

ESD05V02D-VLC

ROHS

Transient Voltage Suppressors for ESD Protection

Description

The ESD05V02D-VLC is ultra low capacitance TVS designed to protect high speed data interfaces. This series has been specifically designed to protect sensitive components which are connected to high-speed data and transmission lines from over-voltage caused by ESD (electrostatic discharge), CDE (Cable Discharge Events), and EFT (electrical fast transients).

Features

- ◆ Ultra Small SMD Package
- ◆ Protects One Bidirectional I/O Line
- ◆ Ultra-Low capacitance: 0.08pF typical
- ◆ Reverse Stand-off Voltage: 5.0V
- ◆ Low Clamping Voltage
- ◆ Low Leakage Current
- ◆ IEC61000-4-2(ESD) ±12kV (air discharge), ±8kV (contact discharge);
- ◆ IEC61000-4-4 (EFT) 40A (5/50ns)
- ◆ IEC61000-4-5 (Lightning) 2A (8/20us)

Applications

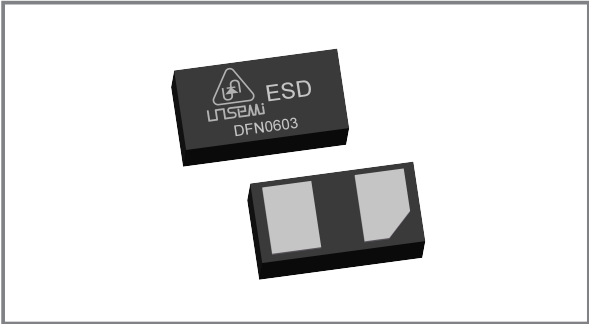
- ◆ USB 3.1 / 3.2 Interface
- ◆ RF Antenna
- ◆ USB Type-C Interface

Mechanical Characteristics

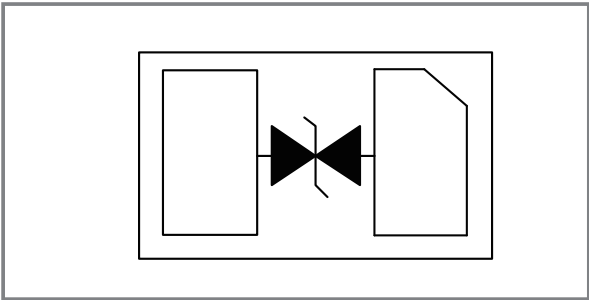
Parameter	Symbol	Value	Units
Peak Pulse Current (Tp=8/20μs waveform)	I _{PP}	2	A
Lead Soldering Temperature	T _L	260 (10 sec.)	°C
Storage Temperature Range	T _{STG}	-55 to +150	°C
Operating Junction Temperature Range	T _J	-55 to +125	°C



www.unsemi.com.tw



Functional Diagram



Mechanical Data

- ◆ JEDEC 0201/DFN0603 Package
- ◆ Molding Compound Flammability Rating : UL 94V-O
- ◆ Weight 0.3 Milligrams (Approximate)
- ◆ Lead Finish : Lead Free

Electrical Characteristics @ 25°C Unless Otherwise Specified)

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Reverse Working Voltage	V_{RWM}	--	--	--	5.0	V
Reverse Breakdown Voltage	V_{BR}	$I_T=1.0mA$	6.0	7.5	--	V
Reverse Leakage Current	I_R	$V_{RWM}=5.0V, T=25^{\circ}C$	--	--	0.1	μA
Clamping Voltage	V_C	$I_{PP}=1.0A, T_P=8/20\mu s$	--	14	--	V
		$I_{PP}=2.0A, T_P=8/20\mu s$	--	18	--	V
Junction Capacitance	C_J	$V_{DC}=0V, f=1MHz$	--	0.08	0.12	pF

