

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>.

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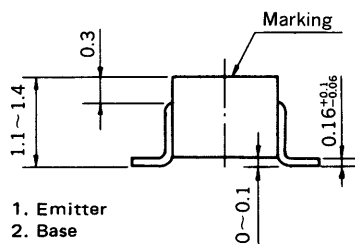
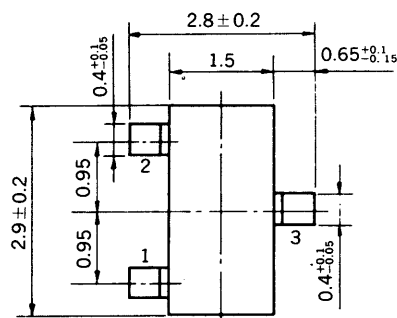
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HIGH FREQUENCY AMPLIFIER AND SWITCHING PNP SILICON EPITAXIAL TRANSISTOR MINI MOLD

PACKAGE DIMENSIONS

in millimeters



1. Emitter
2. Base
3. Collector

FEATURES

- High Speed Switching: $t_{stg} = 110$ ns
- High Gain Bandwidth Product : $f_T = 510$ MHz
- Complementary to 2SC3734

ABSOLUTE MAXIMUM RATINGS

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

Collector to Base Voltage	V_{CBO}	-40	V
Collector to Emitter Voltage	V_{CEO}	-40	V
Emitter to Base Voltage	V_{EBO}	-5	V
Collector Current (DC)	I_C	-200	mA

Maximum Power Dissipation

Total Power Dissipation at 25°C Ambient Temperature	P_T	200	mW
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Maximum Temperatures

Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to +150	$^\circ\text{C}$

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

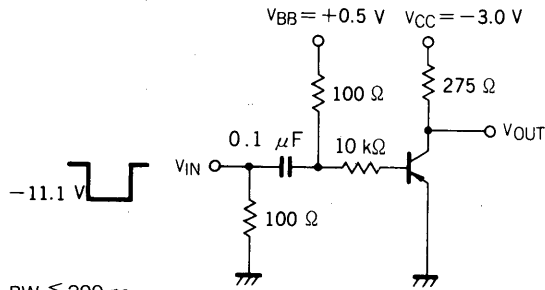
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	I_{CBO}			-100	nA	$V_{CB} = -30$ V, $I_E = 0$
Emitter Cutoff Current	I_{EBO}			-100	nA	$V_{EB} = -3.0$ V, $I_C = 0$
DC Current Gain	h_{FE1}^*	75	180	300		$V_{CE} = -1.0$ V, $I_C = -10$ mA
DC Current Gain	h_{FE2}^*	25	100			$V_{CE} = -10$ V, $I_C = -100$ mA
Collector Saturation Voltage	$V_{CE(sat)}^*$		-0.1	-0.4	V	$I_C = -50$ mA, $I_B = -5.0$ mA
Base Saturation Voltage	$V_{BE(sat)}^*$		-0.8	-0.95	V	$I_C = -50$ mA, $I_B = -5.0$ mA
Gain Bandwidth Product	f_T	200	510		MHz	$V_{CE} = -20$ V, $I_E = 10$ mA
Output Capacitance	C_{ob}		2.5	4.5	pF	$V_{CB} = -5.0$ V, $I_E = 0$, $f = 1.0$ MHz
Turn-on Time	t_{on}			70	ns	$V_{CC} = -3.0$ V
Storage Time	t_{stg}		110	225	ns	$I_C = -10$ mA
Turn-off Time	t_{off}			300	ns	$I_{B1} = -I_{B2} = -1.0$ mA

* Pulsed: $PW \leq 350$ μ s, Duty Cycle ≤ 2 %

h_{FE} Classification

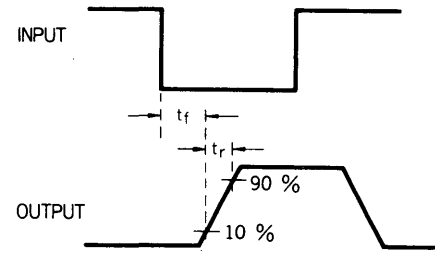
MARKING	Y22	Y23	Y24
h_{FE1}	75 to 150	100 to 200	150 to 300

