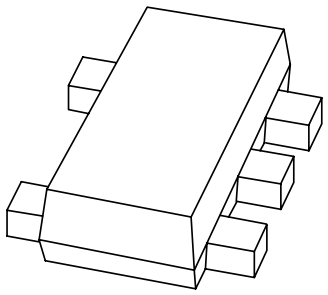
DATA SHEET



PESDxL4UW series
Low capacitance quadruple ESD protection array

Product specification
Supersedes data of 2003 Aug 15

2004 Apr 06

Philips
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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

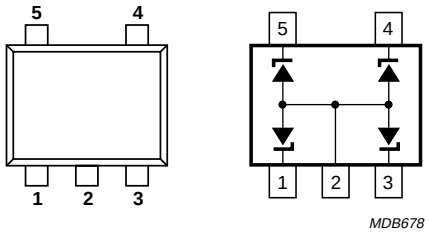


Fig.1 Simplified outline (SOT665) and symbol.

ORDERING INFORMATION

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

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 μs; notes 1 and 2			
	PESD3V3L4UW		–	3	A
	PESD5V0L4UW		–	2.5	A
P_{pp}	peak pulse power	8/20 μs; 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			
	PESD3V3L4UW		–	0.9	A
	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 μs 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).

ELECTRICAL CHARACTERISTICS

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					
	PESD3V3L4UW		–	–	3.3	V
	PESD5V0L4UW		–	–	5	V
I_{RM}	reverse leakage current					
	PESD3V3L4UW	V_{RWM} = 3.3 V	–	75	300	nA
	PESD5V0L4UW	V_{RWM} = 5 V	–	5	25	nA
$V_{(CL)R}$	clamping voltage					
	PESD3V3L4UW	I_{pp} = 1 A; note 1	–	–	8	V
		I_{pp} = 3 A; note 1	–	–	12	V
	PESD5V0L4UW	I_{pp} = 1 A; note 1	–	–	10	V
		I_{pp} = 2.5 A; note 1	–	–	13	V
V_{BR}	breakdown voltage	I_Z = 1 mA				
	PESD3V3L4UW		5.32	5.6	5.88	V
	PESD5V0L4UW		6.46	6.8	7.14	V
r_{diff}	differential resistance	I_R = 1 mA				
	PESD3V3L4UW		–	–	200	Ω
	PESD5V0L4UW		–	–	100	Ω
C_d	diode capacitance					
	PESD3V3L4UW	f = 1 MHz; V_R = 0 V	–	22	28	pF
		f = 1 MHz; V_R = 5 V	–	12	17	pF
	PESD5V0L4UW	f = 1 MHz; V_R = 0 V	–	16	19	pF
		f = 1 MHz; V_R = 5 V	–	8	11	pF

Notes

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

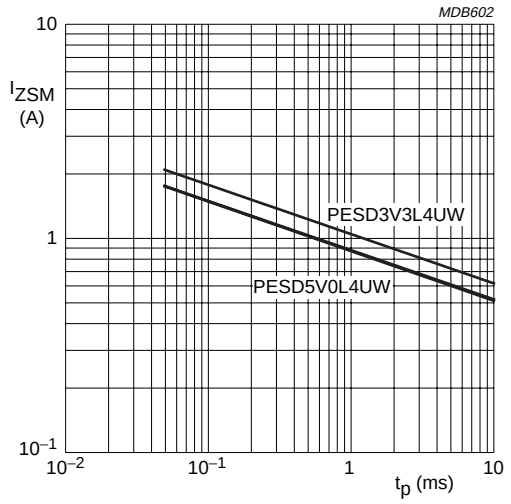
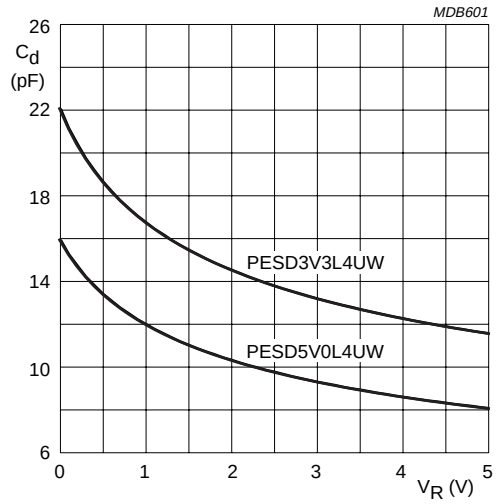
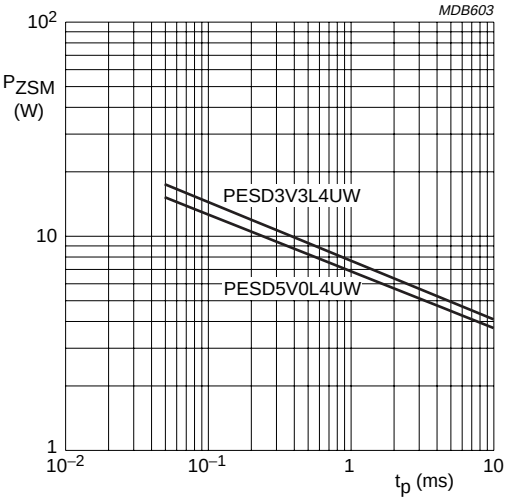


Fig.2 Non-repetitive peak reverse current as a function of pulse time (square pulse).



