

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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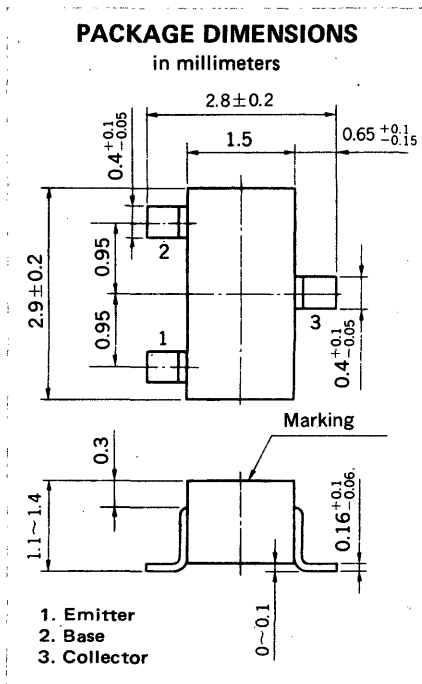
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## HIGH FREQUENCY AMPLIFIER PNP SILICON EPITAXIAL TRANSISTOR MINI MOLD



### FEATURES

- High Gain Bandwidth product  $f_T = 400$  MHz TYP.
- Low Output Capacitance  $C_{ob} = 1.1$  pF TYP.
- Low Noise, NF = 3.5 dB TYP. ( $f = 1.0$  MHz)

### ABSOLUTE MAXIMUM RATINGS

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

Collector to Base Voltage ( $R_{BE} = \infty$ )	$V_{CBO}$	-40	V
Collector to Emitter Voltage (Open Base)	$V_{CEO}$	-40	V
Emitter to Base Voltage	$V_{EBO}$	-5.0	V
Collector Current (DC)	$I_C$	-30	mA

Maximum Power Dissipation

Total Power Dissipation at $25^\circ\text{C}$ 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	$^\circ\text{C}$

