



# ESDUD05BF

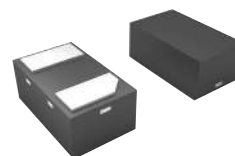
ESD Protection Diodes

Rev.01 - 21 May 2021

Product data sheet

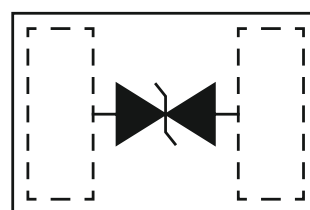
## 1. General description

ESDUD05BF is an ultra-low capacitance ESD protection device designed to protect high speed data interfaces. ESDUD05BF is specifically designed to protect sensitive components which are connected to high-speed data and transmission lines from overvoltage caused by ESD (electrostatic discharge), CDE (Cable Discharge Events), and EFT (electrical fast transients).



## 2. Features and benefits

- Transient protection for high-speed data lines
- Peak pulse power 88W @ 8/20  $\mu$ s waveform
- IEC 61000-4-2 (ESD)  $\pm$ 20kV(air),  $\pm$ 20kV(contact)
- IEC 61000-4-4 (EFT) 40A (5/50 ns)
- Package optimized for high-speed lines
- Low capacitance: 0.25pF (typical)
- Low leakage current
- Low clamping voltage
- Meet MSL level1
- Halogen free and RoHS compliant



## 3. Applications

- Series ATA
- Desktops, Servers and Notebooks
- Cellular Phones
- MDDI Ports
- USB Data Line Protection
- Display Ports
- Digital Visual Interfaces (DVI)



## 4. Ordering information

Type number	Package Name	Orderable part number	Packing method	Small packing quantity	Marking	Package issue date
ESDUD05BF	DFN1006	ESDUD05BFX	Tape and reel	10000	JJ	13-Oct-2020

## 5. Absolute maximum ratings

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

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

Symbol	Parameter	Conditions	Values	Unit
<b>Absolute maximum rating</b>				
$P_{PPM}$	peak pulse power	$t_p = 8/20 \mu\text{s}$	88	W
$I_{PP}$	peak pulse current	$t_p = 8/20 \mu\text{s}$	4	A
$V_{ESD}$	ESD per IEC 61000-4-2 (air) ESD per IEC 61000-4-2 (contact)		$\pm$ 20 $\pm$ 20	kV kV
$T_{stg}$	storage temperature range		-55 to 150	$^\circ\text{C}$
$T_j$	operating temperature range		-55 to 150	$^\circ\text{C}$

## 6. Characteristics

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

Symbol	Parameter	Condition	Min	Typ	Max	Unit
$V_{RWM}$	Reverse Working Voltage		-	-	5	V
$V_{BR}$	Reverse Breakdown Voltage	$I_T = 1\text{ mA}$	6	-	-	V
$I_R$	Reverse Leakage Current	$V_{RWM} = 5\text{ V}$	-	-	100	nA
$V_C$	Clamping Voltage	$I_{PP} = 1\text{ A}; t_p = 8/20\text{ }\mu\text{s}$	-	-	13	V
		$I_{PP} = 4\text{ A}; t_p = 8/20\text{ }\mu\text{s}$	-	-	22	V
$C_j$	Junction Capacitance	$V_R = 0\text{ V}; f = 1\text{ MHz}$	-	0.2	0.5	pF

