



VS5V0BN1HS

Transient Voltage Suppressor

RAS MID

Datasheet

V_{RWM}	5.0	V
P_{PP}	36	W
I_{PP}	2.0	A

●Features

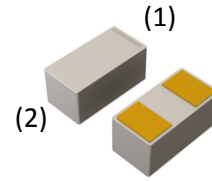
- High reliability
- Bi-directional ESD protection
- ESD protection level $\pm 8kV$ (IEC61000-4-2 Contact)
- Dimension tolerance $\pm 10\mu m$

●Applications

- Cellular handsets and accessories
- Portable electronics
- Data lines
- Audio and Video equipment

●Outline

DSN0603-2 SOD-962 SMD0603B



●Inner Circuit



●Packaging Specifications

Packing	Embossed Tape
Reel Size(mm)	180
Taping Width(mm)	8
Basic Ordering Unit(pcs)	15000
Taping Code	T15R
Marking	BN

●Absolute Maximum Ratings (Ta=25°C)

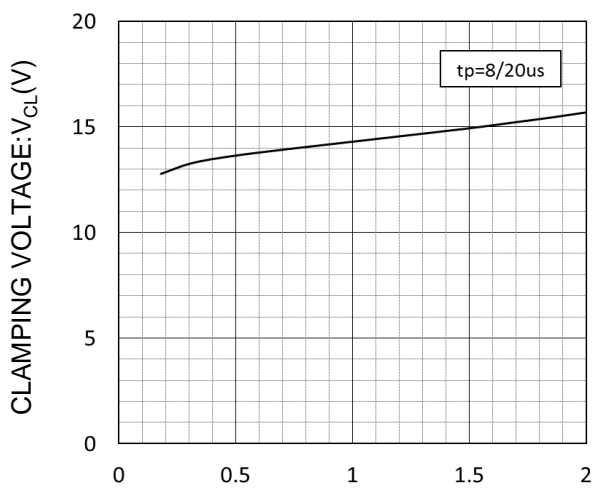
Parameter	Symbol	Conditions	Min.	Max.	Unit	
Peak pulse power	P_{PP}	$tp=8/20\mu s$	-	36	W	
Maximum peak pulse current	I_{pp}	$tp=8/20\mu s$	-	2.0	A	
Electrostatic discharge voltage*	V_{ESD}	IEC61000-4-2	Air discharge	-	± 15	kV
			Contact	-	± 11	kV
Junction temperature	T_j	-	-	150	°C	
Storage temperature	T_{stg}	-	-55	150	°C	
Operation temperature	T_{opr}	-	-55	150	°C	
Power dissipation	P_D	-	-	100	mW	

* IEC61000-4-2 C=150pF R=330Ω

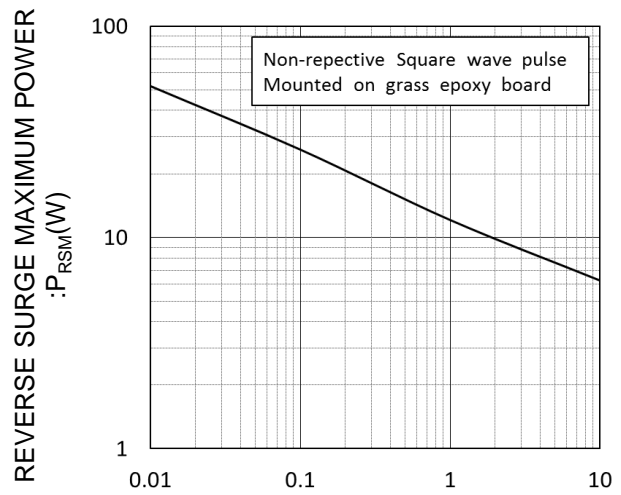
●Characteristics (Ta=25°C unless otherwise stated)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Reverse standoff voltage	V_{RWM}	-	-	-	5.0	V
Reverse breakdown voltage	V_{BR}	$I_R=1mA$	6.0	8.5	10.0	V
Reverse leakage current	I_R	$V_R=5V$	-	1	70	nA
Clamping voltage	V_{CL}	$I_{pp}=2.0A, tp=8/20\mu s$	-	16.0	18.0	V
Capacitance between terminals	C_t	$V_R=0V, f=1MHz$	-	0.50	1.0	pF