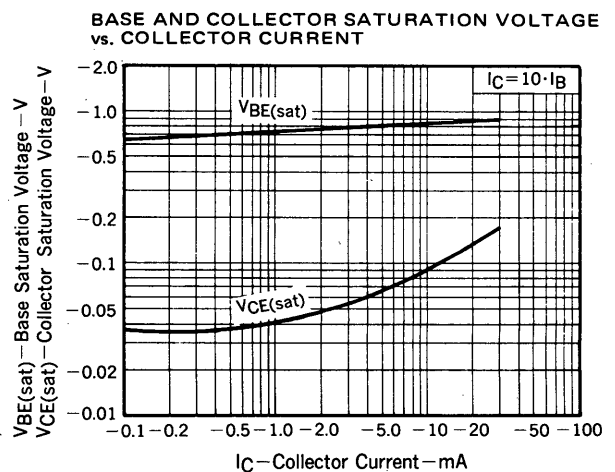
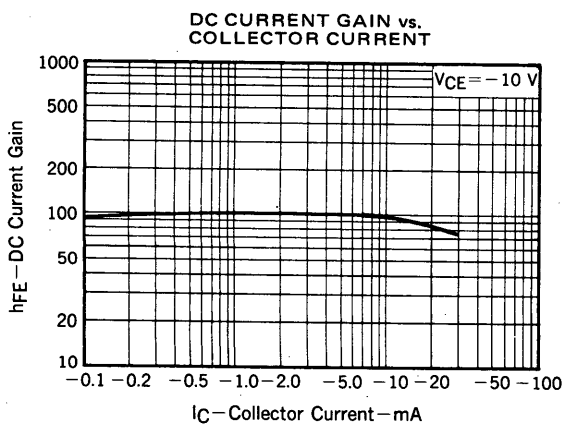
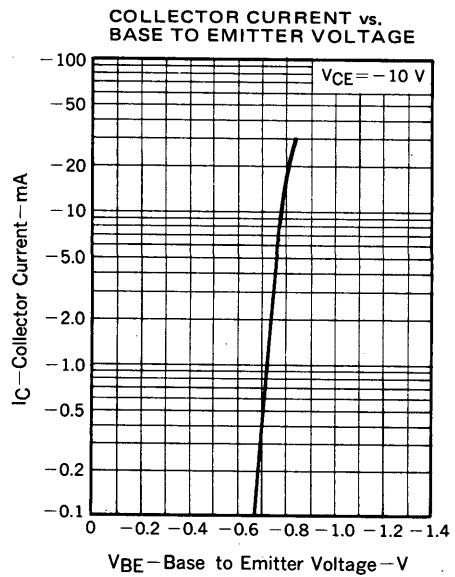
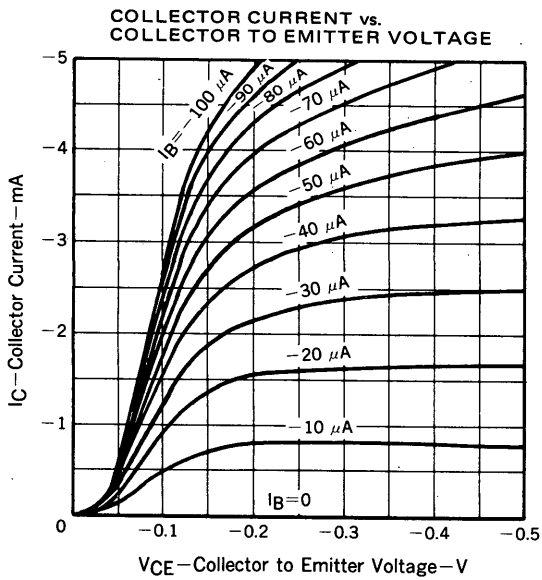
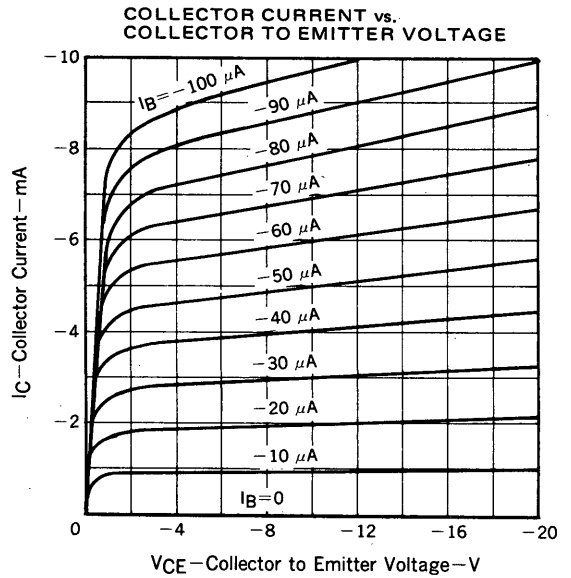
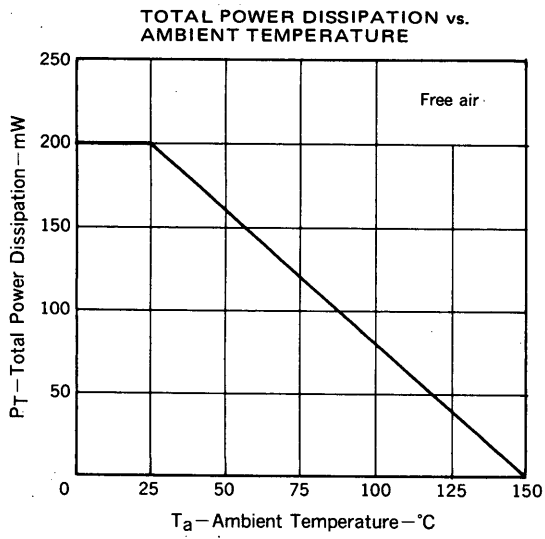
### ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	$I_{CBO}$			-0.1	$\mu\text{A}$	$V_{CB} = -40\text{ V}, I_E = 0$
Emitter Cutoff Current	$I_{EBO}$			-0.1	$\mu\text{A}$	$V_{EB} = -4.0\text{ V}, I_C = 0$
DC Current Gain	$h_{FE}$	40	90	180		$V_{CE} = -10\text{ V}, I_C = -1.0\text{ mA}$
Collector Saturation Voltage	$V_{CE(sat)}$		-0.09	-0.3	V	$I_C = -10\text{ mA}, I_B = -1.0\text{ mA}$
Base to Emitter Voltage	$V_{BE}$	-0.67	-0.72		V	$V_{CE} = -10\text{ V}, I_C = -10\text{ mA}$
Gain Bandwidth Product	$f_T$	250	400		MHz	$V_{CE} = -10\text{ V}, I_E = 1.0\text{ mA}$
Output Capacitance	$C_{ob}$		1.1	2.0	pF	$V_{CB} = -10\text{ V}, I_E = 0, f = 1.0\text{ MHz}$
Noise Figure	NF		3.5		dB	$V_{CE} = -10\text{ V}, I_C = -1.0\text{ mA}$ $R_G = 500\ \Omega, f = 1.0\text{ MHz}$

