

# MSKSEMI

SEMICONDUCTOR



ESD



TVS



TSS



MOV

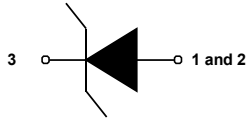


GDT



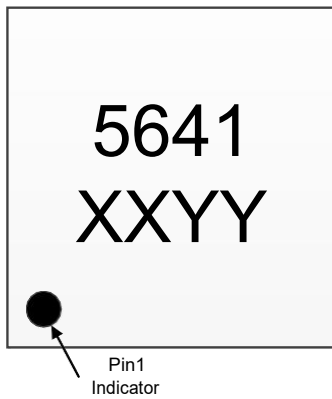
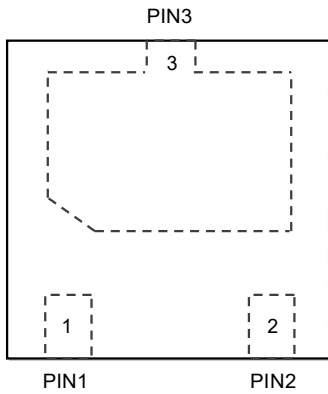
PLED

Product data sheet



**Circuit diagram**

**Pin configuration (Top View)**



**Marking** 5641 = Series code  
XX = Device code  
YY = Date code

**Descriptions**

The MSESD5641DXX-3 is a transient voltage suppressor designed to protect power interfaces. It is suitable to replace multiple discrete components in portable electronics.

The MSESD5641DXX-3 is specifically designed to protect USB port. TVS diode with higher surge capability is used to protect USB voltage bus pin.

The MSESD5641DXX-3 is available in DFN2×2-3L package. Standard products are Pb-free and Halogen-free.

**Features**

- Reverse stand-off voltage: 7.5V ~ 15V
- Surge protection according to IEC61000-4-5  
8/20µs waveform: I<sub>PPM</sub> see Table 4
- Surge protection according to IEC61643-321  
10/1000µs waveform: I<sub>PPM</sub> see Table 4
- Low clamping voltage
- Solid-state silicon technology

**Applications**

- Power supply protection
- Power management

**Order information**

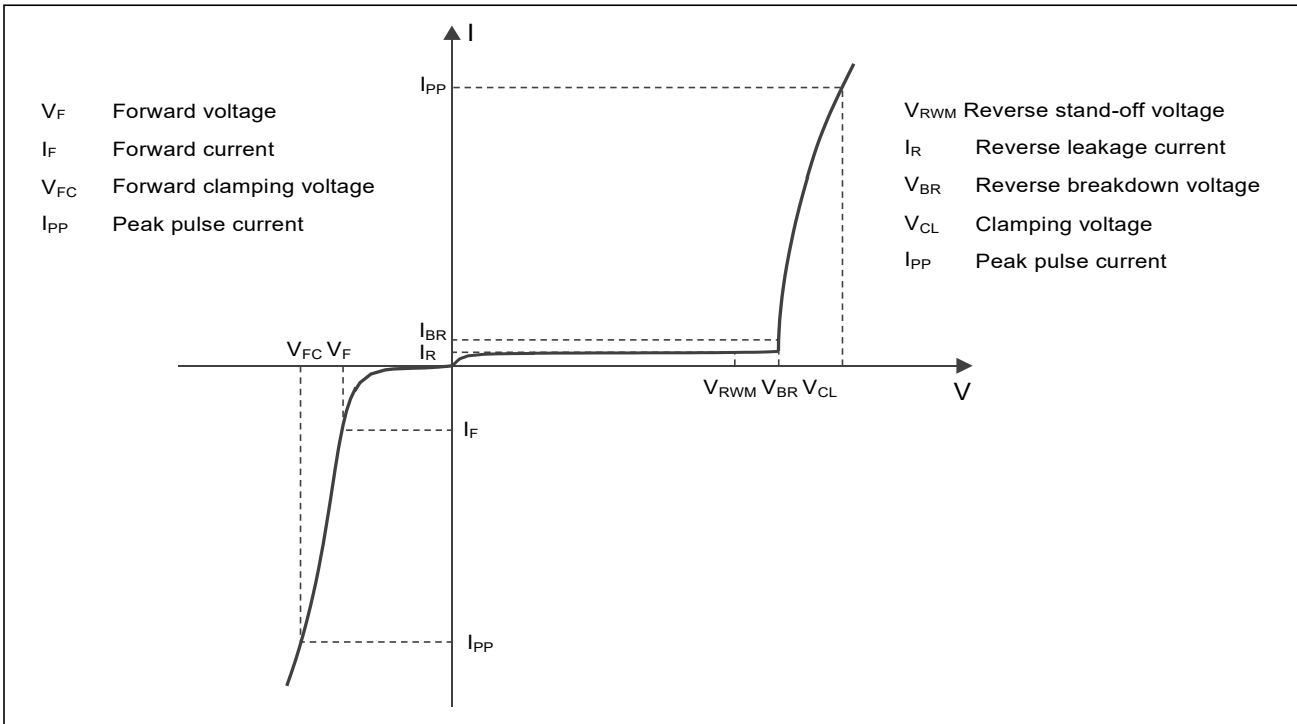
Device	Package	Shipping	Device code
MSESD5641D07-3	DFN2×2-3L	3000/Tape&Reel	07
MSESD5641D10-3	DFN2×2-3L	3000/Tape&Reel	10
MSESD5641D12-3	DFN2×2-3L	3000/Tape&Reel	12
MSESD5641D15-3	DFN2×2-3L	3000/Tape&Reel	15

