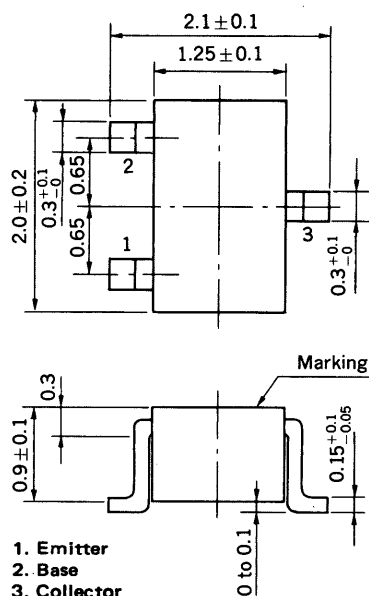


**SILICON TRANSISTOR**  
**2SC4179**

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

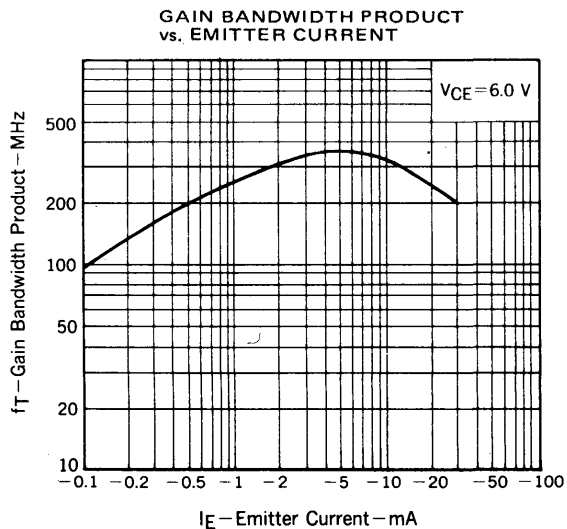
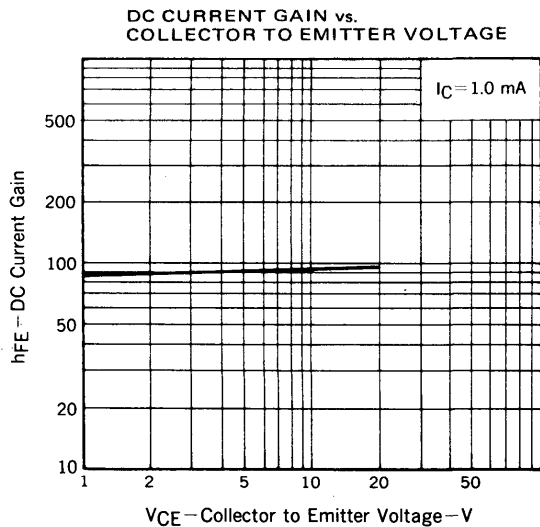
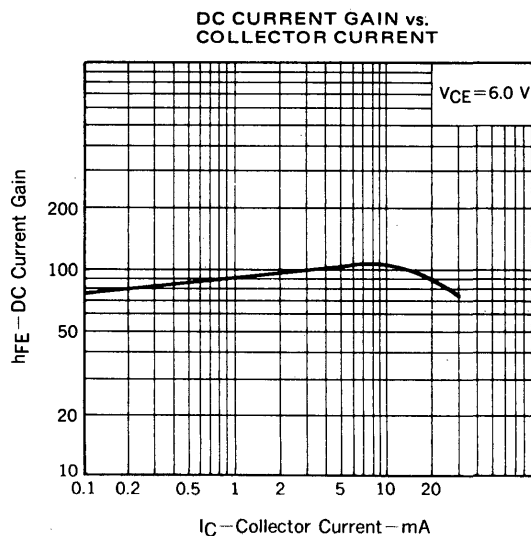
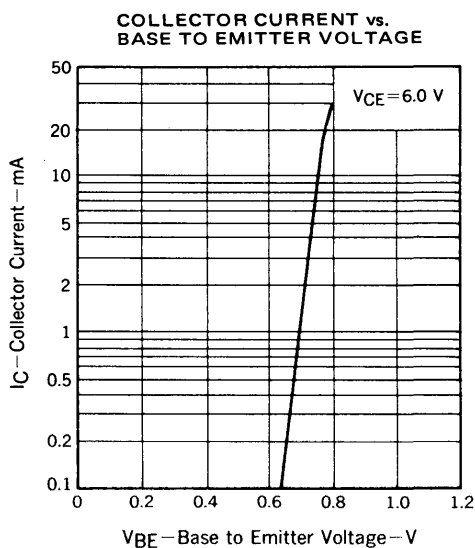
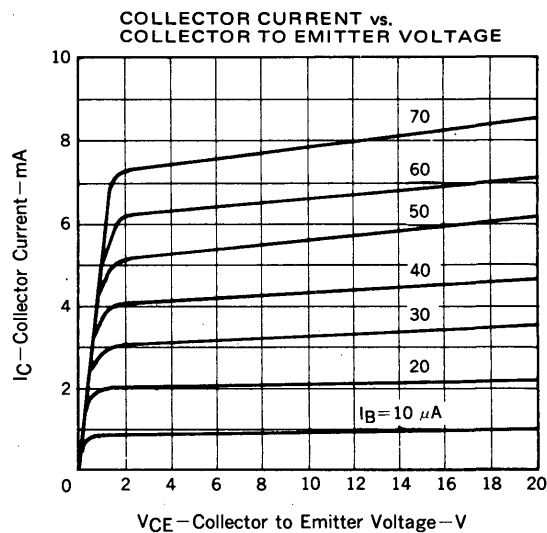
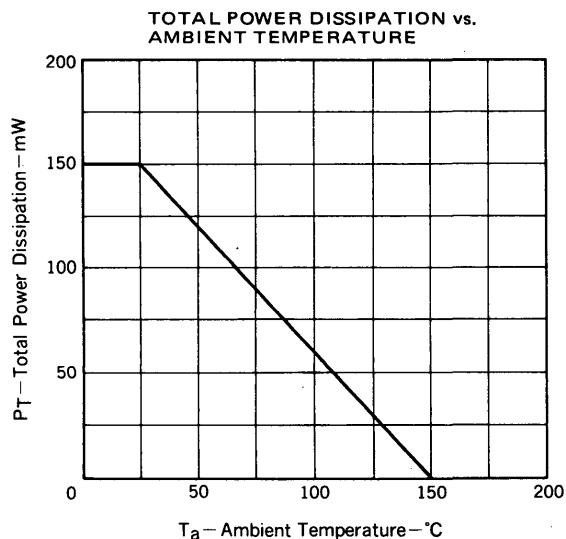
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	$I_{CBO}$			0.1	$\mu\text{A}$	$V_{CB} = 50\text{ V}, I_E = 0$
Emitter Cutoff Current	$I_{EBO}$			0.1	$\mu\text{A}$	$V_{EB} = 5.0\text{ V}, I_C = 0$
DC Current Gain	$h_{FE}$	60	100	180		$V_{CE} = 6.0\text{ V}, I_C = 1.0\text{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

