UMW PESDxxxL2UM

1.Description

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

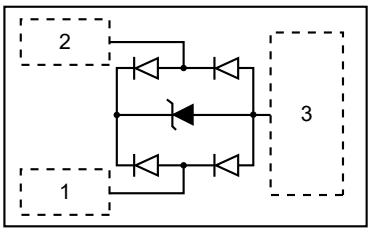
2.Applications

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

3.Features

- Uni-directional ESD protection of two lines or bi-directional ESD protection of one line
- Reverse standoff voltage 3.3 and5 V
- Low diode capacitance
- Ultra low leakage current
- ESD protection >15 kV
- Leadless ultra small SOT883 surface mount package (1 × 0.6 × 0.5 mm)
- Board space 1.17 mm2 (approx. 10% of SOT23)
- IEC 61000-4-2; level 4 (ESD); 15 kV (air) or 8 kV (contact).

4.Pinning information



SOT-883

5.Limiting values

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

Parameter	Symbol	Conditions	Min	Max	Units
peak pulse current	I_{PP}	8/20 μs pulse; notes 1, 2 and 3			
PESD3V3L2UM				3	A
PESD5V0L2UM				2.5	A
peak pulse power	P_{PP}	8/20 μs pulse; notes 1, 2 and 3		30	W
non-repetitive peak forward current	I_{FSM}	t_p=1ms; square pulse		3.5	A
non-repetitive peak reverse current	I_{ZSM}	t_p=1ms; square pulse			
PESD3V3L2UM				0.9	A
PESD5V0L2UM				0.8	A
total power dissipation	P_{tot}	T_{amb}=25°C; note 4		250	mW
non-repetitive peak reverse power dissipation	P_{ZSM}	t_p=1ms; square pulse; see Fig.4		6	W
storage temperature	T_{STG}		-65	150	°C
junction temperature	T_J			150	°C
electrostatic discharge	ESD	IEC 61000-4-2 (contact discharge)	15		kV
		HBM MIL-Std 883	10		kV

Notes:

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.
4. Device mounted on standard printed-circuit board.

6.ESD standards compliance

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

7.Thermal Characteristics

Parameter	Symbol	Conditions	Value	Units
thermal resistance from junction to ambient	$R_{th\ j\text{-}a}$	all diodes loaded; note 1	500	K/W
		one diode loaded; note 2	290	K/W

Notes:

1. Refer to SOT883 standard mounting conditions (footprint), FR4 with 60 μm copper strip line.

2. FR4 single-sided copper 1 cm^2.

8.1Electrical Characteristic (T_J=25 °C unless otherwise specified)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
forward voltage	V_F	I_F=200mA		1	1.2	V
reverse stand-off voltage						
PESD3V3L2UM	V_{RWM}				3.3	V
PESD5V0L2UM					5	V
reverse leakage current						
PESD3V3L2UM	I_{RM}	V_R=3.3V		75	300	nA
PESD5V0L2UM		V_R=5V		5	25	nA
		8/20μs pulse				
		I_{PP}=1A; notes 1 and 2			8	V
		I_{PP}=3A; notes 1 and 2			12	V
clamping voltage		I_{PP}=1A; notes 1 and 3			9	V
PESD3V3L2UM	$V_{(CL)R}$	I_{PP}=3A; notes 1 and 3			13	V
PESD5V0L2UM		I_{PP}=1A; notes 1 and 2			10	V
		I_{PP}=2.5A; notes 1 and 2			13	V
		I_{PP}=1A; notes 1 and 3			11	V
		I_{PP}=2.5A; notes 1 and 3			15	V
breakdown voltage		I_Z=1mA				
PESD3V3L2UM	V_{BR}		5.32	5.6	5.88	V
PESD5V0L2UM			6.46	6.8	7.14	V
temperature coefficient		I_Z=1mA				
PESD3V3L2UM	S_Z			1.3		mV/K
PESD5V0L2UM				2.9		mV/K

8.2Electrical Characteristic (T_J=25 °C unless otherwise specified)

differential resistance		I_R=1mA				
PESD3V3L2UM	r_{diff}				200	Ω
PESD5V0L2UM					100	Ω
diode capacitance						
PESD3V3L2UM	C_d	f=1MHz; V_R=0		22	28	pF
		f=1MHz; V_R=5		12	17	pF
PESD5V0L2UM		f=1MHz; V_R=0		16	19	pF
		f=1MHz; V_R=5		8	11	pF

Notes:

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.

