To our customers,

Old Company Name in Catalogs and Other Documents

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

April 1st, 2010
Renesas Electronics Corporation

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DATA SHEET

RENESAS

ZENER DIODES
RD2.0S to RD150S

ZENER DIODES
200 mW 2-PIN SUPER MINI MOLD

DESCRIPTION

Type RD2.0S to RD150S series are 2 pin super mini mold package zener diodes possessing an allowable power dissipation of 200 mW.

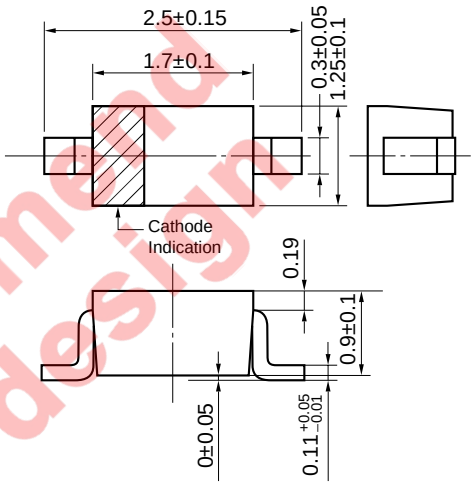
FEATURES

- Sharp breakdown characteristic
- V_Z: Applied E24 standard

APPLICATIONS

Circuit for constant voltage, constant current, wave form clipper, surge absorver, etc.

PACKAGE DRAWING (Unit: mm)



ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Power Dissipation	P	200	mW	
Forward Current	I_F	100	mA	
Reverse Surge Power	P_{RSM}	85	W	(at t = 10 μs/ 1 pulse) Show Fig.12
Junction Temperature	T_j	150	°C	
Storage Temperature	T_{stg}	–55 to +150	°C	

Document No. D11444EJ6V0DS00 (6th edition)
Date Published August 2006 NS CP(K)
Printed in Japan

The mark <R> shows major revised points.
The revised points can be easily searched by copying an "<R>" in the PDF file and specifying it in the "Find what:" field.

<R> **ELECTRICAL CHARACTERISTICS (T_A = 25 ±2°C)** (1/4)

Type Number	Class	Zener Voltage V_Z (V) Note1			Dynamic Impedance Z_Z (Ω) Note2		Reverse Current I_R (μA)	
		MIN.	MAX.	I_Z (mA)	MAX.	I_Z (mA)	MAX.	V_R (V)
RD2.0S	B	1.90	2.20	5	100	5	120	0.5
RD2.2S	B	2.10	2.40	5	100	5	120	0.7
RD2.4S	B	2.30	2.60	5	100	5	120	1.0
RD2.7S	B	2.50	2.90	5	110	5	120	1.0
	B1	2.50	2.75					
	B2	2.65	2.90					
RD3.0S	B	2.80	3.20	5	120	5	50	1.0
	B1	2.80	3.05					
	B2	2.95	3.20					
RD3.3S	B	3.10	3.50	5	130	5	20	1.0
	B1	3.10	3.35					
	B2	3.25	3.50					
RD3.6S	B	3.40	3.80	5	130	5	10	1.0
	B1	3.40	3.65					
	B2	3.55	3.80					
RD3.9S	B	3.70	4.10	5	130	5	10	1.0
	B1	3.70	3.97					
	B2	3.87	4.10					
RD4.3S	B	4.00	4.49	5	130	5	10	1.0
	B1	4.00	4.22					
	B2	4.14	4.35					
	B3	4.27	4.49					
	BX	4.00	4.35					
	BY	4.14	4.49					
RD4.7S	B	4.40	4.92	5	130	5	10	1.0
	B1	4.40	4.63					
	B2	4.53	4.77					
	B3	4.67	4.92					
	BX	4.40	4.77					
	BY	4.53	4.92					
RD5.1S	B	4.82	5.39	5	130	5	5	1.5
	B1	4.82	5.06					
	B2	4.96	5.22					
	B3	5.12	5.39					
	BX	4.82	5.22					
	BY	4.96	5.39					

Note 1. V_Z is tested with pulsed (40 ms).

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

Remark Suffix B is suffix B1, B2 or suffix B3.

