NEC

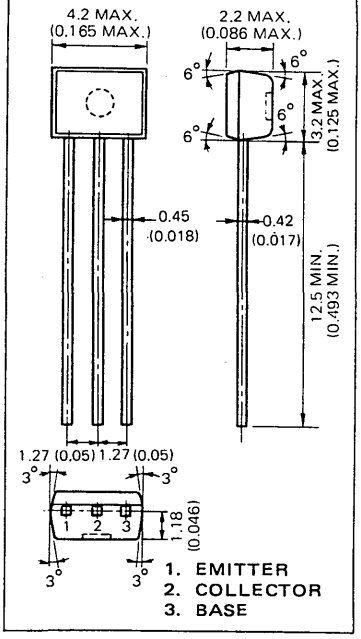
NPN SILICON TRANSISTOR
2SC2785

DESCRIPTION The 2SC2785 is designed for use in driver stage of AF amplifier and low speed switching.

FEATURES

- High Voltage V_{CEO} : 50 V MIN.
- Excellent h_{FE} Linearity : 0.92 TYP.
  h_{FE1} (0.1 mA)/h_{FE2} (1.0 mA)
- Complementary to the NEC 2SA1175 PNP Transistor.

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 ..... 60 V
- V_{CEO} Collector to Emitter Voltage ..... 50 V
- V_{EBO} Emitter to Base Voltage ..... 5.0 V
- I_C Collector Current ..... 100 mA
- I_B Base Current ..... 20 mA

ELECTRICAL CHARACTERISTICS (Ta = 25 °C)

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
h_{FE1}	DC Current Gain	50	185			V_{CE}=6.0 V, I_C=0.1 mA
h_{FE2}	DC Current Gain	110	200	600		V_{CE}=6.0 V, I_C=1.0 mA
NF	Noise Figure		0.8	15	dB	V_{CE}=6.0 V, I_C=0.1 mA, R_G=2.0 kΩ, f=1.0 kHz
f_T	Gain Bandwidth Product	150	250	450	MHz	V_{CE}=6.0 V, I_E=−10 mA
C_{ob}	Collector to Base Capacitance		3.0	4.0	pF	V_{CB}=6.0 V, I_E=0, f=1.0 MHz
I_{CBO}	Collector Cutoff Current			100	nA	V_{CB}=60 V, I_E=0
I_{EBO}	Emitter Cutoff Current			100	nA	V_{EB}=5.0 V, I_C=0
V_{BE}	Base to Emitter Voltage	0.55	0.62	0.65	V	V_{CE}=6.0 V, I_C=1.0 mA
$V_{CE(sat)}$	Collector Saturation Voltage		0.15	0.3	V	I_C=100 mA, I_B=10 mA
$V_{BE(sat)}$	Base Saturation Voltage		0.86	1.0	V	I_C=100 mA, I_B=10 mA

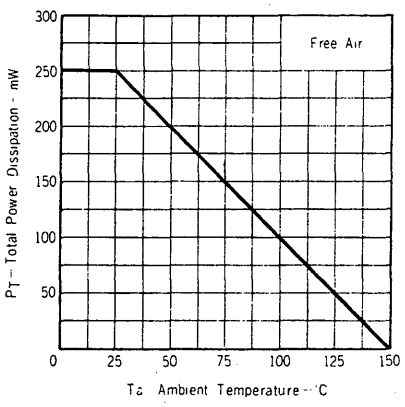
Classification of h_{FE2}

Rank	RF	JF	HF	FF	EF	KF
Range	110 – 180	135 – 220	170 – 270	200 – 320	250 – 400	300 – 600

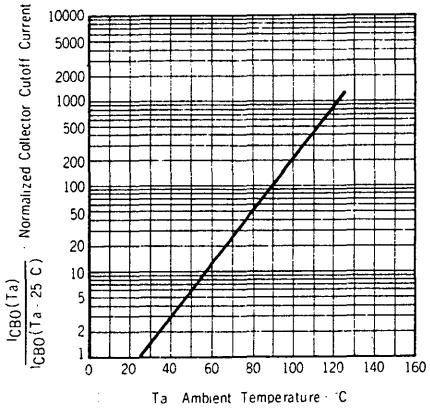
h_{FE2} Test Conditions : V_{CE}=6.0 V, I_C=1.0 mA

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

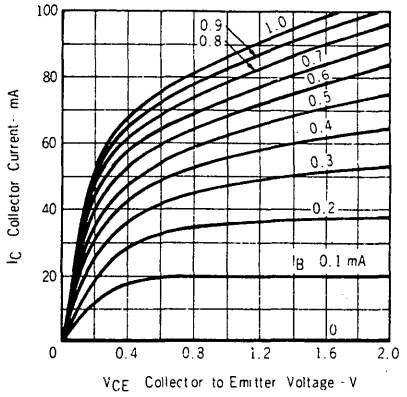
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



