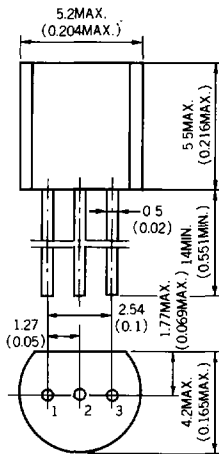


**RF LOW NOISE AMPLIFIER**  
**NPN SILICON EPITAXIAL TRANSISTOR**

**PACKAGE DIMENSIONS**  
in millimeters (inches)



- 1. Emitter EIAJ : SC-43
- 2. Base JEDEC : TO-92
- 3. Collector IEC : PA33

**DESCRIPTION**

Suitable for low noise amplifier in the VHF to UHF band.

**FEATURES**

- NF 3.0dB TYP. @f = 500MHz
- G<sub>pe</sub> 13dB TYP. @f = 500MHz
- f<sub>T</sub> 2.0GHz TYP.

**ABSOLUTE MAXIMUM RATINGS (T<sub>a</sub> = 25°C)**

Maximum Voltages and Current

Collector to Base Voltage	V <sub>CB0</sub>	30	V
Collector to Emitter Voltage	V <sub>CEO</sub>	14	V
Emitter to Base Voltage	V <sub>EBO</sub>	3.0	V
Collector Current	I <sub>C</sub>	50	mA

Maximum Power Dissipation

Total Power Dissipation	P <sub>T</sub>	250	mW
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Maximum Temperatures

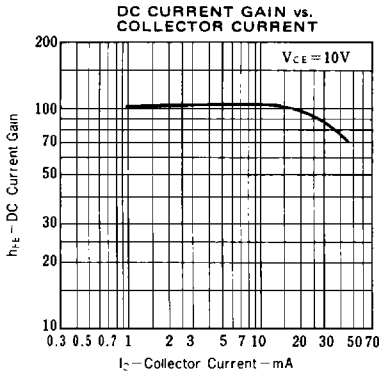
Junction Temperature	T <sub>j</sub>	150	°C
Storage Temperature	T <sub>stg</sub>	- 55 to +150	°C

**ELECTRICAL CHARACTERISTICS (T<sub>a</sub> = 25°C)**

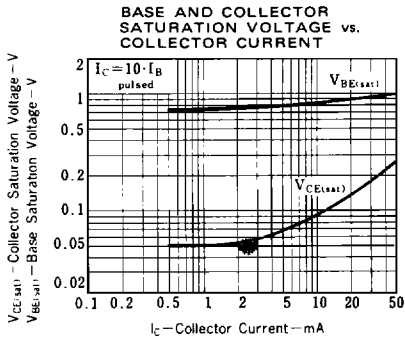
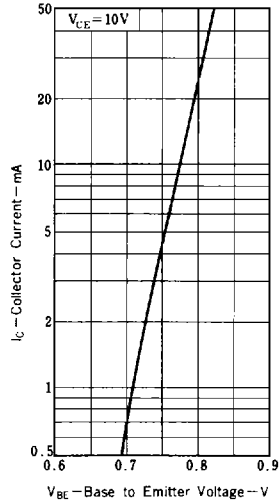
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	I <sub>CB0</sub>			0.1	μA	V <sub>CB</sub> = 15V, I <sub>E</sub> = 0
Emitter Cutoff Current	I <sub>EBO</sub>			0.1	μA	V <sub>EB</sub> = 2.0V, I <sub>C</sub> = 0
DC Current Gain	h <sub>FE</sub>	25	80	200		V <sub>CE</sub> = 10V, I <sub>C</sub> = 10mA
Gain Bandwidth Product	f <sub>T</sub>	1.5	2.0		GHz	V <sub>CE</sub> = 10V, I <sub>C</sub> = 10mA
Output Capacitance	C <sub>ob</sub>		0.9	1.3	pF	V <sub>CB</sub> = 10V, I <sub>E</sub> = 0, f = 1.0MHz*
Power Gain	G <sub>pe</sub>	11	13		dB	V <sub>CE</sub> = 10V, I <sub>C</sub> = 10mA, f = 500MHz
Noise Figure	NF		3.0	4.0	dB	V <sub>CE</sub> = 10V, I <sub>C</sub> = 3.0mA, f = 500MHz, R <sub>G</sub> = 50Ω

\* The emitter terminal should be connected to the guard terminal of the three-terminal capacitance bridge.