(2/4)

Type Number	Class	Zener Voltage V_Z (V) Note1			Dynamic Impedance Z_Z (Ω) Note2		Reverse Current I_R (μA)	
		MIN.	MAX.	I_Z (mA)	MAX.	I_Z (mA)	MAX.	V_R (V)
RD5.6S	B	5.29	5.94	5	80	5	5	2.5
	B1	5.29	5.57					
	B2	5.47	5.75					
	B3	5.65	5.94					
	BX	5.29	5.57					
	BY	5.47	5.94					
RD6.2S	B	5.84	6.55	5	50	5	2	3.0
	B1	5.84	6.14					
	B2	6.04	6.35					
	B3	6.24	6.55					
	BX	5.84	6.35					
	BY	6.04	6.55					
RD6.8S	B	6.44	7.17	5	30	5	2	3.5
	B1	6.44	6.76					
	B2	6.62	6.96					
	B3	6.83	7.17					
	BX	6.44	6.96					
	BY	6.62	7.17					
RD7.5S	B	7.03	7.87	5	30	5	2	4.0
	B1	7.03	7.39					
	B2	7.25	7.63					
	B3	7.49	7.87					
	BX	7.03	7.63					
	BY	7.25	7.87					
RD8.2S	B	7.73	8.67	5	30	5	2	5.0
	B1	7.73	8.13					
	B2	7.98	8.39					
	B3	8.25	8.67					
	BX	7.73	8.39					
	BY	7.98	8.67					
RD9.1S	B	8.53	9.58	5	30	5	2	6.0
	B1	8.53	8.96					
	B2	8.81	9.26					
	B3	9.12	9.58					
	BX	8.53	9.26					
	BY	8.81	9.58					

Note 1. V_Z is tested with pulsed (40 ms).

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

Remark Suffix B is suffix B1, B2 or suffix B3.

(3/4)

Type Number	Class	Zener Voltage V_Z (V) Note1			Dynamic Impedance Z_Z (Ω) Note2		Reverse Current I_R (μA)	
		MIN.	MAX.	I_Z (mA)	MAX.	I_Z (mA)	MAX.	V_R (V)
RD10S	B	9.42	10.58	5	30	5	2	7.0
	B1	9.42	9.90					
	B2	9.74	10.24					
	B3	10.08	10.58					
	BX	9.42	10.24					
	BY	9.74	10.58					
RD11S	B	10.40	11.60	5	30	5	2	8.0
	B1	10.40	10.92					
	B2	10.72	11.26					
	B3	11.06	11.60					
	BX	10.40	11.26					
	BY	10.72	11.60					
RD12S	B	11.38	12.64	5	35	5	2	9.0
	B1	11.38	11.94					
	B2	11.69	12.28					
	B3	12.04	12.64					
	BX	11.38	12.28					
	BY	11.69	12.64					
RD13S	B	12.43	14.00	5	35	5	2	10
	B1	12.43	13.07					
	B2	12.87	13.53					
	B3	13.33	14.00					
RD15S	B	13.80	15.56	5	40	5	2	11
	B1	13.80	14.50					
	B2	14.30	15.02					
	B3	14.81	15.56					
RD16S	B	15.31	17.14	5	40	5	2	12
	B1	15.31	16.07					
	B2	15.78	16.58					
	B3	16.30	17.14					
RD18S	B	16.89	19.08	5	45	5	2	13
	B1	16.89	17.75					
	B2	17.51	18.40					
	B3	18.16	19.08					

Note 1. V_Z is tested with pulsed (40 ms).

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

Remark Suffix B is suffix B1, B2 or suffix B3.

(4/4)

Type Number	Class	Zener Voltage V_Z (V) Note1			Dynamic Impedance Z_Z (Ω) Note2		Reverse Current I_R (μA)	
		MIN.	MAX.	I_Z (mA)	MAX.	I_Z (mA)	MAX.	V_R (V)
RD20S	B	18.80	21.14	5	50	5	2	15
	B1	18.80	19.76					
	B2	19.46	20.45					
	B3	20.15	21.14					
RD22S	B	20.81	23.25	5	55	5	2	17
	B1	20.81	21.84					
	B2	21.46	22.55					
	B3	22.15	23.25					
RD24S	B	22.86	25.66	5	60	5	2	19
	B1	22.86	24.03					
	B2	23.65	24.85					
	B3	24.45	25.66					
RD27S	B	25.10	28.90	2	70	2	2	21
RD30S	B	28.00	32.00	2	80	2	2	23
RD33S	B	31.00	35.00	2	80	2	2	25
RD36S	B	34.00	38.00	2	90	2	2	27
RD39S	B	37.00	41.00	2	100	2	2	30
RD43S	B	40.00	45.00	2	130	2	2	33
RD47S	B	44.00	49.00	2	150	2	2	36
RD51S	B	48.00	54.00	2	180	2	1	39
RD56S	B	53.00	60.00	2	180	2	1	43
RD62S	B	58.00	66.00	2	200	2	0.2	47
RD68S	B	64.00	72.00	2	250	2	0.2	52
RD75S	B	70.00	79.00	2	300	2	0.2	57
RD82S	B	77.00	87.00	2	300	2	0.2	63
RD91S	B	85.00	96.00	1	700	1	0.2	69
RD100S	B	94.00	106.0	1	700	1	0.2	76
RD110S	B	104.00	116.00	1	800	1	0.2	84
RD120S	B	114.00	126.00	1	900	1	0.2	91
RD150S	B	140.00	160.00	1	1500	1	0.2	120

