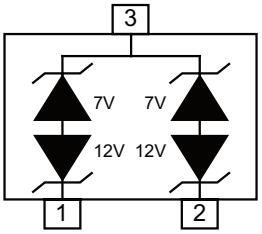
ESDAHD712BE2

ESD Protection Diodes Array

Rev.01 - 02 March 2021 Product data sheet

1. General description

The ESDAHD712BE2 is designed for asymmetrical (12V to -7V) protection in multi-point data transmission standard RS-485 applications. The ESDAHD712BE2 can be used to protect devices from transient voltages resulting from electrostatic discharge (ESD), electrical fast transients (EFT), and lightning induced surges.



2. Features and benefits

- Peak pulse power 500W @ 8/20us waveform
- IEC 61000-4-2 (ESD) ±30kV(air), ±30kV(contact)
- IEC 61000-4-4 (EFT) 40A (5/50ns)
- IEC 61000-4-5 (Lightning) 19A (8/20μs)
- Protects two +12V to -7V lines
- Low capacitance
- Low leakage current
- Low clamping voltage
- Meet MSL level1
- Halogen free and RoHS compliant

3. Applications

- Protection of RS-485 transceivers with extended common-mode range
- Security systems
- Automatic Teller Machines
- HFC systems
- Networks

4. Absolute maximum ratings

In accordance with the Absolute Maximum Rating System (IEC 60134).
T_j = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions	Values	Unit
Absolute maximum rating				
P_{PPM}	peak pulse power	t_p = 8/20 μs	500	W
I_{PP}	peak pulse current	t_p = 8/20 μs	19	A
V_{ESD}	ESD per IEC 61000-4-2 (air) ESD per IEC 61000-4-2 (contact)		±30 ±30	kV kV
T_{stg}	storage temperature range		-55 to 150	°C
T_j	operating temperature range		-55 to 150	°C

5. Characteristics

T_j = 25 °C unless otherwise specified.

Symbol	Parameter	Condition	Pin 1 to 3 and Pin 2 to 3 (12V TVS)			Pin 3 to 1 and Pin 3 to 2 (7V TVS)			Unit
			Min	Typ	Max	Min	Typ	Max	
V_{RWM}	Reverse Working Voltage	Pin 3 to 1 or Pin 2 to 1	-	-	12	-	-	7	V
V_{BR}	Reverse Breakdown Voltage	I_T = 1 mA	13.3			7.5	-	-	V
I_R	Reverse Leakage Current	$V_R = V_{RWM}$	-	-	1	-	-	20	µA
V_C	Clamping Voltage	I_{PP} = 5 A; t_p = 8/20 µs	-	-	22	-	-	15	V
		I_{PP} = 19 A; t_p = 8/20 µs	-	-	30	-	-	18	V
C_J	Junction Capacitance	V_R = 0 V; f = 1 MHz	-	-	75	-	-	75	pF
		$V_R = V_{RWM}$; f = 1 MHz	-	45	-	-	45	-	pF

