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)

4.2 MAX. (0.165 MAX.)   2.2 MAX. (0.086 MAX.)   3.2 MAX. (0.125 MAX.)   6°   6°   6°   6°

0.45 (0.018)   0.42 (0.017)   12.5 MIN. (0.493 MIN.)

1.27 (0.05) 1.27 (0.05)   3°   3°   1.18 (0.046)   1 2 3   3°   3°

1. EMITTER
2. COLLECTOR
3. BASE

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
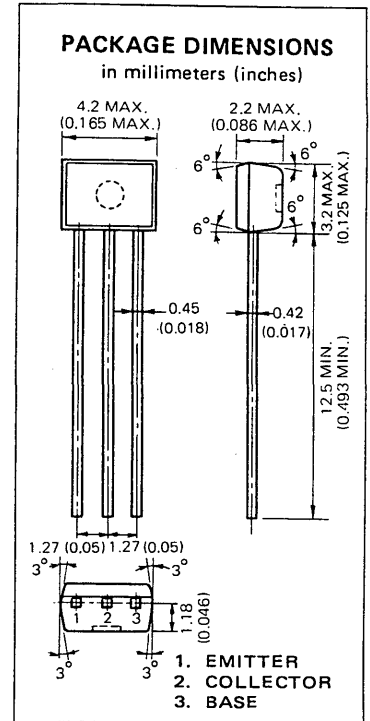
ELECTRICAL CHARACTERISTICS (Ta = 25 °C)

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

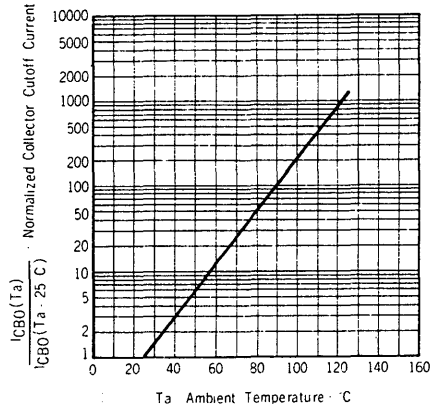h_{FE2} Test Conditions : V_{CE}=6.0 V, I_C=1.0 mA

TYPICAL CHARACTERISTICS (Ta = 25 °C unless otherwise noted)
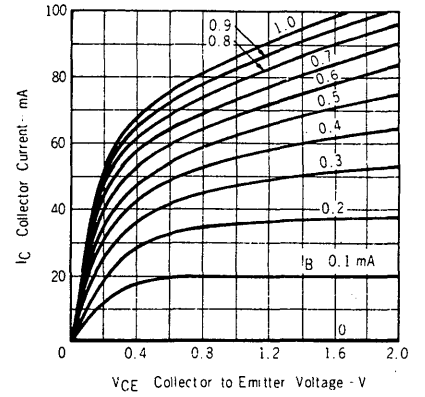
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE
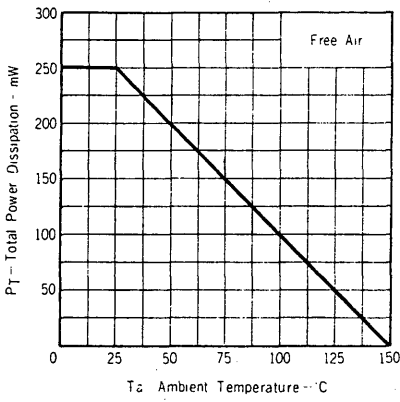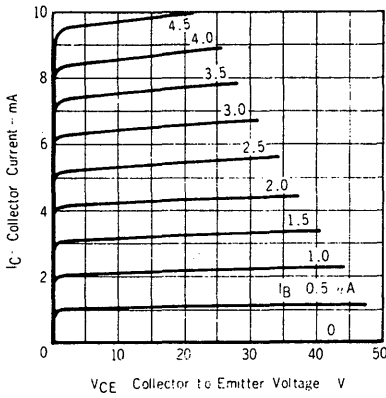

