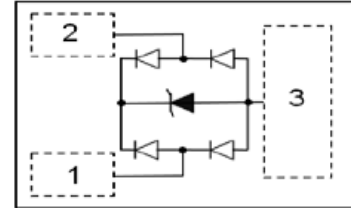


FEATURES

- Uni-directional ESD protection of two lines or bi-directional ESD protection of one line
- Reverse standoff voltage 3.3 and 5 V
- Low diode capacitance
- Ultra low leakage current
- Leadless ultra small SOT883 surface mount package (1 × 0.6 × 0.5 mm)
- Board space 1.17 mm² (approx. 10% of SOT23)
- ESD protection >15 kV
- IEC 61000-4-2; level 4 (ESD); 15 kV (air) or 8 kV (contact).



APPLICATIONS

- Cellular handsets and accessories
- Portable electronics
- Computers and peripherals
- Communication systems
- Audio and video equipment.

DESCRIPTION

Low capacitance ESD protection diode in a three pad SOT883 leadless ultra small plastic package designed to protect up to two transmission or data lines from ElectroStatic Discharge (ESD) damage.

LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
Per diode					
I_{pp}	peak pulse current PESD3V3L2UM PESD5V0L2UM	8/20 μ s pulse; notes 1, 2 and 3	–	3 2.5	A A
P_{pp}	peak pulse power	8/20 μ s pulse; notes 1, 2 and 3	–	30	W
I_{FSM}	non-repetitive peak forward current	$t_p = 1$ ms; square pulse	–	3.5	A
I_{ZSM}	non-repetitive peak reverse current PESD3V3L2UM PESD5V0L2UM	$t_p = 1$ ms; square pulse	–	0.9 0.8	A A
P_{tot}	total power dissipation	$T_{amb} = 25$ °C; note 4	–	250	mW
P_{ZSM}	non-repetitive peak reverse power dissipation	$t_p = 1$ ms; square pulse; see Fig.4	–	6	W
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C
ESD	electrostatic discharge	IEC 61000-4-2 (contact discharge)	15	–	kV
		HBM MIL-Std 883	10	–	kV

1. Non-repetitive current pulse 8/20 μ s exponential decay waveform; see Fig.5.
2. Pins 1 and 3 or 2 and 3.
3. Pins 1 and 2.
4. Device mounted on standard printed-circuit board.

ESD standards compliance

IEC 61000-4-2, level 4 (ESD)	>15 kV (air); >8 kV (contact)
HBM MIL-Std 883, class 3	>4 kV

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R _{th j-a}	thermal resistance from junction to ambient	all diodes loaded; note 1	500	K/W
		one diode loaded; note 2	290	K/W

1. Refer to SOT883 standard mounting conditions (footprint), FR4 with 60 μm copper strip line.
2. FR4 single-sided copper 1 cm².

T_j = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT				
Per diode										
V _F	forward voltage	I _F = 200 mA	–	1	1.2	V				
V _{RWM}	reverse stand-off voltage		–	–	3.3	V				
					PESD3V3L2UM	5	V			
I _{RM}	reverse leakage current	V _R = 3.3 V	–	75	300	nA				
						PESD3V3L2UM	V _R = 5 V	5	25	nA
V _{(CL)R}	clamping voltage	8/20 μs pulse	–	–	8	V				
						PESD3V3L2UM	I _{pp} = 1 A; notes 1 and 2	12	V	
						I _{pp} = 3 A; notes 1 and 2	9	V		
						I _{pp} = 1 A; notes 1 and 3	13	V		
						I _{pp} = 3 A; notes 1 and 3	10	V		
						PESD5V0L2UM	I _{pp} = 1 A; notes 1 and 2	13	V	
						I _{pp} = 2.5 A; notes 1 and 2	11	V		
						I _{pp} = 1 A; notes 1 and 3	15	V		
V _{BR}	breakdown voltage	I _Z = 1 mA	5.32	5.6	5.88	V				
						PESD3V3L2UM	6.46	6.8	7.14	V
S _Z	temperature coefficient	I _Z = 1 mA	–	1.3	–	mV/K				
						PESD3V3L2UM	2.9	–	mV/K	
r _{diff}	differential resistance	I _R = 1 mA	–	–	200	Ω				
					PESD3V3L2UM	100	Ω			
C _d	diode capacitance	f = 1 MHz; V _R = 0	–	22	28	pF				
						PESD3V3L2UM	f = 1 MHz; V _R = 5	12	17	pF
						PESD5V0L2UM	f = 1 MHz; V _R = 0	16	19	pF
							f = 1 MHz; V _R = 5	8	11	pF

1. Non-repetitive current pulse 8/20 μs exponential decay waveform; see Fig.5.
2. Pins 1 and 3 or 2 and 3.
3. Pins 1 and 2.