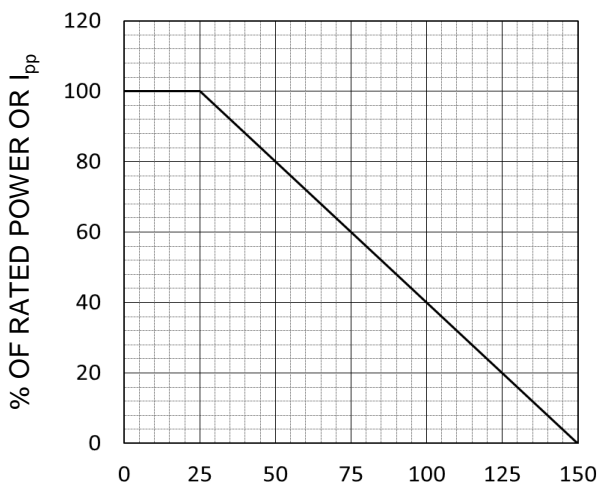
● Characteristic Curves



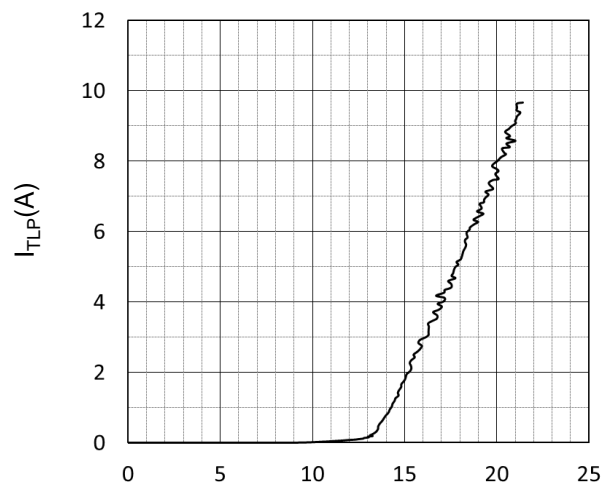
CLAMPING VOLTAGE vs PEAK PULSE CURRENT



PULSE TIME: t (ms)
P_{RSM}-t CHARACTERISTICS

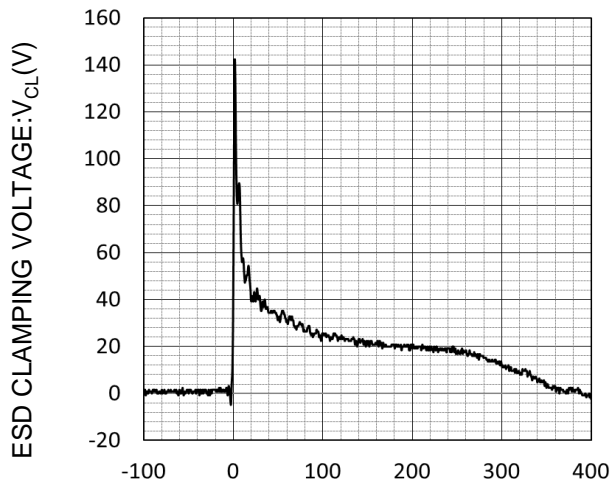


T_a (°C)
POWER DERATING CURVE

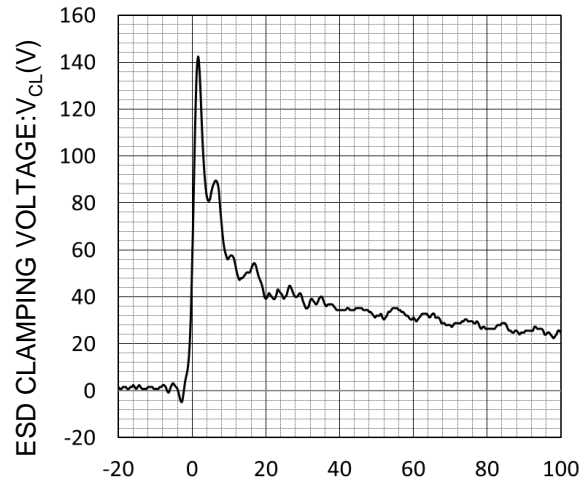


V_{TLP} (V)
TRANSMISSION LINE PULSE

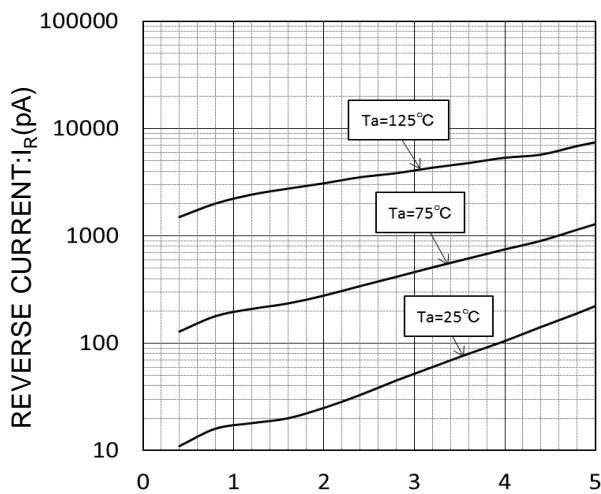
