

1. 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.

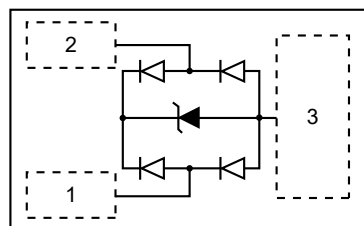
3. Features

- 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
- ESD protection >15 kV

2. Applications

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

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 μ s pulse; notes 1, 2 and 3			
PESD3V3L2UM				3	A
PESD5V0L2UM				2.5	A
peak pulse power	P_{PP}	8/20 μ s pulse; notes 1, 2 and 3		30	W
non-repetitive peak forward current	I_{FSM}	$t_p=1$ ms; square pulse		3.5	A
non-repetitive peak reverse current	I_{ZSM}	$t_p=1$ ms; square pulse			
PESD3V3L2UM				0.9	A
PESD5V0L2UM				0.8	A
total power dissipation	P_{tot}	$T_{amb}=25^{\circ}\text{C}$; note 4		250	mW
non-repetitive peak reverse power dissipation	P_{ZSM}	$t_p=1$ ms; square pulse; see Fig.4		6	W
storage temperature	T_{STG}		-65	150	$^{\circ}\text{C}$
junction temperature	T_J			150	$^{\circ}\text{C}$
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 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.



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	$R_{th\ j-a}$	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 μ m copper strip line.
2. FR4 single-sided copper 1 cm².



8.1 Electrical Characteristic ($T_J=25\text{ }^{\circ}\text{C}$ unless otherwise specified)

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



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

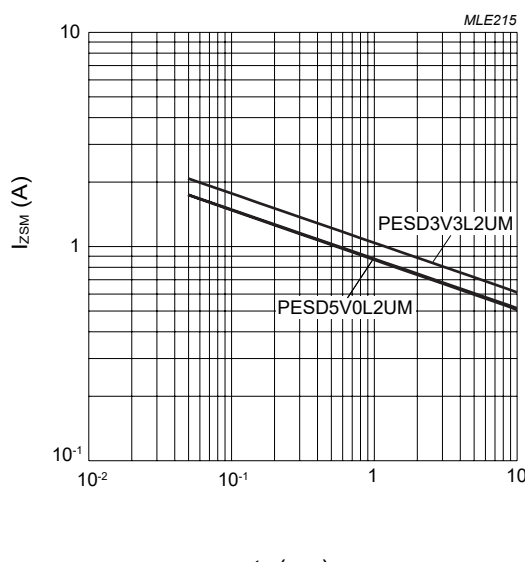
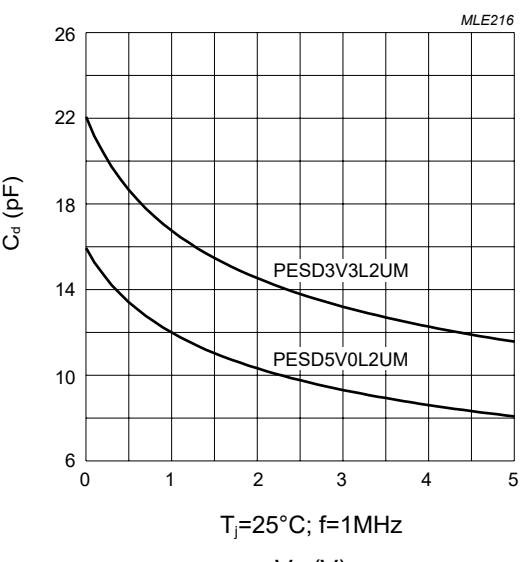
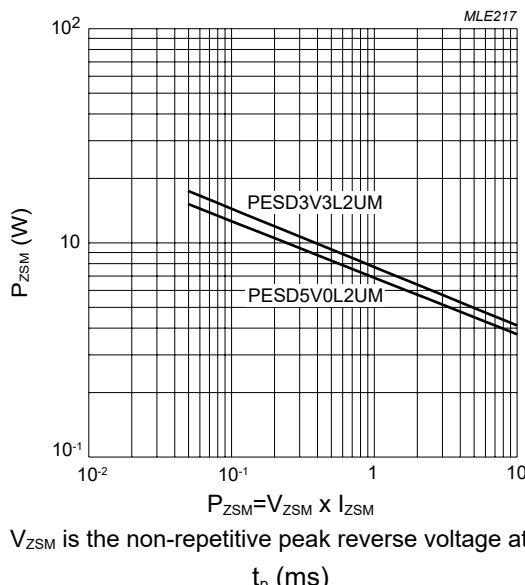
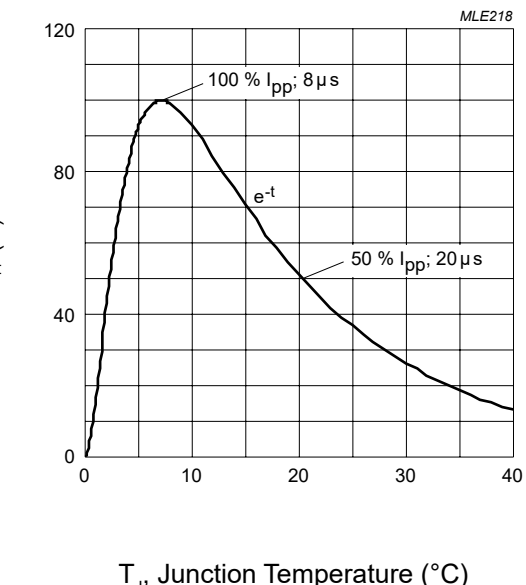
differential resistance	r _{diff}	I _R =1mA				
PESD3V3L2UM				200	Ω	
PESD5V0L2UM				100	Ω	
diode capacitance	C _d					
PESD3V3L2UM		f=1MHz; V _R =0		22	28	pF
		f=1MHz; V _R =5		12	17	pF
PESD5V0L2UM		f=1MHz; V _R =0		16	19	pF
		f=1MHz; V _R =5		8	11	pF