Characteristic Curves

Fig1. 8/20 μs Pulse Waveform

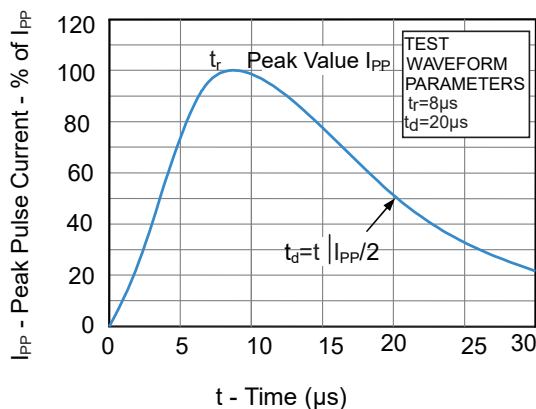


Fig2. Power Rating Derating Curve

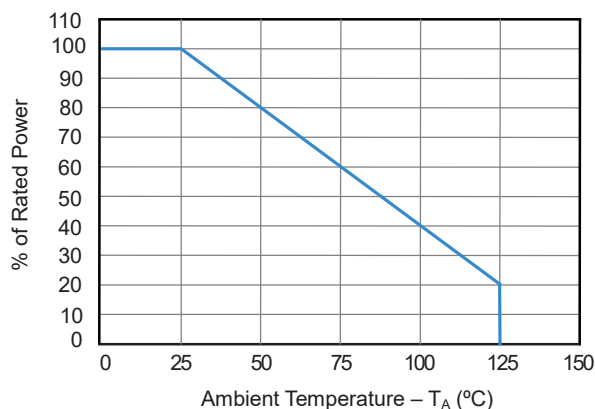
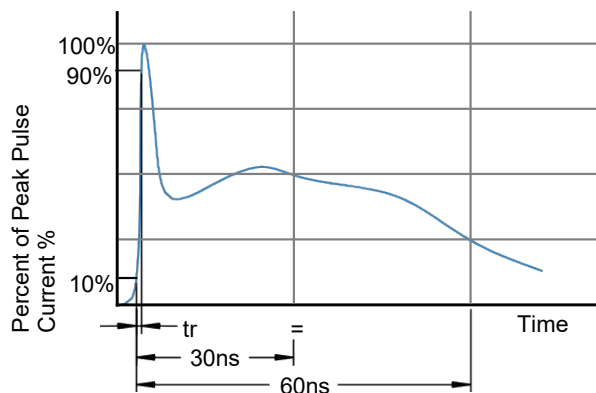
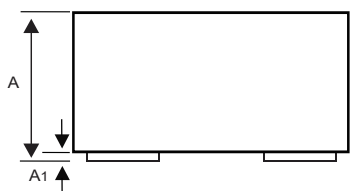
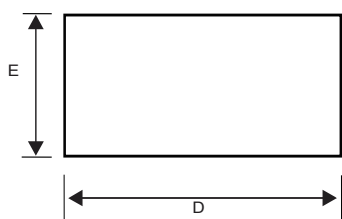


Fig3. ESD Pulse Waveform (according to IEC61000-4-2)

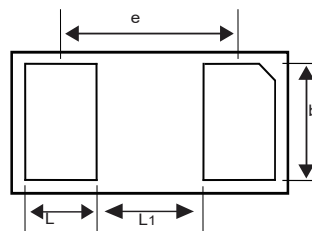
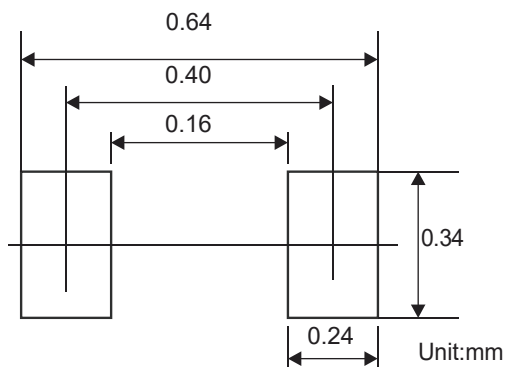


0201/DFN0603 Package Outline & Dimensions

0201/DFN0603



Suggested PAD Layout



Symbol	Millimeters		
	Min	Nom	Max
A	0.270	0.300	0.340
A1	0	0.020	0.050
D	0.550	0.600	0.650
E	0.250	0.300	0.350
e	0.340REF		
L	0.140	0.180	0.240
b	0.200	0.250	0.300
L1	0.150REF		

Ordering Information

Device	Marking	Package	Quantity	Reel Size
ESD05V02D-VLC	5B	0201/DFN0603	10,000pcs/Reel	7 inch

Disclaimer

UNSEMI RESERVES THE RIGHT TO MAKE CHANGE ON OUR PRODUCTS , PRODUCTS SPECIFICATION AND DATA WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

UN SEMICONDUCTOR LIMITED its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "UNSEMI") does not give any representations or warranties for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

In no event shall UNSEMI be liable for any indirect, incidental, punitive, special or consequential damages (including any and all implied warranties, warranties of fitness for particular purpose, non-infringement and merchantability.) whether or not such damages are based on tort (including negligence), warranty, breach of contract or any other legal theory.

Statements regarding the suitability of products for certain types of applications are based on UNSEMI knowledge of typical requirements that are often placed on UNSEMI products in generic applications. Such statements are not binding, statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify UNSEMI's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Unless otherwise agreed in writing, UNSEMI product is not designed, authorized or warranted to be suitable for use in medical life-saving, or life-sustaining application , nor in applications where failure or malfunction of a UNSEMI product can reasonably be expected to result in personal injury, death or severe property or environmental damage. UNSEMI and its suppliers accept no liability for inclusion or use of UNSEMI products in such equipment or applications and therefore such inclusion and/or use is at the customer's own risk.

All referenced brands, product names, service names and trademarks are the property of their respective owners.