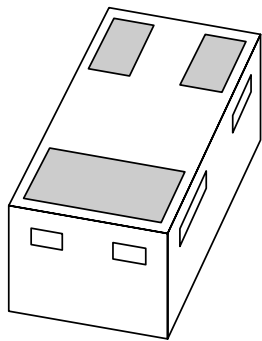


# DATA SHEET



## **PESDxL2UM series** Low capacitance double ESD protection diode

Product specification  
Supersedes data of 2003 Aug 05

2005 May 23

# Low capacitance double ESD protection diode

# PESDxL2UM series

### 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 mm<sup>2</sup> (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.

### MARKING

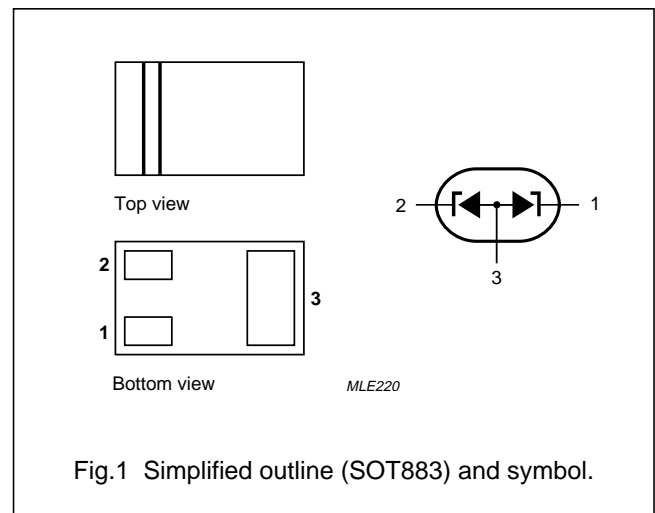
TYPE NUMBER	MARKING CODE
PESD3V3L2UM	F2
PESD5V0L2UM	F1

### 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.

### PINNING

PIN	DESCRIPTION
1	cathode 1
2	cathode 2
3	common anode



## Low capacitance double ESD protection diode

## PESDxL2UM series

**LIMITING VALUES**

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

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

**Notes**

1. Non-repetitive current pulse 8/20  $\mu$ 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 <sub>th j-a</sub>	thermal resistance from junction to ambient	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  $\mu$ m copper strip line.
2. FR4 single-sided copper 1 cm<sup>2</sup>.