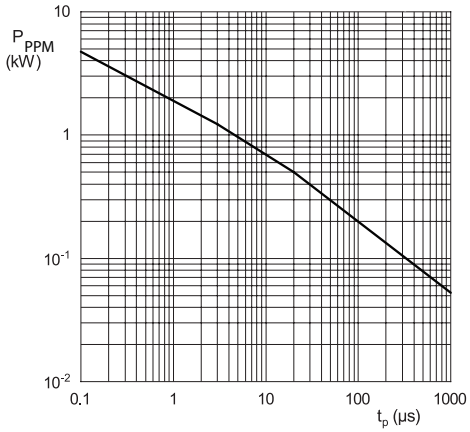


Fig. 1. Pulse rating curve

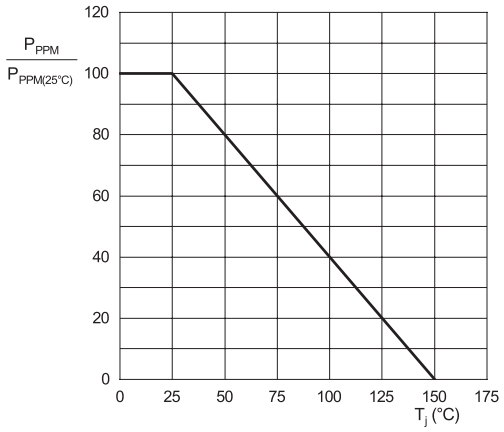


Fig. 2. Peak pulse power derating curve

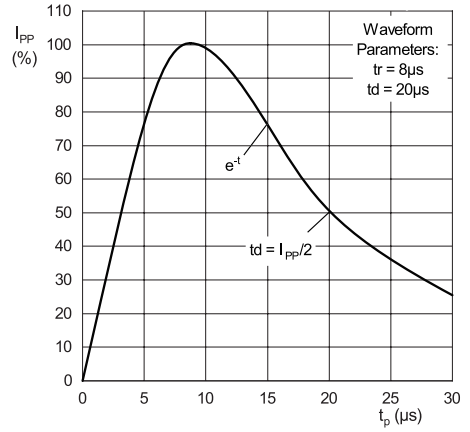


Fig. 3. Pulse waveform

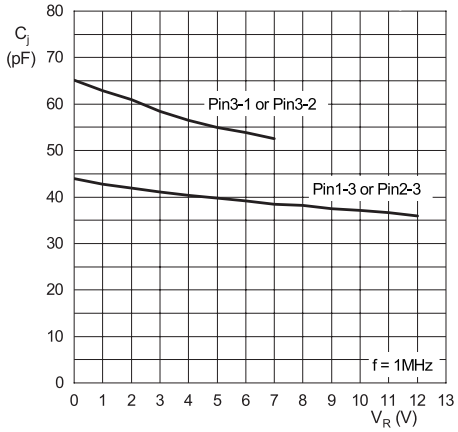


Fig. 4. Capacitance vs reverse voltage

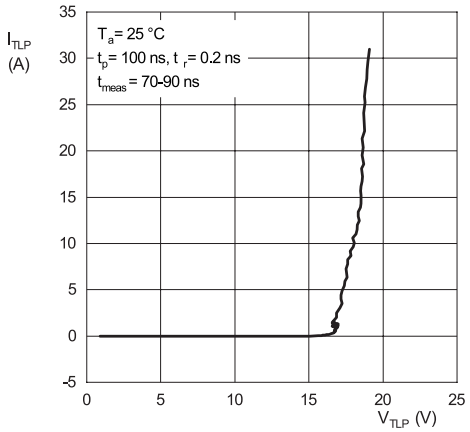


Fig. 5. TLP I-V Curve (Pin 1 or 2 to Pin 3)

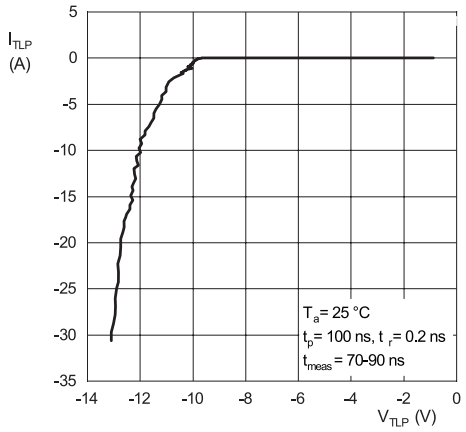


Fig. 6. TLP I-V Curve (Pin 3 to Pin 1 or 2)