Note 1. V_Z is tested with pulsed (40 ms).

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

Remark Suffix B is suffix B1, B2 or suffix B3.

TYPICAL CHARACTERISTICS (T_A = 25°C)

Fig.1 POWER DISSIPATION vs. AMBIENT TEMPERATURE

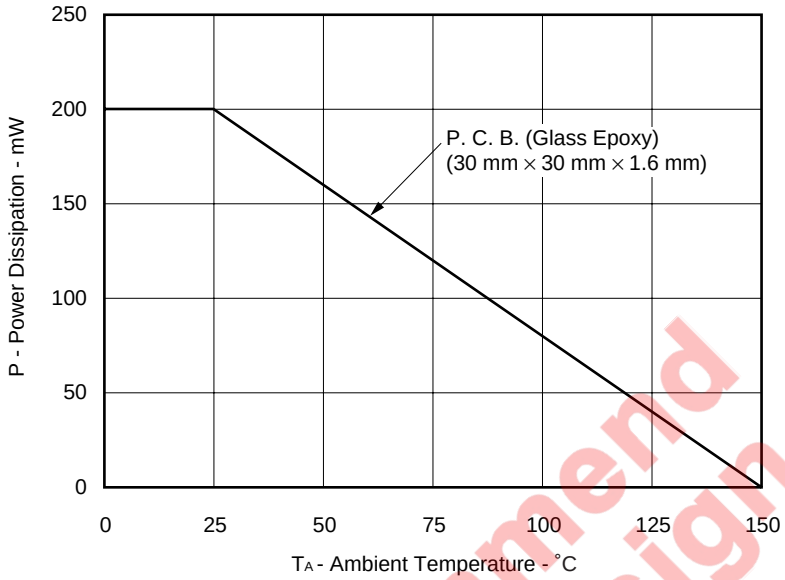


Fig.2 ZENER CURRENT vs. ZENER VOLTAGE