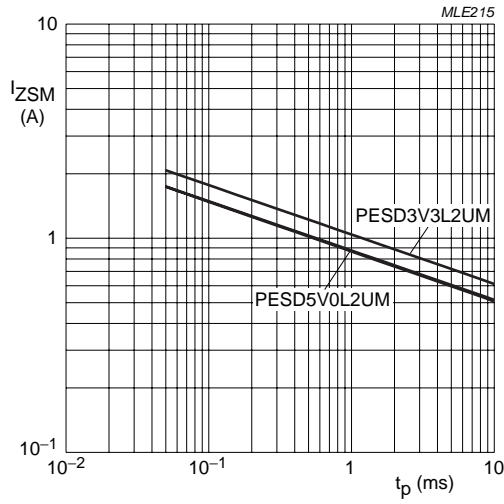
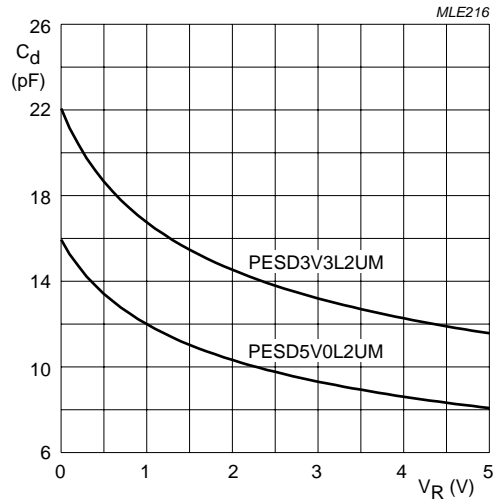
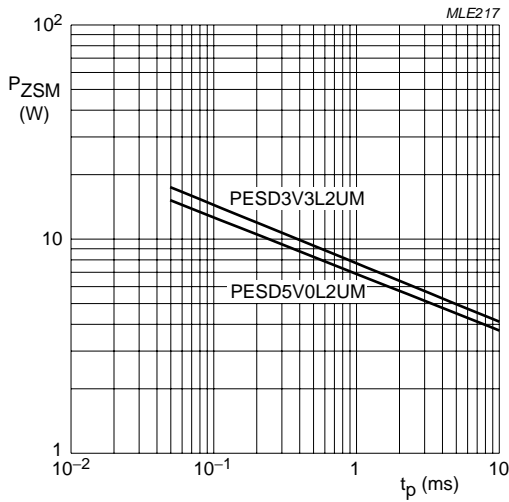


Fig.2 Non-repetitive peak reverse current as a function of pulse time (square pulse).



$T_j = 25\text{ }^\circ\text{C}$; $f = 1\text{ MHz}$.

Fig.3 Diode capacitance as a function of reverse voltage; typical values.



$P_{ZSM} = V_{ZSM} \times I_{ZSM}$.
 V_{ZSM} is the non-repetitive peak reverse voltage at I_{ZSM} .

Fig.4 Maximum non-repetitive peak reverse power dissipation as a function of pulse duration (square pulse).

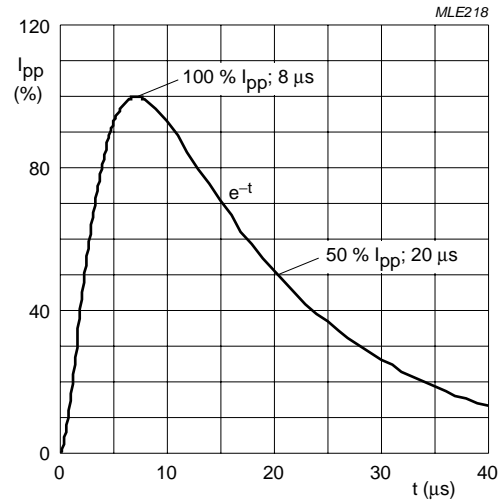
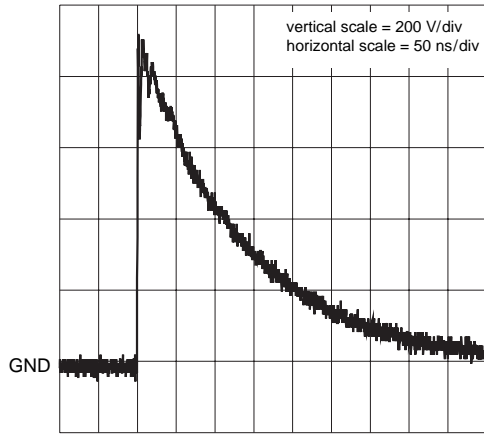
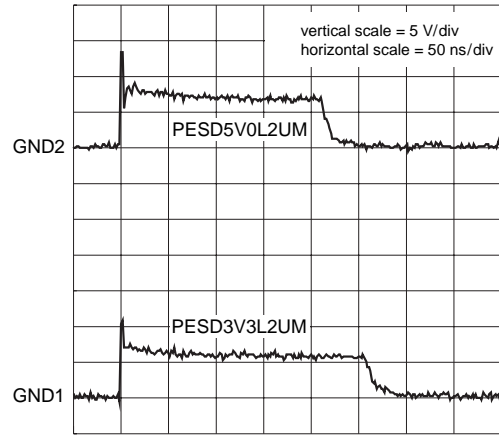