SWITCHING TIME TEST CIRCUIT

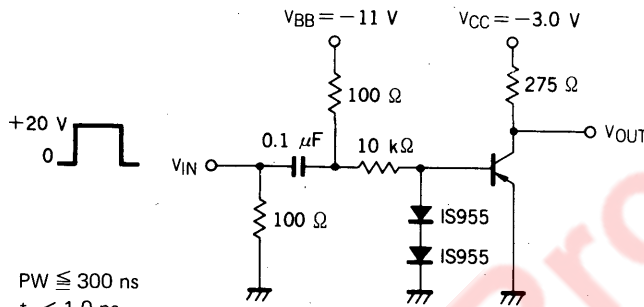


$PW \cong 300\ \text{ns}$
 $t_r < 1.0\ \text{ns}$
 $Z_{IN} = 50\ \Omega$
 Duty Cycle = 2%

t_{on} SWITCHING

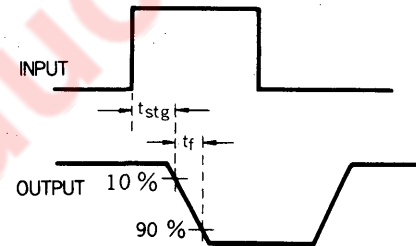


VOLTAGE WAVEFORMS



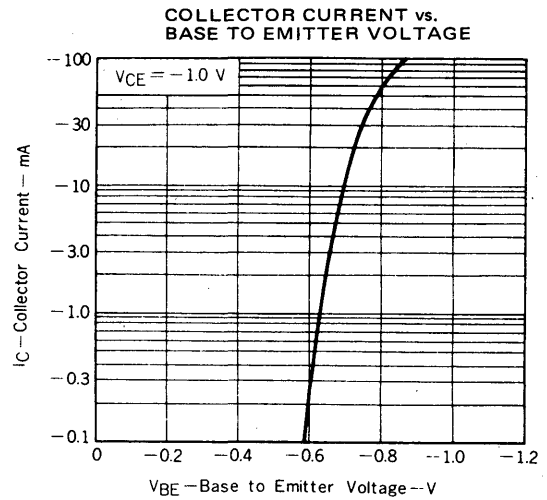
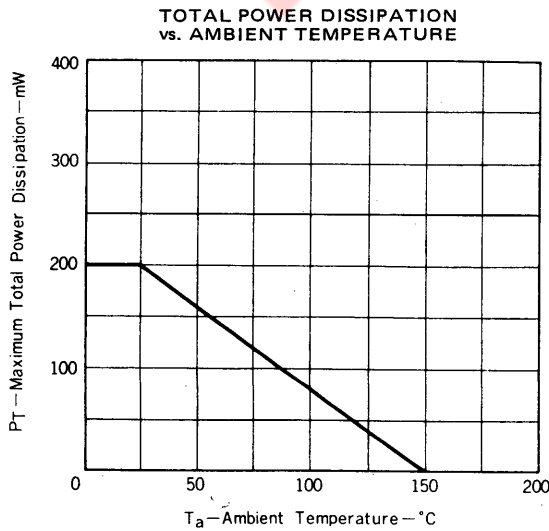
$PW \cong 300\ \text{ns}$
 $t_r < 1.0\ \text{ns}$
 Duty Cycle = 2%

