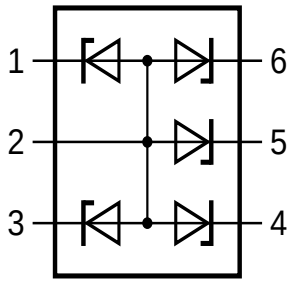
Description

Low capacitance unidirectional fivefold ElectroStatic Discharge (ESD) protection diode arrays in small Surface-Mounted Device (SMD) plastic packages designed to protect up to five unidirectional signal lines from the damage caused by ESD and other transients.



Features

- ESD protection of up to five lines
- Low diode capacitance
- Max. peak pulse power: P_{PP} = 25 W
- Low clamping voltage: V_{CL} = 12 V
- Ultra low leakage current: I_{RM} = 5 nA
- ESD protection up to 20 kV
- IEC 61000-4-2; level 4 (ESD)
- IEC 61000-4-5 (surge); I_{PP} = 2.5 A

Applications

- Computers and peripherals
- Audio and video equipment
- Cellular handsets and accessories
- Communication systems
- Portable electronics
- Subscriber Identity Module (SIM) card protection

Quick reference data

Quick reference data

T_{amb} = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Per diode						
V_{RWM}	reverse standoff voltage					
	PESD3V3L5UF PESD3V3L5UV PESD3V3L5UY		-	-	3.3	V
	PESD5V0L5UF PESD5V0L5UV PESD5V0L5UY		-	-	5.0	V
C_d	diode capacitance	f = 1 MHz; V_R = 0 V				
	PESD3V3L5UF PESD3V3L5UV PESD3V3L5UY		-	22	28	pF
	PESD5V0L5UF PESD5V0L5UV PESD5V0L5UY		-	16	19	pF

Limiting values

Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions		Min	Max	Unit
Per diode						
P_{PP}	peak pulse power	t_p = 8/20 µs	[1][2]	-	25	W
I_{PP}	peak pulse current	t_p = 8/20 µs	[1][2]	-	2.5	A
Per device						
T_j	junction temperature			-	150	°C
T_{amb}	ambient temperature			–65	+150	°C
T_{stg}	storage temperature			–65	+150	°C

[1] Non-repetitive current pulse 8/20 µs exponential decay waveform according to IEC 61000-4-5.

[2] Measured from pin 1, 3, 4, 5 or 6 to pin 2.

ESD maximum ratings

T_{amb} = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions		Min	Max	Unit
Per diode						
V_{ESD}	electrostatic discharge voltage	IEC 61000-4-2 (contact discharge)	[1][2]	-	20	kV
		MIL-STD-883 (human body model)		-	10	kV

[1] Device stressed with ten non-repetitive ESD pulses.

[2] Measured from pin 1, 3, 4, 5 or 6 to pin 2.

ESD standards compliance

Standard	Conditions
Per diode	
IEC 61000-4-2; level 4 (ESD)	> 15 kV (air); > 8 kV (contact)
MIL-STD-883; class 3 (human body model)	> 4 kV

