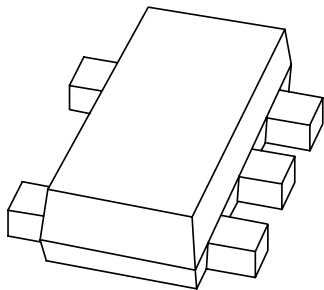


# DATA SHEET



## **PESDxL4UW series**

Low capacitance quadruple ESD  
protection array

Product specification  
Supersedes data of 2003 Aug 15

2004 Apr 06

# Low capacitance quadruple ESD protection array

## PESDxL4UW series

### FEATURES

- Uni-directional ESD protection of four lines or bi-directional ESD protection of 3 lines
- Reverse standoff voltage: 3.3 and 5 V
- Low diode capacitance
- Ultra low leakage current
- Ultra small SOT665 surface mount package
- ESD protection >20 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

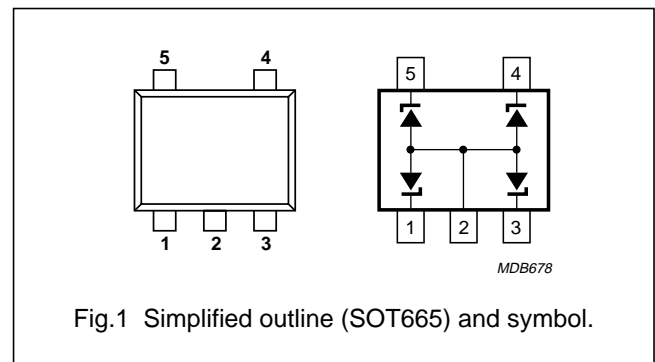
TYPE NUMBER	MARKING CODE
PESD3V3L4UW	A2
PESD5V0L4UW	A1

### DESCRIPTION

Low capacitance quadruple ESD protection array in a five pad SOT665 ultra small plastic package designed to protect up to four transmission or data lines from ElectroStatic Discharge (ESD) damage.

### PINNING

PIN	DESCRIPTION
1	cathode 1
2	common anode
3	cathode 2
4	cathode 3
5	cathode 4



### ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
PESD3V3L4UW	-	plastic surface mounted package; 5 leads	SOT665
PESD5V0L4UW			

## Low capacitance quadruple ESD protection array

## PESDxL4UW series

### LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$I_{pp}$	peak pulse current	8/20 $\mu$ s; notes 1 and 2	–	3	A
	PESD3V3L4UW				
	PESD5V0L4UW			2.5	A
$P_{pp}$	peak pulse power	8/20 $\mu$ s; notes 1 and 2	–	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	$t_p = 1$ ms; square pulse	–	0.9	A
	PESD3V3L4UW				
	PESD5V0L4UW			0.8	A
$P_{tot}$	total power dissipation	$T_{amb} = 25$ °C; note 3	–	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)	20	–	kV
		HBM MIL-Std 883	10	–	kV

### Notes

1. Non-repetitive current pulse 8/20  $\mu$ s exponentially decaying waveform see Fig.5.
2. Pins 1, 3, 4 or 5 to pin 2.
3. 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	370	K/W
$R_{th(j-sp)}$	thermal resistance from junction to solder point	one diode loaded; note 1	135	K/W
		all diodes loaded; note 1	125	K/W

### Notes

1. Solder point of common anode (pin 2).

# Low capacitance quadruple ESD protection array

## PESDxL4UW series

### ELECTRICAL CHARACTERISTICS

$T_j = 25\text{ °C}$  unless otherwise specified.