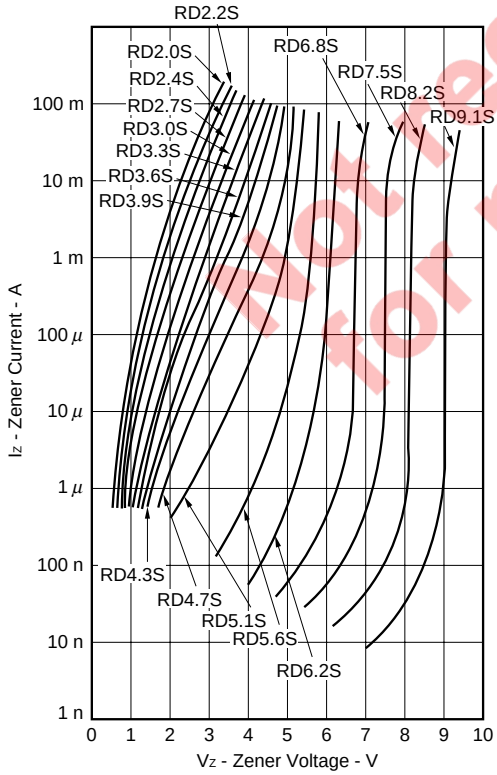


Fig.3 ZENER CURRENT vs. ZENER VOLTAGE

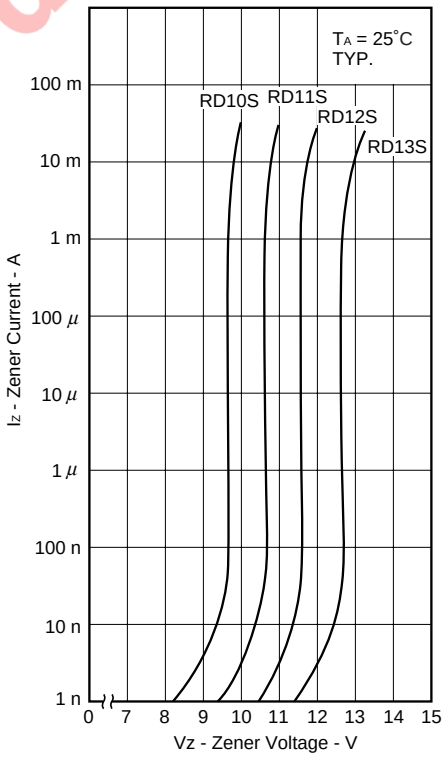


Fig.4 ZENER CURRENT vs. ZENER VOLTAGE

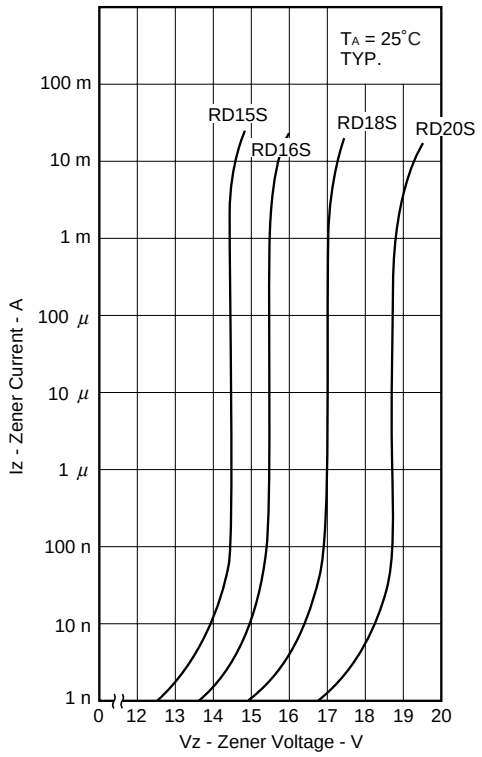


Fig.5 ZENER CURRENT vs. ZENER VOLTAGE

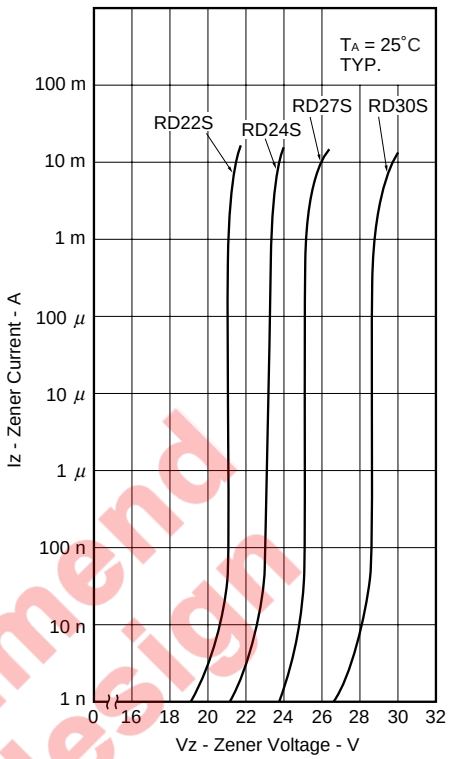


Fig.6 ZENER CURRENT vs. ZENER VOLTAGE

