To our customers,

Old Company Name in Catalogs and Other Documents

On April 1st, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

Renesas Electronics website: http://www.renesas.com

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (http://www.renesas.com)

Send any inquiries to http://www.renesas.com/inquiry.

Notice

1. All information included in this document is current as of the date this document is issued. Such information, however, is subject to change without any prior notice. Before purchasing or using any Renesas Electronics products listed herein, please confirm the latest product information with a Renesas Electronics sales office. Also, please pay regular and careful attention to additional and different information to be disclosed by Renesas Electronics such as that disclosed through our website.
2. Renesas Electronics does not assume any liability for infringement of patents, copyrights, or other intellectual property rights of third parties by or arising from the use of Renesas Electronics products or technical information described in this document. No license, express, implied or otherwise, is granted hereby under any patents, copyrights or other intellectual property rights of Renesas Electronics or others.
3. You should not alter, modify, copy, or otherwise misappropriate any Renesas Electronics product, whether in whole or in part.
4. Descriptions of circuits, software and other related information in this document are provided only to illustrate the operation of semiconductor products and application examples. You are fully responsible for the incorporation of these circuits, software, and information in the design of your equipment. Renesas Electronics assumes no responsibility for any losses incurred by you or third parties arising from the use of these circuits, software, or information.
5. When exporting the products or technology described in this document, you should comply with the applicable export control laws and regulations and follow the procedures required by such laws and regulations. You should not use Renesas Electronics products or the technology described in this document for any purpose relating to military applications or use by the military, including but not limited to the development of weapons of mass destruction. Renesas Electronics products and technology may not be used for or incorporated into any products or systems whose manufacture, use, or sale is prohibited under any applicable domestic or foreign laws or regulations.
6. Renesas Electronics has used reasonable care in preparing the information included in this document, but Renesas Electronics does not warrant that such information is error free. Renesas Electronics assumes no liability whatsoever for any damages incurred by you resulting from errors in or omissions from the information included herein.
7. Renesas Electronics products are classified according to the following three quality grades: "Standard", "High Quality", and "Specific". The recommended applications for each Renesas Electronics product depends on the product's quality grade, as indicated below. You must check the quality grade of each Renesas Electronics product before using it in a particular application. You may not use any Renesas Electronics product for any application categorized as "Specific" without the prior written consent of Renesas Electronics. Further, you may not use any Renesas Electronics product for any application for which it is not intended without the prior written consent of Renesas Electronics. Renesas Electronics shall not be in any way liable for any damages or losses incurred by you or third parties arising from the use of any Renesas Electronics product for an application categorized as "Specific" or for which the product is not intended where you have failed to obtain the prior written consent of Renesas Electronics. The quality grade of each Renesas Electronics product is "Standard" unless otherwise expressly specified in a Renesas Electronics data sheets or data books, etc.

   "Standard": Computers; office equipment; communications equipment; test and measurement equipment; audio and visual equipment; home electronic appliances; machine tools; personal electronic equipment; and industrial robots.

   "High Quality": Transportation equipment (automobiles, trains, ships, etc.); traffic control systems; anti-disaster systems; anti-crime systems; safety equipment; and medical equipment not specifically designed for life support.

