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New ESD Protection Diodes With Ultra Low Capacitance in Ultra Compact DFN1006 Package for High Speed USB Interface Applications

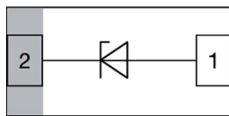
Offered in the ultra compact DFN1006 two-pin package with wettable flanks, Vishay’s new VBUS03N1 and VBUS05N1 ESD protection diodes are single-line unidirectional / bidirectional ultra low capacitance devices designed for high speed interface applications.

Connected between the signal or data line and the ground, the VBUS03N1 and VBUS05N1 offer high isolation (low leakage current, ultra low capacitance) within the specified working range. Due to the short leads and small package size of the DFN1006, the devices’ line inductance is very low, allowing fast transients like an ESD strike to be clamped with minimal over- or undershoots.

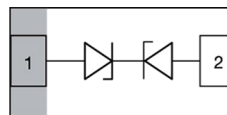
Both devices are also available in automotive AEC-Q101 qualified versions.



Unidirectional Device



Bidirectional Device



Automotive

Device Specification Table

No.	Device Name	Package	Type	V _{RWM}	Capacitance V _R = 0 V (Typ.)	ESD Immunity (Contact Discharge)
Unidirectional Devices						
1	VBUS03N1-HD1-G3	DFN1006-2A	Commercial	3.3 V	0.7 pF	16 kV
2	VBUS03N1-HD1-HG3		AEC-Q101			
3	VBUS05N1-HD1-G3		Commercial	5.5 V		
4	VBUS05N1-HD1-HG3		AEC-Q101			



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Bidirectional Devices						
5	VBUS03N1-DD1-G3	DFN1006-2B	Commercial	± 3.3 V	0.36 pF	16 kV
6	VBUS03N1-DD1-HG3		AEC-Q101			
7	VBUS05N1-DD1-G3		Commercial	± 5.5 V		
8	VBUS05N1-DD1-HG3		AEC-Q101			

Features

- Ultra compact DFN1006-2 package
- Low package height of < 0.5 mm
- 1-line ESD protection
- Working range of ± 3.3 V or ± 5.5 V
- Low leakage current I_R of < 0.01 μA
- Ultra low load capacitance C_D of 0.70 pF (typ.) - **unidirectional**
- Ultra low load capacitance C_D of 0.36 pF (typ.) - **bidirectional**
- ESD immunity in accordance with IEC 61000-4-2
 - ± 16 kV contact discharge
 - ± 16 kV air discharge
- e3 - Sn, tin-plated exposed side wall of lead frame
- AEC-Q101 qualified versions available
- AOI capable (AOI = automated optical inspection)

Applications

- High speed signal or data line applications, like HDMI, USB 3.0, or Thunderbolt

Samples

Available at Vishay Sample Service Center (VSSC).

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