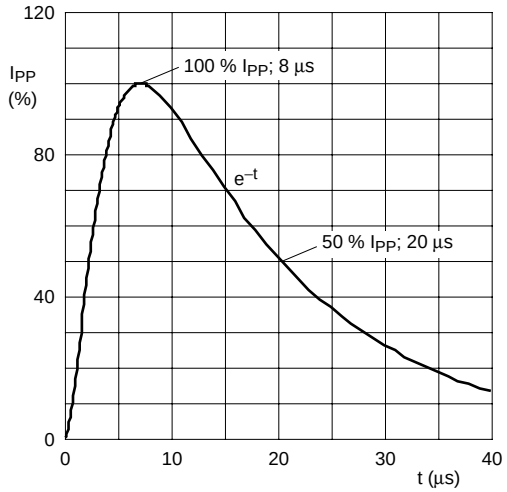


Fig 1. 8/20 µs pulse waveform according to IEC 61000-4-5

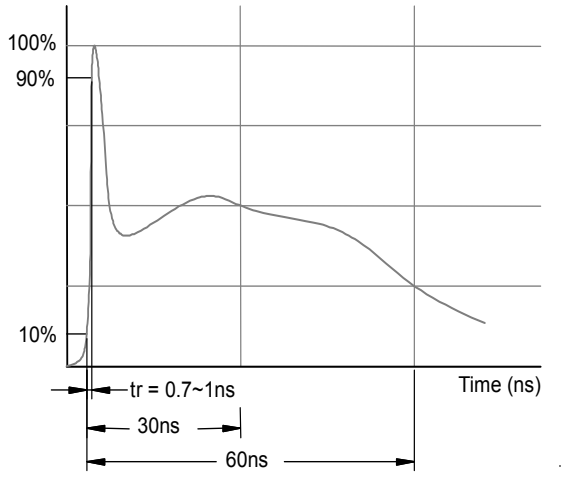


Fig 2. ESD pulse waveform according to IEC 61000-4-2

Characteristics

Characteristics

T_{amb} = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Per diode						
V_{RWM}	reverse standoff voltage					
	PESD3V3L5UF PESD3V3L5UV PESD3V3L5UY		-	-	3.3	V
	PESD5V0L5UF PESD5V0L5UV PESD5V0L5UY		-	-	5.0	V
I_{RM}	reverse leakage current					
	PESD3V3L5UF PESD3V3L5UV PESD3V3L5UY	V_{RWM} = 3.3 V	-	75	300	nA
	PESD5V0L5UF PESD5V0L5UV PESD5V0L5UY	V_{RWM} = 5.0 V	-	5	25	nA
V_{BR}	breakdown voltage	I_R = 1 mA				
	PESD3V3L5UF PESD3V3L5UV PESD3V3L5UY		5.3	5.6	5.9	V
	PESD5V0L5UF PESD5V0L5UV PESD5V0L5UY		6.4	6.8	7.2	V

Characteristics …continued

T_{amb} = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
C_d	diode capacitance	f = 1 MHz; V_R = 0 V					
	PESD3V3L5UF PESD3V3L5UV PESD3V3L5UY			-	22	28	pF
	PESD5V0L5UF PESD5V0L5UV PESD5V0L5UY			-	16	19	pF
V_{CL}	clamping voltage		[1][2]				
	PESD3V3L5UF PESD3V3L5UV PESD3V3L5UY	I_{PP} = 1 A		-	-	10	V
	PESD3V3L5UF PESD3V3L5UV PESD3V3L5UY	I_{PP} = 2.5 A		-	-	12	V
	PESD5V0L5UF PESD5V0L5UV PESD5V0L5UY	I_{PP} = 1 A		-	-	10	V
	PESD5V0L5UF PESD5V0L5UV PESD5V0L5UY	I_{PP} = 2.5 A		-	-	12	V
r_{dif}	differential resistance	I_R = 1 mA					
	PESD3V3L5UF PESD3V3L5UV PESD3V3L5UY			-	-	200	Ω
	PESD5V0L5UF PESD5V0L5UV PESD5V0L5UY			-	-	100	Ω

[1] Non-repetitive current pulse 8/20 µs exponential decay waveform according to IEC 61000-4-5.

[2] Measured from pin 1, 3, 4, 5 or 6 to pin 2.

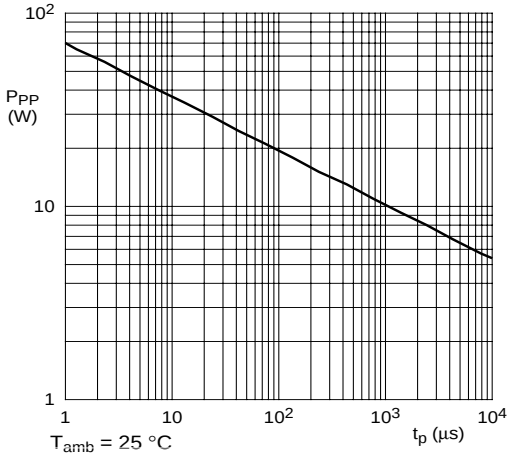


Fig 3. Peak pulse power as a function of exponential pulse duration; typical values