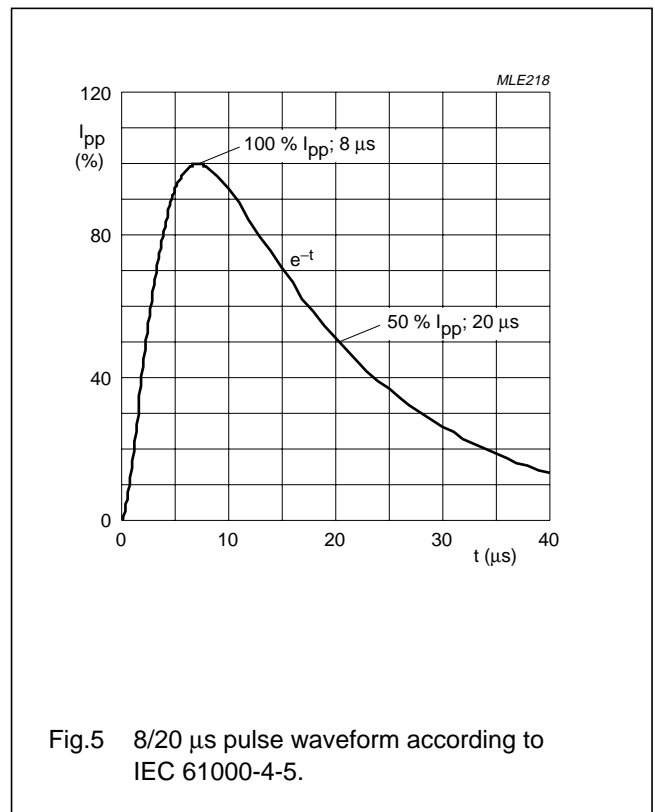
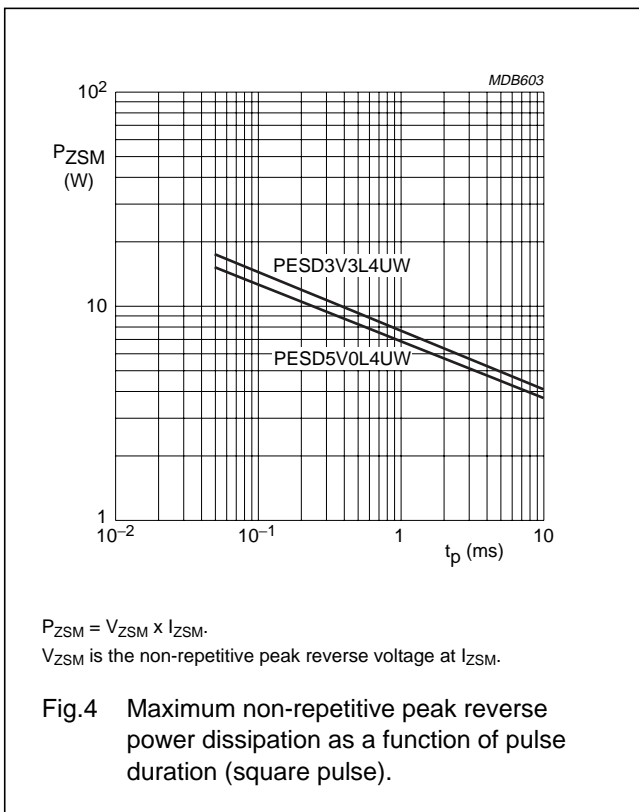
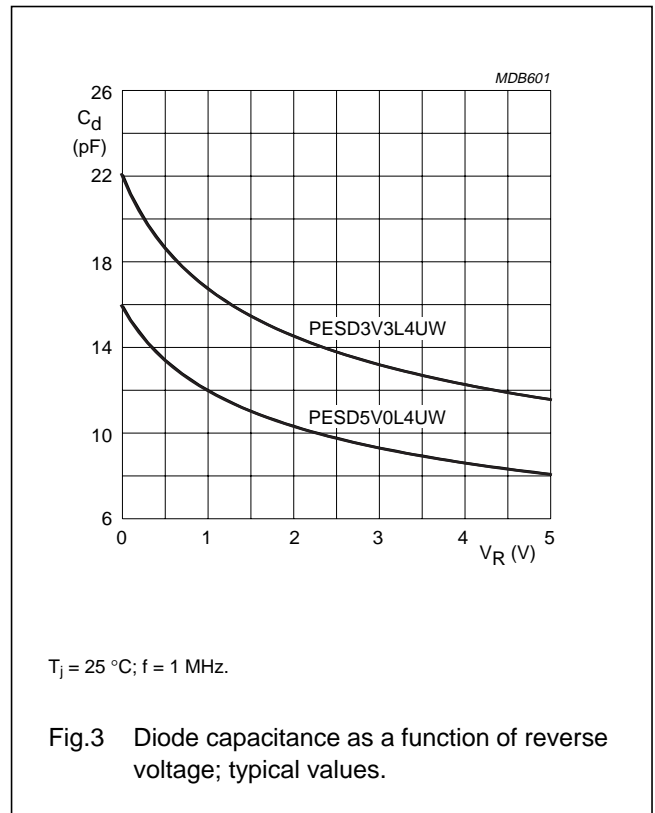
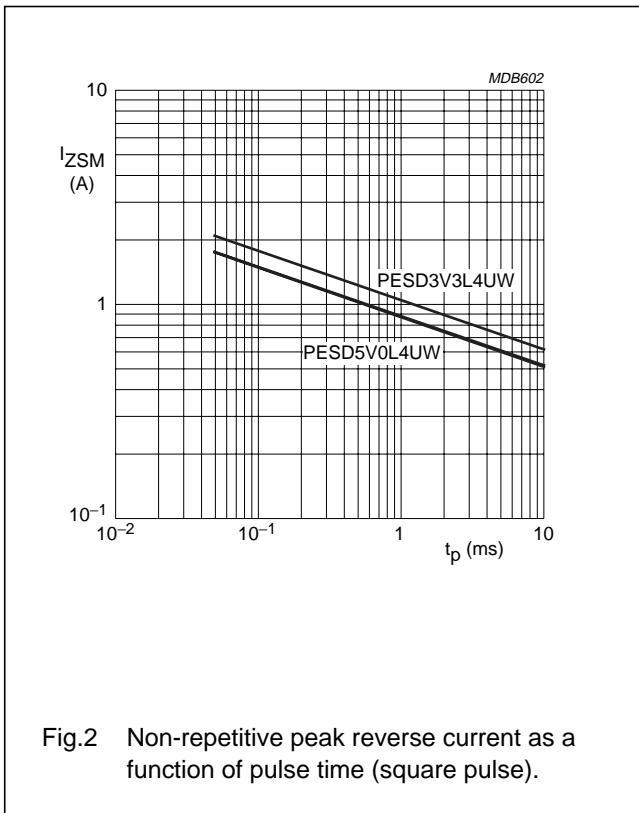
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
<b>Per diode</b>						
$V_F$	forward voltage	$I_F = 200\text{ mA}$	–	1	1.2	V
$V_{RWM}$	reverse stand-off voltage					
	PESD3V3L4UW		–	–	3.3	V
	PESD5V0L4UW		–	–	5	V
$I_{RM}$	reverse leakage current					
	PESD3V3L4UW	$V_{RWM} = 3.3\text{ V}$	–	75	300	nA
	PESD5V0L4UW	$V_{RWM} = 5\text{ V}$	–	5	25	nA
$V_{(CL)R}$	clamping voltage					
	PESD3V3L4UW	$I_{pp} = 1\text{ A}$ ; note 1	–	–	8	V
		$I_{pp} = 3\text{ A}$ ; note 1	–	–	12	V
	PESD5V0L4UW	$I_{pp} = 1\text{ A}$ ; note 1	–	–	10	V
		$I_{pp} = 2.5\text{ A}$ ; note 1	–	–	13	V
$V_{BR}$	breakdown voltage	$I_Z = 1\text{ mA}$				
	PESD3V3L4UW		5.32	5.6	5.88	V
	PESD5V0L4UW		6.46	6.8	7.14	V
$r_{diff}$	differential resistance	$I_R = 1\text{ mA}$				
	PESD3V3L4UW		–	–	200	$\Omega$
	PESD5V0L4UW		–	–	100	$\Omega$
$C_d$	diode capacitance					
	PESD3V3L4UW	$f = 1\text{ MHz}$ ; $V_R = 0\text{ V}$	–	22	28	pF
		$f = 1\text{ MHz}$ ; $V_R = 5\text{ V}$	–	12	17	pF
	PESD5V0L4UW	$f = 1\text{ MHz}$ ; $V_R = 0\text{ V}$	–	16	19	pF
		$f = 1\text{ MHz}$ ; $V_R = 5\text{ V}$	–	8	11	pF