## Low capacitance double ESD protection diode

## PESDxL2UM series

**ELECTRICAL CHARACTERISTICS**T<sub>j</sub> = 25 °C unless otherwise specified.

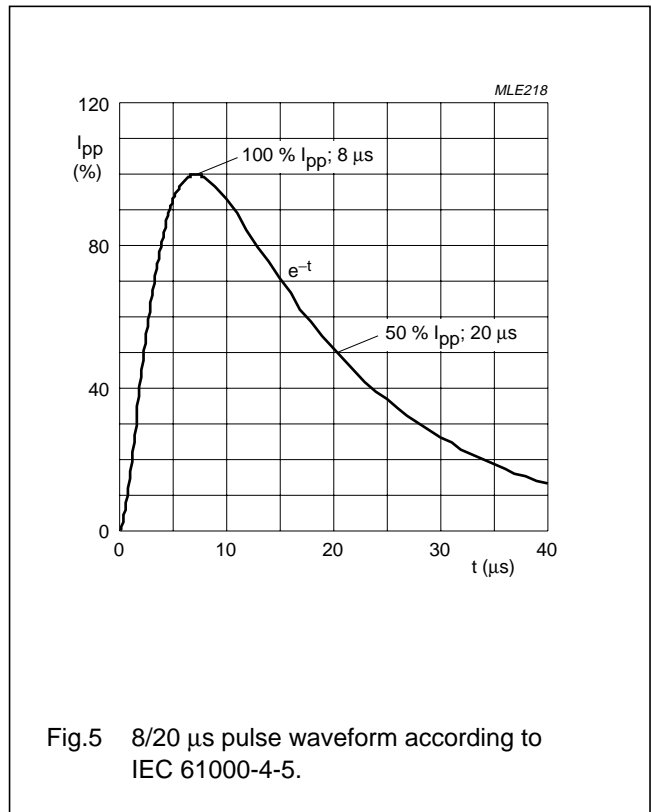
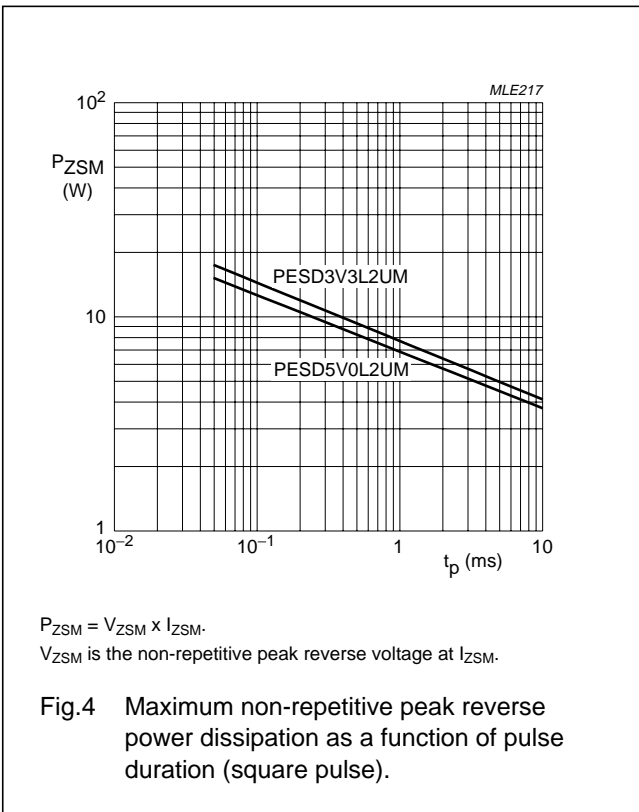
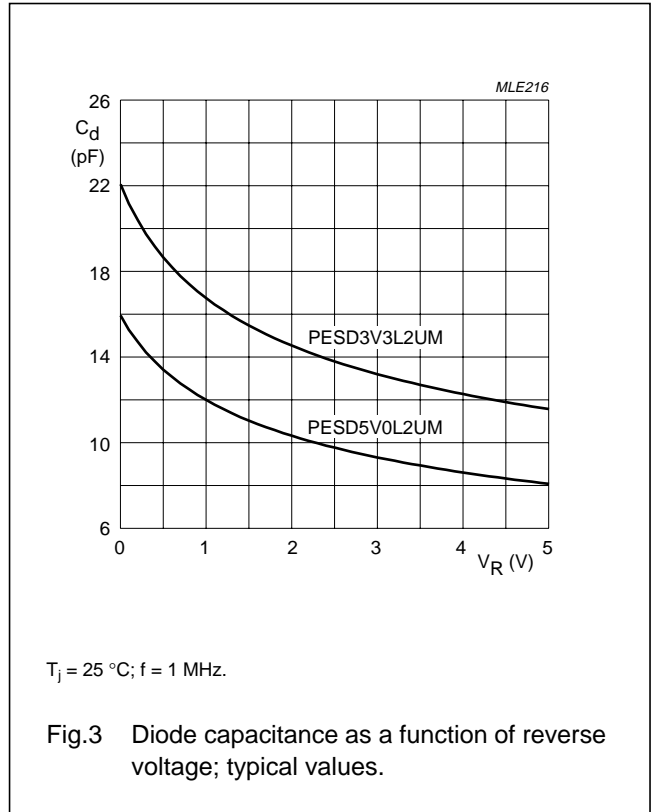
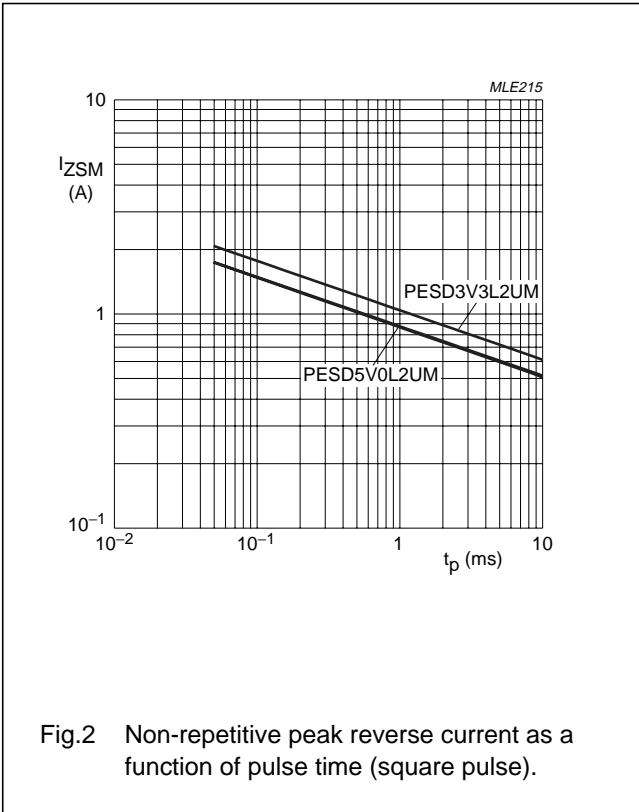
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
<b>Per diode</b>						
V <sub>F</sub>	forward voltage	I <sub>F</sub> = 200 mA	–	1	1.2	V
V <sub>RWM</sub>	reverse stand-off voltage					
	PESD3V3L2UM		–	–	3.3	V
	PESD5V0L2UM		–	–	5	V
I <sub>RM</sub>	reverse leakage current					
	PESD3V3L2UM	V <sub>R</sub>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

