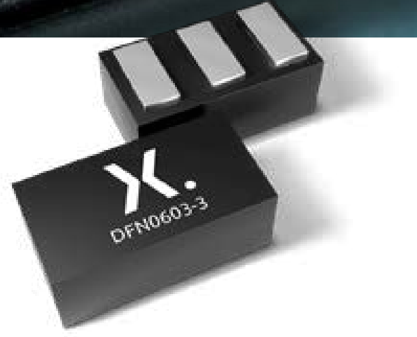
High-speed dataline protection for HDMI2.1, USB and Thunderbolt

Compact 2-in-1 TrEOS protection for high-speed data lines

Nexperia`s new TrEOS protection devices provide the most compact method to suppress ESD in USB3.2, HDMI2.1 and other high-speed data lines. They combine two TrEOS protection diodes in one miniature DFN0603-3 package – effectively delivering two diodes in the footprint of one. Providing best-in-class ESD protection and system robustness by combining high RF performance with very low clamping and very high surge capability.



Product Features

- Bidirectional ESD protection of two lines
- Very low diode capacitance down to Cd = 0.21 pF
- Extremely low clamping to protect sensitive I/Os
- Extremely low-inductance protection path to ground
- Extremely symmetrical layout
- ESD protection up to ±25 kV acc. to IEC 61000-4-2;
- Surge robustness up to 11.0 A 8/20
- Ultra small SMD package
- Placed on one differential line pair, almost no extra PCB space demand for protection

TrEOS Protection in DFN0603-3

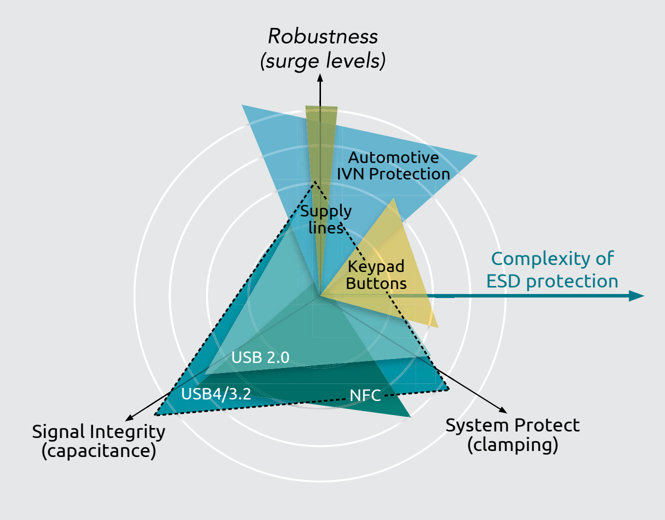
Optimizing the three pillars of ESD protection

1. Low capacitance
for highest signal integrity down to 0.2 pF

2. Low clamping & trigger
for enhanced system protection down to 0.19 Ω (Ddyn)

3. High robustness
against ESD up to 30 kV & surge up to 11 A at 8/20 µs

The ideal combination for every design



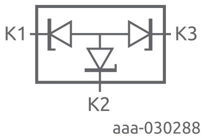
Target Applications

- Thunderbolt, USB and HDMI 2.1 data lines
- Cellular handsets and accessories
- Portable electronics
- Communication systems
- Computers and peripherals

nexperia

EFFICIENCY WINS.

Product overview - Low capacitance ESD protection for high-speed interfaces in DFN0603-3

Uni-directional	Bi-directional	C_d (pF)	V_{RWM} (V)	V_{ESD} (kV)	Vcl 8 A TLP (V)	Vcl 16 A TLP (V)	I_{PPM} 8/20 µs (A)	Vcl @ I_{PPM} 8/20 µs	Configuration	Type
0	2	0.26	4	20	4.5	6.2	8	5.3 V @ 8 A		PUSB3BB2DF
0	2	0.21	5	20	4.5	6.5	8.5	5.4 V @ 8 A		PESD5V0C2BDF
0	2	0.31	4	25	4.4	5.7	11	5.8 V @ 11 A		PESD4V0Z2BCDF

Read App Note

AN90013 Recommendations for Printed Circuit Board assembly of DFN0603-3 (SOT8013)

This application note provides guidelines for board assembly of the ultra-small DFN0603-3 (0.63 x 0.33 mm^2) leadless full encapsulated package. The main focus is on recommendations for reflow soldering.

Parametrics

Parametric search

Choose the optimal device in DFN0603-3 for your system configuration.

Watch video

TrEOS - ESD protection for USB

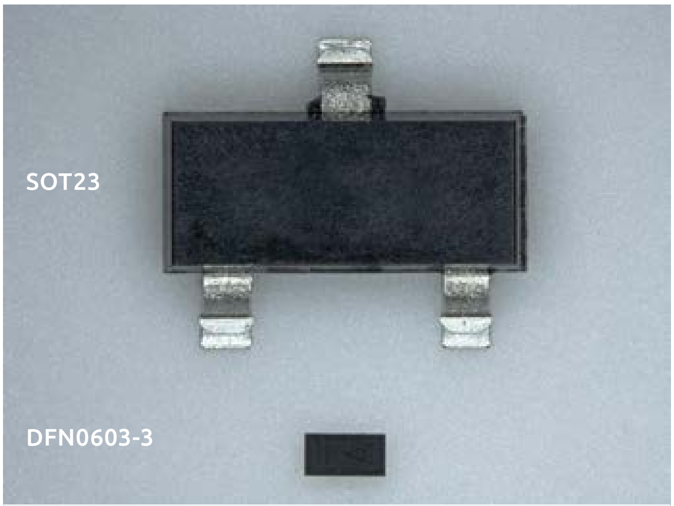
Check out the video on Nexperia´s TrEOS Protection technology and learn how to protect your design.

View PDF

ESD application handbook

Sharing technical insights & offering protection concepts, testing and simulation for modern interfaces.

Package comparison SOT23 – DFN0603-3 (SOT8013)



Package	Size in mm	Performance
SOT23	2 x 1.25 x 0.95	2 x 1pF, 10 A 8/20
DFN0603-3	0.63 x 0.33 x 0.25	2 x 0.31 pF, 11 A 8/20

For further informaiton visit:
nexperia.com/esdprotection

nexperia.com

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