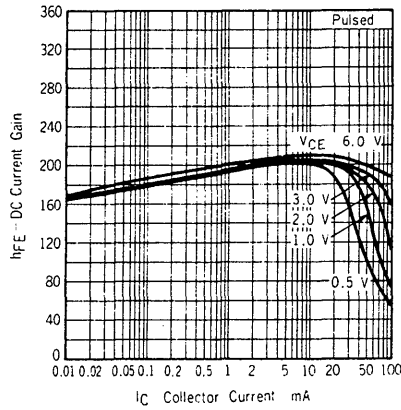### NORMALIZED COLLECTOR CUTOFF CURRENT vs. AMBIENT TEMPERATURE
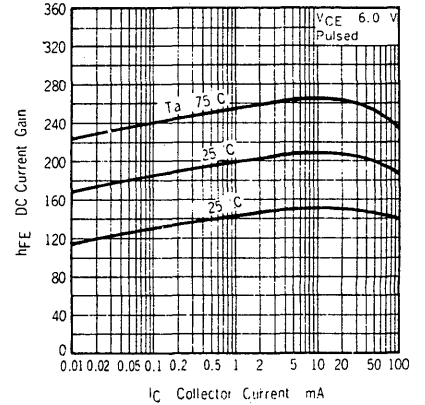

COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE

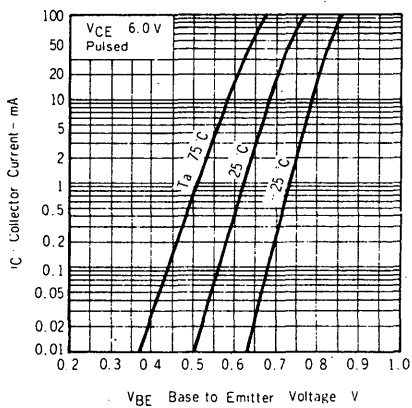

COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE
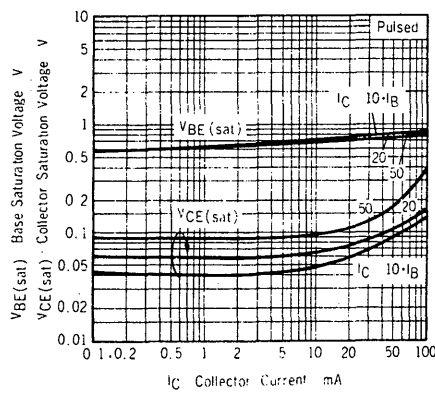

DC CURRENT GAIN vs. COLLECTOR CURRENT
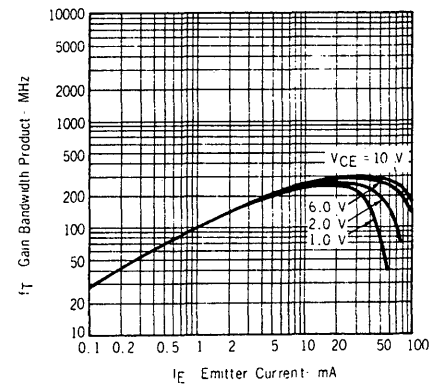

DC CURRENT GAIN vs. COLLECTOR CURRENT
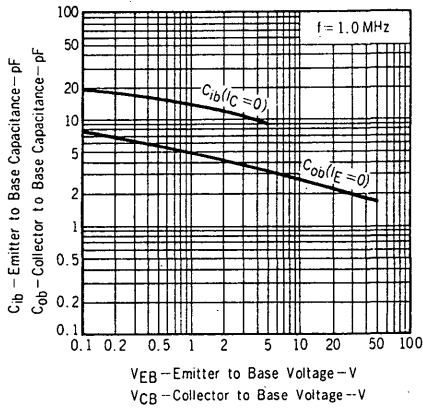

COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE

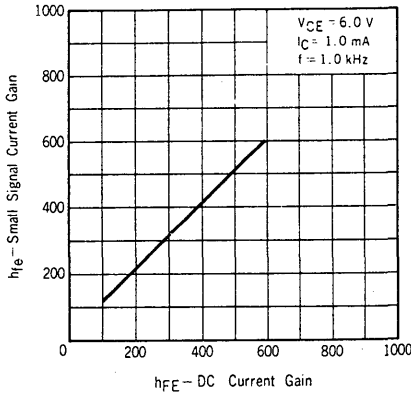### COLLECTOR AND BASE SATURATION VOLTAGE vs. COLLECTOR CURRENT

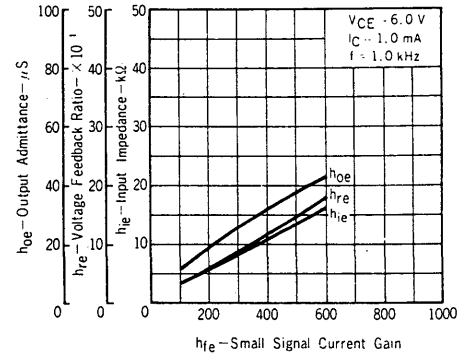### GAIN BANDWIDTH PRODUCT vs. EMITTER CURRENT