   "Specific": Aircraft; aerospace equipment; submersible repeaters; nuclear reactor control systems; medical equipment or systems for life support (e.g. artificial life support devices or systems), surgical implantations, or healthcare intervention (e.g. excision, etc.), and any other applications or purposes that pose a direct threat to human life.
8. You should use the Renesas Electronics products described in this document within the range specified by Renesas Electronics, especially with respect to the maximum rating, operating supply voltage range, movement power voltage range, heat radiation characteristics, installation and other product characteristics. Renesas Electronics shall have no liability for malfunctions or damages arising out of the use of Renesas Electronics products beyond such specified ranges.
9. Although Renesas Electronics endeavors to improve the quality and reliability of its products, semiconductor products have specific characteristics such as the occurrence of failure at a certain rate and malfunctions under certain use conditions. Further, Renesas Electronics products are not subject to radiation resistance design. Please be sure to implement safety measures to guard them against the possibility of physical injury, and injury or damage caused by fire in the event of the failure of a Renesas Electronics product, such as safety design for hardware and software including but not limited to redundancy, fire control and malfunction prevention, appropriate treatment for aging degradation or any other appropriate measures. Because the evaluation of microcomputer software alone is very difficult, please evaluate the safety of the final products or system manufactured by you.
10. Please contact a Renesas Electronics sales office for details as to environmental matters such as the environmental compatibility of each Renesas Electronics product. Please use Renesas Electronics products in compliance with all applicable laws and regulations that regulate the inclusion or use of controlled substances, including without limitation, the EU RoHS Directive. Renesas Electronics assumes no liability for damages or losses occurring as a result of your noncompliance with applicable laws and regulations.
11. This document may not be reproduced or duplicated, in any form, in whole or in part, without prior written consent of Renesas Electronics.
12. Please contact a Renesas Electronics sales office if you have any questions regarding the information contained in this document or Renesas Electronics products, or if you have any other inquiries.

(Note 1) "Renesas Electronics" as used in this document means Renesas Electronics Corporation and also includes its majority-owned subsidiaries.

(Note 2) "Renesas Electronics product(s)" means any product developed or manufactured by or for Renesas Electronics.

DATA SHEET

RENESAS

ZENER DIODES

RD2.0MW to RD39MW

ZENER DIODES
200 mW 3-PIN MINI MOLD

DESCRIPTION

Type RD2.0MW to RD39MW Series are 3-PIN Mini Mold Package zener diodes possessing allowable power dissipation of 200 mW.

FEATURES

- V_Z; Applied E24 standard
- Surge absorber on either side

APPLICATIONS

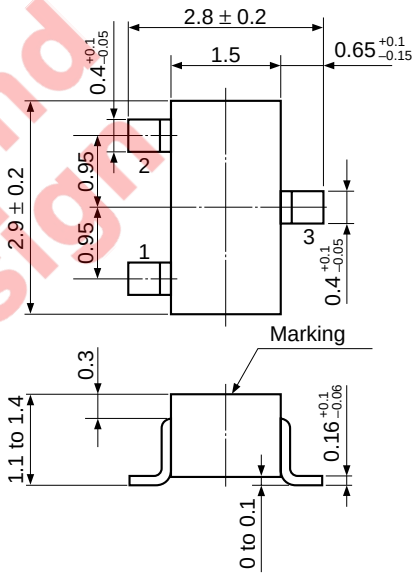
Circuits for Constant Voltage, Constant Current, Wavefore clipper, Surge absorber, ESD Protect circuit, etc.

MAXIMUM RATINGS (T_A = 25°C)

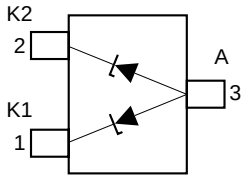
Power Dissipation	P	200 mW
Junction Temperature	T_j	150°C
Storage Temperature	T_{stg}	–55 to +150°C
Peak Reverse Power	P_{RSM}	85 W (t = 10 μs)
Forward Current	I_F	100 mA

PACKAGE DIMENSIONS

(Unit: mm)



1 . Cathode : K1
2 . Cathode : K2 SC-59 (EIAJ)
3 . Anode : A



Document No. D10247EJ5V0DS00 (5th edition)
Date Published June 2000 N CP(K)
Printed in Japan

ELECTRICAL CHARACTERISTICS (T_A = 25 ± 2°C)

