



# PESD1CANFD36LS-Q

Extremely low clamping bidirectional ESD protection diode

17 November 2025

Product data sheet

## 1. General description

ESD protection device in a leadless ultra small DFN1006BD-2 (SOD882BD) Surface-Mounted Device (SMD) plastic package with side-wettable flanks, designed to protect automotive in-vehicle network bus lines from the damage caused by ElectroStatic Discharge (ESD) and other transients.

## 2. Features and benefits

- Reverse stand-off voltage:  $V_{RWM} = 36$  V
- Low clamping voltage: typical  $V_{CL} = 42$  V at  $I_{pp} = 1$  A
- ESD protection up to 20 kV (IEC 61000-4-2)
- ESD protection up to 20 kV (ISO 10605;  $C = 330$  pF,  $R = 330$   $\Omega$ )
- Low capacitance:  $C_d = 10$  pF
- Qualified according to AEC-Q101 and recommended for use in automotive applications

## 3. Applications

ESD protection for in-vehicle network lines in automotive environments

- 24 V board net / truck systems
- CAN / CAN-FD
- FlexRay
- SENT

## 4. Quick reference data

Table 1. Quick reference data

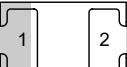
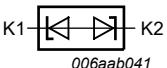
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$V_{RWM}$	reverse standoff voltage	$T_{amb} = 25$ °C		-	-	36	V
$I_{PPM}$	rated peak pulse current	$t_p = 8/20$ $\mu$ s	[1]	-	-	2.9	A
$V_{CL}$	clamping voltage	$I_{pp} = 16$ A; $t_p = 100$ ns; $T_{amb} = 25$ °C	[2]	-	52	-	V

[1] Device stressed with 8/20  $\mu$ s exponential decay waveform according to IEC 61000-4-5.

[2] Non-repetitive current pulse, Transmission Line Pulse (TLP); square pulse; ANSI / ESD STM5.5.1-2008

## 5. Pinning information

**Table 2. Pinning information**

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K1	cathode (diode 1)	 <b>DFN1006BD-2 (SOD882BD)</b>	
2	K2	cathode (diode 2)		

## 6. Ordering information

**Table 3. Ordering information**

Type number	Package			Version
	Name	Description		
PESD1CANFD36LS-Q	DFN1006BD-2	Leadless ultra small plastic package with side-wettable flanks (SWF); 2 terminals; 0.65 mm pitch; 1 mm x 0.6 mm x 0.47 mm body		SOD882BD

