

## 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.

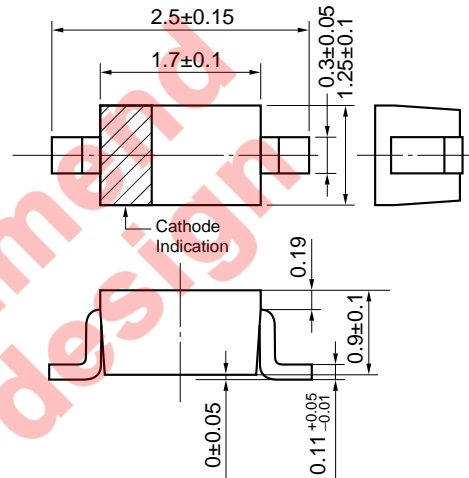
### FEATURES

- Sharp breakdown characteristic
- Vz: Applied E24 standard

### APPLICATIONS

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

### PACKAGE DRAWING (Unit: mm)



### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C)

Power Dissipation	P	200	mW	
Forward Current	I <sub>F</sub>	100	mA	
Reverse Surge Power	P <sub>RSM</sub>	85	W	(at t = 10 μs/ 1 pulse) Show Fig.12
Junction Temperature	T <sub>j</sub>	150	°C	
Storage Temperature	T <sub>stg</sub>	-55 to +150	°C	

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<R> ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25 ±2°C)

(1/4)

Type Number	Class	Zener Voltage V <sub>Z</sub> (V) <sup>Note1</sup>			Dynamic Impedance Z <sub>Z</sub> (Ω) <sup>Note2</sup>		Reverse Current I <sub>R</sub> (μA)	
		MIN.	MAX.	I <sub>Z</sub> (mA)	MAX.	I <sub>Z</sub> (mA)	MAX.	V <sub>R</sub> (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<sub>Z</sub> is tested with pulsed (40 ms).

**2.** Z<sub>Z</sub> is measured at I<sub>Z</sub> 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			Dynamic Impedance		Reverse Current	
		$V_z$ (V) <sup>Note1</sup>			$Z_z$ ( $\Omega$ ) <sup>Note2</sup>		$I_R$ ( $\mu A$ )	
		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			Dynamic Impedance		Reverse Current	
		V <sub>z</sub> (V) <sup>Note1</sup>		I <sub>z</sub> (mA)	Z <sub>z</sub> (Ω) <sup>Note2</sup>		I <sub>R</sub> (μA)	
		MIN.	MAX.		MAX.	I <sub>z</sub> (mA)	MAX.	V <sub>R</sub> (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<sub>z</sub> is tested with pulsed (40 ms).

**2.** Z<sub>z</sub> is measured at I<sub>z</sub> 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			Dynamic Impedance		Reverse Current	
		V <sub>z</sub> (V) <sup>Note1</sup>		I <sub>z</sub> (mA)	Z <sub>z</sub> (Ω) <sup>Note2</sup>		I <sub>R</sub> (μA)	
		MIN.	MAX.		MAX.	I <sub>z</sub> (mA)	MAX.	V <sub>R</sub> (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<sub>z</sub> is tested with pulsed (40 ms).

**2.** Z<sub>z</sub> is measured at I<sub>z</sub> by given a very small A.C. current signal.

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

TYPICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)

