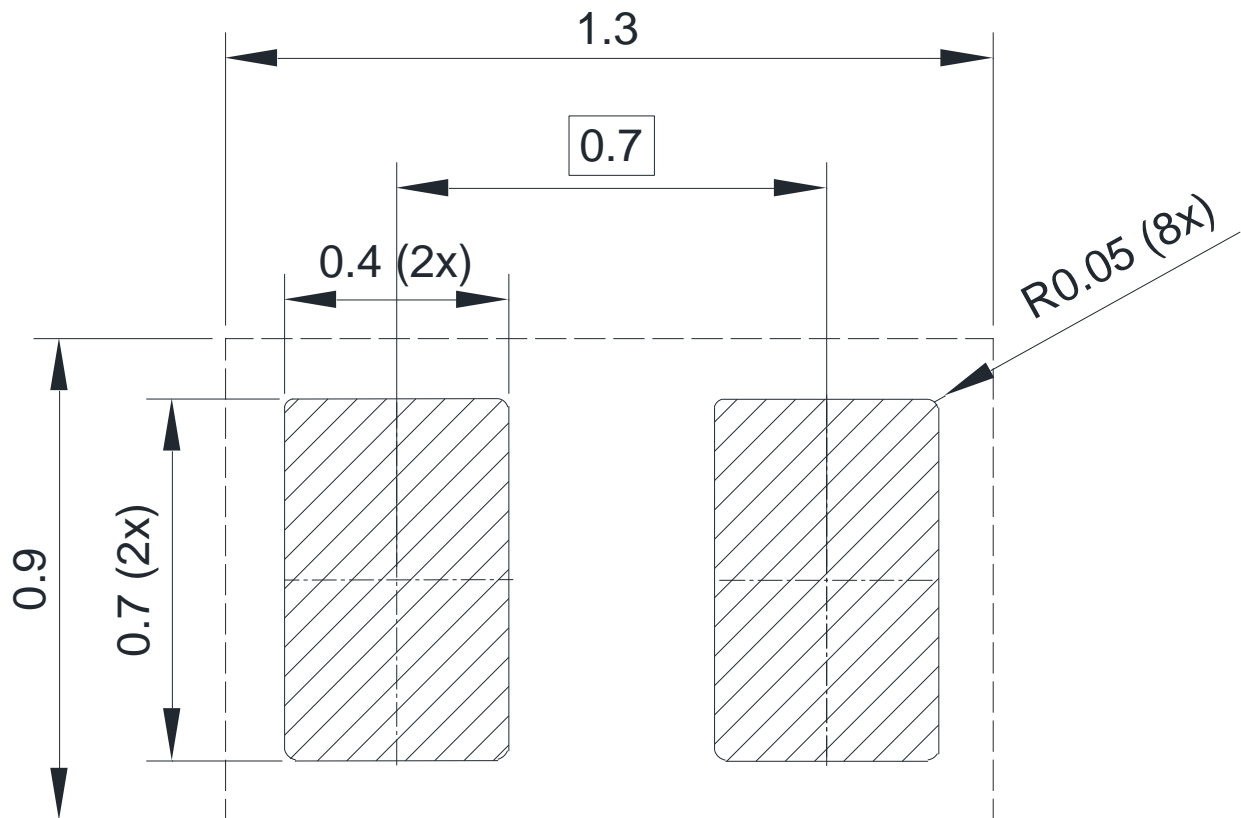
POD(Q)



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

9. Recommended Soldering Footprint



DIMENSIONS: MILLIMETERS

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