NEC

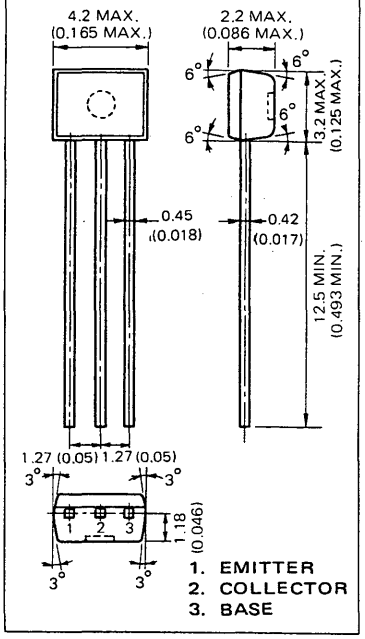
NPN SILICON TRANSISTOR
2SC2786

DESCRIPTION The 2SC2786 is designed for use in FM RF amplifier and local oscillator of FM tuner.

FEATURES

- High gain bandwidth product (f_T = 600 MHz TYP.)
- Small output capacitance (C_{ob} = 1.0 pF TYP.)
- Low noise figure (NF = 3.0 dB TYP. @100 MHz)

PACKAGE DIMENSIONS
in millimeters (inches)



ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures

- Storage Temperature ..... −55 to +150 °C
- Junction Temperature ..... +150 °C Maximum

Maximum Power Dissipation (Ta = 25 °C)

- Total Power Dissipation ..... 250 mW

Maximum Voltages and Currents (Ta = 25 °C)

- V_{CBO} Collector to Base Voltage ..... 30 V
- V_{CEO} Collector to Emitter Voltage ..... 20 V
- V_{EBO} Emitter to Base Voltage ..... 4.0 V
- I_C Collector Current ..... 20 mA
- I_B Base Current ..... 20 mA

ELECTRICAL CHARACTERISTICS (Ta = 25 °C)

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
h_{FE}	DC Current Gain	40	90	180	–	V_{CE}=6.0 V, I_C=1.0 mA
C_{ob}	Output Capacitance		1.0	1.3	pF	V_{CB}=6.0 V, I_E=0, f=1.0 MHz
NF	Noise Figure		3.0	5.0	dB	V_{CE}=6.0 V, I_E=−1.0 mA, R_G=50 Ω f=100 MHz, See test circuit
f_T	Gain Bandwidth Product	400	600		MHz	V_{CE}=6.0 V, I_E=−1.0 mA
G_{pe}	Power Gain	18	22		dB	V_{CE}=6.0 V, I_E=−1.0 mA, R_G=50 Ω f=100 MHz, See test circuit
C_c·rb'b	Collector to Base Time Constant		12	15	ps	V_{CE}=6.0 V, I_E=−1.0 mA, f=31.9 MHz
I_{CBO}	Collector Cutoff Current			100	nA	V_{CB}=30 V, I_E=0
I_{EBO}	Emitter Cutoff Current			100	nA	V_{EB}=4.0 V, I_C=0
V_{BE}	Base to Emitter Voltage		0.72		V	V_{CE}=6.0 V, I_C=1.0 mA
$V_{CE(sat)}$	Collector Saturation Voltage		0.1	0.3	V	I_C=10 mA, I_B=1.0 mA

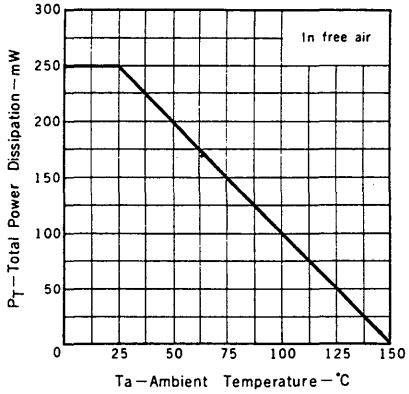
Classification of h_{FE}

Rank	MF	LF	KF
Range	40 – 80	60 – 120	90 – 180

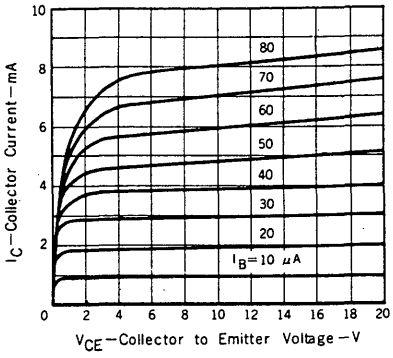
h_{FE} Test Conditions : V_{CE}=6.0 V, I_C=1.0 mA