Fig.1 POWER DISSIPATION vs. AMBIENT TEMPERATURE

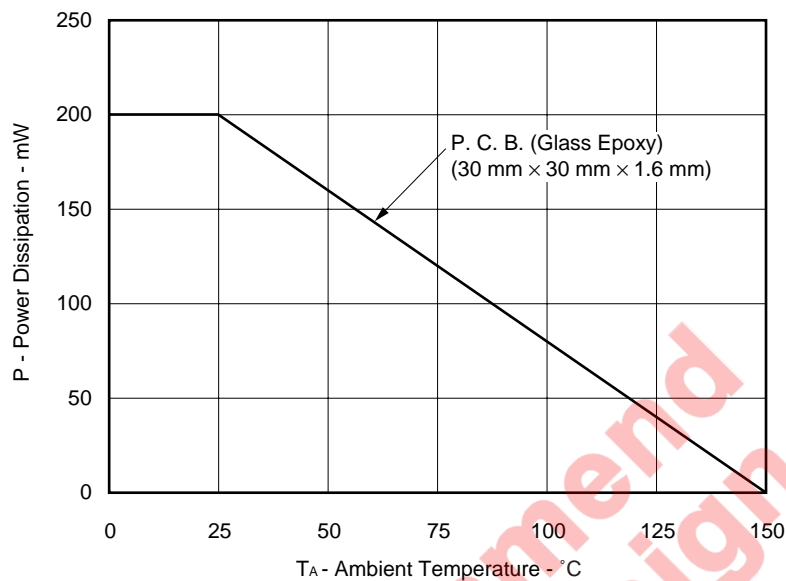


Fig.2 ZENER CURRENT vs. ZENER VOLTAGE

Fig.3 ZENER CURRENT vs. ZENER VOLTAGE

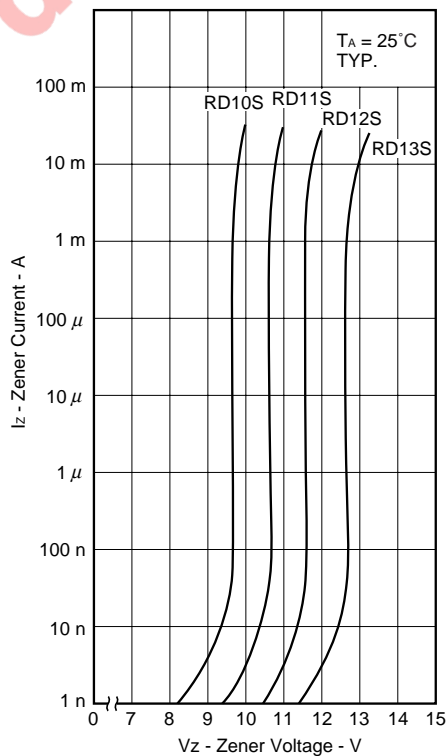
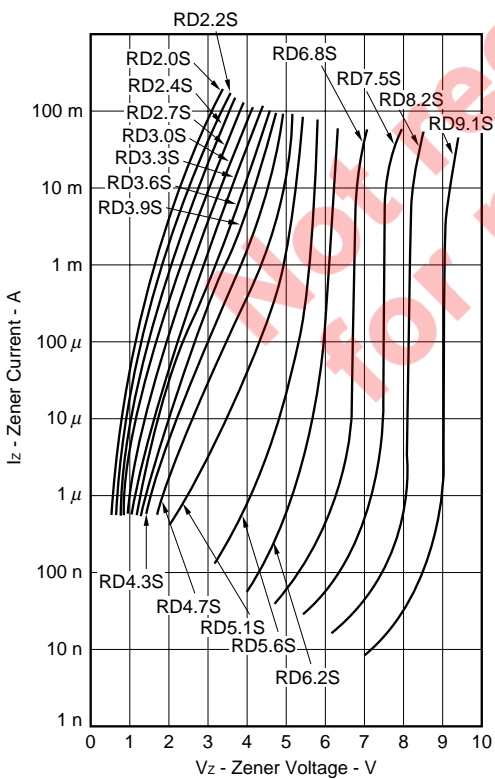


