

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>)

Send any inquiries to <http://www.renesas.com/inquiry>.

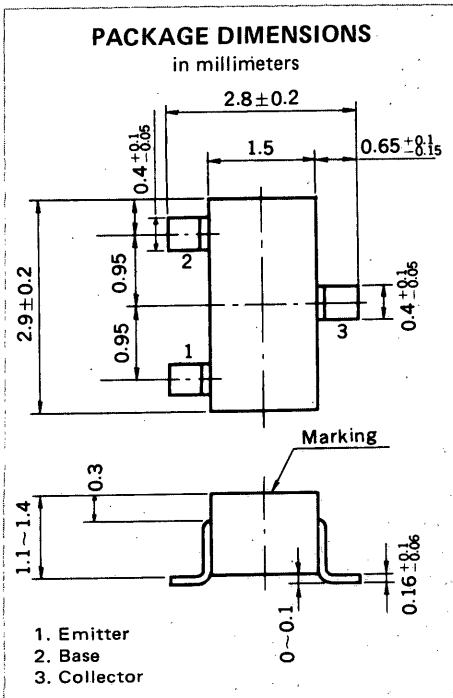
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HIGH FREQUENCY AMPLIFIER AND SWITCHING
PNP SILICON EPITAXIAL TRANSISTOR
MINI MOLD



FEATURES

- High f_T : $f_T = 400$ MHz
- Complementary to 2SC3739

ABSOLUTE MAXIMUM RATINGS

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

Collector to Base Voltage	V_{CB0}	-60	V
Collector to Emitter Voltage	V_{CEO}	-40	V
Emitter to Base Voltage	V_{EBO}	-5.0	V
Collector Current (DC)	I_C	-500	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 ($T_a = 25^\circ\text{C}$)

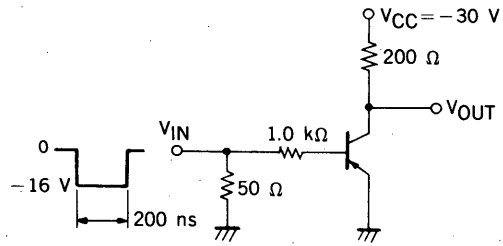
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	I_{CBO}			-100	nA	$V_{CB} = -40\text{ V}, I_E = 0$
Emitter Cutoff Current	I_{EBO}			-100	nA	$V_{EB} = -4.0\text{ V}, I_C = 0$
DC Current Gain	h_{FE1}^*	75	140	300		$V_{CE} = -2.0\text{ V}, I_C = -150\text{ mA}$
DC Current Gain	h_{FE2}^*	20	50			$V_{CE} = -2.0\text{ V}, I_C = -500\text{ mA}$
Collector Saturation Voltage	$V_{CE(sat)}^*$		-0.45	-0.75	V	$I_C = -500\text{ mA}, I_B = -50\text{ mA}$
Base Saturation Voltage	$V_{BE(sat)}^*$		-1.0	-1.30	V	$I_C = -500\text{ mA}, I_B = -50\text{ mA}$
Gain Bandwidth Product	f_T	150	400		MHz	$V_{CE} = -10\text{ V}, I_E = 20\text{ mA}$
Output Capacitance	C_{ob}		5.0	8.0	pF	$V_{CB} = -10\text{ V}, I_E = 0, f = 1.0\text{ MHz}$
Turn-on Time	t_{on}			35	ns	$V_{CC} = -30\text{ V}$
Storage Time	t_{stg}			225	ns	$I_C = 150\text{ mA}$
Turn-off Time	t_{off}			255	ns	$I_{B1} = -I_{B2} = 15\text{ mA}$