T_j = 25 °C; f = 1 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).

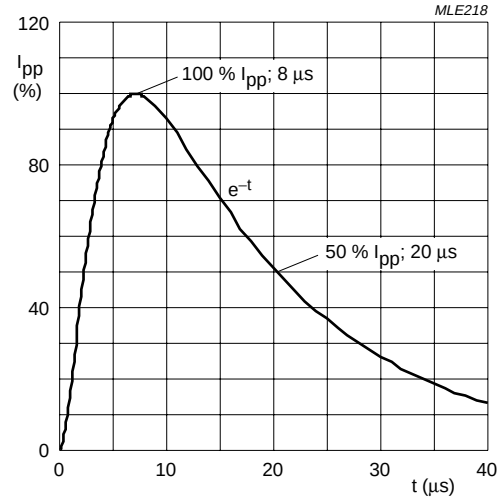
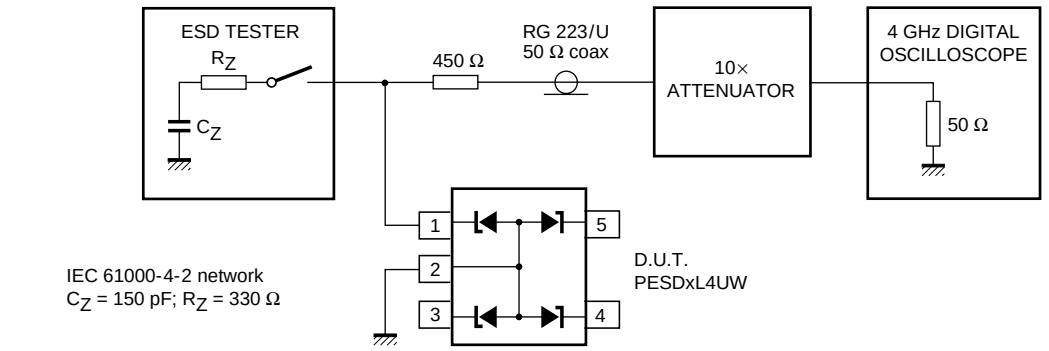
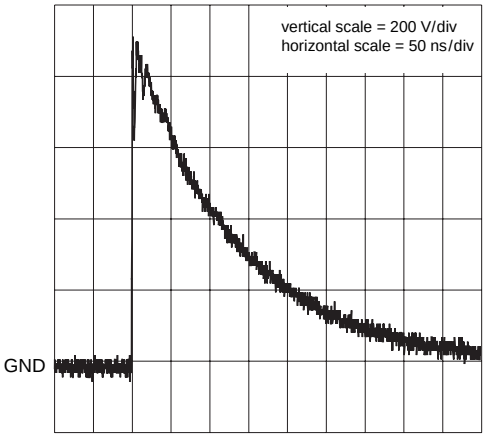
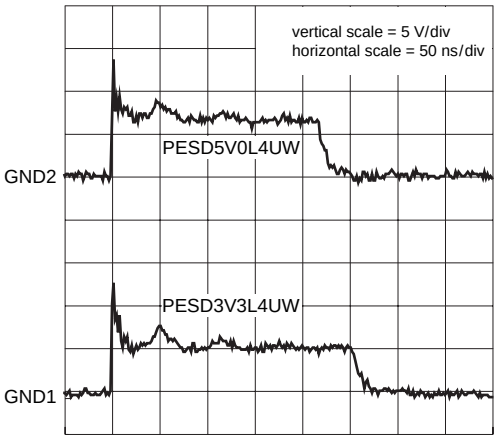


Fig.5 8/20 µs pulse waveform according to IEC 61000-4-5.