Fig.4 ZENER CURRENT vs. ZENER VOLTAGE

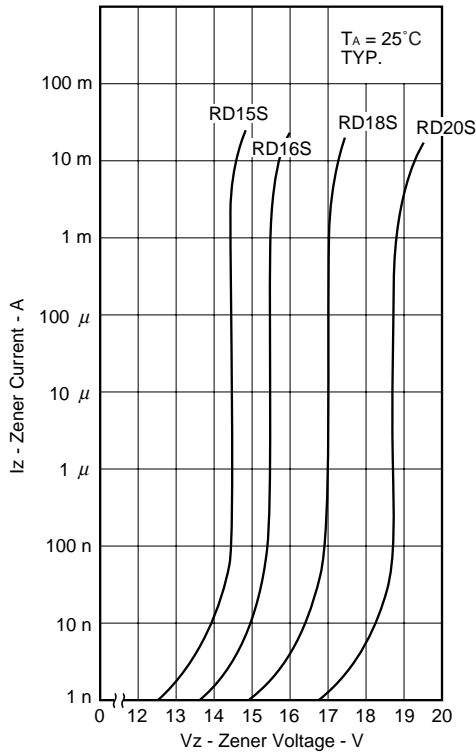


Fig.5 ZENER CURRENT vs. ZENER VOLTAGE

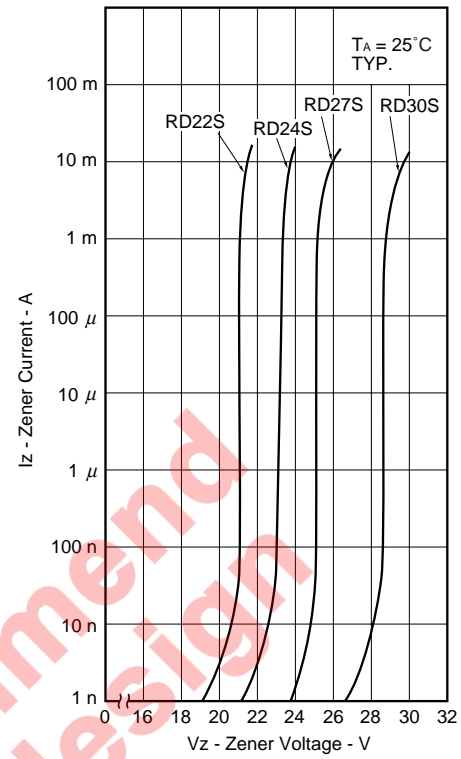


Fig.6 ZENER CURRENT vs. ZENER VOLTAGE

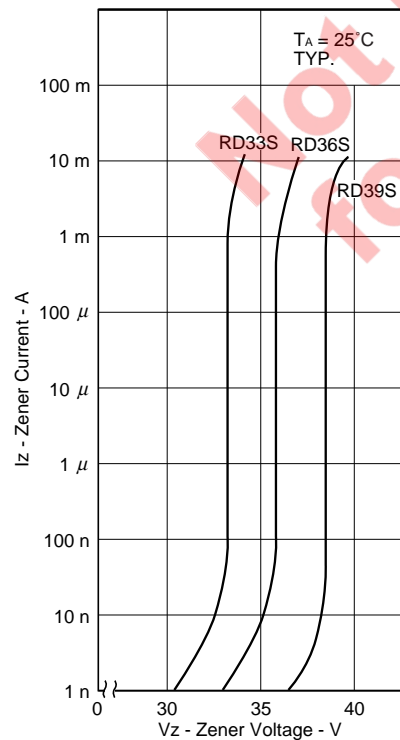


Fig.7 ZENER CURRENT vs. ZENER VOLTAGE