TYPICAL CHARACTERISTICS (Ta = 25 °C unless otherwise noted)

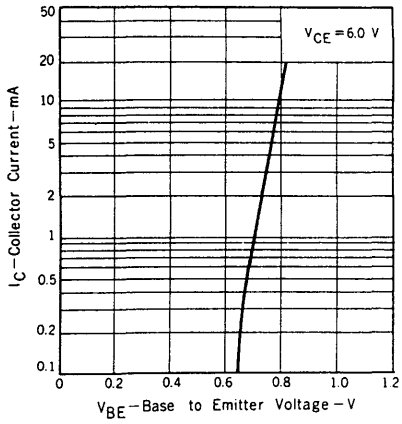
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



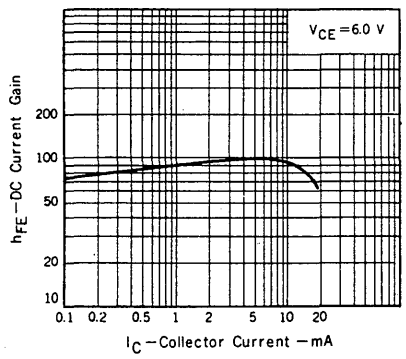
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



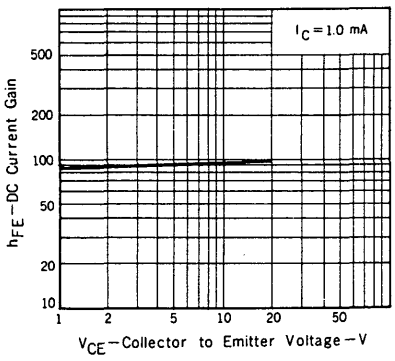
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



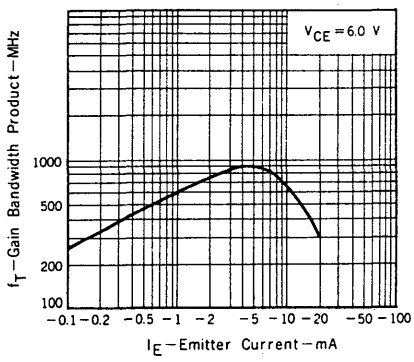
DC CURRENT GAIN vs. COLLECTOR CURRENT



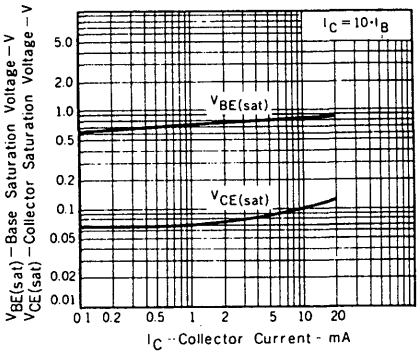
DC CURRENT GAIN vs. COLLECTOR TO EMITTER VOLTAGE



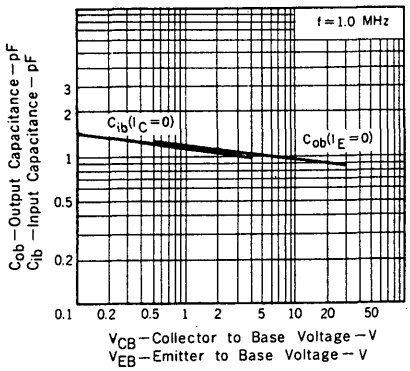
GAIN BANDWIDTH PRODUCT vs. EMITTER CURRENT