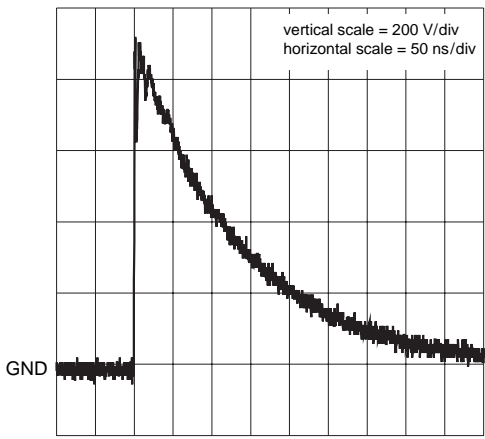
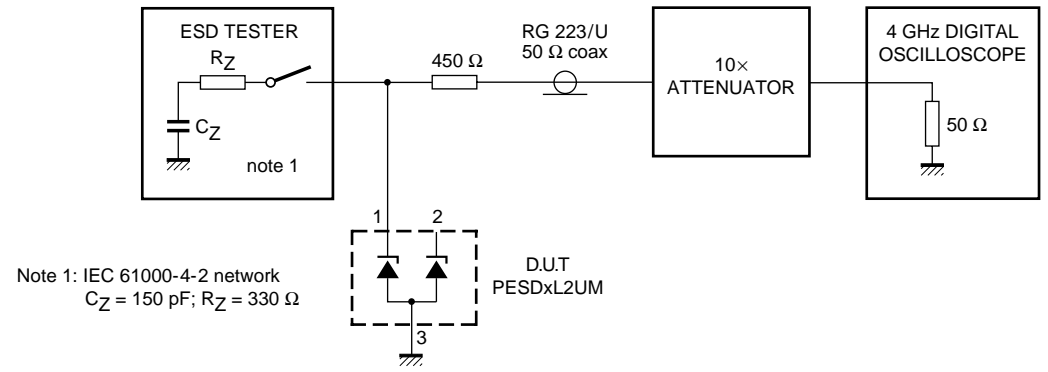
Low capacitance double ESD protection diode

PESDxL2UM series

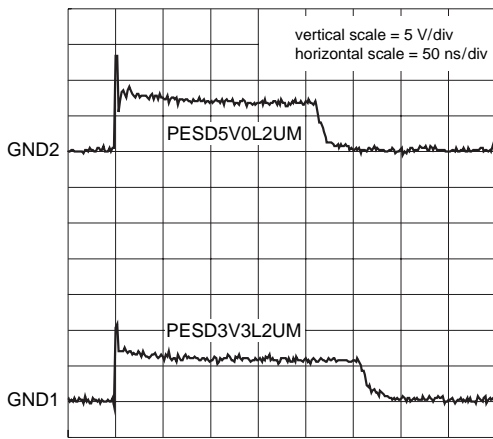


Low capacitance double ESD protection diode

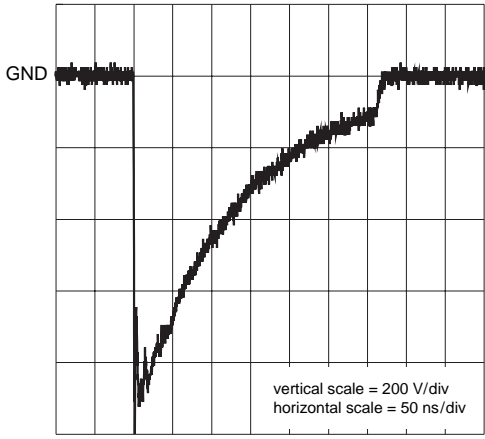
PESDxL2UM series



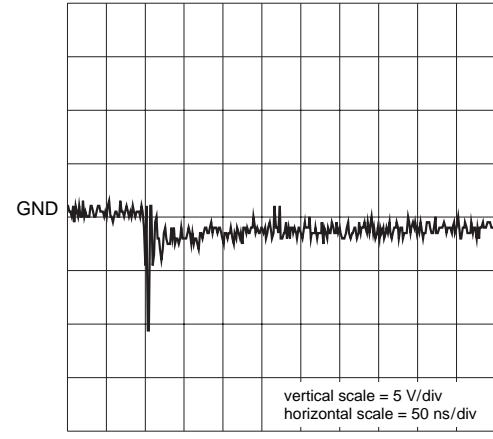
unclamped +1 kV ESD voltage waveform  
(IEC 61000-4-2 network)



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.