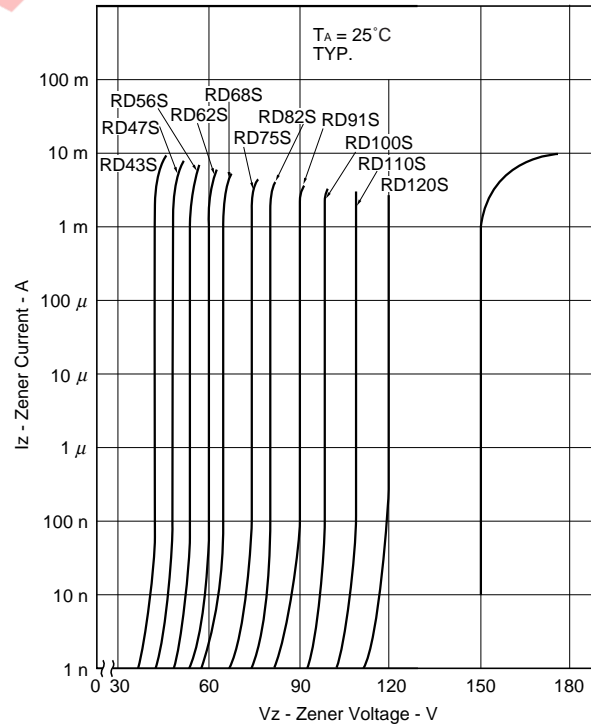


Fig.8 DYNAMIC IMPEDANCE vs. ZENER CURRENT

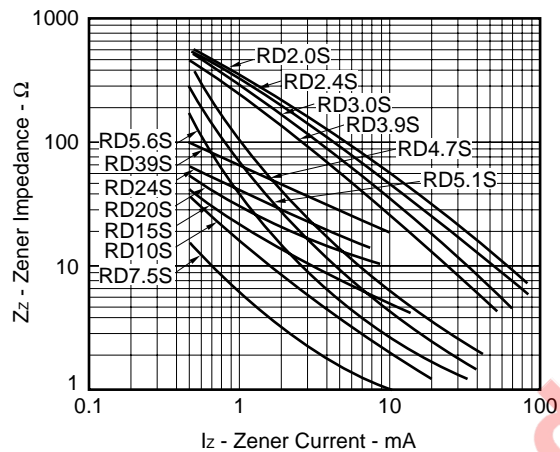


Fig.9 ZENER VOLTAGE TEMPERATURE COEFFICIENT vs. ZENER VOLTAGE

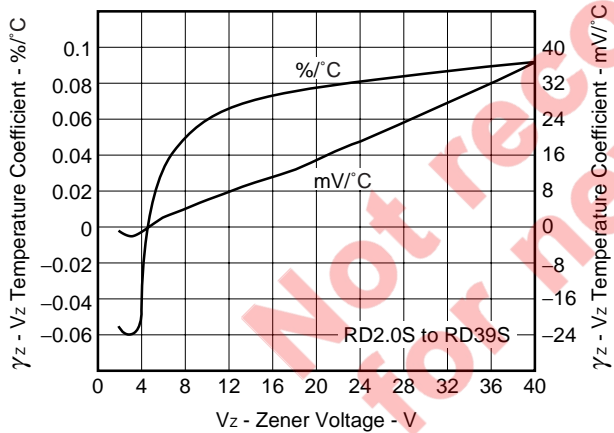


Fig.10 ZENER VOLTAGE TEMPERATURE COEFFICIENT vs. ZENER VOLTAGE