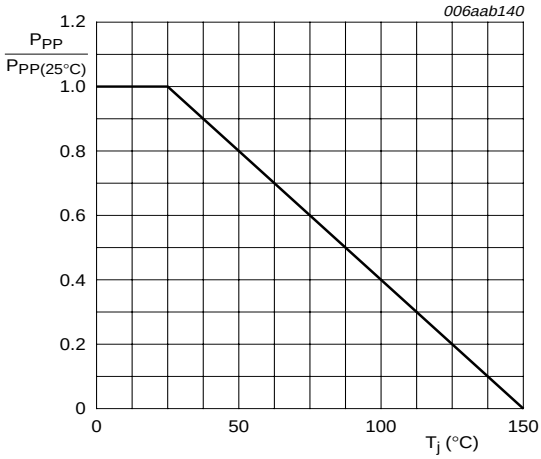
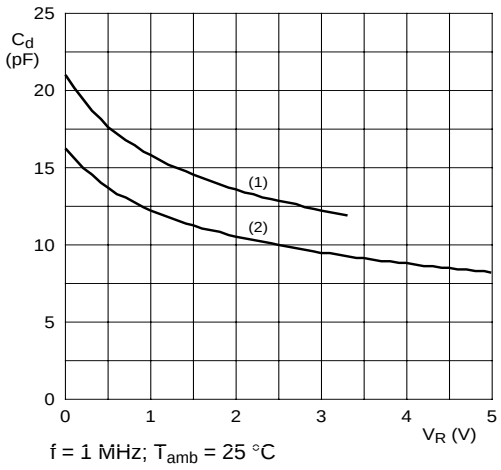


Fig 4. Relative variation of peak pulse power as a function of junction temperature; typical values



(1) PESD3V3L5UF; PESD3V3L5UV; PESD3V3L5UY

(2) PESD5V0L5UF; PESD5V0L5UV; PESD5V0L5UY

Fig 5. Diode capacitance as a function of reverse voltage; typical values

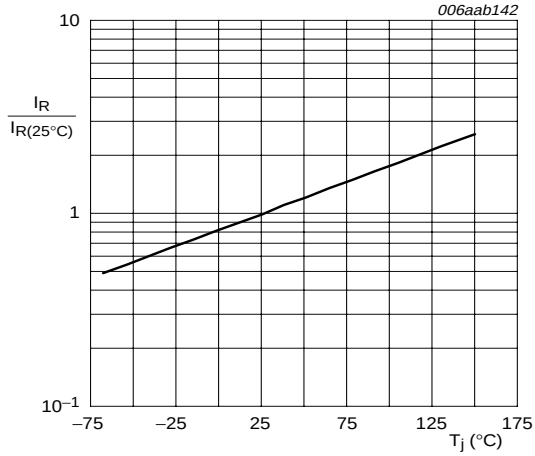


Fig 6. Relative variation of reverse current as a function of junction temperature; typical values