Type Number	Class	Zener Voltage V_Z (V)[Note 1]			Dynamic Impedance Z_Z (Ω)[Note 2]		Reverse Current I_R (μA)	
		MIN.	MAX.	I_Z (mA)	MAX.	I_Z (mA)	MAX.	V_R(V)
RD2.0MW	B	1.90	2.20	5	100	5	120	0.5
RD2.2MW	B	2.10	2.40	5	100	5	120	0.7
RD2.4MW	B	2.30	2.60	5	100	5	120	1.0
RD2.7MW	B	2.50	2.90	5	110	5	120	1.0
RD3.0MW	B	2.80	3.20	5	120	5	50	1.0
RD3.3MW	B	3.10	3.50	5	130	5	20	1.0
RD3.6MW	B	3.40	3.80	5	130	5	10	1.0
RD3.9MW	B	3.70	4.10	5	130	5	10	1.0
RD4.3MW	B	4.01	4.48	5	130	5	10	1.0
RD4.7MW	B	4.42	4.90	5	130	5	10	1.0
RD5.1MW	B	4.84	5.37	5	130	5	5	1.0
RD5.6MW	B	5.31	5.92	5	80	5	5	1.5
RD6.2MW	B	5.86	6.53	5	50	5	2	2.5
RD6.8MW	B	6.47	7.14	5	30	5	2	3.5
RD7.5MW	B	7.06	7.84	5	30	5	2	4.0
RD8.2MW	B	7.76	8.64	5	30	5	2	5.0
RD9.1MW	B	8.56	9.55	5	30	5	2	6.0
RD10MW	B	9.45	10.55	5	30	5	2	7.0
RD11MW	B	10.44	11.56	5	30	5	2	8.0
RD12MW	B	11.42	12.60	5	35	5	2	9.0
RD13MW	B	12.47	13.96	5	35	5	2	10
RD15MW	B	13.84	15.52	5	40	5	2	11
RD16MW	B	15.37	17.09	5	40	5	2	12
RD18MW	B	16.94	19.03	5	45	5	2	13
RD20MW	B	18.86	21.08	5	50	5	2	15
RD22MW	B	20.88	23.17	5	55	5	2	17
RD24MW	B	22.93	25.57	5	60	5	2	19
RD27MW	B	25.10	28.90	2	70	2	2	21
RD30MW	B	28.00	32.00	2	80	2	2	23
RD33MW	B	31.00	35.00	2	80	2	2	25
RD36MW	B	34.00	38.00	2	90	2	2	27
RD39MW	B	37.00	41.00	2	100	2	2	30

Note 1. Tested with pulse (40 ms)

2. Z_Z is measured at I_Z given a very small A.C. signal

Type Number	Class	Zener Voltage +Forward Voltage ($V_Z + V_F$) (V)			Zener Voltage + Forward Voltage $\Delta(V + V_F)$ (V)		Forward Voltage V_F (V) A–K1 A–K2	
		MIN.	MAX.	I_Z (mA)	MAX.	I_Z (mA)	MAX.	I_F (mA)
RD2.0MW	B	2.54	3.04	5	0.35	5	1.2	100
RD2.2MW	B	2.74	3.24	5	0.35	5		
RD2.4MW	B	2.97	3.47	5	0.35	5		
RD2.7MW	B	3.17	3.77	5	0.35	5		
RD3.0MW	B	3.47	4.07	5	0.35	5		
RD3.3MW	B	3.77	4.37	5	0.35	5		
RD3.6MW	B	4.07	4.67	5	0.35	5		
RD3.9MW	B	4.37	4.97	5	0.35	5		
RD4.3MW	B	4.68	5.35	5	0.35	5		
RD4.7MW	B	5.09	5.77	5	0.35	5		
RD5.1MW	B	5.51	6.24	5	0.35	5		
RD5.6MW	B	5.98	6.79	5	0.35	5		
RD6.2MW	B	6.53	7.40	5	0.35	5		
RD6.8MW	B	7.14	8.01	5	0.35	5		
RD7.5MW	B	7.73	8.71	5	0.35	5		
RD8.2MW	B	8.07	9.87	5	0.35	5		
RD9.1MW	B	8.87	10.87	5	0.35	5		
RD10MW	B	10.12	11.42	5	0.70	5		
RD11MW	B	11.11	12.43	5	0.70	5		
RD12MW	B	12.09	13.47	5	0.70	5		
RD13MW	B	13.14	14.83	5	0.90	5		
RD15MW	B	14.51	16.37	5	0.90	5		
RD16MW	B	16.04	17.96	5	0.90	5		
RD18MW	B	17.61	19.90	5	1.20	5		
RD20MW	B	19.53	21.95	5	1.20	5		
RD22MW	B	21.55	24.04	5	1.20	5		
RD24MW	B	23.60	26.44	5	1.20	5		
RD27MW	B	25.73	29.73	2	1.70	2		
RD30MW	B	28.63	32.83	2	1.70	2		
RD33MW	B	31.63	35.83	2	1.70	2		
RD36MW	B	34.63	38.83	2	1.70	2		
RD39MW	B	37.63	41.83	2	1.70	2		

