

SILICON TRANSISTOR

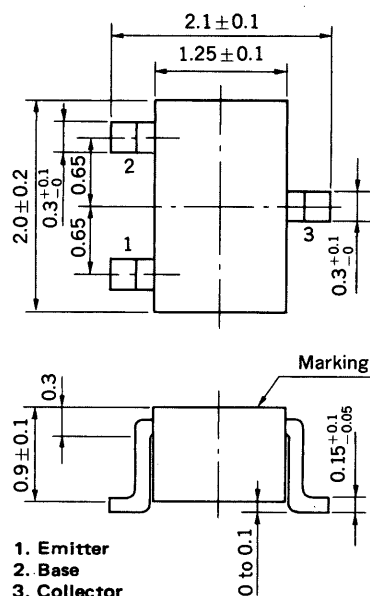
2SC4179

FM/AM RF AMPLIFIER, MIXER, OSCILLATOR, CONVERTER

NPN SILICON EPITAXIAL TRANSISTOR

PACKAGE DIMENSIONS

in millimeters



FEATURES

- High Gain Bandwidth Product: $f_T = 250$ MHz TYP.
- Low Output Capacitance: $C_{ob} = 1.8$ pF TYP.
- Low Noise Figure: NF = 2.0 dB TYP.

ABSOLUTE MAXIMUM RATINGS

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

Collector to Base Voltage	V_{CBO}	50	V
Collector to Emitter Voltage	V_{CEO}	30	V
Emitter to Base Voltage	V_{EBO}	5.0	V
Collector Current (DC)	I_C	50	mA

Maximum Power Dissipation

Total Power Dissipation at 25°C Ambient Temperature	P_T	150	mW
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Maximum Temperatures

Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to +150	$^\circ\text{C}$

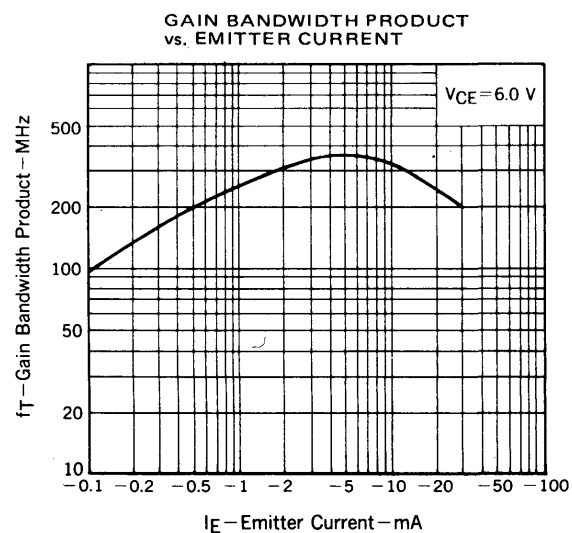
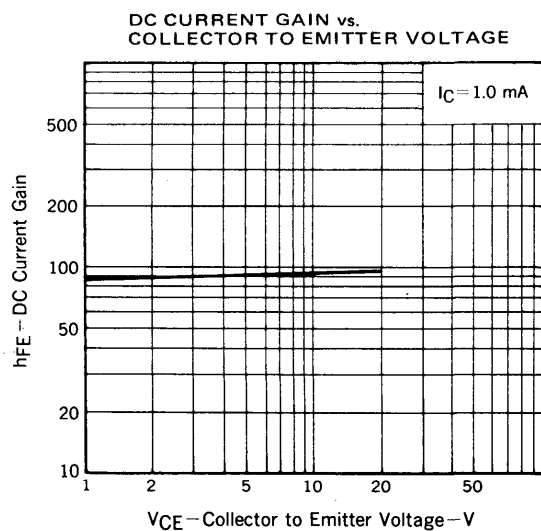
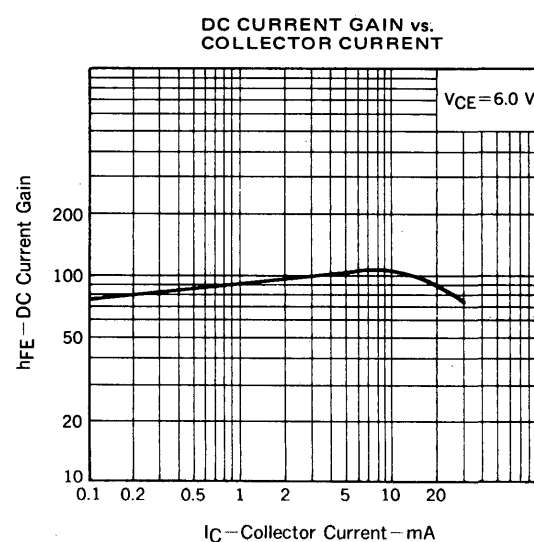
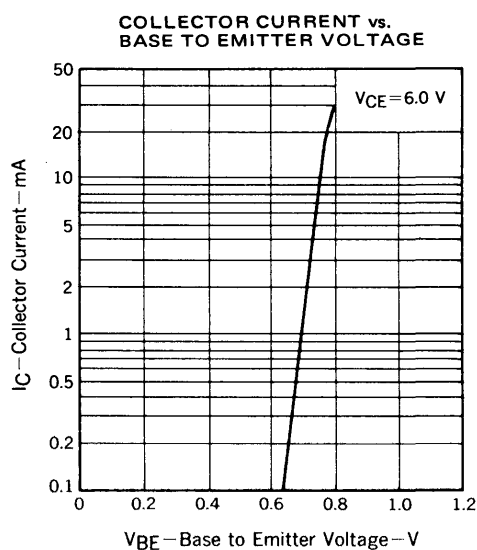
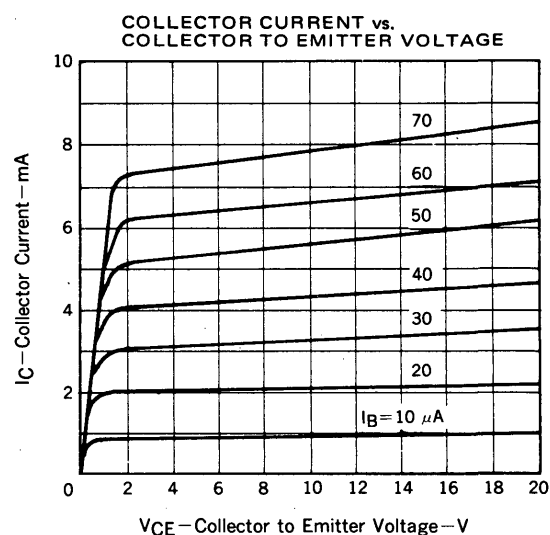
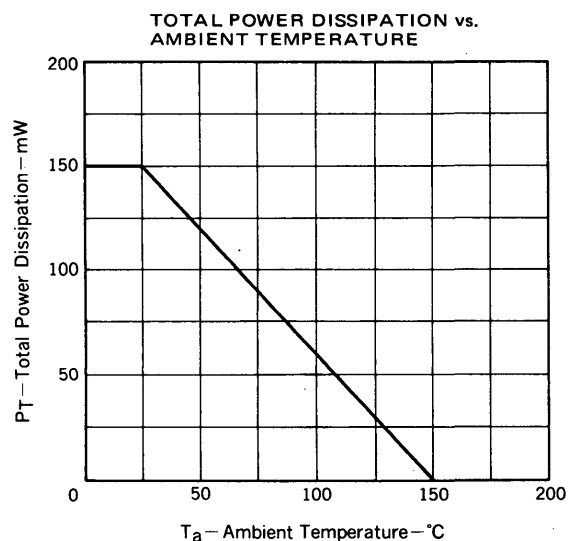
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	I_{CBO}			0.1	μA	$V_{CB} = 50$ V, $I_E = 0$
Emitter Cutoff Current	I_{EBO}			0.1	μA	$V_{EB} = 5.0$ V, $I_C = 0$
DC Current Gain	h_{FE}	60	100	180		$V_{CE} = 6.0$ V, $I_C = 1.0$ mA*
Base to Emitter Voltage	V_{BE}	0.65	0.70	0.75	V	$V_{CE} = 6.0$ V, $I_C = 1.0$ mA
Collector Saturation Voltage	$V_{CE(sat)}$		0.08	0.3	V	$I_C = 10$ mA, $I_B = 1.0$ mA
Gain Bandwidth Product	f_T	150	250		MHz	$V_{CE} = 6.0$ V, $I_E = -1.0$ mA
Output Capacitance	C_{ob}		1.9	2.2	pF	$V_{CB} = 6.0$ V, $I_E = 0$, $f = 1.0$ MHz
Collector to Base Time Constant	$C_c - r_b' b$		10	15	ps	$V_{CB} = 6.0$ V, $I_E = -10$ mA, $f = 31.9$ MHz
Noise Figure	NF		2.0	4.0	dB	$V_{CE} = 6.0$ V, $I_E = -1.0$ mA, $f = 1.0$ MHz, $R_G = 500 \Omega$