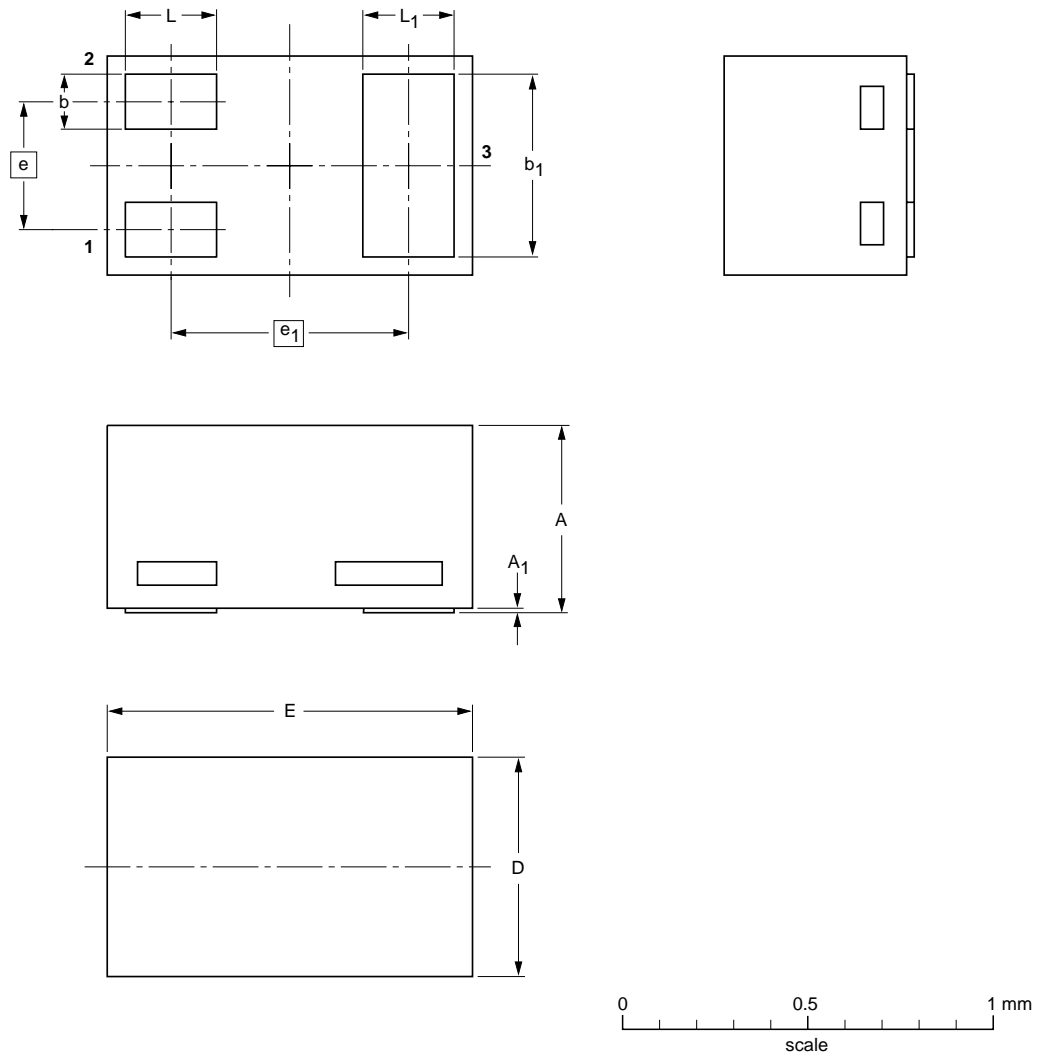
Low capacitance double ESD protection diode

PESDxL2UM series

PACKAGE OUTLINE

Leadless ultra small plastic package; 3 solder lands; body 1.0 x 0.6 x 0.5 mm

SOT883



DIMENSIONS (mm are the original dimensions)

UNIT	A <sup>(1)</sup>	A <sub>1</sub> max.	b	b <sub>1</sub>	D	E	e	e <sub>1</sub>	L	L <sub>1</sub>
mm	0.50 0.46	0.03	0.20 0.12	0.55 0.47	0.62 0.55	1.02 0.95	0.35	0.65	0.30 0.22	0.30 0.22

Note

1. Including plating thickness

OUTLINE VERSION	REFERENCES			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA		
SOT883			SC-101		03-02-05 03-04-03

## Low capacitance double ESD protection diode

## PESDxL2UM series

## DATA SHEET STATUS

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Printed in The Netherlands

R76/02/pp9

Date of release: 2005 May 23

Document order number: 9397 750 15162

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