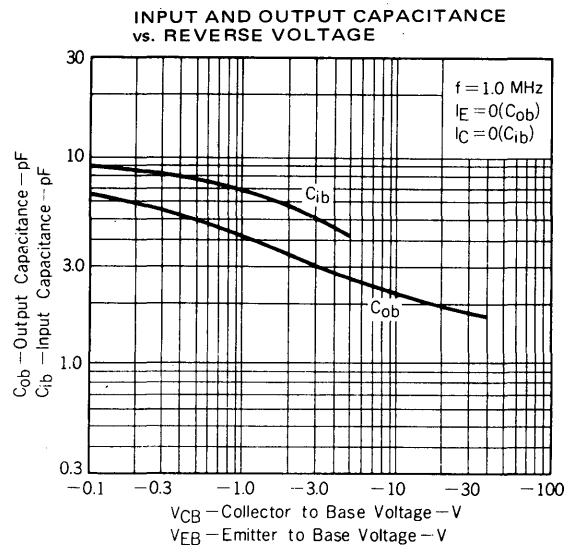
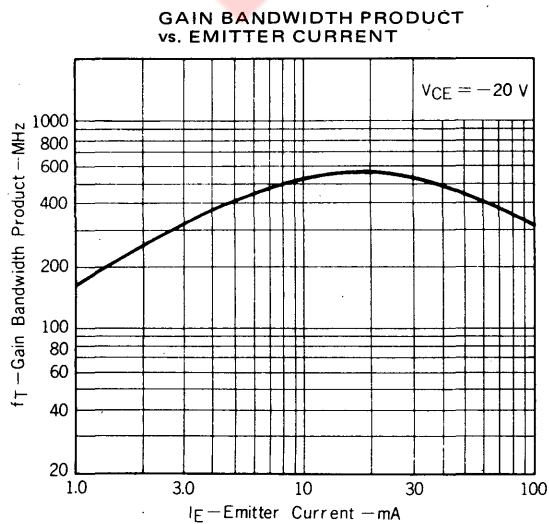
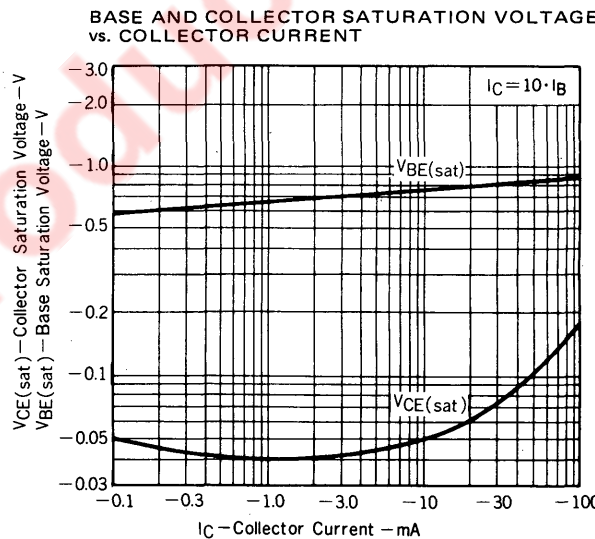
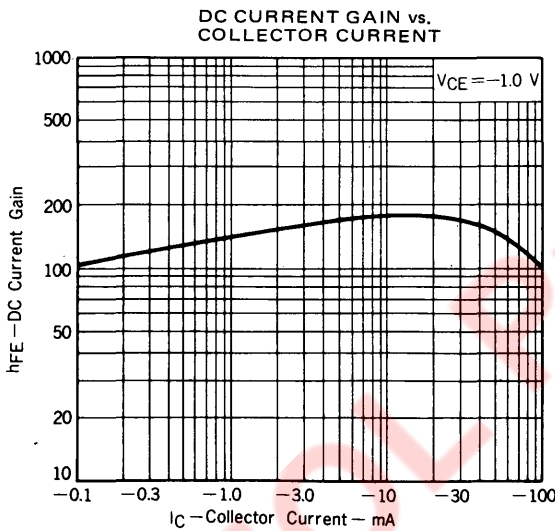
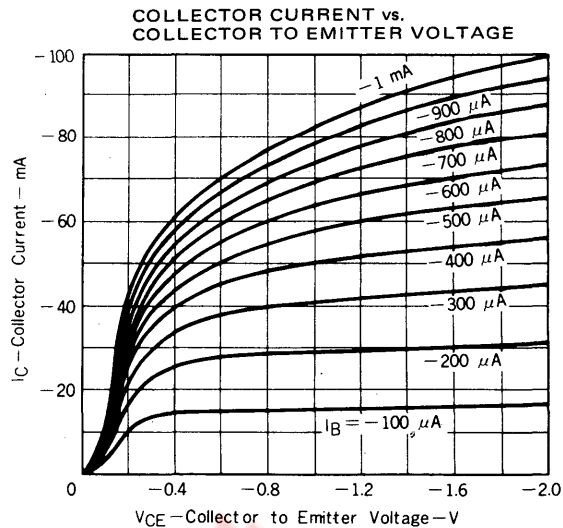
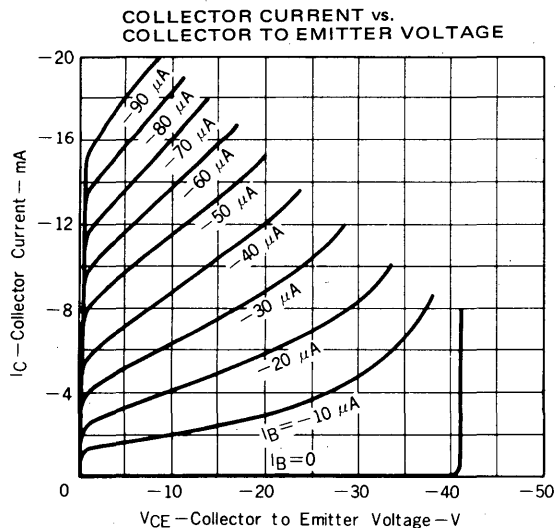
t_{off} SWITCHING