TYPICAL CHARACTERISTICS (T_A = 25°C)

Fig. 1 P - T_A RATING

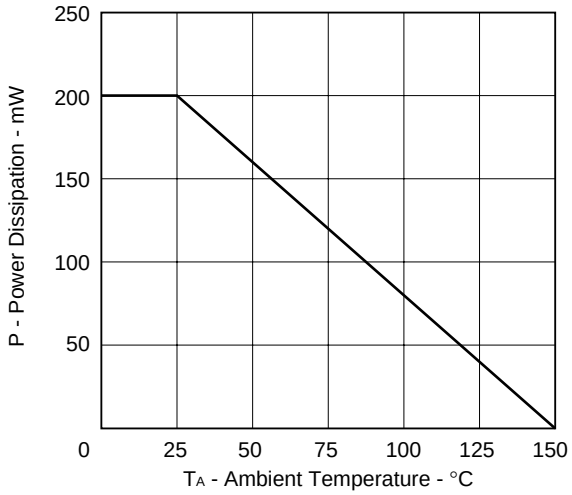
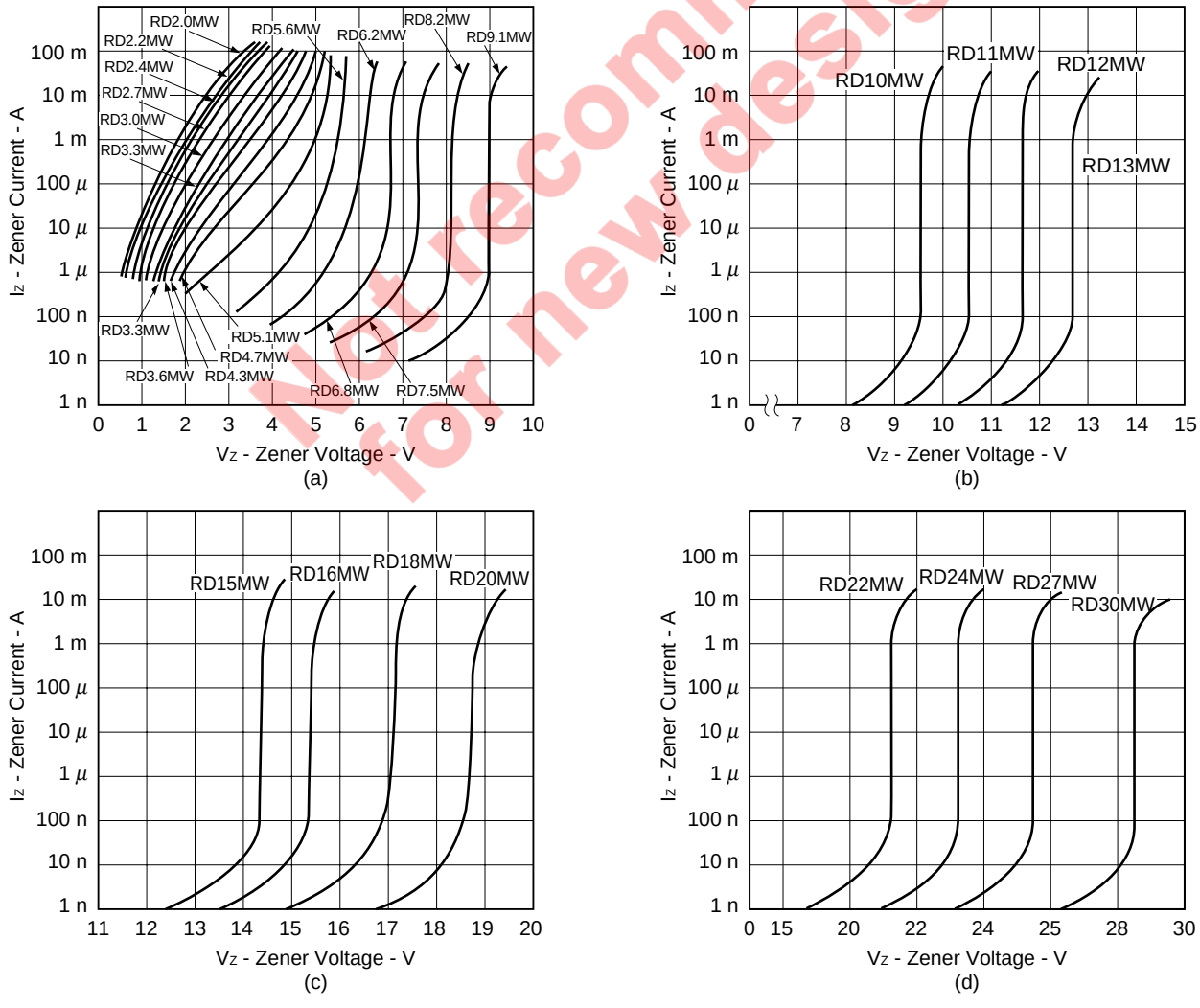