### Notes

- Pins 1, 3, 4 or 5 to pin 2.

Low capacitance quadruple ESD protection array

PESDxL4UW series



Low capacitance quadruple ESD protection array

PESDxL4UW series

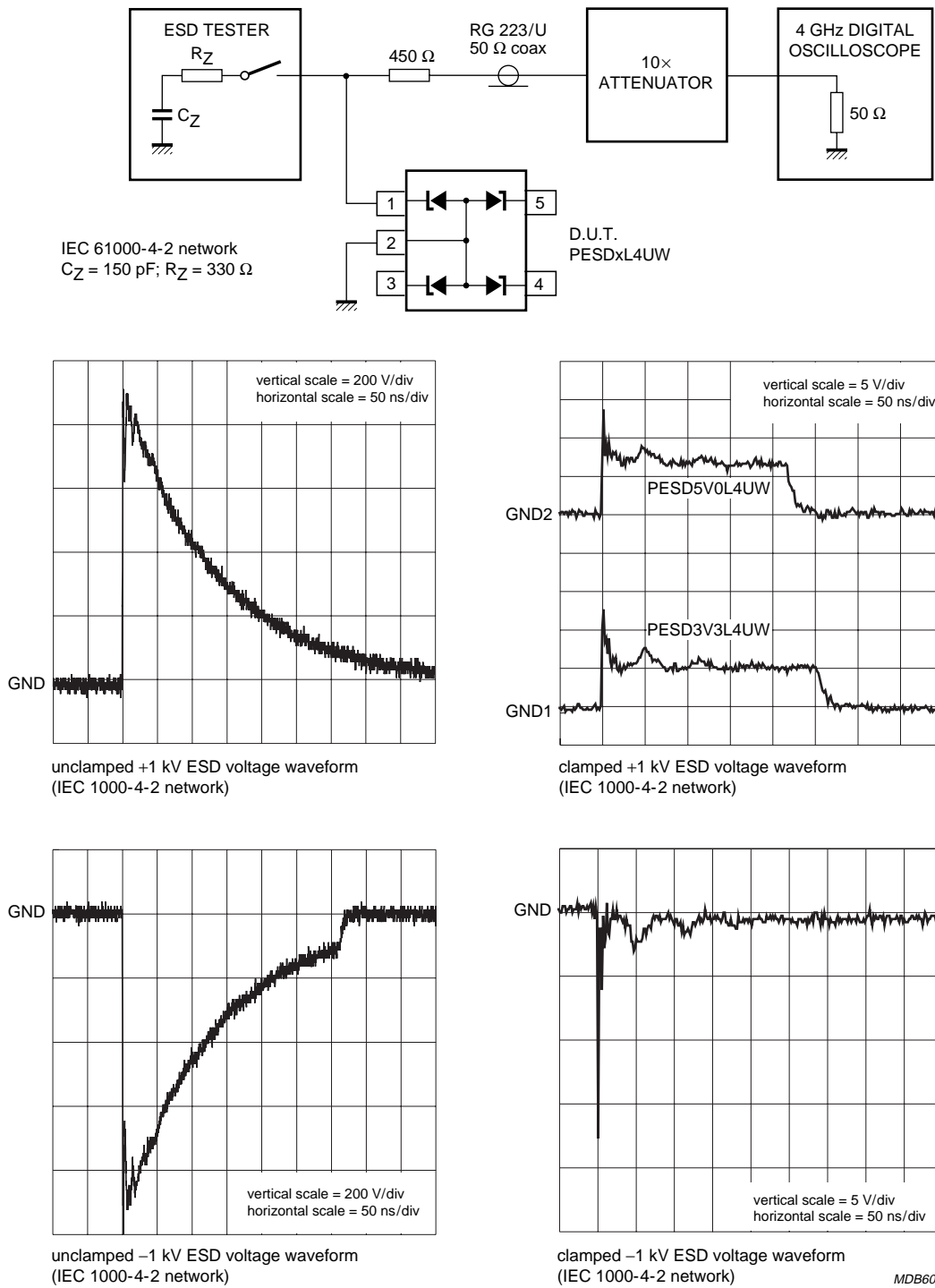


Fig.6 ESD clamping test set-up and waveforms.

MDB605

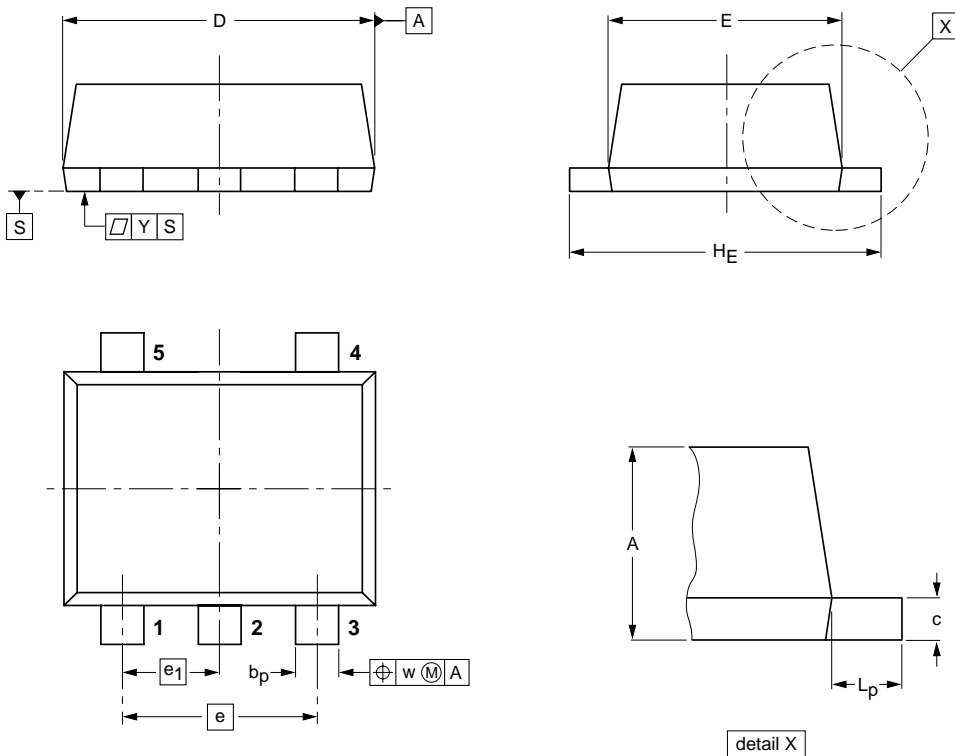
Low capacitance quadruple ESD protection array

PESDxL4UW series

PACKAGE OUTLINE

Plastic surface mounted package; 5 leads

SOT665



DIMENSIONS (mm are the original dimensions)

UNIT	A	$b_p$	c	D	E	e	$e_1$	$H_E$	$L_p$	w	y
mm	0.6 0.5	0.27 0.17	0.18 0.08	1.7 1.5	1.3 1.1	1.0	0.5	1.7 1.5	0.3 0.1	0.1	0.1

OUTLINE VERSION	REFERENCES			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ		
SOT665					01-01-04 01-08-27

# Low capacitance quadruple ESD protection array

## PESDxL4UW series

### DATA SHEET STATUS

LEVEL	DATA SHEET STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)(3)</sup>	DEFINITION
I	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
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**Limiting values definition** — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.

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