## 7. Marking

**Table 4. Marking codes**

Type number	Marking code
PESD1CANFD36LS-Q	82

## 8. Limiting values

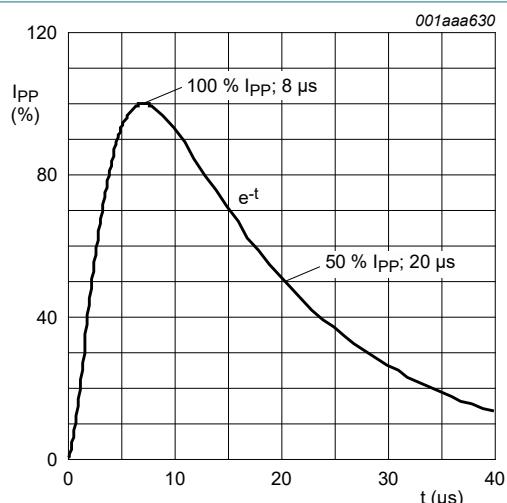
**Table 5. Limiting values**

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

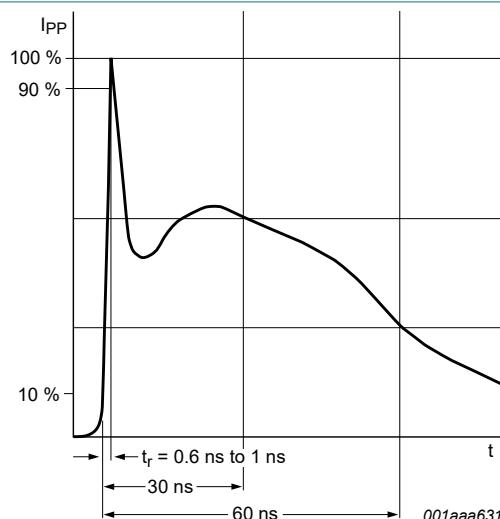
Symbol	Parameter	Conditions		Min	Max	Unit
$I_{PPM}$	rated peak pulse current	$t_p = 8/20 \mu s$	[1]	-	2.9	A
$T_j$	junction temperature			-	150	°C
$T_{amb}$	ambient temperature			-55	150	°C
$T_{stg}$	storage temperature			-65	150	°C
<b>ESD maximum ratings</b>						
$V_{ESD}$	electrostatic discharge voltage	IEC 61000-4-2; contact discharge	[2]	-	20	kV
		ISO 10605; contact discharge; $C = 330 \text{ pF}$ , $R = 330 \Omega$	[2]	-	20	kV
		ISO 10605; contact discharge; $C = 150 \text{ pF}$ , $R = 330 \Omega$	[2]	-	20	kV
		ISO 10605; contact discharge; $C = 150 \text{ pF}$ , $R = 2000 \Omega$	[2]	-	30	kV

[1] Device stressed with 8/20  $\mu$ s exponential decay waveform according to IEC 61000-4-5.

[2] Device stressed with ten non-repetitive ESD pulses.