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.



9.2 Typical characteristic

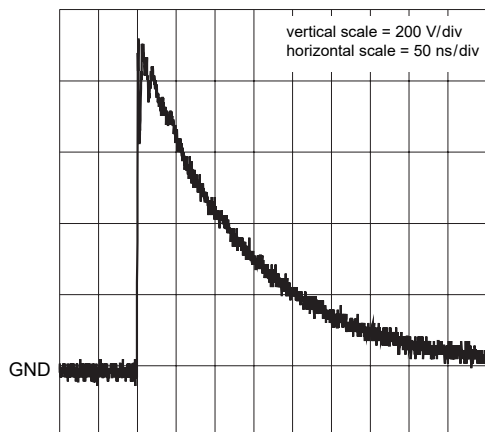


Fig 5. unclamped +1 kV ESD voltage waveform
(IEC 61000-4-2 network)

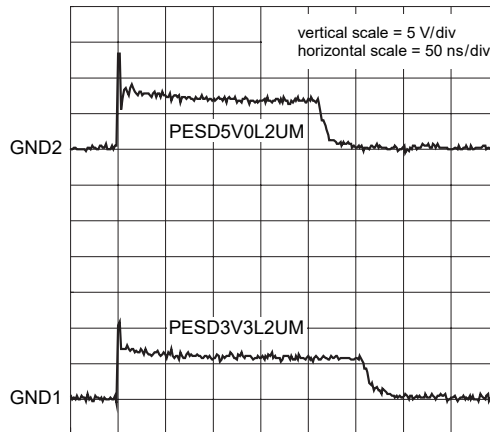


Fig 6. clamped +1 kV ESD voltage waveform
(IEC 61000-4-2 network)