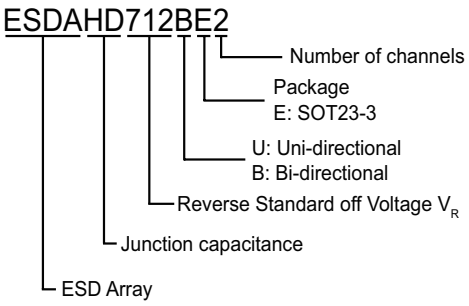
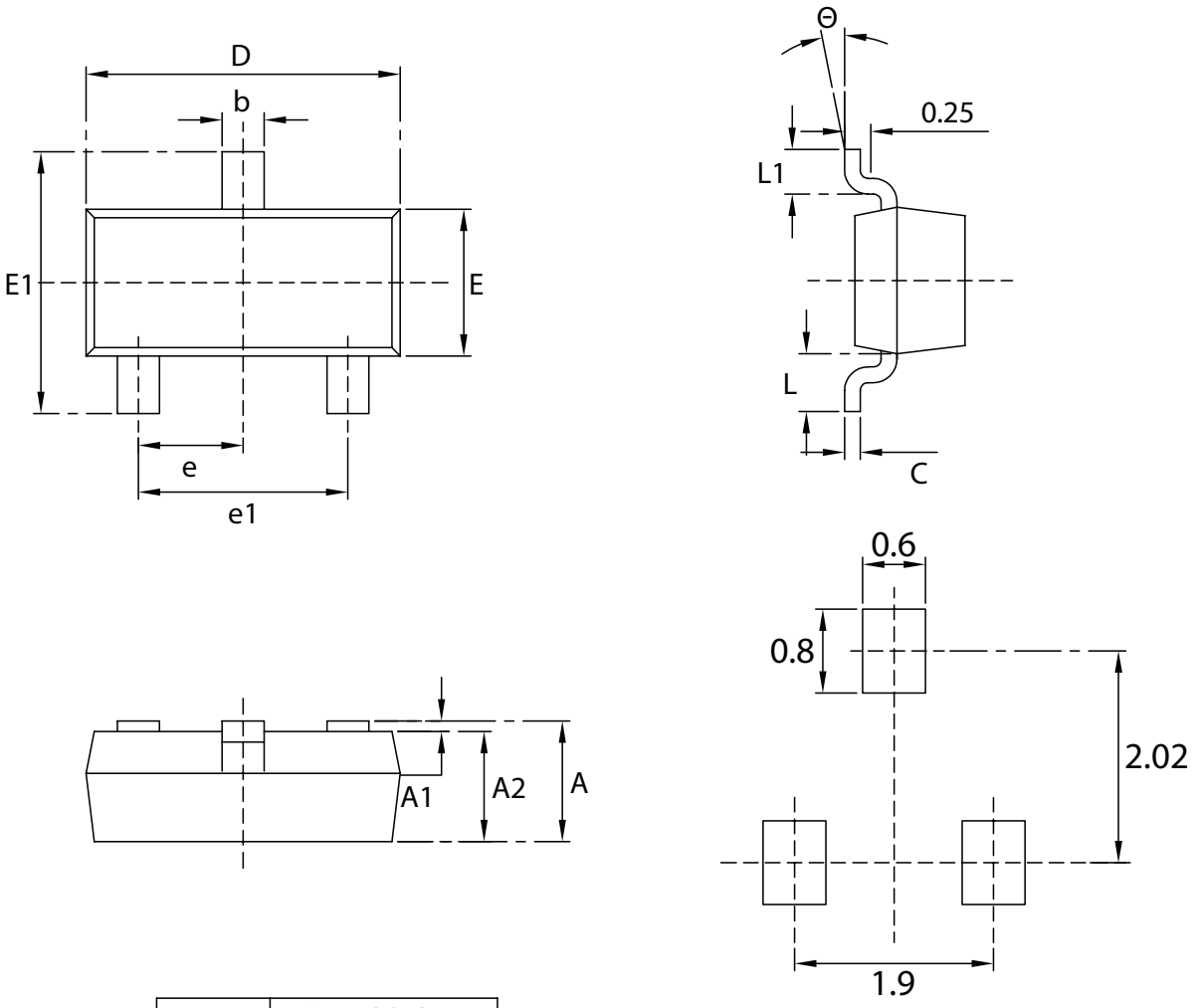


Fig. 7. Part numbering

6. Package outline

SOT23-3



Soldering Footprint

SYMBOL	DIMENSIONS	
	MIN	MAX
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
Θ	0°	8°

Unit：mm

NOTE：
1. Controlling dimension:in millimeters.
2.General tolerance:±0.05mm.
3. The pad layout is for reference purposes only.

7. Legal information

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Document status [1][2]	Product status [3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

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[2] The term 'short data sheet' is explained in section "Definitions".
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