Fig. 2 I_Z - V_Z CHARACTERISTICS (a to e)



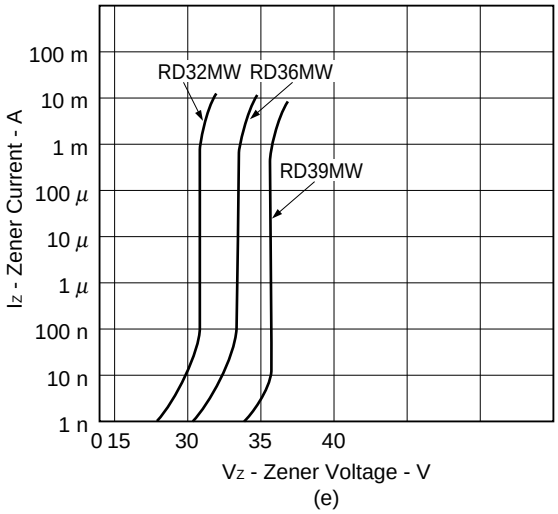


Fig. 3 γ_z - V_z CHARACTERISTICS

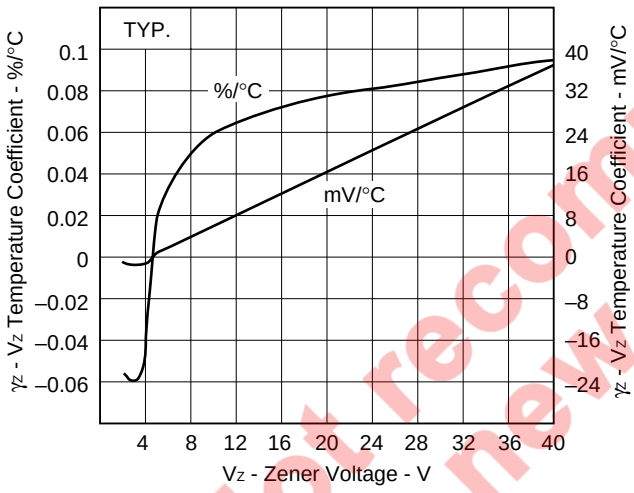


Fig. 4 Z_z - I_z CHARACTERISTICS