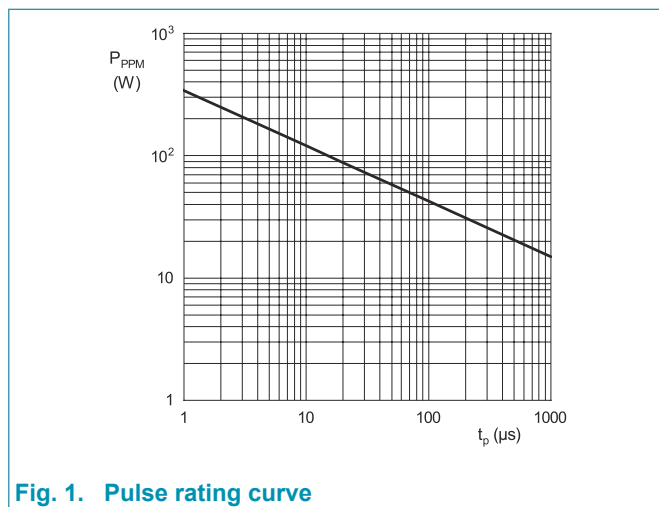


Fig. 1. Pulse rating curve

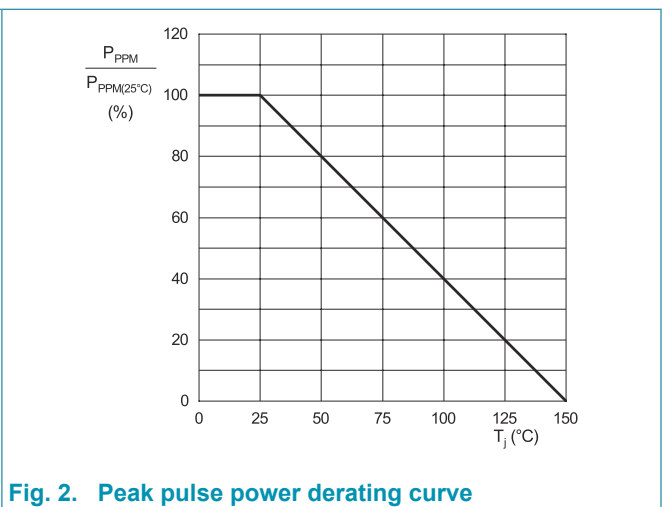


Fig. 2. Peak pulse power derating curve

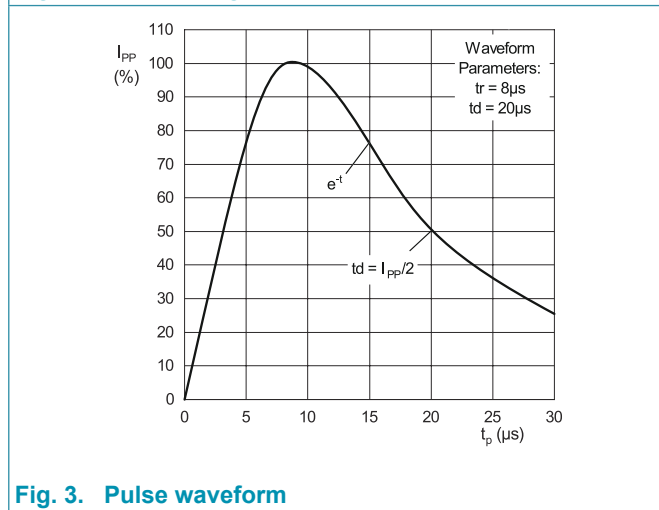


Fig. 3. Pulse waveform

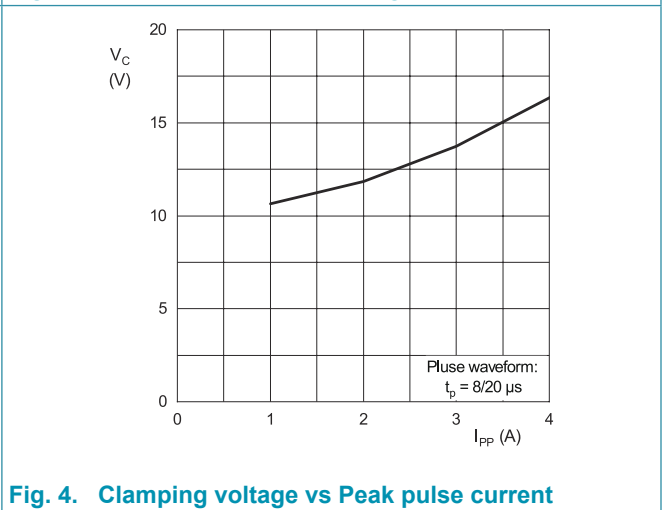


Fig. 4. Clamping voltage vs Peak pulse current

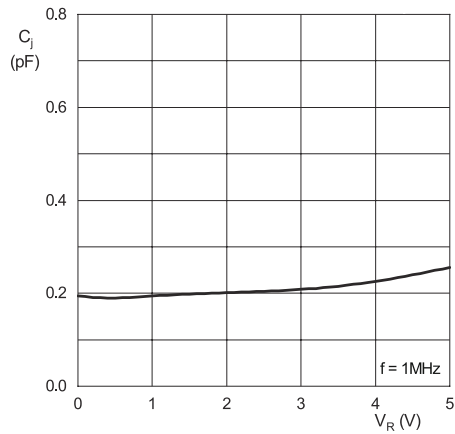


Fig. 5. Capacitance vs Reverse voltage

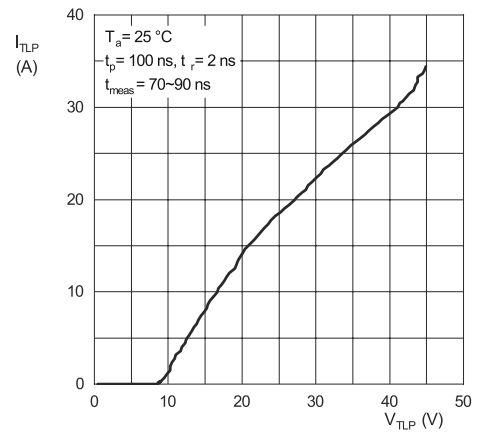


Fig. 6. TLP I-V Curve

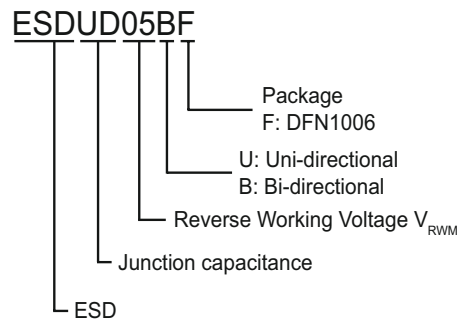
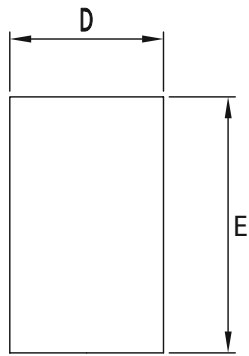


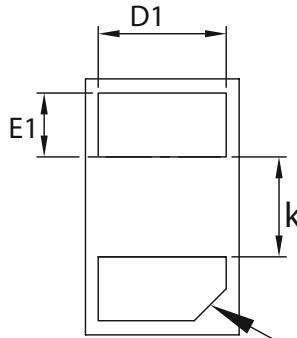
Fig. 7. Part numbering

### 7. Package outline

DFN1006

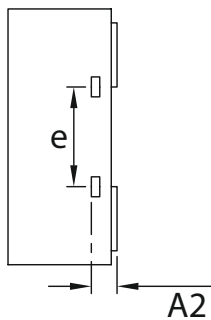