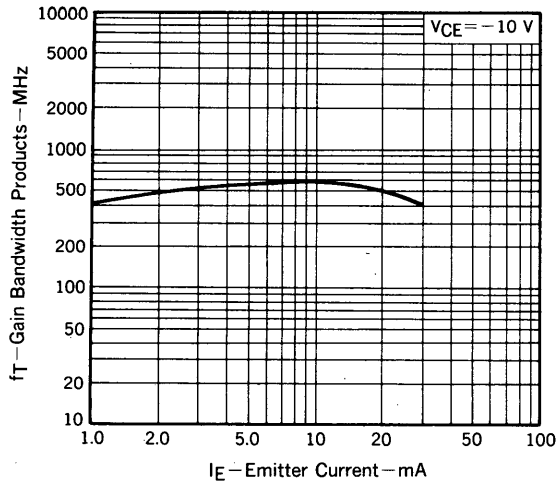
### $h_{FE}$ Classification

Marking	E2	E3	E4
$h_{FE2}$	40 to 80	60 to 120	90 to 180

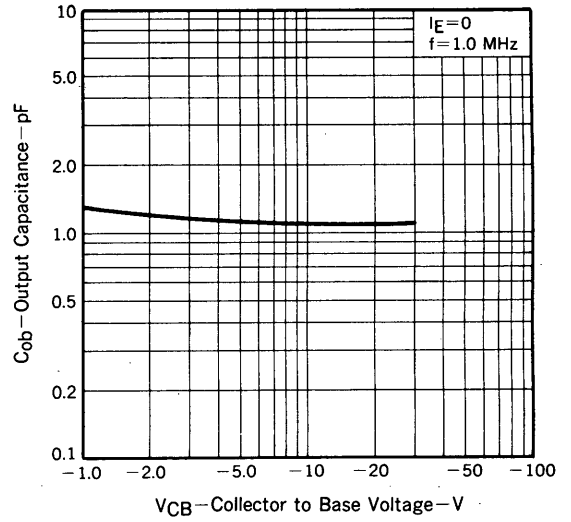
TYPICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )



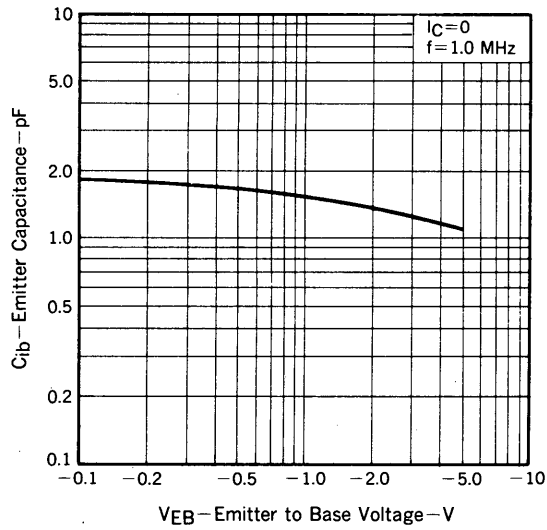
GAIN BANDWIDTH PRODUCTS vs. EMITTER CURRENT



OUTPUT CAPACITANCE vs. COLLECTOR TO BASE VOLTAGE



INPUT CAPACITANCE vs. EMITTER TO BASE VOLTAGE



**2SA1226**

**NEC** ELECTRON DEVICE

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