**Fig. 1. 8/20  $\mu$ s pulse waveform according to IEC 61000-4-5**



**Fig. 2. ESD pulse waveform according to IEC 61000-4-2**

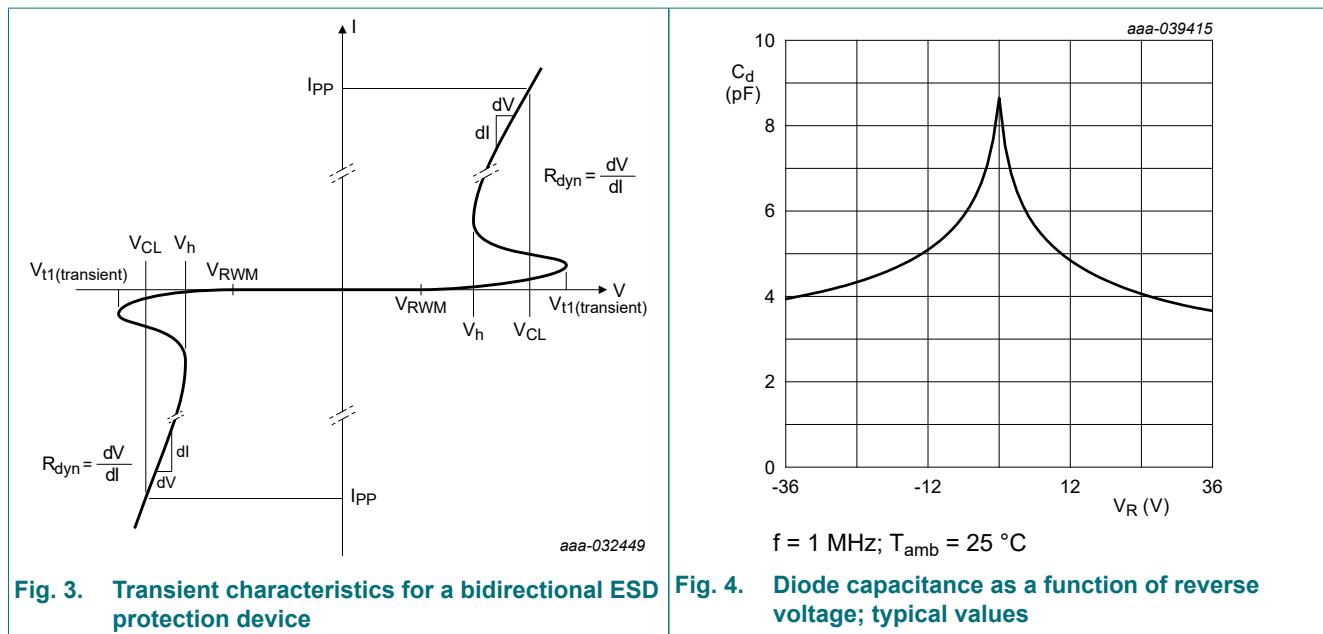
## 9. Characteristics

Table 6. Characteristics

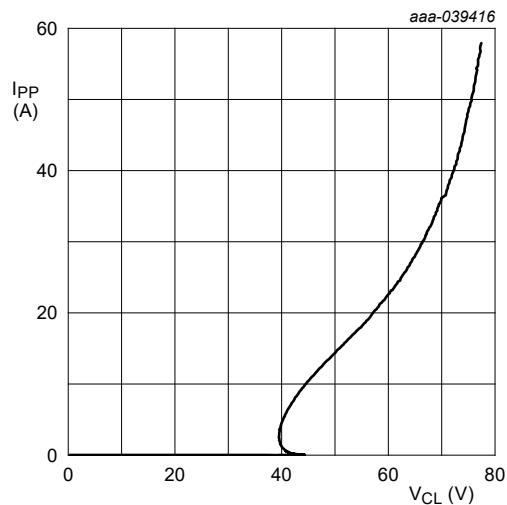
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$V_{RWM}$	reverse standoff voltage	$T_{amb} = 25^\circ C$		-	-	36	V
$V_{BR}$	breakdown voltage	$I_R = 10 \text{ mA}; T_{amb} = 25^\circ C$		37	41	47	V
$I_{RM}$	reverse leakage current	$V_{RWM} = 36 \text{ V}; T_{amb} = 25^\circ C$		-	1	50	nA
$C_d$	diode capacitance	$f = 1 \text{ MHz}; V_R = 0 \text{ V}; T_{amb} = 25^\circ C$		-	8.7	10	pF
$V_{CL}$	clamping voltage	$I_{PP} = 1 \text{ A}; t_p = 8/20 \mu\text{s}; T_{amb} = 25^\circ C$	[1]	-	42	-	V
		$I_{PP} = 16 \text{ A}; t_p = 100 \text{ ns}; T_{amb} = 25^\circ C$	[2]	-	52	-	V
$R_{dyn}$	dynamic resistance	$I_R = 10 \text{ A}; t_p = 100 \text{ ns}; T_{amb} = 25^\circ C$	[2]	-	1	-	$\Omega$

[1] Device stressed with 8/20  $\mu\text{s}$  exponential decay waveform according to IEC 61000-4-5.

[2] Non-repetitive current pulse, Transmission Line Pulse (TLP); square pulse; ANSI / ESD STM5.5.1-2008

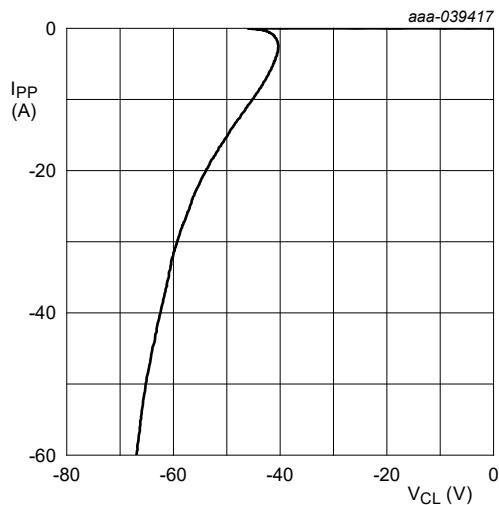


## Extremely low clamping bidirectional ESD protection diode



Transmission Line Pulse (TLP);  
 $t_p = 100$  ns;  $t_r = 1$  ns

Fig. 5. Positive clamping voltage (TLP); typical values



Transmission Line Pulse (TLP);  
 $t_p = 100$  ns;  $t_r = 1$  ns

Fig. 6. Negative clamping voltage (TLP); typical values

## 10. Application information

The device is designed for the protection of one automotive in-vehicle bus line, e.g. CAN (FD), from the damage caused by ESD and surge pulses.