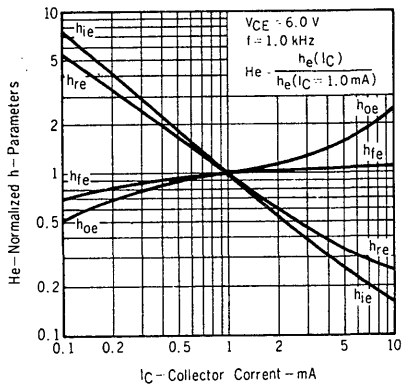## EMITTER TO BASE AND COLLECTOR TO BASE CAPACITANCE vs. REVERSE VOLTAGE

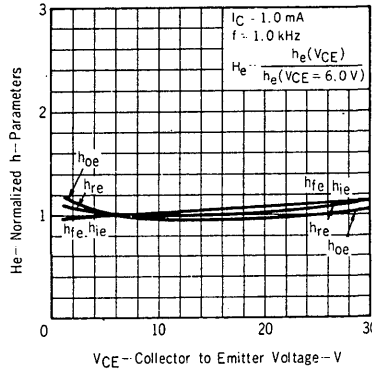## SMALL SIGNAL CURRENT GAIN vs. DC CURRENT GAIN

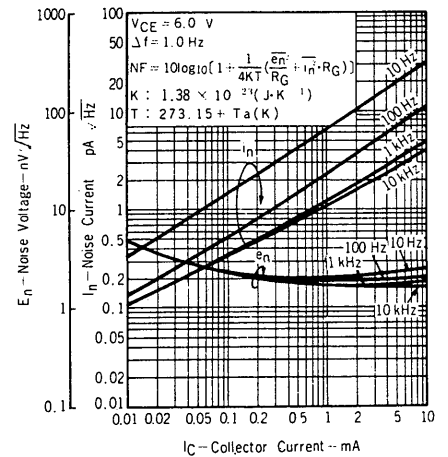## INPUT IMPEDANCE, VOLTAGE FEEDBACK RATIO AND OUTPUT ADMITTANCE vs. SMALL SIGNAL CURRENT GAIN

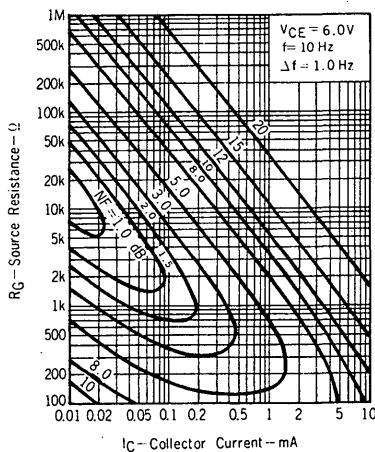## NORMALIZED h-PARAMETERS vs. COLLECTOR CURRENT

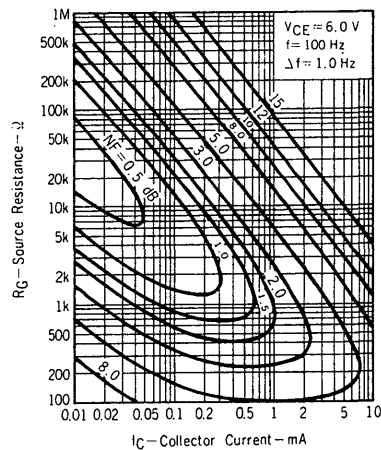## NORMALIZED h-PARAMETERS vs. COLLECTOR TO EMITTER VOLTAGE

E_n AND I_n vs. COLLECTOR CURRENT

NOISE FIGURE MAP 1

NOISE FIGURE MAP 2

NOISE FIGURE MAP 3