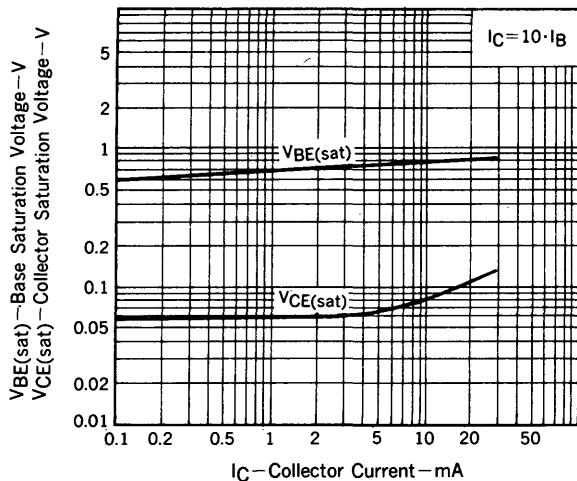
* Pulsed: $PW \leq 350 \mu\text{s}$, Duty Cycle $\leq 2\%$

h_{FE} Classification

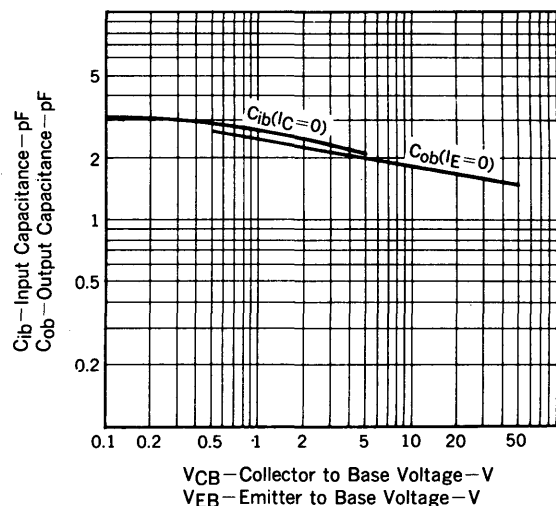
Marking	FA3	FA4
h_{FE}	60 to 120	90 to 180

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

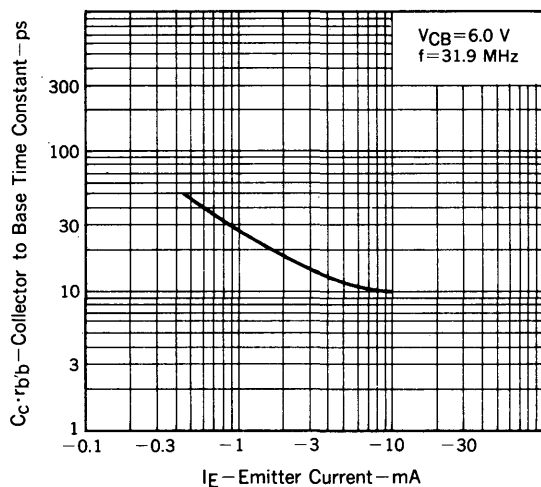
COLLECTOR AND BASE SATURATION VOLTAGE vs. COLLECTOR CURRENT



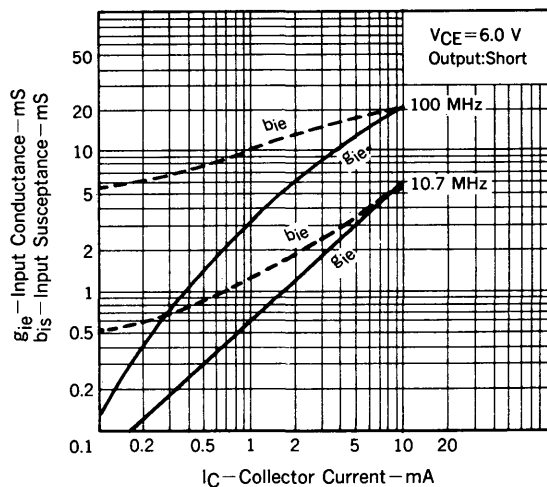
OUTPUT AND INPUT CAPACITANCE vs. REVERSE VOLTAGE



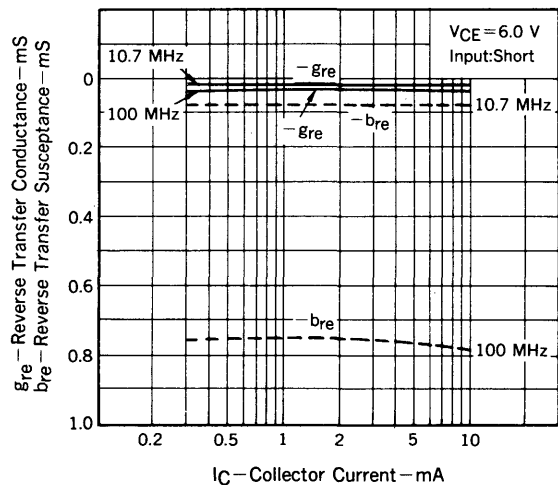
COLLECTOR TO BASE TIME CONSTANT vs. EMITTER CURRENT