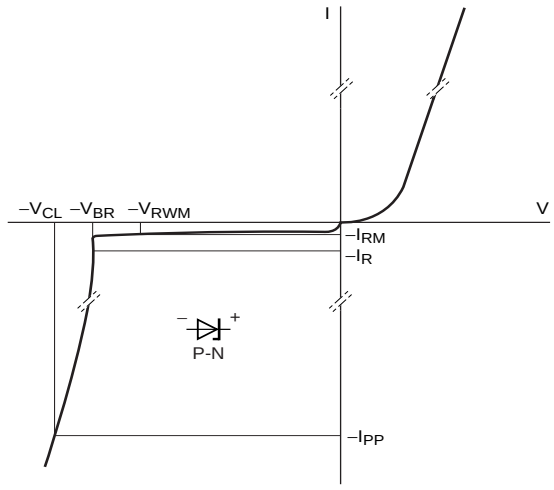
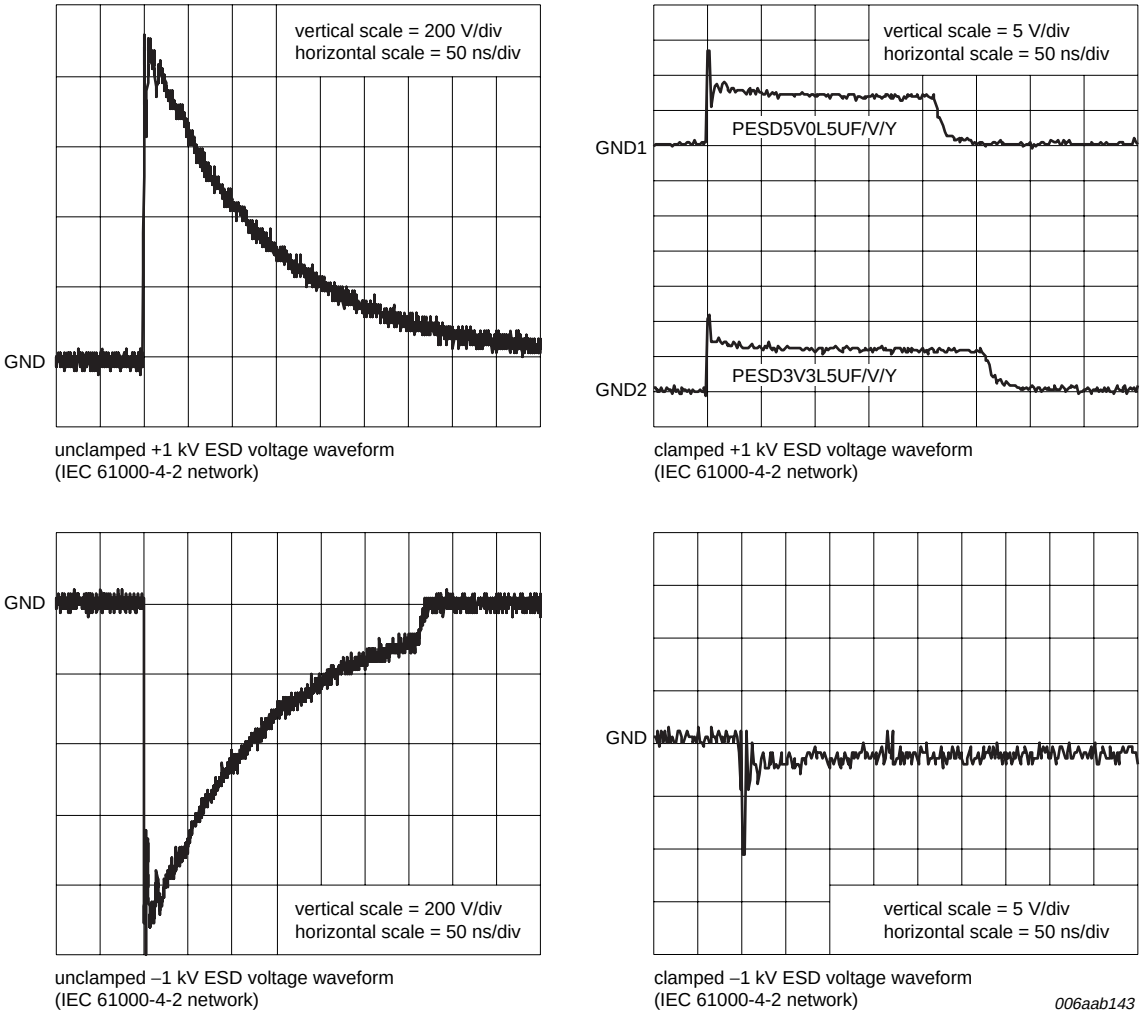


Fig 7. V-I characteristics for a unidirectional ESD protection diode



unclamped +1 kV ESD voltage waveform (IEC 61000-4-2 network)