9.1Typical characteristic

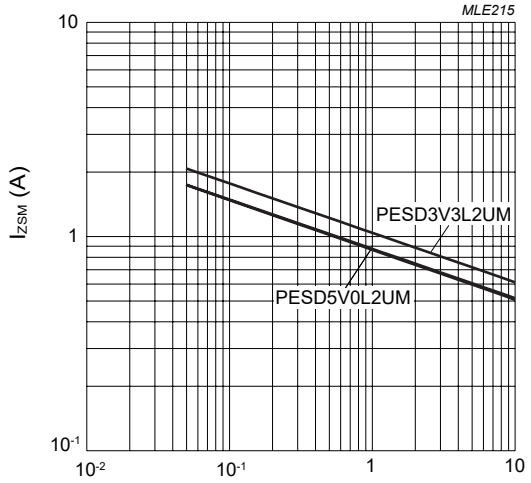


Fig 1. Non-repetitive peak reverse current as a function of pulse time (square pulse).

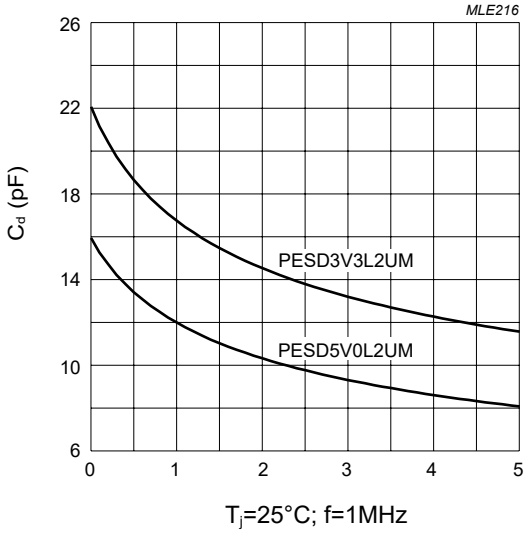


Fig 2. Diode capacitance as a function of reverse voltage; typical values.

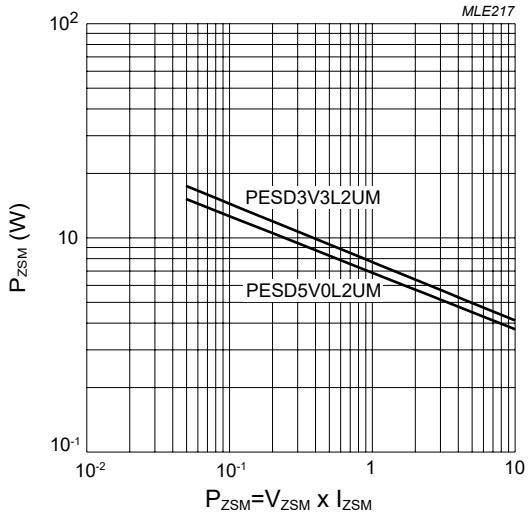


Fig 3. Maximum non-repetitive peak reverse power dissipation as a function of pulse duration (square pulse)

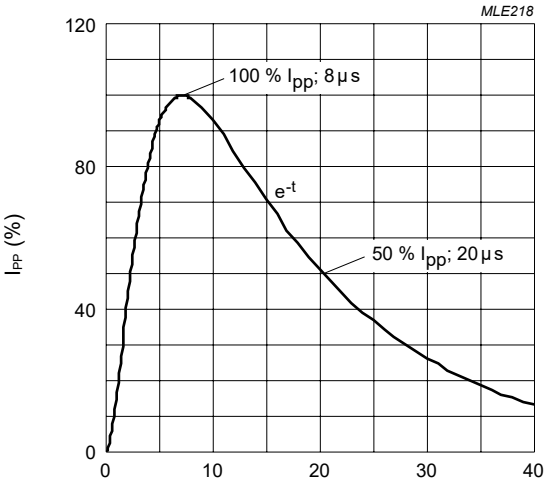


Fig 4. 8/20 µs pulse waveform according to IEC 61000-4-5.

9.2Typical characteristic

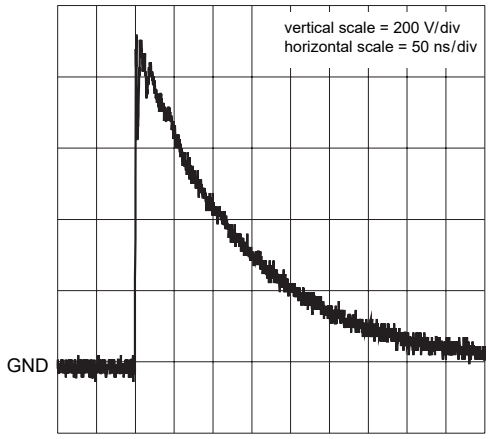


Fig 5. unclamped +1 kV ESD voltage waveform (IEC 61000-4-2 network)