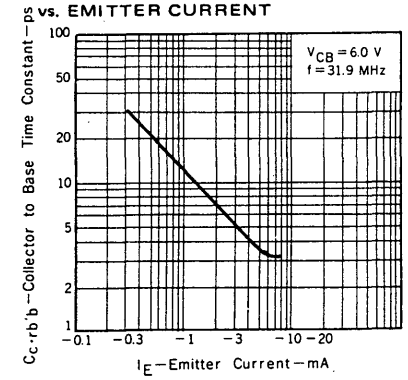
BASE AND COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT



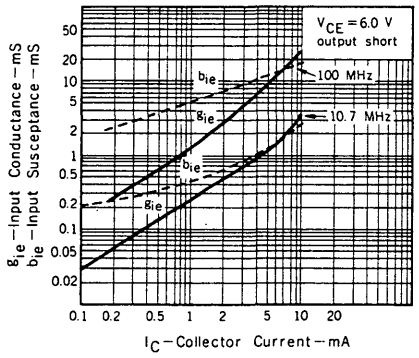
INPUT CAPACITANCE vs. EMITTER TO BASE VOLTAGE, OUTPUT CAPACITANCE vs. COLLECTOR TO BASE VOLTAGE



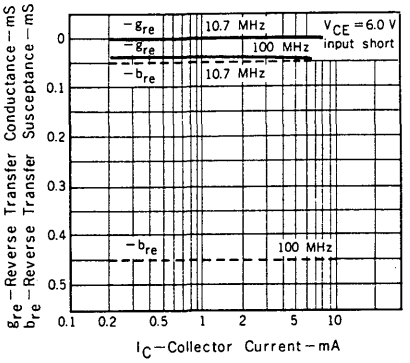
COLLECTOR TO BASE TIME CONSTANT vs. EMITTER CURRENT



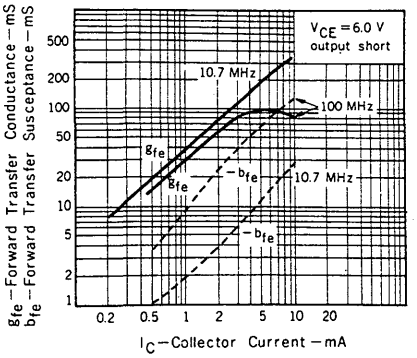
INPUT ADMITTANCE vs. COLLECTOR CURRENT



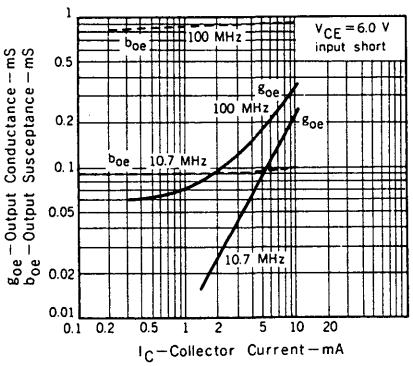
REVERSE TRANSFER ADMITTANCE vs. COLLECTOR CURRENT



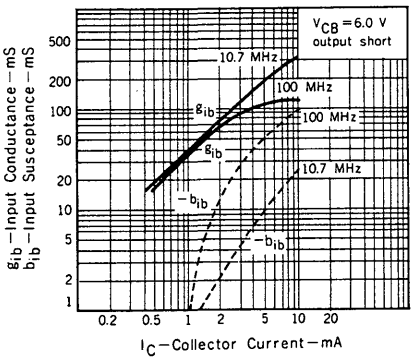
FORWARD TRANSFER ADMITTANCE vs. COLLECTOR CURRENT