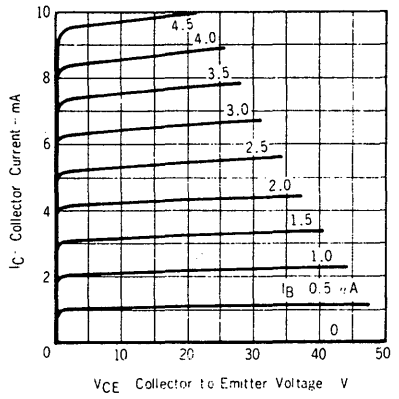
NORMALIZED COLLECTOR CUTOFF CURRENT vs. AMBIENT TEMPERATURE



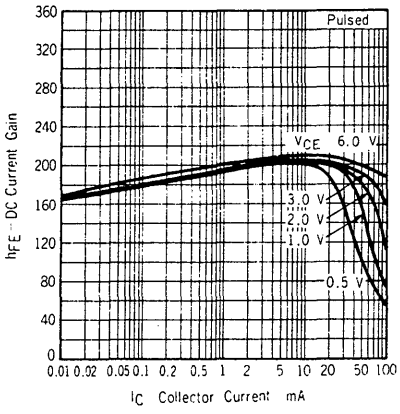
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



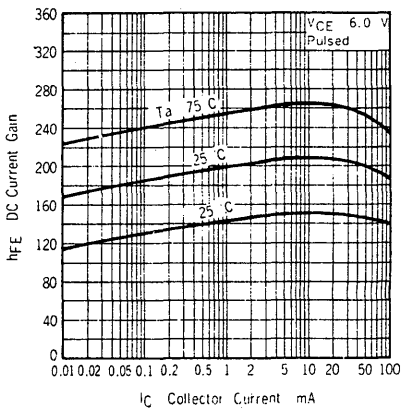
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



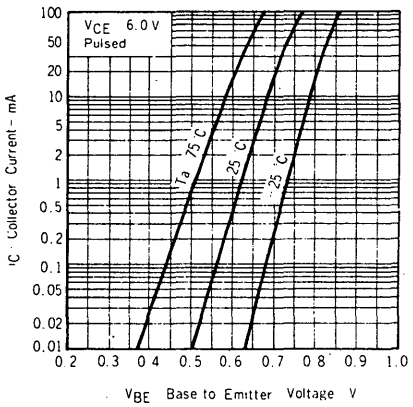
DC CURRENT GAIN vs. COLLECTOR CURRENT



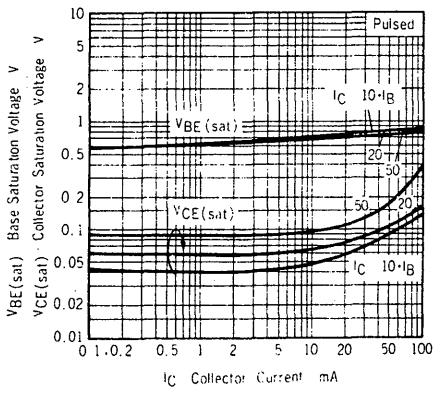
DC CURRENT GAIN vs. COLLECTOR CURRENT



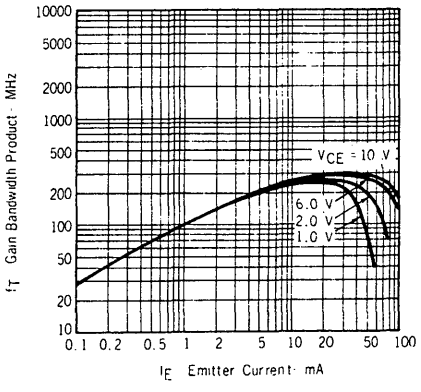
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



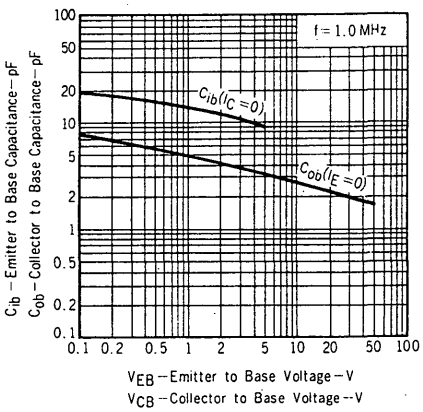
COLLECTOR AND BASE SATURATION VOLTAGE vs. COLLECTOR CURRENT



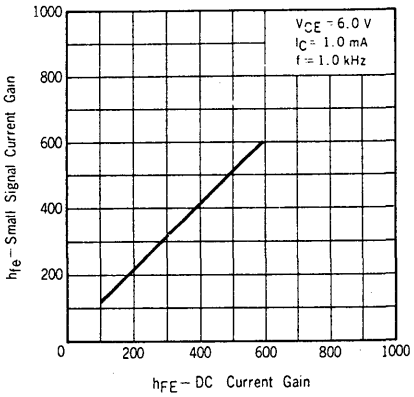
GAIN BANDWIDTH PRODUCT vs. EMITTER CURRENT



