

To our customers,

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## Old Company Name in Catalogs and Other Documents

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On April 1<sup>st</sup>, 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 1<sup>st</sup>, 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.

## SV24A, SV24B SNAP-OFF DIODE

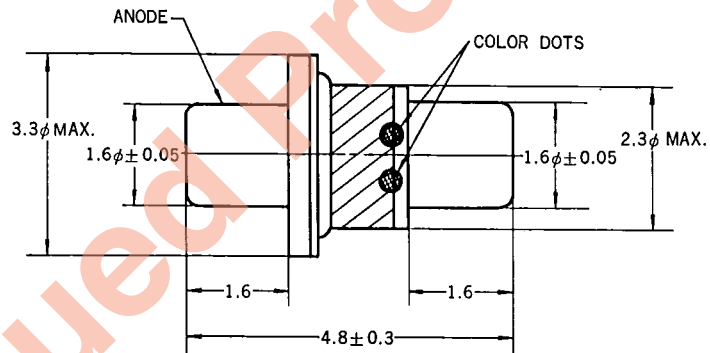
Epitaxial Mesa Silicon Diode for Microwave Frequency-Multiplier Use

### GENERAL

Diodes of this series are developed mainly to be used as frequency-multipliers of high efficiency with their output in the microwave region. Due to a special impurity-diffusion technique in the silicon body, they feature a distinct snap-off action when driven back to the reversed-biased region from the forward-biased region of the silicon device because of the storage effect of minority carriers in the latter region. Consequently, they are able to achieve an amazingly-low conversion loss when operated as frequency multipliers of higher multiplication ratio, e.g., 10 or 20. Moreover, the extremely small pill package makes it convenient to mount them on strip-line-type transmission line.

### OUTLINE DIMENSIONS

(Unit in mm)



Color Identification

Type	Upper	Lower
SV24A	Black	Orange
SV24B	Red	Orange

### ABSOLUTE MAXIMUM RATINGS

(Ambient Temperature,  $T_a=25^\circ\text{C}$ )

Item	Symbol	Rating	Unit
Storage Temperature	$T_{stg}$	-65~+150	$^\circ\text{C}$
Junction Temperature	$T_J$	+150	$^\circ\text{C}$
Power Dissipation	P	1.0	W

### ELECTRICAL CHARACTERISTICS

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

Item	Symbol	Condition	SV24A			SV24B			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Reverse Voltage	$V_R$	$I_R=10\ \mu\text{A}$	30			30			V
Capacitance	$C_0^*$	$V_R=0\ \text{V}$ , $f=1\ \text{MHz}$	0.4		0.8	0.8		1.6	pF
Transition Time	$t_T$	$I_F=10\ \text{mA}$ , $V_R=10\ \text{V}$			200		150	200	pS
Life Time	$\tau$	$I_F=10\ \text{mA}$ , $V_R=6\ \text{V}$	20			20			nS
Multiplication Efficiency	$\eta$	110~1980 MHz, $P_{in}=100\ \text{mW}$				8	10		%

Note: \*Excluding package capacitance 0.35 pF

# SV24A, SV24B



## APPLICATION PERFORMANCE

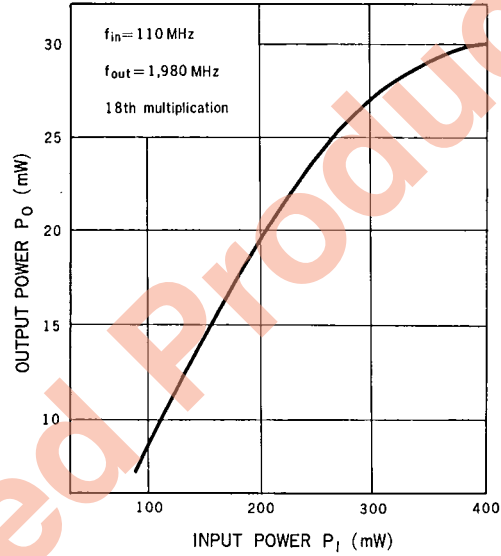
(example)

110~1980 MHz 18th multiplication

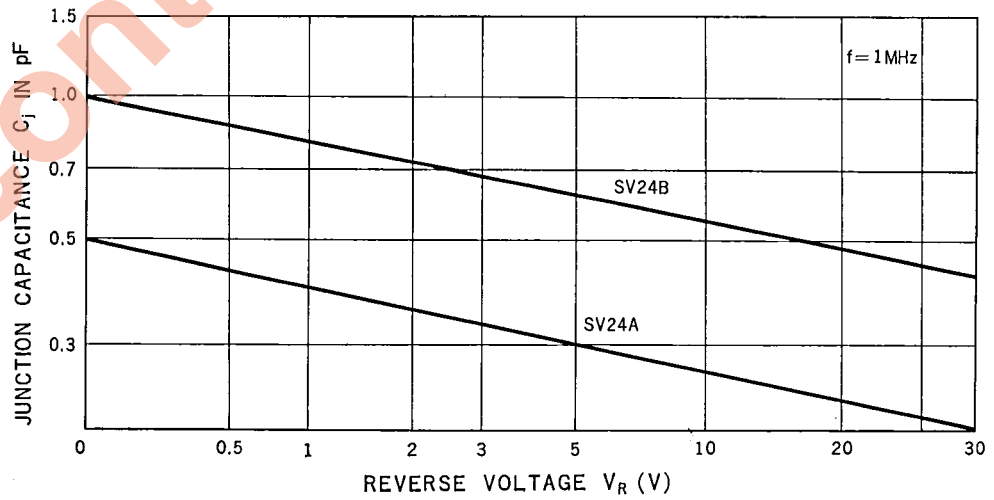
$P_{in}=300\text{ mW}$ ,  $P_{out}=27\text{ mW}$

$\eta=9.0\%$  (10.5 dB)

### SV24B. Input-Output Characteristic



### SV24A, SV24B $V_R$ - $C_j$ Characteristic



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