● Characteristic Curves



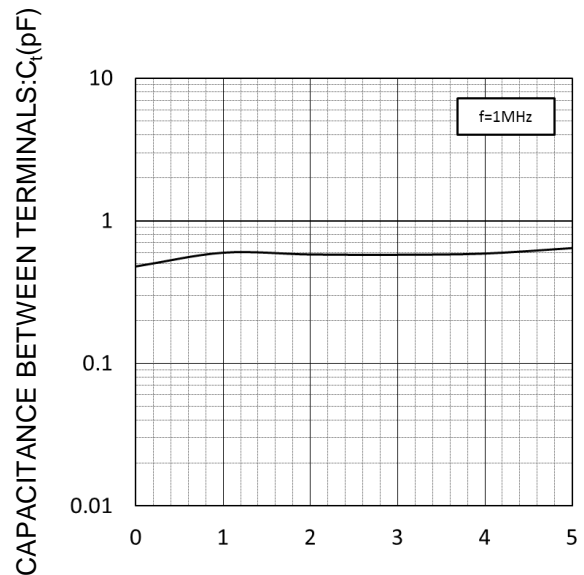
TIME(ns)
ESD CLAMPING VOLTAGE
(IEC61000-4-2 +8kV CONTACT)



TIME(ns)
ESD CLAMPING VOLTAGE
(IEC61000-4-2 +8kV CONTACT)

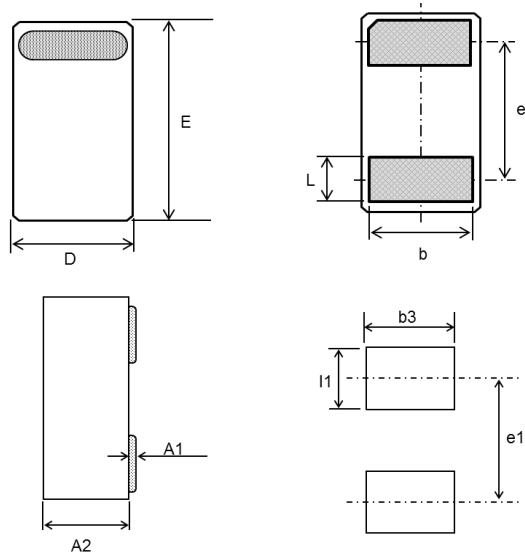


REVERSE VOLTAGE: VR(V)
VR-IR CHARACTERISTICS



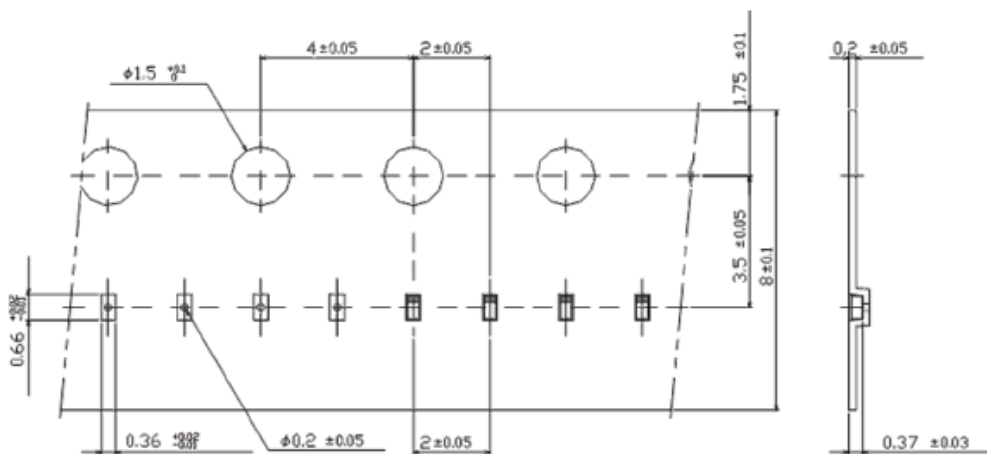
REVERSE VOLTAGE: VR(V)
VR-Ct CHARACTERISTICS