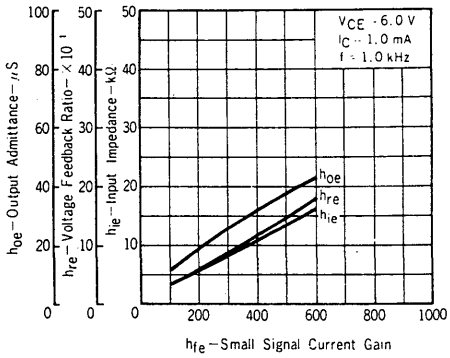
EMITTER TO BASE AND COLLECTOR TO BASE CAPACITANCE vs. REVERSE VOLTAGE



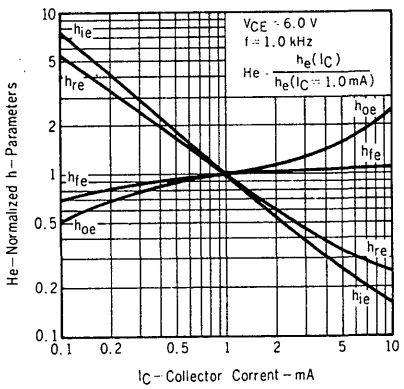
SMALL SIGNAL CURRENT GAIN vs. DC CURRENT GAIN



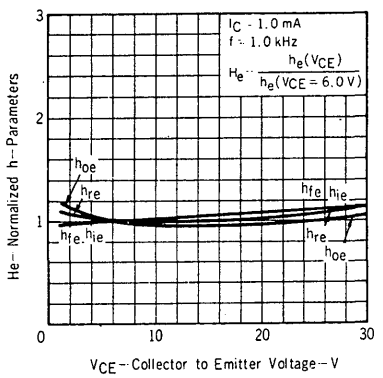
INPUT IMPEDANCE, VOLTAGE FEEDBACK RATIO AND OUTPUT ADMITTANCE vs. SMALL SIGNAL CURRENT GAIN



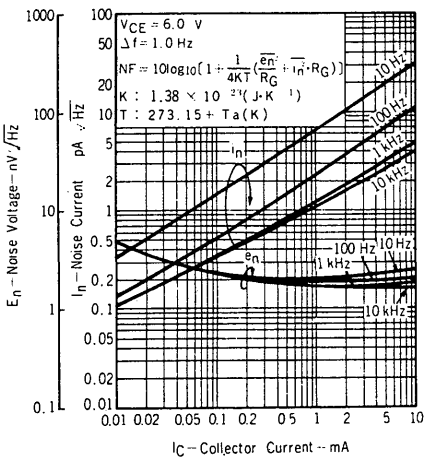
NORMALIZED h-PARAMETERS vs. COLLECTOR CURRENT



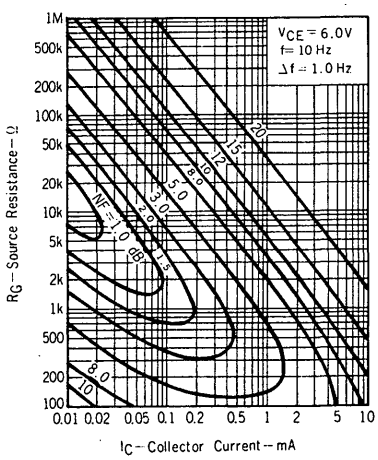
NORMALIZED h-PARAMETERS vs. COLLECTOR TO EMITTER VOLTAGE



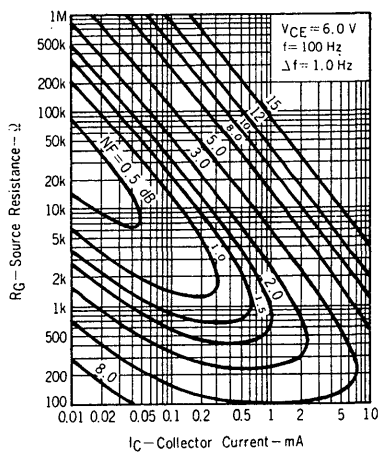
E_n AND I_n vs. COLLECTOR CURRENT



NOISE FIGURE MAP 1



NOISE FIGURE MAP 2



NOISE FIGURE MAP 3