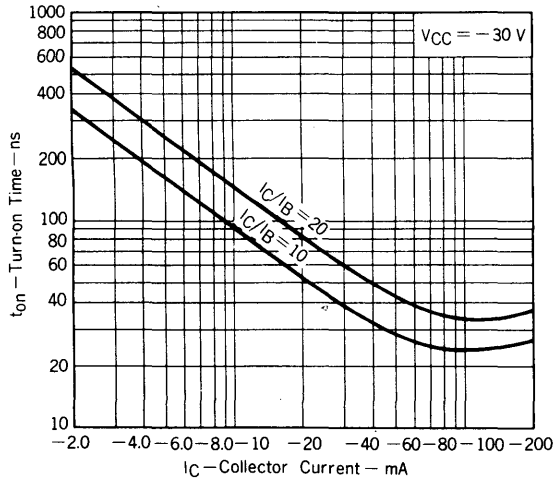
VOLTAGE WAVEFORMS

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

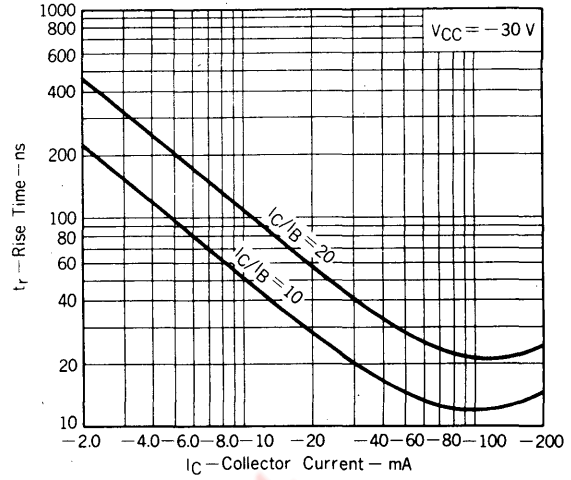




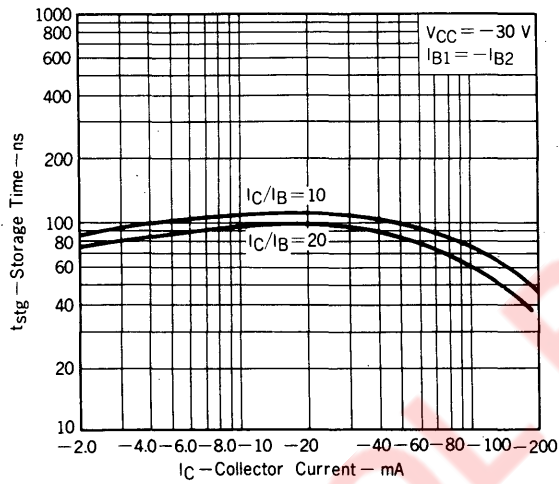
TURN-ON TIME vs. COLLECTOR CURRENT



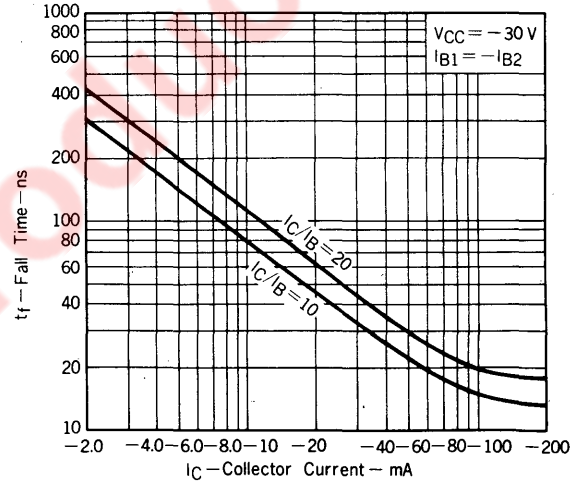
RISE TIME vs. COLLECTOR CURRENT



STORAGE TIME vs. COLLECTOR CURRENT



FALL TIME vs. COLLECTOR CURRENT



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