* Pulsed: $PW \leq 350\ \mu\text{s}$, Duty Cycle $\leq 2\%$

h_{FE} Classification

Making	Y12	Y13	Y14
h_{FE1}	75 to 150	100 to 200	150 to 300

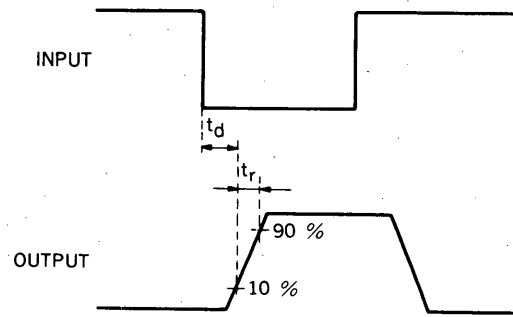
SWITCHING TIME TEST CIRCUIT



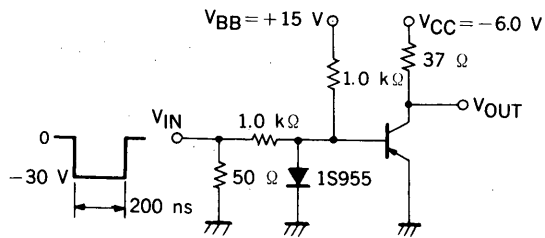
$Z_0 = 50 \Omega$
 PRF = 150 pps
 $t_r \leq 2.0 \text{ ns}$

TO OSCILLOSCOPE
 $t_r \leq 5.0 \text{ ns}$
 $Z_{IN} = 10 \text{ M}\Omega$

t_{on} SWITCHING



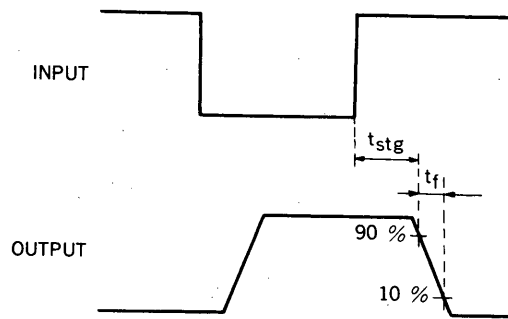
VOLTAGE WAVEFORMS



$Z_0 = 50 \Omega$
 PRF = 150 pps
 $t_r \leq 2.0 \text{ ns}$

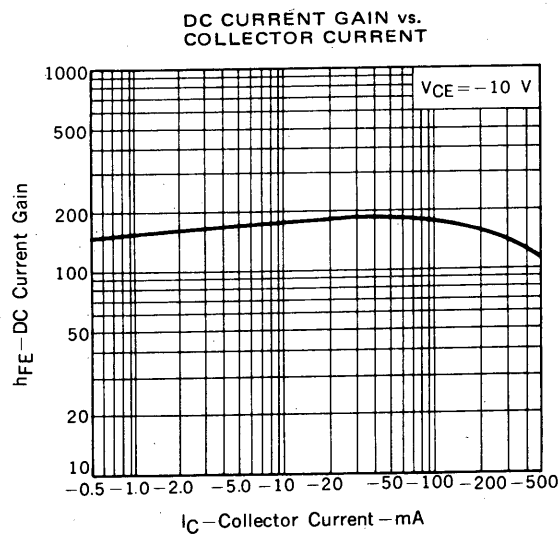
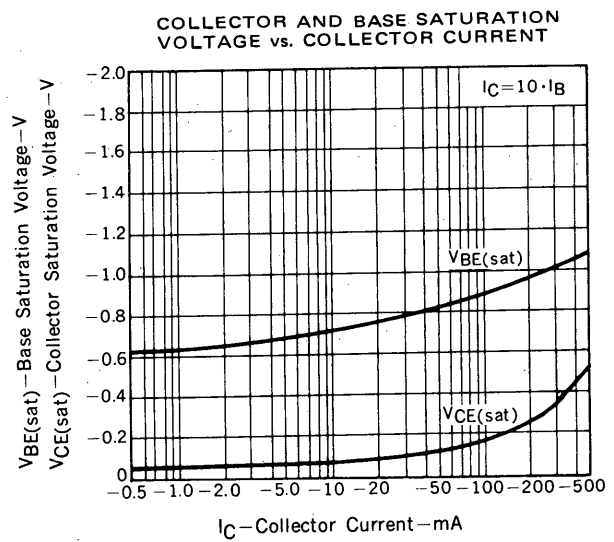
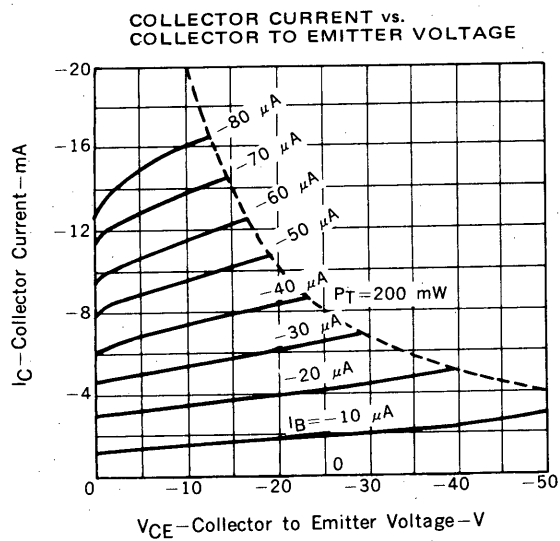
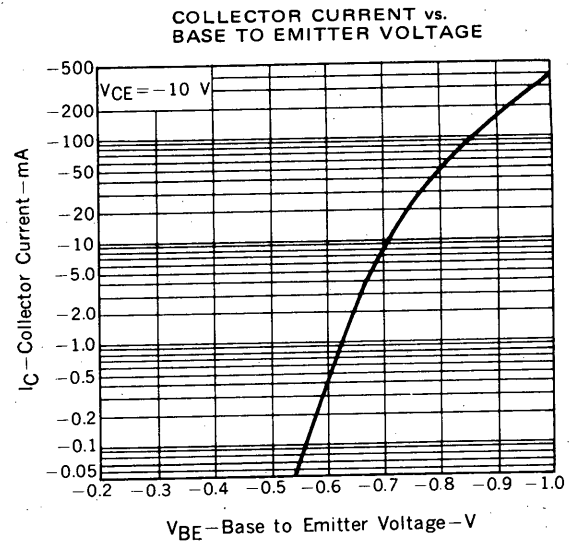
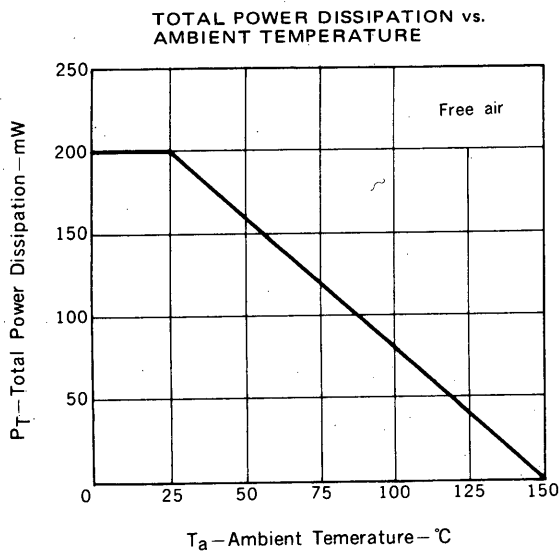
TO OSCILLOSCOPE
 $t_r \leq 5.0 \text{ ns}$
 $Z_{IN} = 10 \text{ M}\Omega$