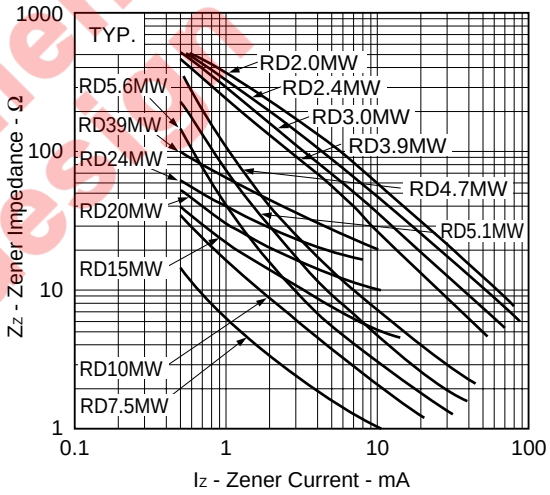


Fig. 5 TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS

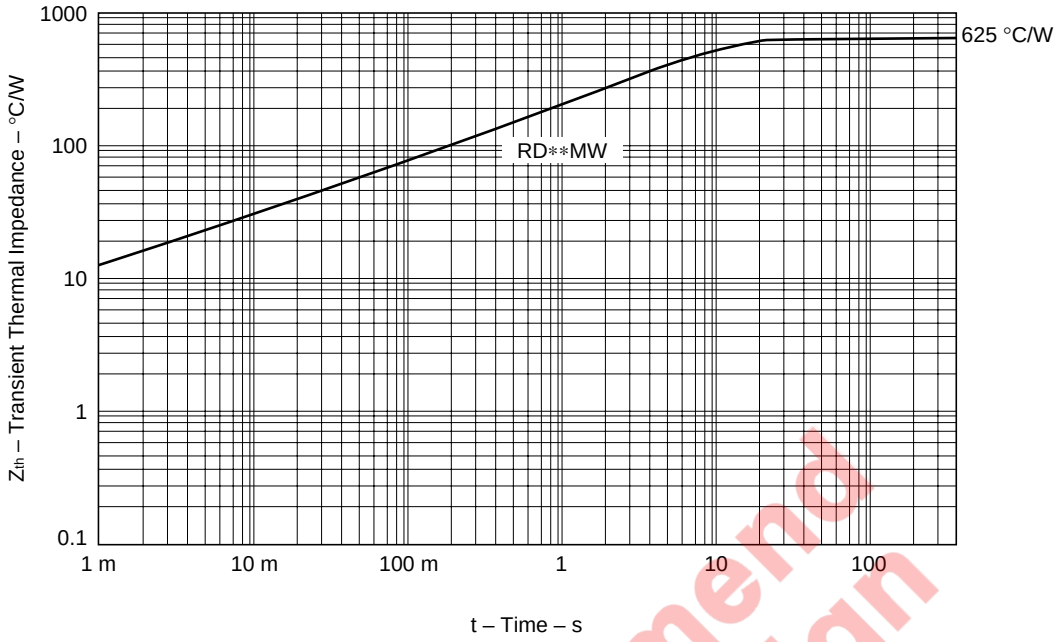
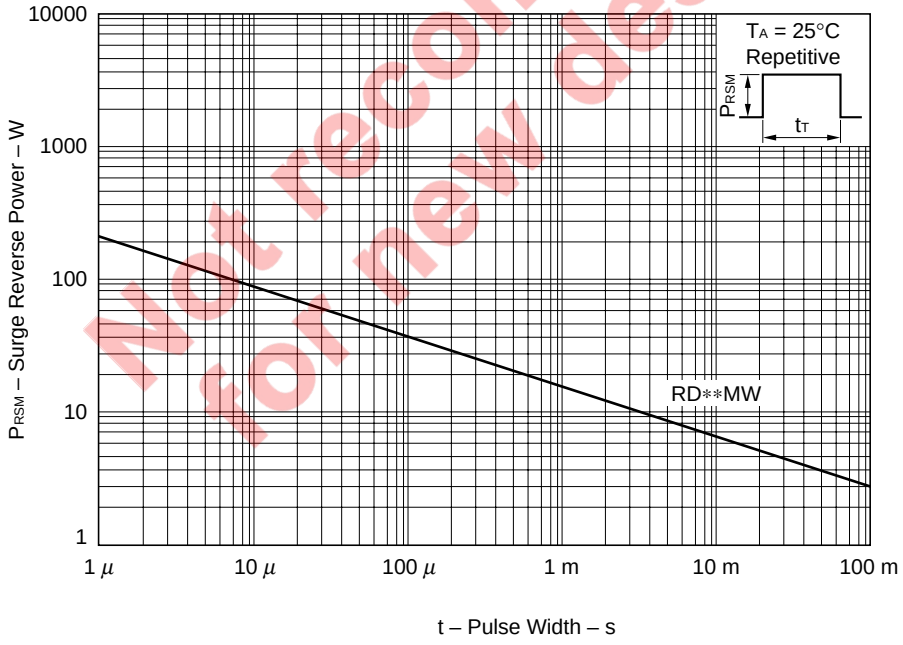