Parameter	Symbol	Rating	Unit
Peak pulse power ( $t_p=8/20\mu s$ ) <sup>1)3)</sup>	$P_{PK}$	4000	W
Peak pulse power ( $t_p=10/1000\mu s$ ) <sup>2)3)</sup>	$P_{PK}$	350	W
ESD according to IEC61000-4-2 air discharge	$V_{ESD}$	$\pm 30$	kV
ESD according to IEC61000-4-2 contact discharge		$\pm 30$	
Junction temperature	$T_J$	125	$^{\circ}C$
Operating temperature	$T_{OP}$	-40~85	$^{\circ}C$
Lead temperature	$T_L$	260	$^{\circ}C$
Storage temperature	$T_{STG}$	-55~150	$^{\circ}C$

Notes:

- 1 Non-repetitive current pulse, according to IEC61000-4-5. (8/20 $\mu s$  current waveform)
- 2 Non-repetitive current pulse, according to IEC61643-321. (10/1000 $\mu s$  current waveform)
- 3 Measured from pin 3 to pin 1 and pin 2.

**Electrical characteristics ( $T_A = 25^{\circ}C$ , unless otherwise noted)**



**Definitions of electrical characteristics**

**Electrical characteristics (T<sub>A</sub> = 25°C, unless otherwise noted)**

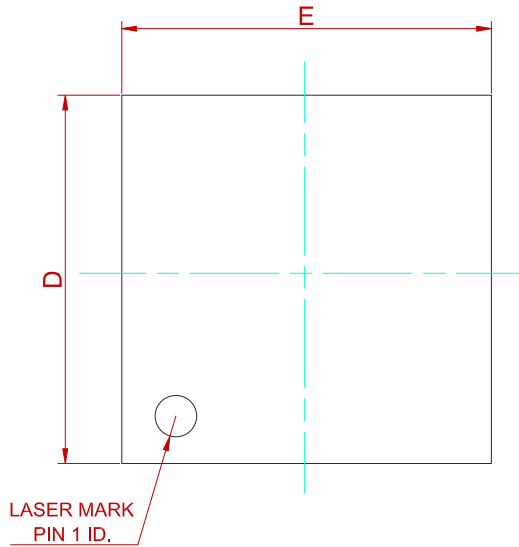
P/N	Reverse Standoff Voltage V <sub>RWM</sub> (V)	Breakdown voltage V <sub>BR</sub> (V) I <sub>BR</sub> = 1mA			Reverse leakage current I <sub>RM</sub> (nA) at V <sub>RWM</sub>		Forward voltage V <sub>F</sub> (V) I <sub>F</sub> = 20mA		Junction capacitance F=1MHz, VR=0V (pF)	
	Max	Min	Typ	Max	Typ	Max	Min	Max	Typ	Max
MSESD5641D07-3	7.5	8.0	9.0	10.0	10	1000	0.45	1.25	2200	3000
MSESD5641D10-3	10.0	11.5	13.5	15.5	1	500	0.45	1.25	1500	2000
MSESD5641D12-3	12.0	13.0	15.0	17.0	1	100	0.45	1.25	1200	1800
MSESD5641D15-3	15.0	16.0	17.5	19.0	1	100	0.45	1.25	1000	1500