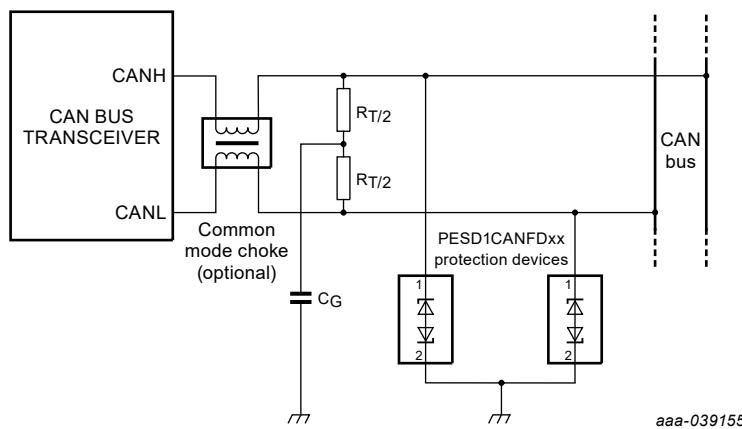


Fig. 7. Typical application: ESD protection of one automotive CAN bus line

### Circuit board layout and protection device placement

Circuit board layout is critical for the suppression of ESD, Electrical Fast Transient (EFT) and surge transients. The following guidelines are recommended:

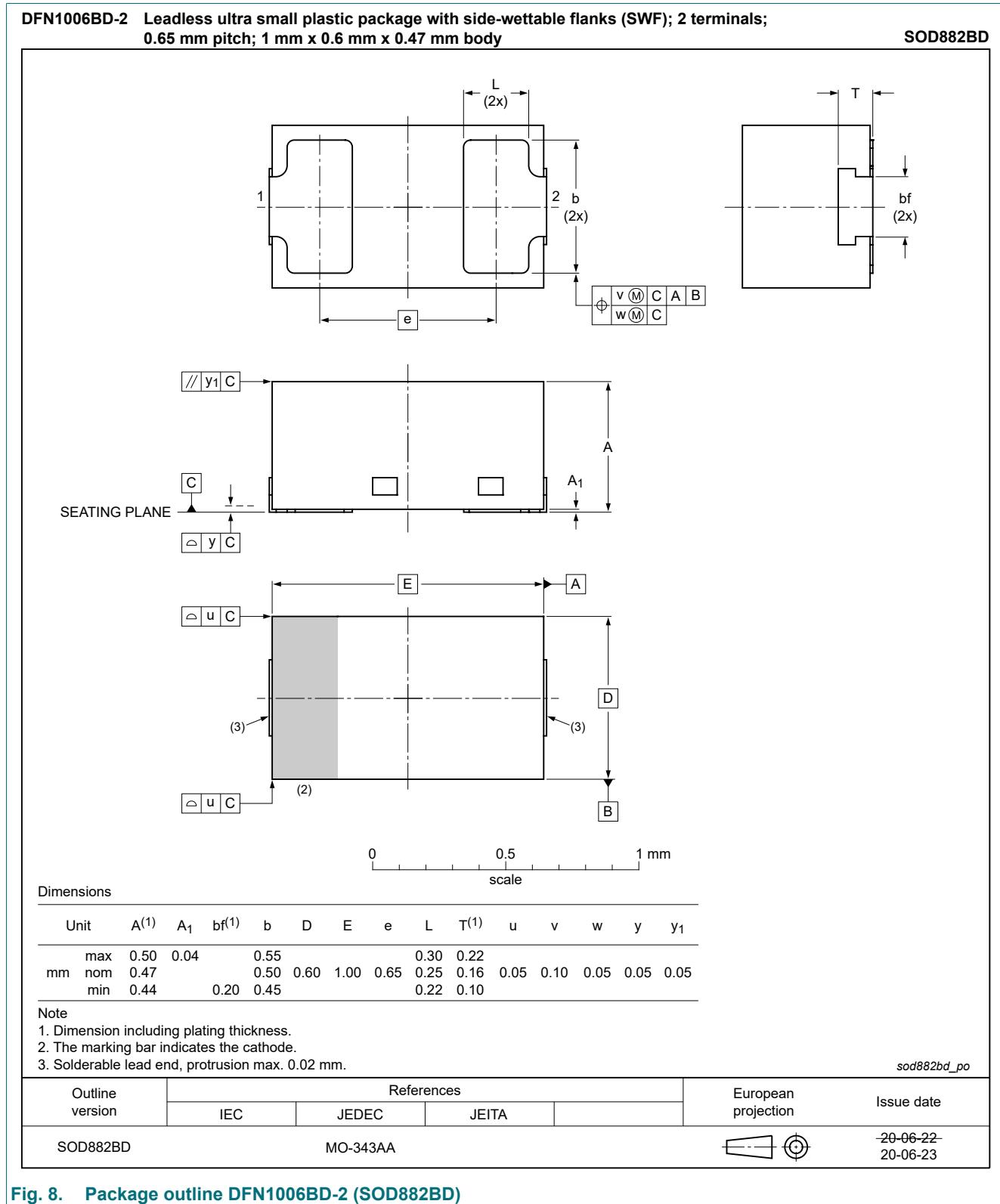
1. Place the device as close to the input terminal or connector as possible.
2. Minimize the path length between the device and the protected line.
3. Keep parallel signal paths to a minimum.
4. Avoid running protected conductors in parallel with unprotected conductors.
5. Minimize all Printed-Circuit Board (PCB) conductive loops including power and ground loops.
6. Minimize the length of the transient return path to ground.
7. Avoid using shared transient return paths to a common ground point.
8. Use ground planes whenever possible. For multilayer PCBs, use ground vias.