Top view

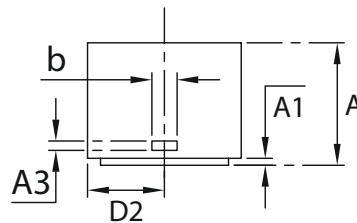


Bottom view

PIN 1 ID  
0.125X45°

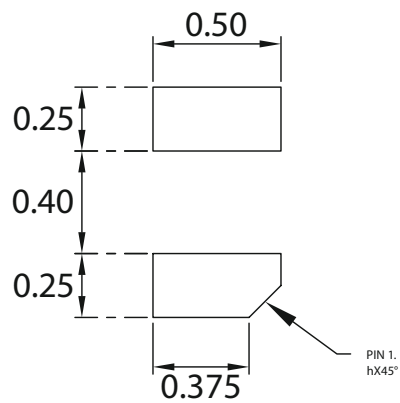


Side view



COMMON DIMENSIONS  
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	0.350	0.450	0.550
A1	0.000	0.020	0.050
A2	0.077	0.127	0.207
A3	0.013	0.063	0.113
b	0.070	0.120	0.200
D	0.500	0.60	0.700
D1	0.400	0.500	0.600
D2	0.200	0.300	0.400
E	0.900	1.000	1.100
E1	0.150	0.250	0.350
e	0.460	0.510	0.560
k	0.300	0.400	0.500



Pad Layout

PIN 1.  
hX45°

**Note:**

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

## 8. 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.

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