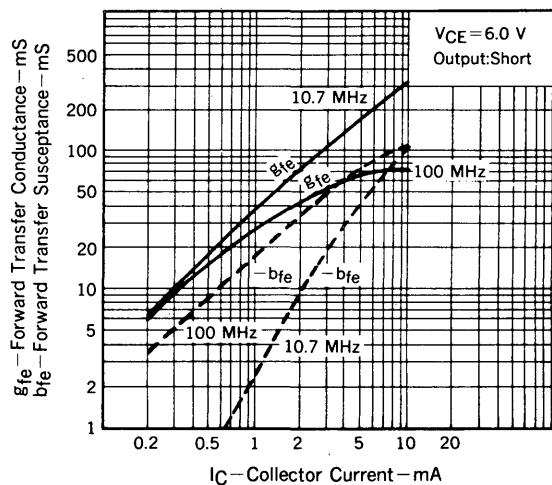
INPUT ADMITTANCE (y_{ie}) vs. COLLECTOR CURRENT

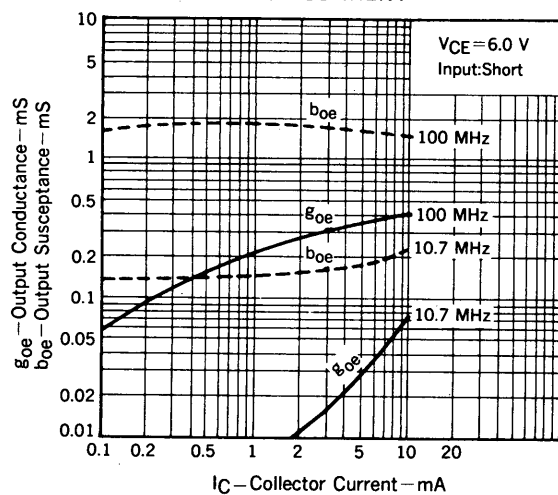
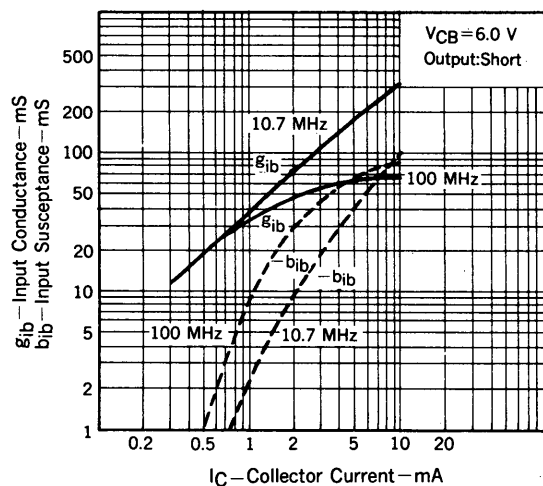
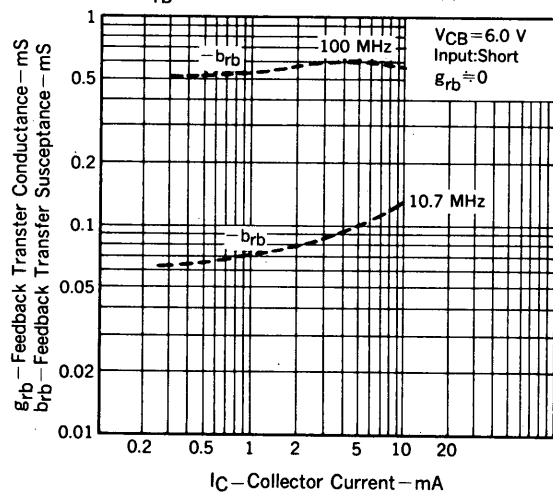


REVERSE TRANSFER ADMITTANCE (y_{re}) vs. COLLECTOR CURRENT



FORWARD TRANSFER ADMITTANCE (y_{fe}) vs. COLLECTOR CURRENT



OUTPUT ADMITTANCE (y_{oe}) vs.
COLLECTOR CURRENTINPUT ADMITTANCE (y_{ib}) vs.
COLLECTOR CURRENTREVERSE TRANSFER ADMITTANCE
(y_{rb}) vs. COLLECTOR CURRENTFORWARD TRANSFER ADMITTANCE
(y_{fb}) vs. COLLECTOR CURRENT