P/N	Rated peak pulse current I <sub>PP</sub> (A) <sup>1)3)</sup>	Clamping voltage V <sub>CL</sub> (V) at I <sub>PP</sub> (A) <sup>1)3)</sup>	Rated peak pulse current I <sub>PP</sub> (A) <sup>2)3)</sup>	Clamping voltage V <sub>CL</sub> (V) at I <sub>PP</sub> (A) <sup>2)3)</sup>
	Max	Max	Max	Max
MSESD5641D07-3	190	18	28	13
MSESD5641D10-3	170	23	22	18
MSESD5641D12-3	150	27	16	20
MSESD5641D15-3	130	30	13	25

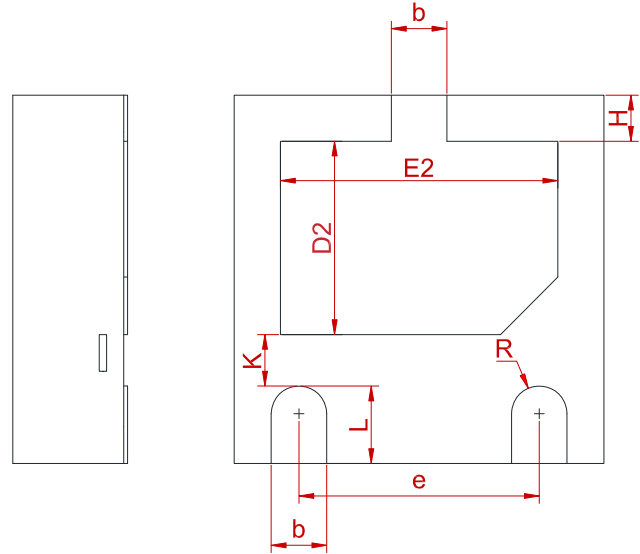
**Notes:**

- 1) Non-repetitive current pulse, according to IEC61000-4-5. (8/20μs current waveform)
- 2) Non-repetitive current pulse, according to IEC61643-321. (10/1000μs current waveform)
- 3) Measured from pin 3 to pin 1 and pin 2.