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

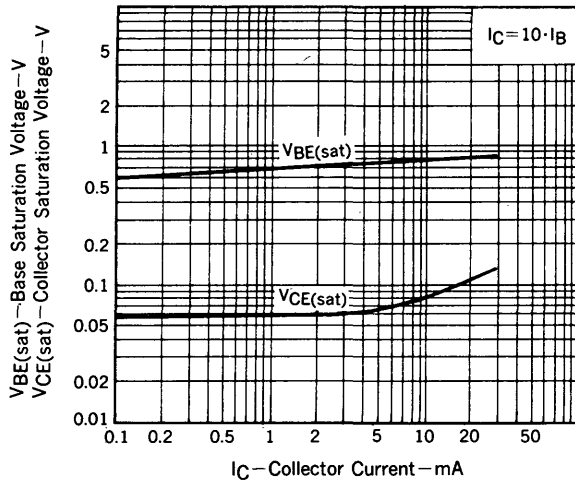
**$h_{FE}$  Classification**

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

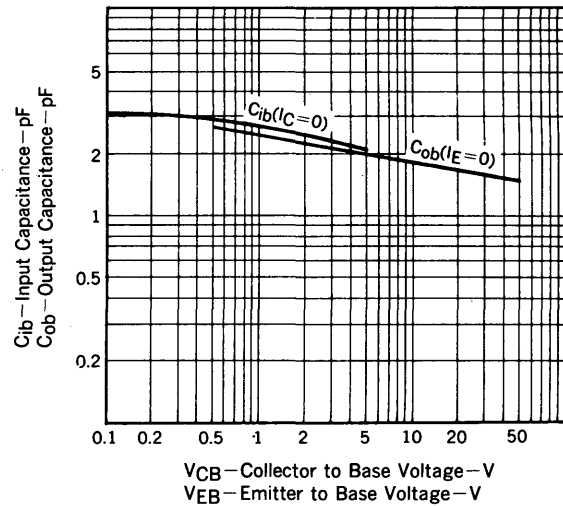
TYPICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )