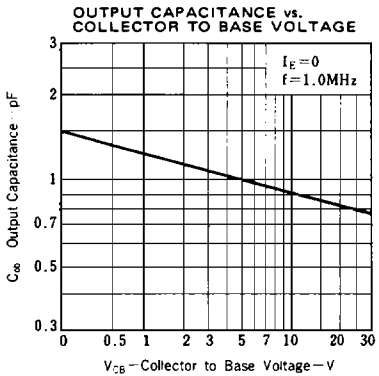
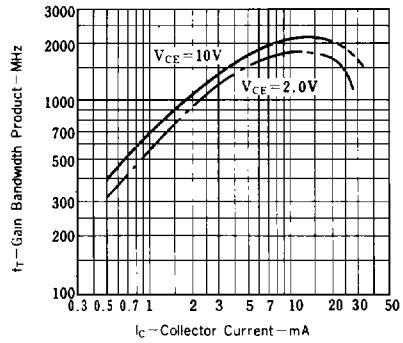
TYPICAL CHARACTERISTICS (T<sub>a</sub> = 25°C)



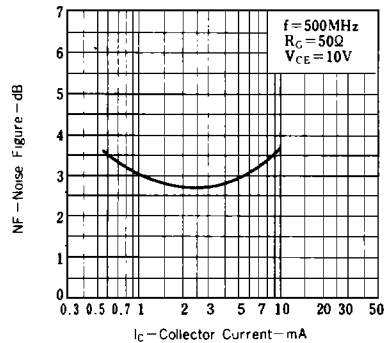
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



GAIN BANDWIDTH PRODUCT vs. COLLECTOR CURRENT



NOISE FIGURE vs. COLLECTOR CURRENT



TYPICAL S-PARAMETER

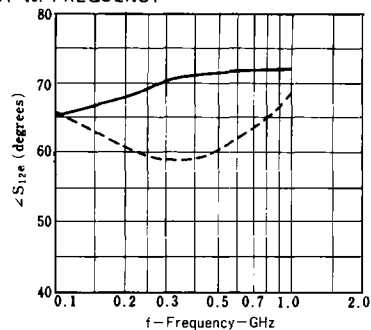
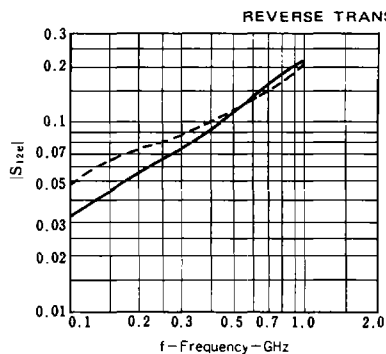
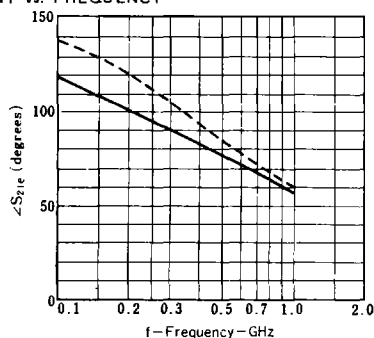
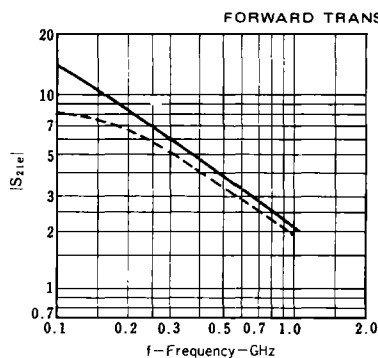
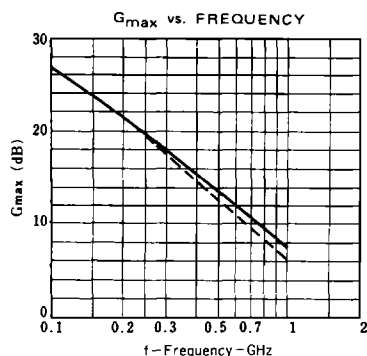
$Z_0 = 50\Omega$

$V_{CE} = 10V$

—  $I_C = 10mA$

- - -  $I_C = 3.0mA$

$$G_{max} = |S_{21}|^2 \cdot \frac{1}{1 - |S_{11}|^2} \cdot \frac{1}{1 - |S_{22}|^2}$$



$S_{11e}$ ,  $S_{22e}$

$V_{CE} = 10V$

$Z_0 = 50\Omega$

○ ——— ○  $I_c = 3.0mA$

× ——— ×  $I_c = 10mA$