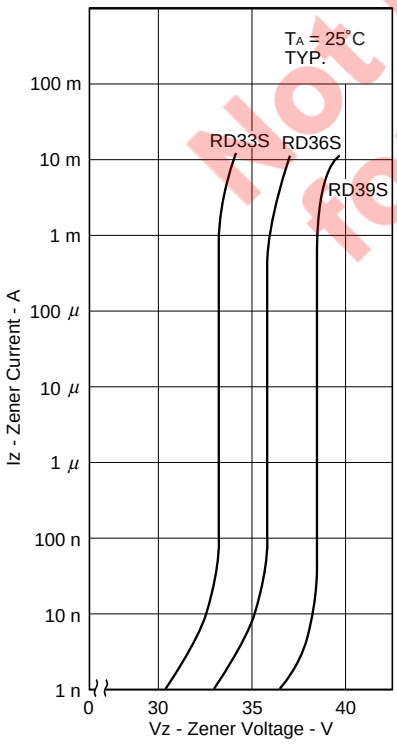


Fig.7 ZENER CURRENT vs. ZENER VOLTAGE

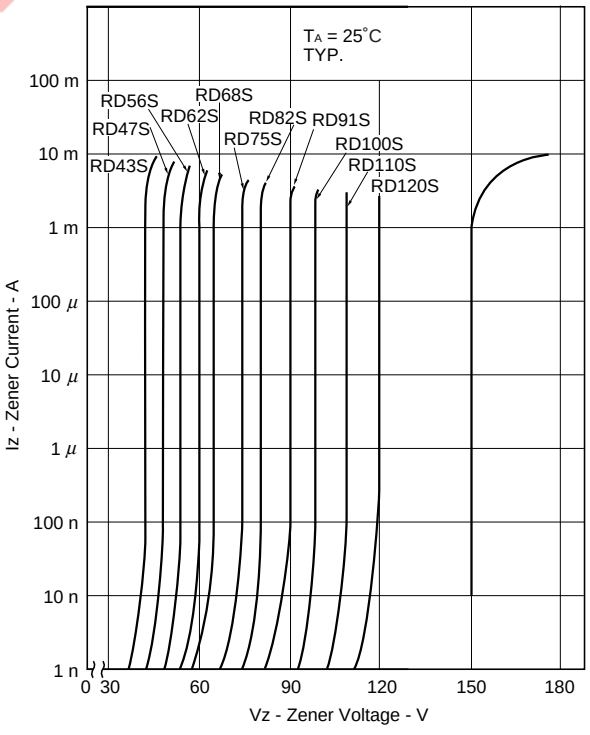


Fig.8 DYNAMIC IMPEDANCE vs. ZENER CURRENT

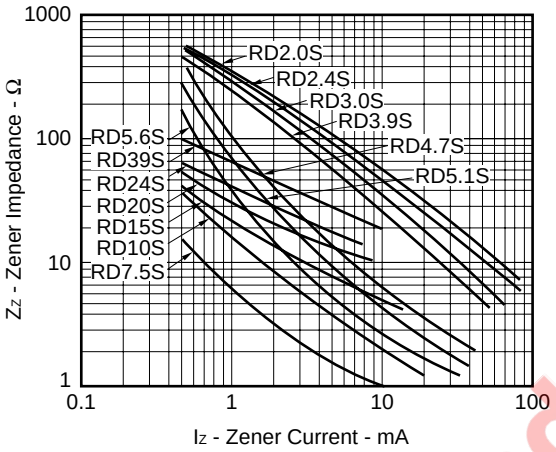


Fig.9 ZENER VOLTAGE TEMPERATURE COEFFICIENT vs. ZENER VOLTAGE

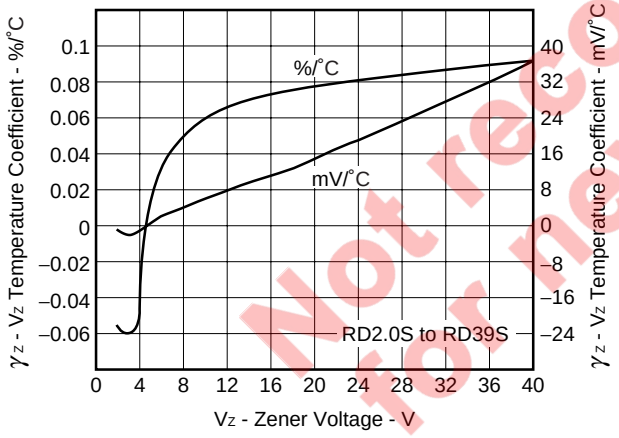


