

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

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

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

SILICON VARACTOR DIODES

1S2208(B), 1S2209(B)

DESCRIPTION The 1S2208(B) and 1S2209(B) are a hyper-abrupt junction type voltage-variable capacitance diodes.

The 1S2208(B) and 1S2209(B) are designed for electronic tuning circuit application in UHF and VHF.

- FEATURES**
- Low series resistance, 0.35 Ω TYP.
 - High capacitance ratio.
 - Low leakage current.
 - High reliability.

ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures

Junction Temperature T_j 125 $^{\circ}\text{C}$

Storage Temperature T_{stg} -55 to +125 $^{\circ}\text{C}$

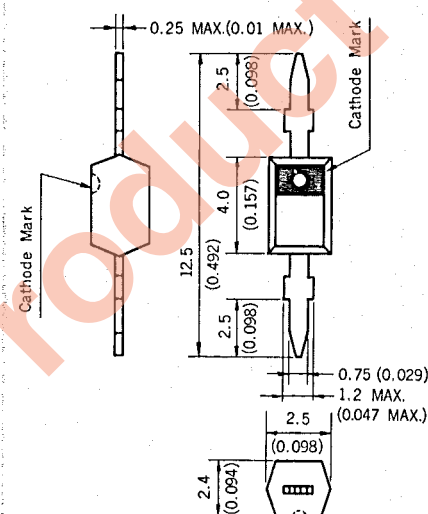
Maximum Voltages ($T_a = 25^{\circ}\text{C}$)

Peak Reverse Voltage V_{RM} 30 V

Reverse Voltage V_R 30 V

PACKAGE DIMENSIONS

in millimeters (inches)



ELECTRICAL CHARACTERISTICS ($T_a = 25^{\circ}\text{C}$)

SYMBOL	CHARACTERISTIC	1S2208(B)			1S2209(B)			UNIT	TEST CONDITIONS
		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		
V_R	Reverse Voltage	30			30			V	$I_R = 1.0 \mu\text{A}$
C_{t3}	Capacitance	11.0		12.65	10.3		12.90	pF	$V_R = 3.0 \text{ V}, f = 1.0 \text{ MHz}$
C_{t25}	Capacitance	2.0		2.3	2.0		2.5	pF	$V_R = 25 \text{ V}, f = 1.0 \text{ MHz}$
N	Capacitance Ratio	4.5			4.0				C_{t3}/C_{t25}
r_s	Series Resistance		0.35	0.6		0.35	0.6	Ω	$C = 9.0 \text{ pF}, f = 50 \text{ MHz}$

NOTE: Diodes are available in matched sets of 20, 60, 120, 120 x n units.

For two diodes of one set the following conditions are relevant:

The variations ΔC in capacitance values at $V_R = 3, 10, 18$ and 25 V are less than 2 % for 1S2208(B), 3 % for 1S2209(B).

$$\Delta C = \frac{C_{\text{max.}} - C_{\text{min.}}}{C_{\text{min.}}} \times 100 (\%)$$

TYPICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

TERMINAL CAPACITANCE vs. REVERSE VOLTAGE

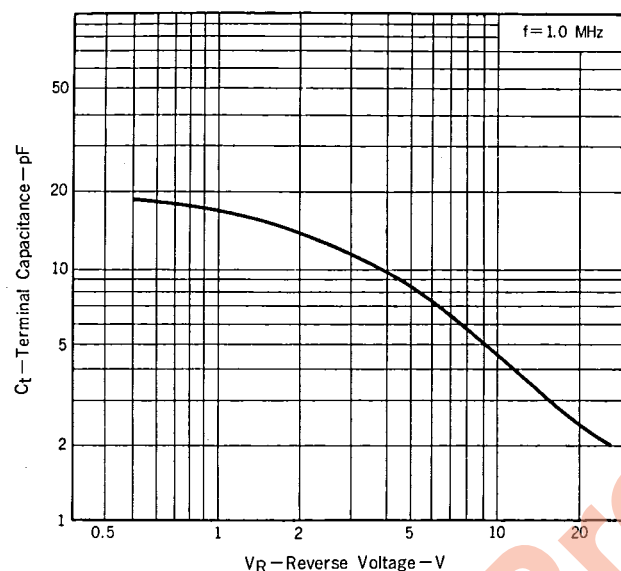
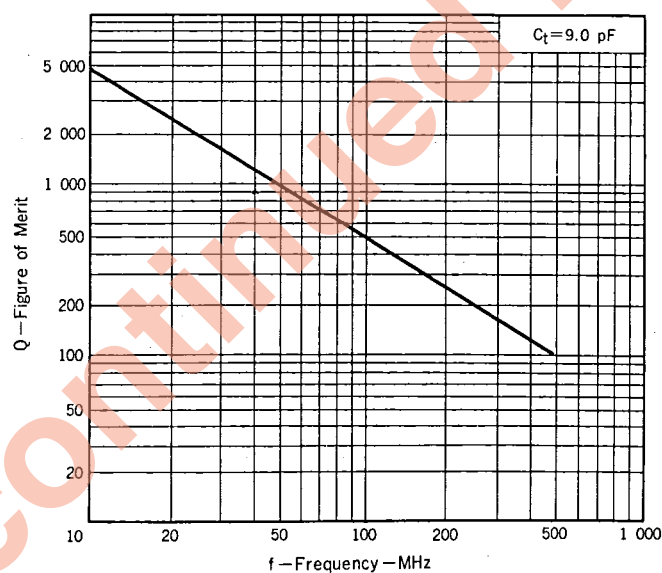


FIGURE OF MERIT vs. FREQUENCY



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