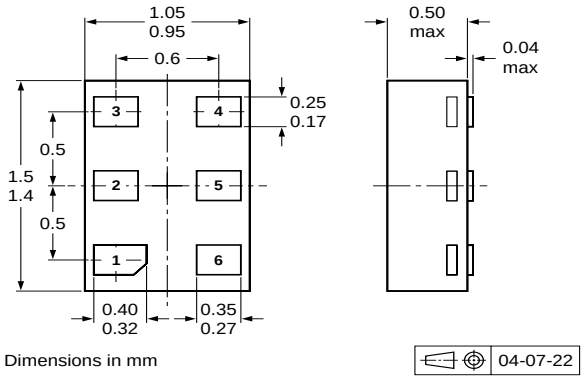
clamped +1 kV ESD voltage waveform (IEC 61000-4-2 network)

unclamped –1 kV ESD voltage waveform (IEC 61000-4-2 network)

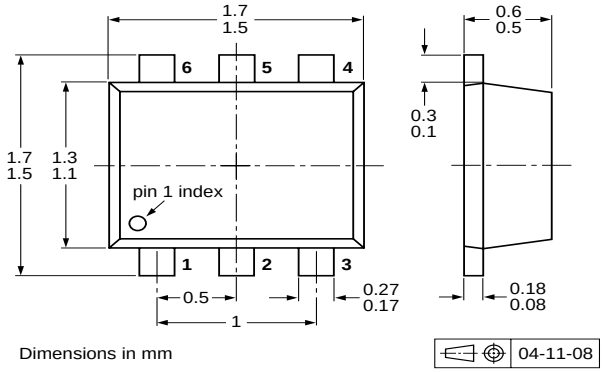
clamped –1 kV ESD voltage waveform (IEC 61000-4-2 network)

Fig 8. ESD clamping test setup and waveforms

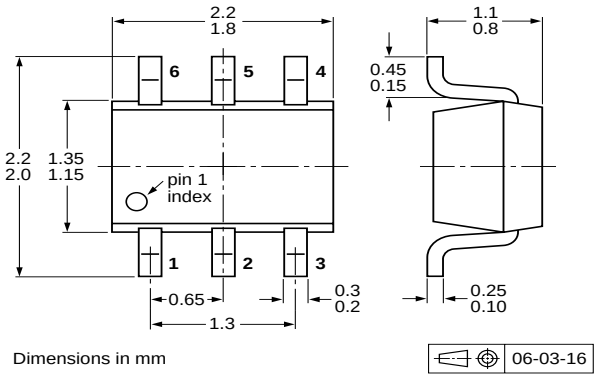
SOT-886/SOT-666/SOT-363 PACKAGE OUTLINE DIMENSIONS



PESDxL5UF (SOT886)

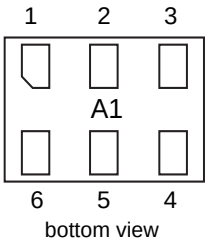


PESDxL5UV (SOT666)

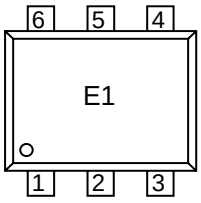


PESDxL5UY (SOT363/SC-88)

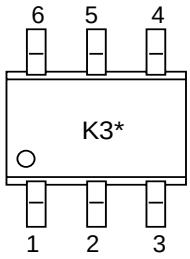
Marking



SOT-886



SOT-666



SOT-363

1.*代表周期

Ordering information

Order code	Marking code	Package	Baseqty	Deliverymode
PESD3V3L5UF	A1	SOT-886	5000	Tape and reel
PESD5V0L5UF	A2	SOT-886	5000	Tape and reel
PESD3V3L5UV	E1	SOT-666	4000	Tape and reel
PESD5V0L5UV	E2	SOT-666	4000	Tape and reel
PESD3V3L5UY	K3*	SOT-363	3000	Tape and reel
PESD5V0L5UY	K4*	SOT-363	3000	Tape and reel