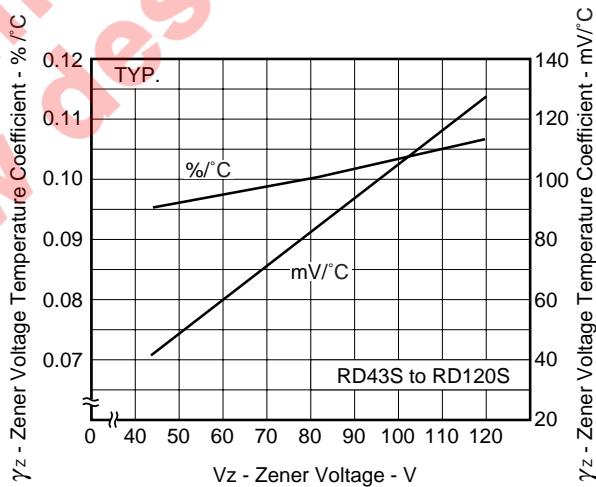




Fig.11 TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS

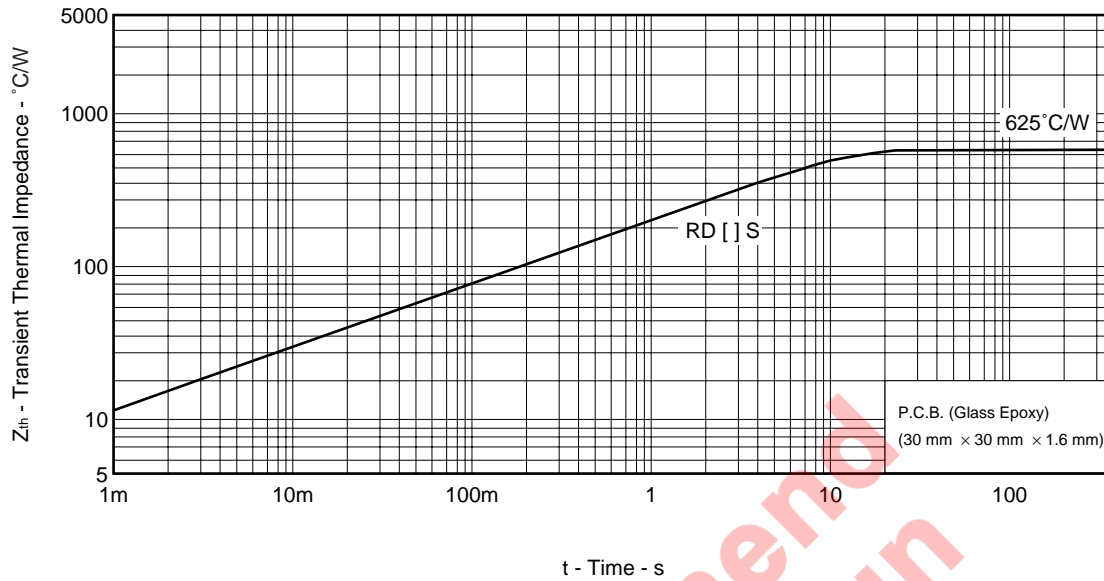
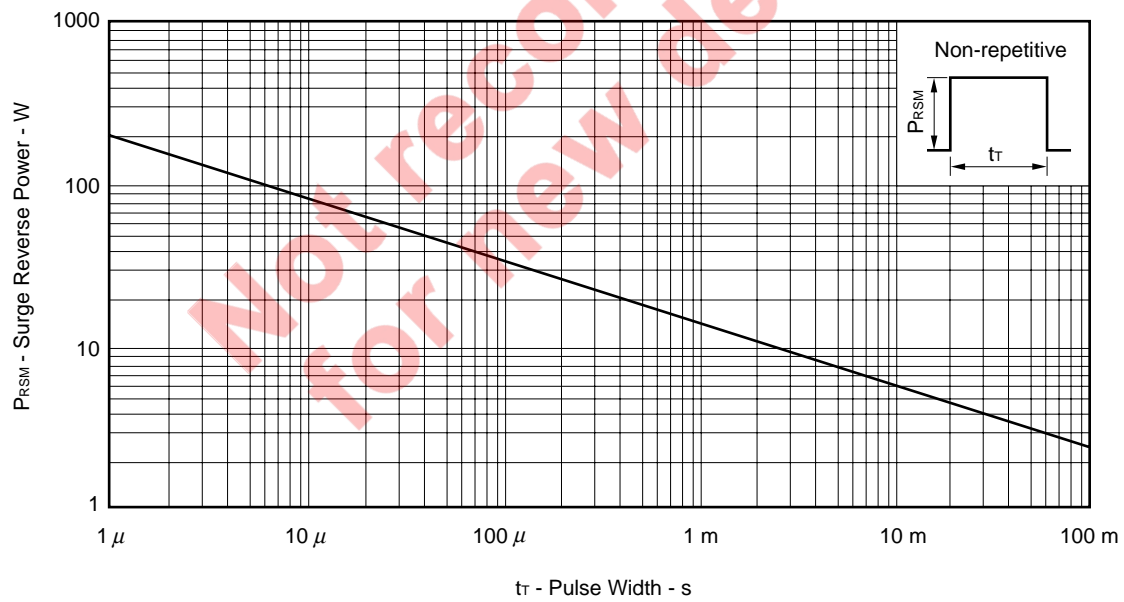


Fig.12 SURGE REVERSE POWER RATINGS



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