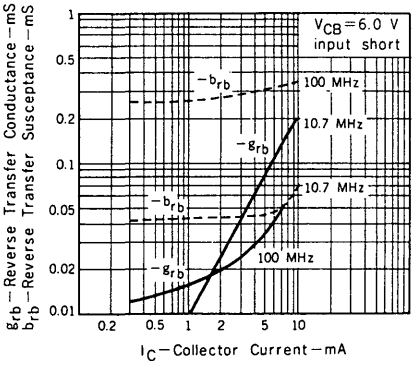
OUTPUT ADMITTANCE vs. COLLECTOR CURRENT



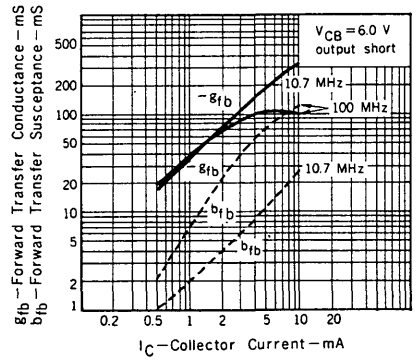
INPUT ADMITTANCE vs. COLLECTOR CURRENT



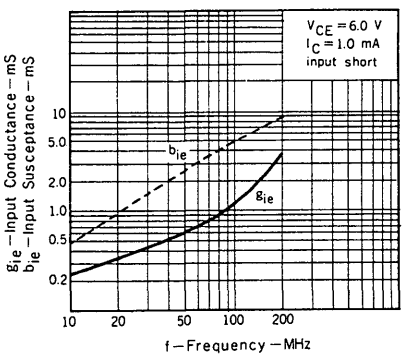
REVERSE TRANSFER ADMITTANCE vs. COLLECTOR CURRENT



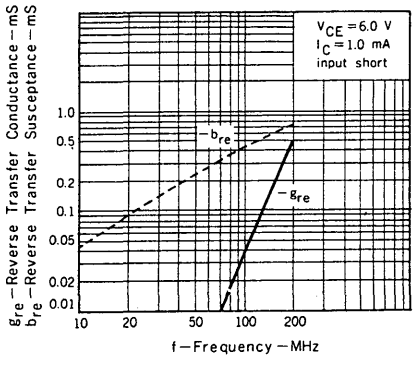
FORWARD TRANSFER ADMITTANCE vs. COLLECTOR CURRENT



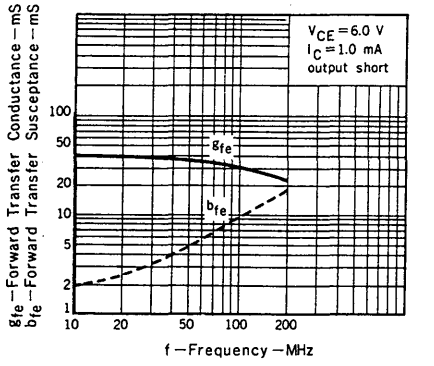
INPUT ADMITTANCE vs. FREQUENCY



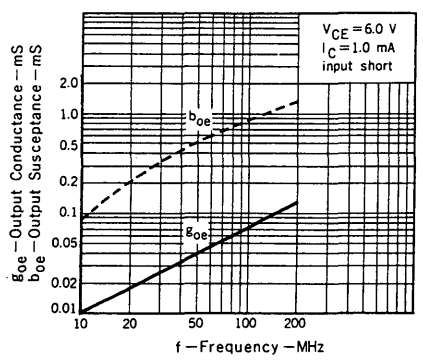
REVERSE TRANSFER ADMITTANCE vs. FREQUENCY



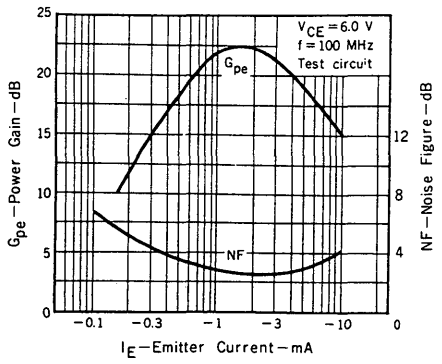
FORWARD TRANSFER ADMITTANCE vs. FREQUENCY



OUTPUT ADMITTANCE vs. FREQUENCY



POWER GAIN, NOISE FIGURE vs. EMITTER CURRENT



100MHz G_{pe}, NF TEST CIRCUIT