t_{off} SWITCHING

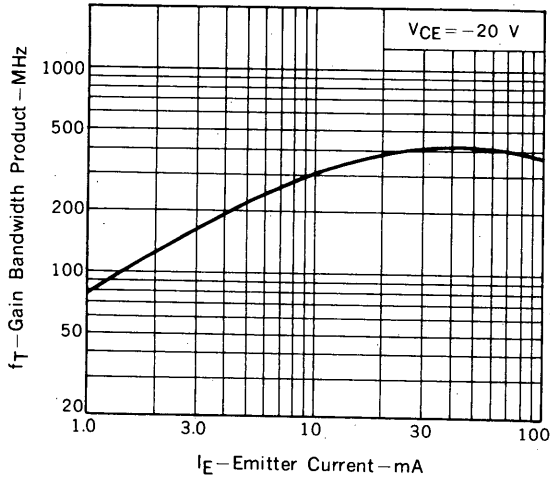


VOLTAGE WAVEFORMS

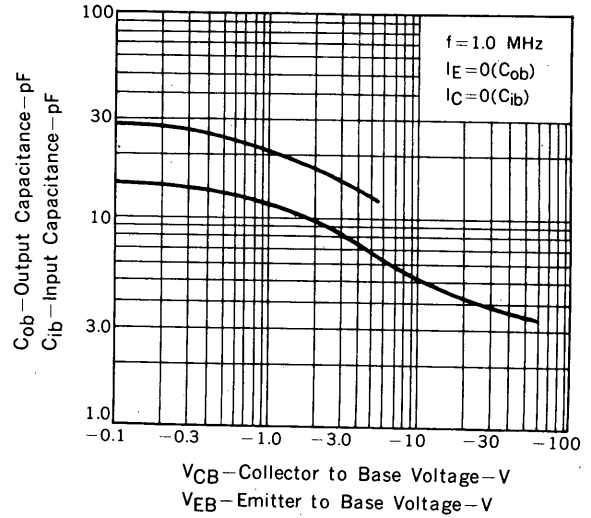
TYPICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)