Fig.10 ZENER VOLTAGE TEMPERATURE COEFFICIENT vs. ZENER VOLTAGE

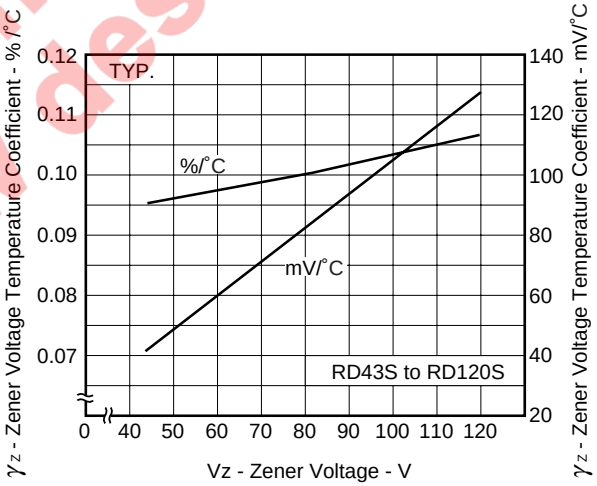


Fig.11 TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS

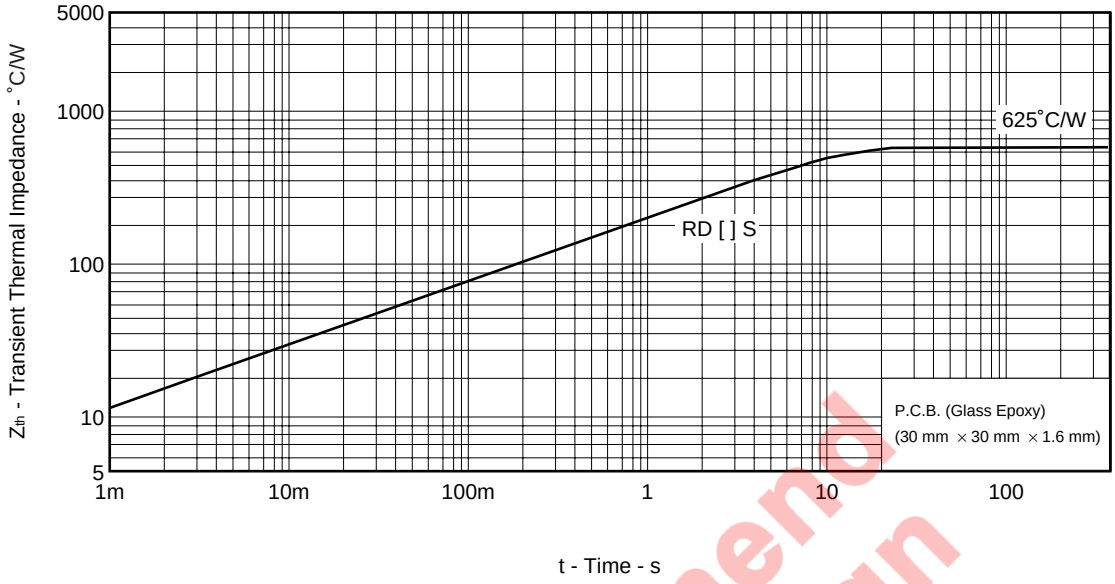
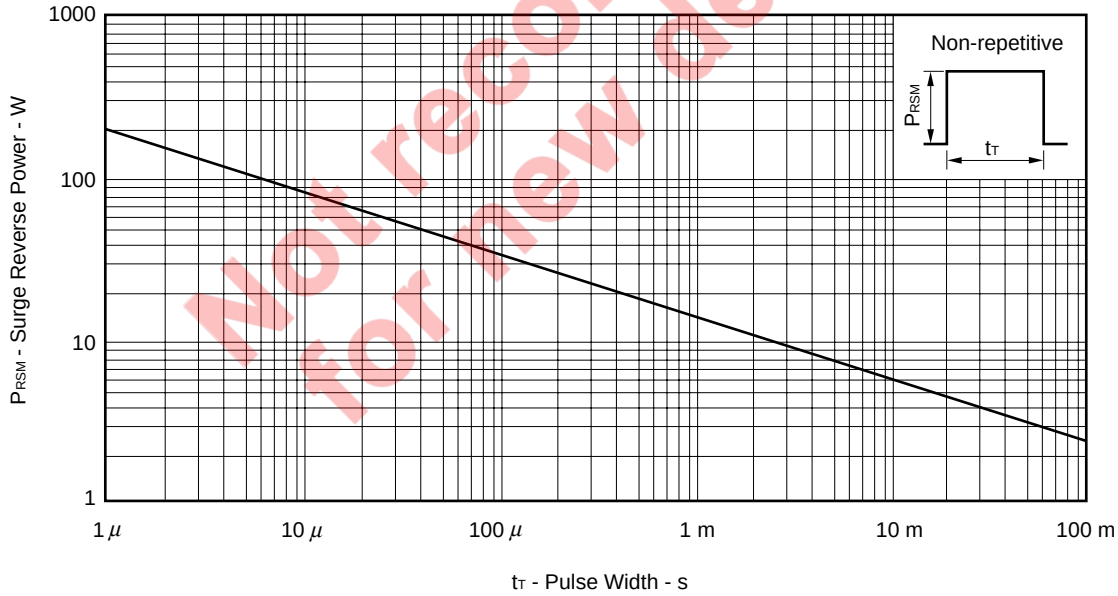


Fig.12 SURGE REVERSE POWER RATINGS



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