## 11. Test information

### Quality information

This product has been qualified in accordance with the Automotive Electronics Council (AEC) standard Q101 - *Stress test qualification for discrete semiconductors*, and is suitable for use in automotive applications.

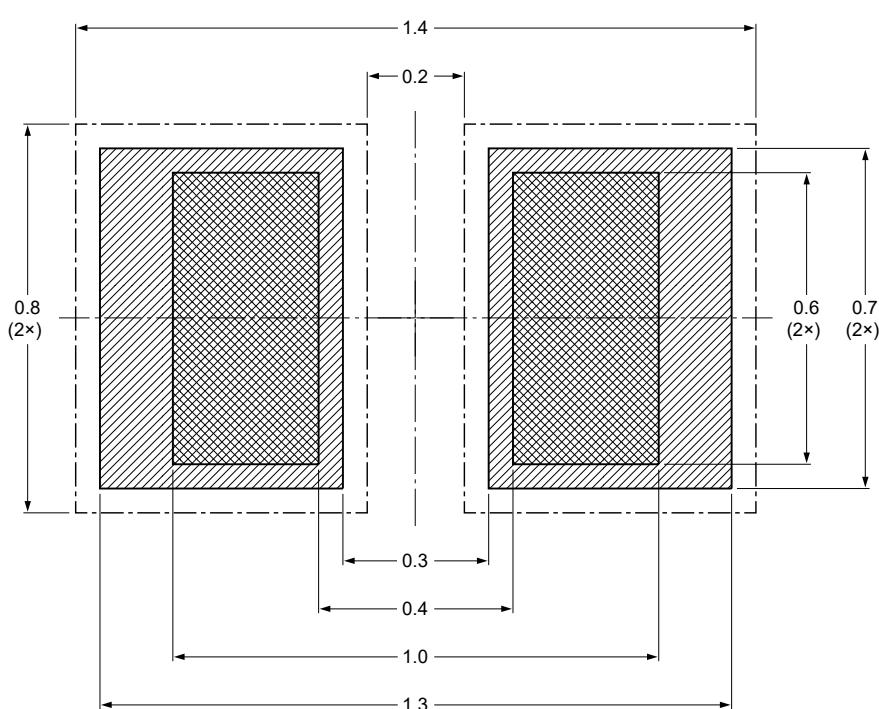
## 12. Package outline



## 13. Soldering

Footprint information for reflow soldering of DFN1006BD-2 package

SOD882BD

 solder resist solder paste solder lands

Dimensions in mm

Issue date 20-05-01  
20-12-15

sod882bd\_fr

**Fig. 9. Reflow soldering footprint for DFN1006BD-2 (SOD882BD)**

## 14. Revision history

**Table 7. Revision history**

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PESD1CANFD36LS-Q v.2	20251117	Product data sheet	-	PESD1CANFD36LS-Q v.1
Modifications:	Chapter "Limiting values": One additional ESD specification inserted.			
PESD1CANFD36LS-Q v.1	20240517	Product data sheet	-	-

## 15. Legal information

### Data sheet status

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.

- [1] Please consult the most recently issued document before initiating or completing a design.
- [2] The term 'short data sheet' is explained in section "Definitions".
- [3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the internet at <https://www.nexperia.com>.

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