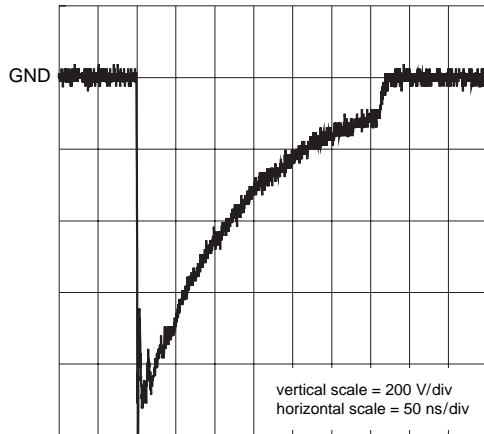
Fig.5 8/20 μs pulse waveform according to IEC 61000-4-5.



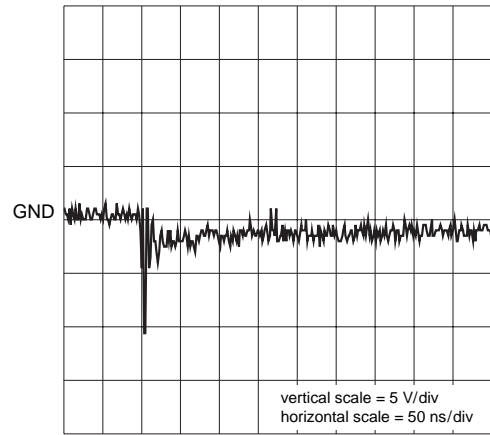
unclamped +1 kV ESD voltage waveform
(IEC 61000-4-2 network)



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



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

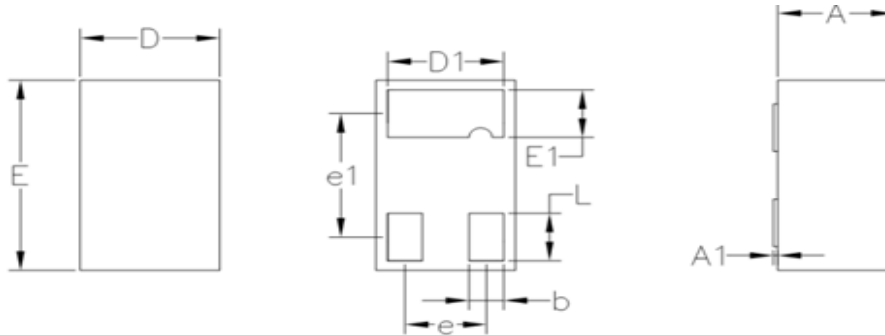


clamped -1 kV ESD voltage waveform
(IEC 61000-4-2 network)

MLE219

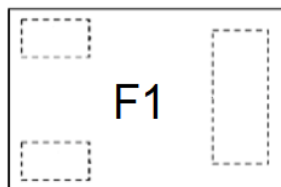
Fig.6 ESD clamping test set-up and waveforms.

SOT-883 PACKAGE OUTLINE DIMENSIONS



SYMBOL	DIMENSIONS IN MM		
	MIN	NOM	MAX
A	0.45	0.50	0.55
A1	0.00	—	0.05
D	0.55	0.60	0.65
E	0.95	1.00	1.05
D1	0.45	0.50	0.55
E1	0.20	0.25	0.30
L	0.20	0.25	0.30
b	0.10	0.15	0.20
e	0.35BSC		
e1	0.65BSC		

Marking



Ordering information

Order code	Marking code	Package	Baseqty	Deliverymode
UMW PESD3V3L2UM	F2	SOT-883	10000	Tape and reel
UMW PESD5V0L2UM	F1	SOT-883	10000	Tape and reel

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