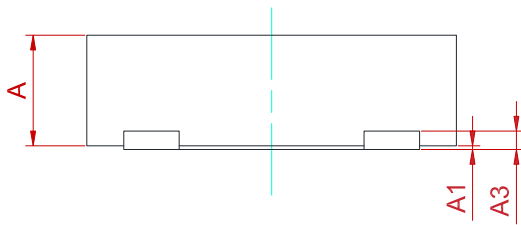
**PACKAGE MECHANICAL DATA**



**Top View**

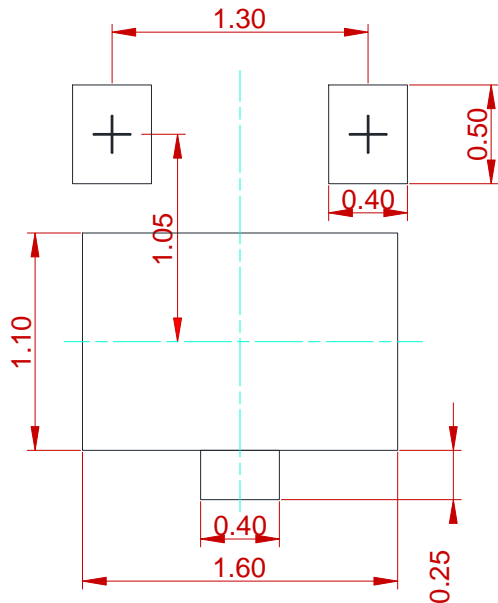


**Bottom View**



**Side View**

**Recommended land pattern (Unit: mm)**



Symbol	Dimensions In Millimeters		
	Min.	Typ.	Max.
A	0.50	0.58	0.65
A1	0.00	0.02	0.05
A3	0.10 REF.		
b	0.25	0.30	0.35
D	1.90	2.00	2.10
E	1.90	2.00	2.10
D2	0.95	1.05	1.15
E2	1.40	1.50	1.60
e	1.20	1.30	1.40
H	0.20	0.25	0.30
K	0.20	0.30	0.40
L	0.33	0.39	0.45
R	0.13	-	-

**Notes:**

This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.

**REEL SPECIFICATION**

P/N	PKG	QTY
MSESD5641DXX-3	DFN2x2-3L	3000

## Attention

- Any and all MSKSEMI Semiconductor products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your MSKSEMI Semiconductor representative nearest you before using any MSKSEMI Semiconductor products described or contained herein in such applications.
- MSKSEMI Semiconductor assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all MSKSEMI Semiconductor products described or contained herein.
- Specifications of any and all MSKSEMI Semiconductor products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.
- MSKSEMI Semiconductor strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that these probabilistic failures could give rise to accidents or events that could endanger human lives, that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.
- In the event that any or all MSKSEMI Semiconductor products (including technical data, services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from the authorities concerned in accordance with the above law.
- No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or any information storage or retrieval system, or otherwise, without the prior written permission of MSKSEMI Semiconductor.
- Information (including circuit diagrams and circuit parameters) herein is for example only ; it is not guaranteed for volume production. MSKSEMI Semiconductor believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringement of intellectual property rights or other rights of third parties.
- Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc. When designing equipment, refer to the "Delivery Specification" for the MSKSEMI Semiconductor product that you intend to use.

## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

*Click to view similar products for [ESD Suppressors / TVS Diodes](#) category:*

*Click to view products by [MSKSEMI](#) manufacturer:*

Other Similar products are found below :

[60KS200C](#) [D18V0L1B2LP-7B](#) [D5V0F4U5P5-7](#) [DESD5V0U1BB-7](#) [NTE4902](#) [P4KE27CA](#) [P6KE11CA](#) [P6KE39CA-TP](#) [P6KE8.2A](#)  
[SA110CA](#) [SA60CA](#) [SA64CA](#) [SMBJ12CATR](#) [SMBJ33CATR](#) [SMBJ8.0A](#) [ESD101-B1-02ELS E6327](#) [ESD105-B1-02EL E6327](#) [ESD112-B1-02EL E6327](#) [ESD119B1W01005E6327XTSA1](#) [ESD5V0L1B02VH6327XTSA1](#) [ESD7451N2T5G](#) [19180-510](#) [CPDT-5V0USP-HF](#)  
[3.0SMCJ33CA-F](#) [3.0SMCJ36A-F](#) [HSPC16701B02TP](#) [D3V3Q1B2DLP3-7](#) [D55V0M1B2WS-7](#) [DESD5V0U1BL-7B](#) [DRTR5V0U4SL-7](#)  
[SCM1293A-04SO](#) [ESD200-B1-CSP0201 E6327](#) [SM12-7](#) [SMLJ45CA-TP](#) [CEN955 W/DATA](#) [82350120560](#) [VESD12A1A-HD1-GS08](#)  
[CPDUR5V0R-HF](#) [CPDQC5V0U-HF](#) [CPDQC5V0USP-HF](#) [CPDQC5V0-HF](#) [D1213A-01LP4-7B](#) [D1213A-02WL-7](#) [MMAD1108/TR13](#)  
[5KP100A](#) [5KP15A](#) [5KP18A](#) [5KP48A](#) [5KP90A](#) [5KP90CA](#)