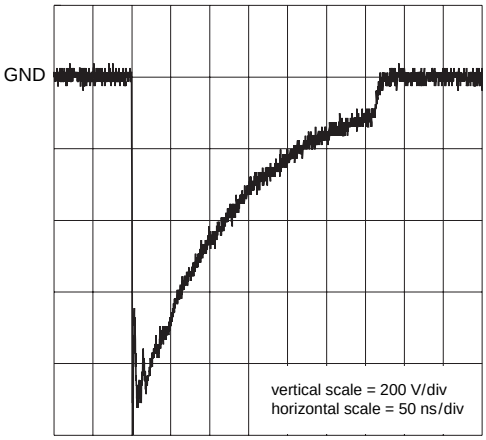




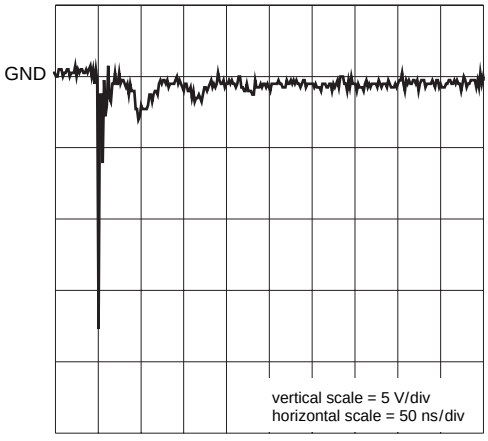
unclamped +1 kV ESD voltage waveform (IEC 1000-4-2 network)



clamped +1 kV ESD voltage waveform (IEC 1000-4-2 network)



unclamped −1 kV ESD voltage waveform (IEC 1000-4-2 network)



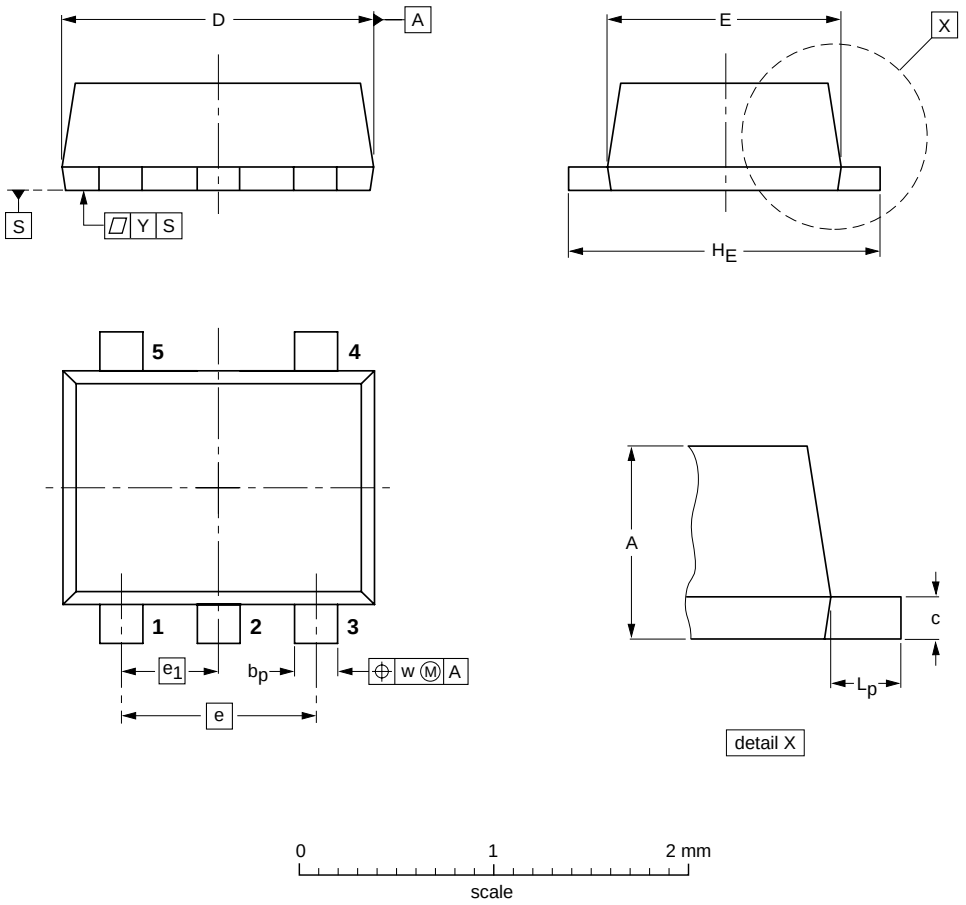
clamped −1 kV ESD voltage waveform (IEC 1000-4-2 network)

MDB605

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

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

DATA SHEET STATUS

LEVEL	DATA SHEET STATUS(1)	PRODUCT STATUS(2)(3)	DEFINITION
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Contact information

For additional information please visit **http://www.semiconductors.philips.com**. Fax: **+31 40 27 24825**
For sales offices addresses send e-mail to: **sales.addresses@www.semiconductors.philips.com**.

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