●Dimensions (DSN0603-2 SOD-962 SMD0603B)



DIM	Millimeters			Inches		
	Min.	Average	Max.	Min.	Average	Max.
A1	0.000	-	0.010	0.000	-	0.000
A2	0.270	0.280	0.290	0.011	0.011	0.011
b	0.230	0.240	0.250	0.009	0.009	0.010
D	0.290	0.300	0.310	0.011	0.012	0.012
E	0.590	0.600	0.610	0.023	0.024	0.024
L	0.130	0.140	0.150	0.005	0.006	0.006
e	0.390	0.400	0.410	0.015	0.016	0.016
l1	-	0.230	-	-	0.009	-
b3	-	0.310	-	-	0.012	-
e1	-	0.380	-	-	0.015	-

●Taping (Unit:mm)



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(Note1) Medical Equipment Classification of the Specific Applications

JAPAN	USA	EU	CHINA
CLASS III	CLASS III	CLASS II b	CLASS III
CLASS IV		CLASS III	

- ROHM designs and manufactures its Products subject to strict quality control system. However, semiconductor products can fail or malfunction at a certain rate. Please be sure to implement, at your own responsibilities, adequate safety measures including but not limited to fail-safe design against the physical injury, damage to any property, which a failure or malfunction of our Products may cause. The following are examples of safety measures:
 - Installation of protection circuits or other protective devices to improve system safety
 - Installation of redundant circuits to reduce the impact of single or multiple circuit failure
- Our Products are designed and manufactured for use under standard conditions and not under any special or extraordinary environments or conditions, as exemplified below. Accordingly, ROHM shall not be in any way responsible or liable for any damages, expenses or losses arising from the use of any ROHM's Products under any special or extraordinary environments or conditions. If you intend to use our Products under any special or extraordinary environments or conditions (as exemplified below), your independent verification and confirmation of product performance, reliability, etc. prior to use, must be necessary:
 - Use of our Products in any types of liquid, including water, oils, chemicals, and organic solvents
 - Use of our Products outdoors or in places where the Products are exposed to direct sunlight or dust
 - Use of our Products in places where the Products are exposed to sea wind or corrosive gases, including Cl₂, H₂S, NH₃, SO₂, and NO₂
 - Use of our Products in places where the Products are exposed to static electricity or electromagnetic waves
 - Use of our Products in proximity to heat-producing components, plastic cords, or other flammable items
 - Sealing or coating our Products with resin or other coating materials
 - Use of our Products without cleaning residue of flux (even if you use no-clean type fluxes, cleaning residue of flux is recommended); or Washing our Products by using water or water-soluble cleaning agents for cleaning residue after soldering
 - Use of the Products in places subject to dew condensation
- The Products are not subject to radiation-proof design.
- Please verify and confirm characteristics of the final or mounted products in using the Products.
- In particular, if a transient load (a large amount of load applied in a short period of time, such as pulse. is applied, confirmation of performance characteristics after on-board mounting is strongly recommended. Avoid applying power exceeding normal rated power; exceeding the power rating under steady-state loading condition may negatively affect product performance and reliability.
- De-rate Power Dissipation depending on ambient temperature. When used in sealed area, confirm that it is the use in the range that does not exceed the maximum junction temperature.
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Precaution for Mounting / Circuit board design

- When a highly active halogenous (chlorine, bromine, etc.) flux is used, the residue of flux may negatively affect product performance and reliability.
- In principle, the reflow soldering method must be used on a surface-mount products, the flow soldering method must be used on a through hole mount products. If the flow soldering method is preferred on a surface-mount products, please consult with the ROHM representative in advance.

For details, please refer to ROHM Mounting specification

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 - [a] the Products are exposed to sea winds or corrosive gases, including Cl₂, H₂S, NH₃, SO₂, and NO₂
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