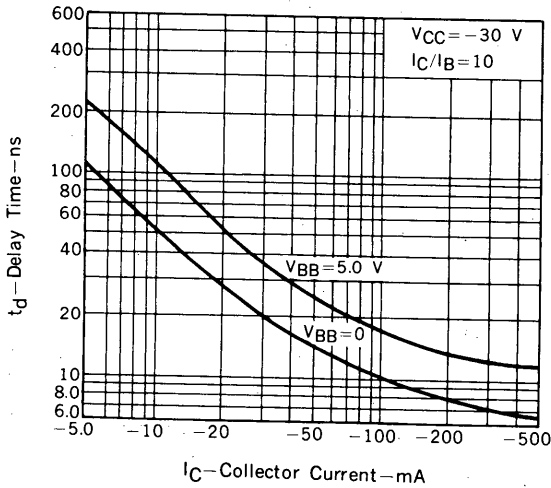
GAIN BANDWIDTH PRODUCT vs. EMITTER CURRENT



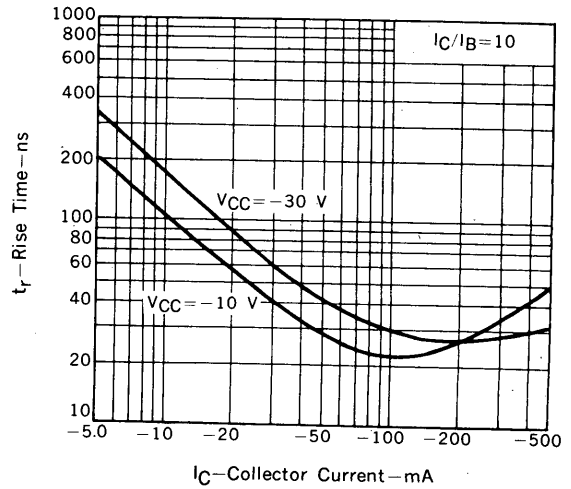
INPUT AND OUTPUT CAPACITANCE vs. REVERSE VOLTAGE



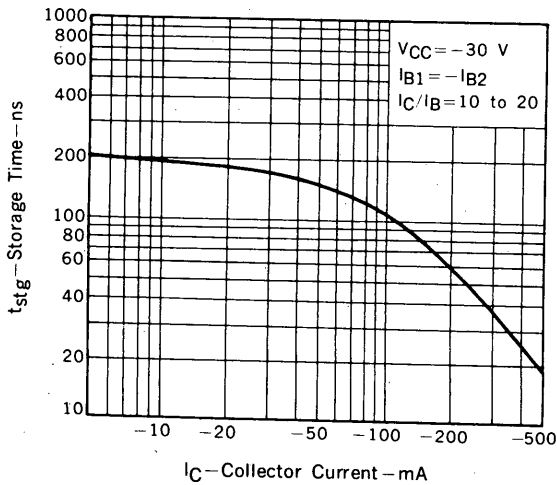
DELAY TIME vs. COLLECTOR CURRENT



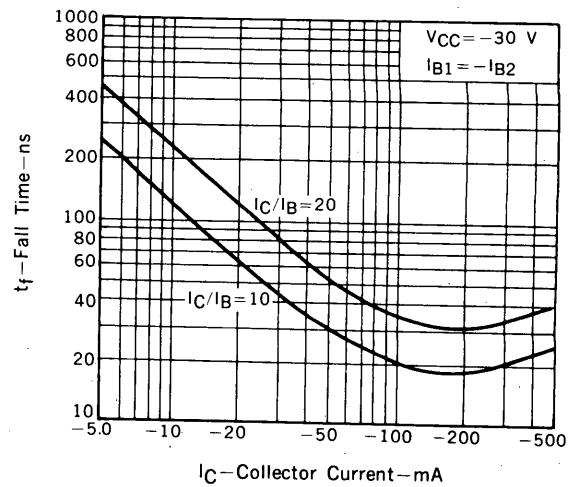
RISE TIME vs. COLLECTOR CURRENT



STORAGE TIME vs. COLLECTOR CURRENT



FALL TIME vs. COLLECTOR CURRENT





[MEMO]

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