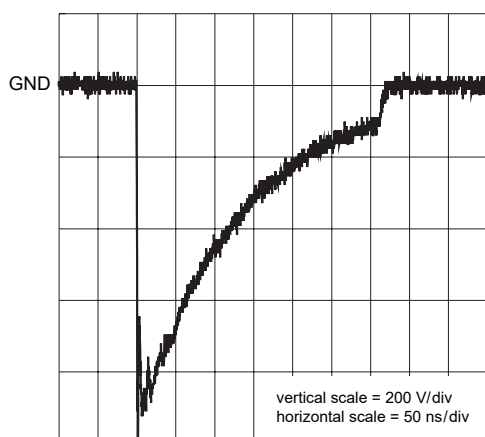


Fig 7. unclamped -1 kV ESD voltage waveform
(IEC 61000-4-2 network)

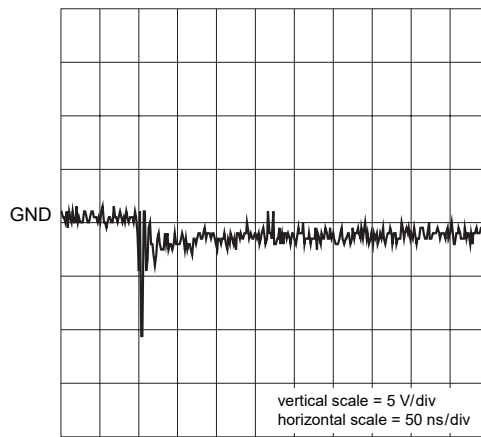
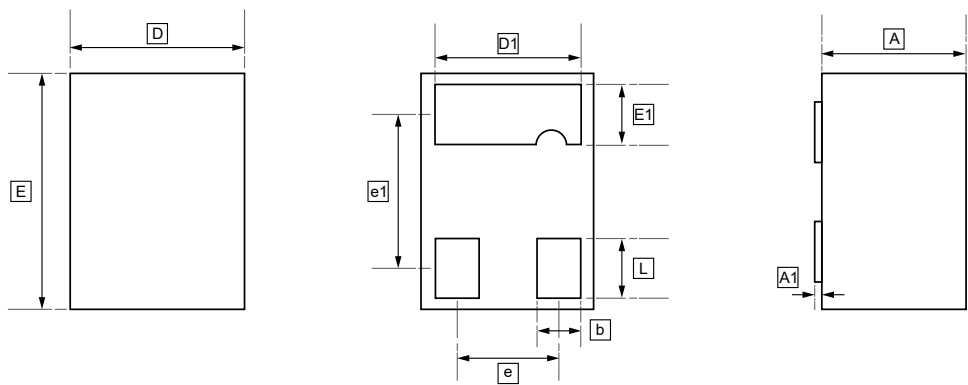


Fig 8. clamped -1 kV ESD voltage waveform
(IEC 61000-4-2 network)



10.SOT-883 Package Outline Dimensions

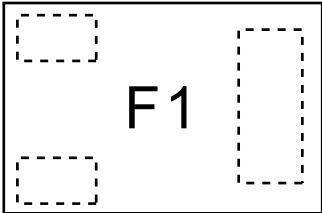


DIMENSIONS (mm are the original dimensions)

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



12.Disclaimer

UMW reserves the right to make changes to all products, specifications. Customers should obtain the latest version of product documentation and verify the completeness and currency of the information before placing an order.

When applying our products, please do not exceed the maximum rated values, as this may affect the reliability of the entire system. Under certain conditions, any semiconductor product may experience faults or failures. Buyers are responsible for adhering to safety standards and implementing safety measures during system design, prototyping, and manufacturing when using our products to prevent potential failure risks that could lead to personal injury or property damage.

Unless explicitly stated in writing, UMW products are not intended for use in medical, life-saving, or life-sustaining applications, nor for any other applications where product failure could result in personal injury or death. If customers use or sell the product for such applications without explicit authorization, they assume all associated risks.

When reselling, applying, or exporting, please comply with export control laws and regulations of China, the United States, the United Kingdom, the European Union, and other relevant countries, regions, and international organizations.

This document and any actions by UMW do not grant any intellectual property rights, whether express or implied, by estoppel or otherwise. The product names and marks mentioned herein may be trademarks of their respective owners.