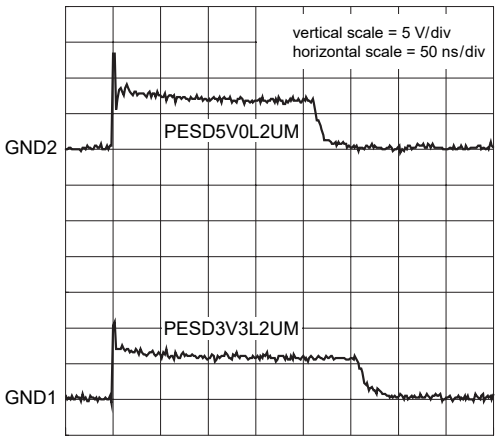


Fig 6. clamped +1 kV ESD voltage waveform (IEC 61000-4-2 network)

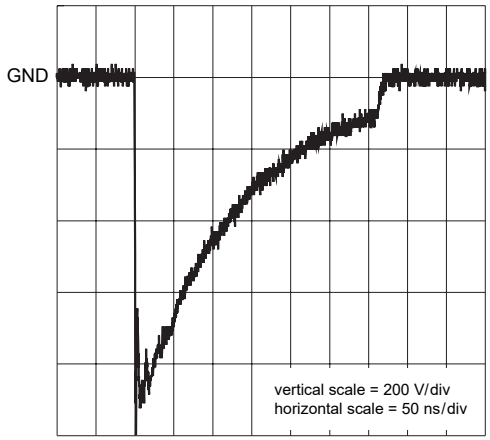


Fig 7. unclamped −1 kV ESD voltage waveform (IEC 61000-4-2 network)

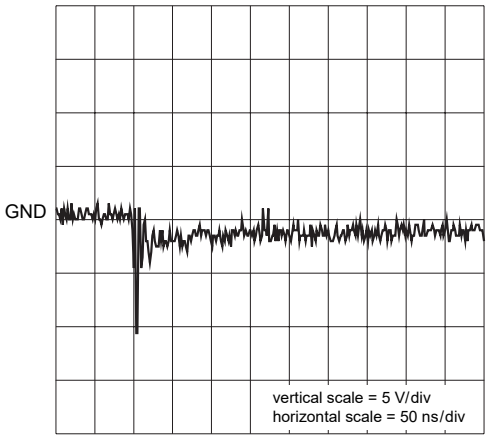
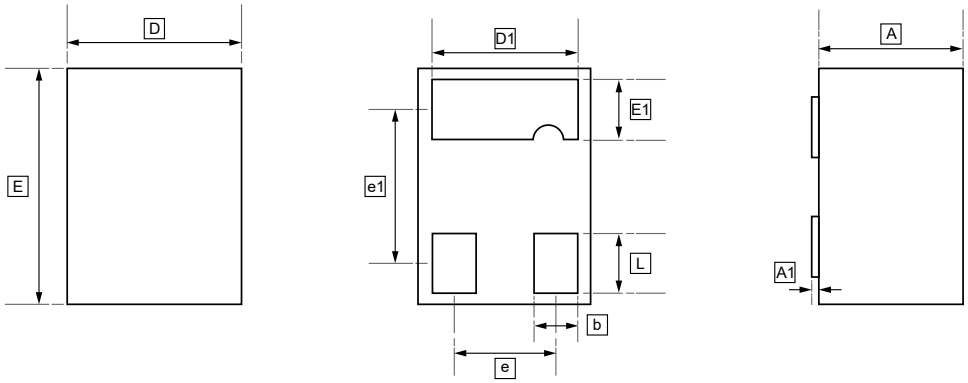


Fig 8. clamped −1 kV ESD voltage waveform (IEC 61000-4-2 network)

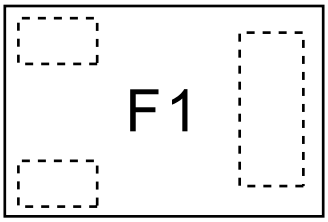
10.SOT-883 Package Outline Dimensions



DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	D	E	D1	E1	L	b	e	e1
Min	0.45	0.00	0.55	0.95	0.45	0.20	0.20	0.10	0.35	0.65
Max	0.55	0.05	0.65	1.05	0.55	0.30	0.30	0.20	BSC	BSC

11.Ordering information



Order Code	Marking	Package	Base QTY	Delivery Mode
UMW PESD3V3L2UM	F2	SOT-883	10000	Tape and reel
UMW PESD5V0L2UM	F1	SOT-883	10000	Tape and reel

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