Fig. 6 SURGE REVERSE POWER RATINGS



[MEMO]

[MEMO]

- **The information in this document is subject to change without notice. Before using this document, please confirm that this is the latest version.**
- No part of this document may be copied or reproduced in any form or by any means without the prior written consent of NEC Corporation. NEC Corporation assumes no responsibility for any errors which may appear in this document.
- NEC Corporation does not assume any liability for infringement of patents, copyrights or other intellectual property rights of third parties by or arising from use of a device described herein or any other liability arising from use of such device. No license, either express, implied or otherwise, is granted under any patents, copyrights or other intellectual property rights of NEC Corporation or others.
- Descriptions of circuits, software, and other related information in this document are provided for illustrative purposes in semiconductor product operation and application examples. The incorporation of these circuits, software, and information in the design of the customer's equipment shall be done under the full responsibility of the customer. NEC Corporation assumes no responsibility for any losses incurred by the customer or third parties arising from the use of these circuits, software, and information.
- While NEC Corporation has been making continuous effort to enhance the reliability of its semiconductor devices, the possibility of defects cannot be eliminated entirely. To minimize risks of damage or injury to persons or property arising from a defect in an NEC semiconductor device, customers must incorporate sufficient safety measures in its design, such as redundancy, fire-containment, and anti-failure features.
- NEC devices are classified into the following three quality grades:
  "Standard", "Special", and "Specific". The Specific quality grade applies only to devices developed based on a customer designated “quality assurance program“ for a specific application. The recommended applications of a device depend on its quality grade, as indicated below. Customers must check the quality grade of each device before using it in a particular application.
  - Standard: Computers, office equipment, communications equipment, test and measurement equipment, audio and visual equipment, home electronic appliances, machine tools, personal electronic equipment and industrial robots
  - Special: Transportation equipment (automobiles, trains, ships, etc.), traffic control systems, anti-disaster systems, anti-crime systems, safety equipment and medical equipment (not specifically designed for life support)
  - Specific: Aircraft, aerospace equipment, submersible repeaters, nuclear reactor control systems, life support systems or medical equipment for life support, etc.

  The quality grade of NEC devices is "Standard" unless otherwise specified in NEC's Data Sheets or Data Books. If customers intend to use NEC devices for applications other than those specified for Standard quality grade, they should contact an NEC sales representative in advance.

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for Zener Diodes ***category:***

Click to view products by Renesas ***manufacturer:***

Other Similar products are found below :

MMSZ5245BS-7-F RKZ13B2KG#P1 RKZ5.6B2KJ#R1 EDZTE6113B EDZTE6116B EDZTE616.8B 1N747A 1N966B NTE5116A NTE5121A NTE5139A NTE5147A NTE5152A NTE5155A NTE5156A NTE5164A JANS1N4974US SMAJ4764A-TP RKZ5.1BKU#P6 3SMAJ5946B-TP 3SMAJ5950B-TP 3SMBJ5920B-TP 3SMBJ5925B-TP TDZTR24 441774C MMSZ4678-TP MMSZ5232BQ-13-F BZG04-36 BZG05C9V1-HE3-TR HZM30NBTR-E UDZTE-175.1B 3SMAJ5945B-TP 3SMAJ5947B-TP 3SMBJ5941B-TP DL4746A-TP RKZ18B2KK#R1 RKZ10B2KL#R1 RKZ6.8B2KL#R1 RKZ8.2B2KL#R1 DZ2S240M0L SMAZ27-TP SMBZ5920B-E3/52 ZMM3.0 RD16UM-T1-A RD39S-T1-A RD9.1S-T1-A RD10S-T1-A RD20S-T1-A RD2.2S-T1-A RD2.7UM-T1-A