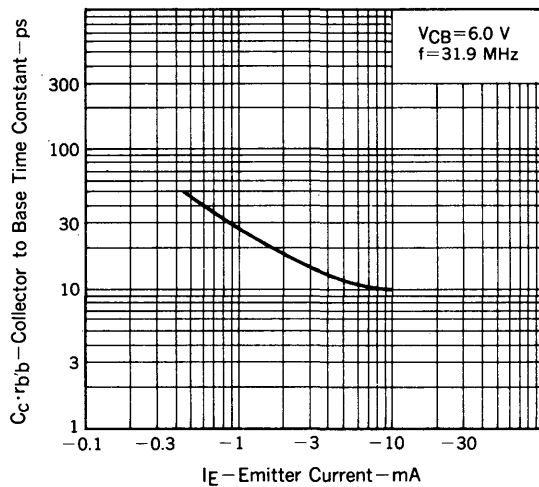
COLLECTOR AND BASE SATURATION VOLTAGE vs. COLLECTOR CURRENT



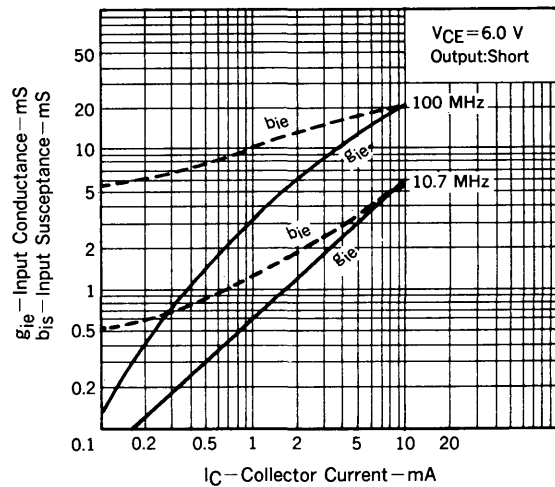
OUTPUT AND INPUT CAPACITANCE vs. REVERSE VOLTAGE



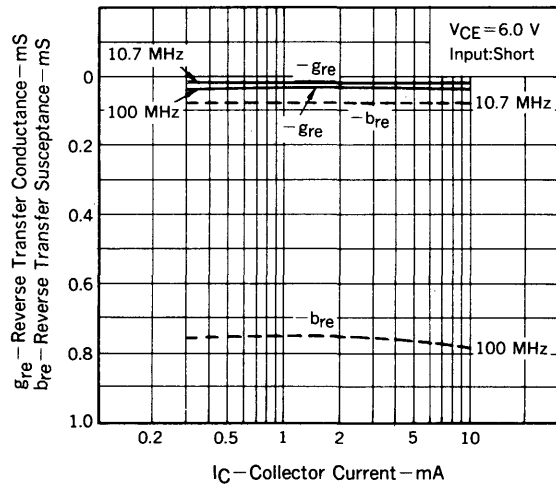
COLLECTOR TO BASE TIME CONSTANT vs. EMITTER CURRENT



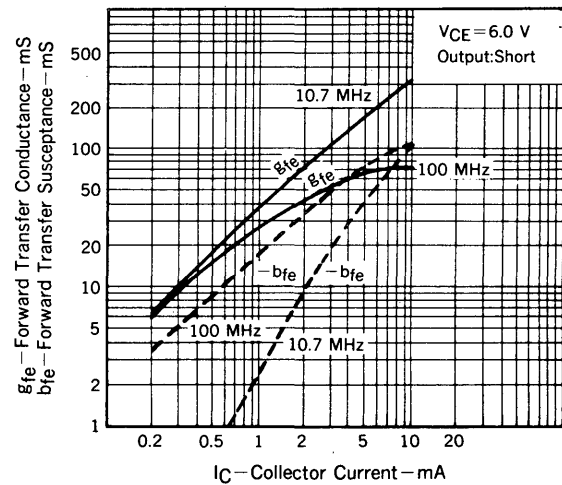
INPUT ADMITTANCE (yie) vs. COLLECTOR CURRENT



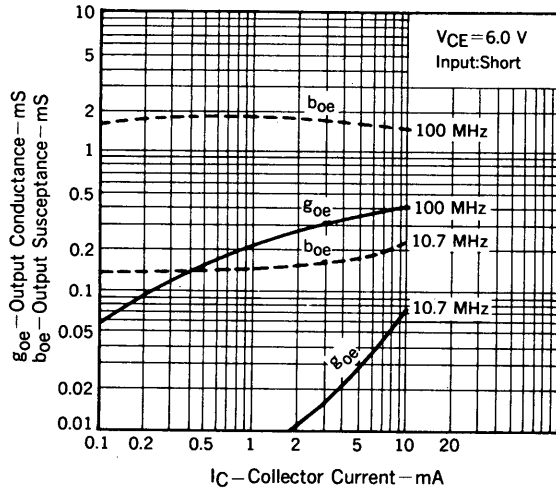
REVERSE TRANSFER ADMITTANCE (yre) vs. COLLECTOR CURRENT



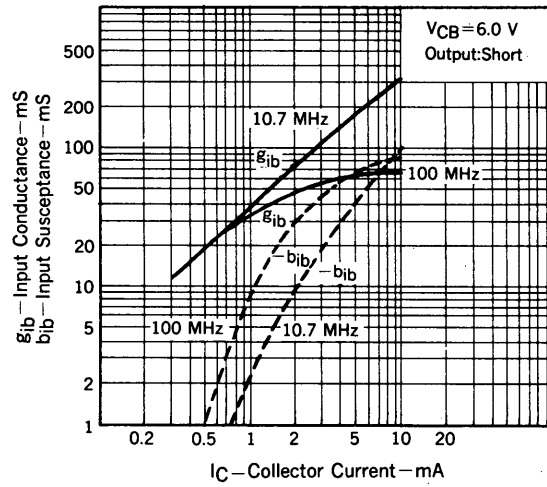
FORWARD TRANSFER ADMITTANCE (yfe) vs. COLLECTOR CURRENT



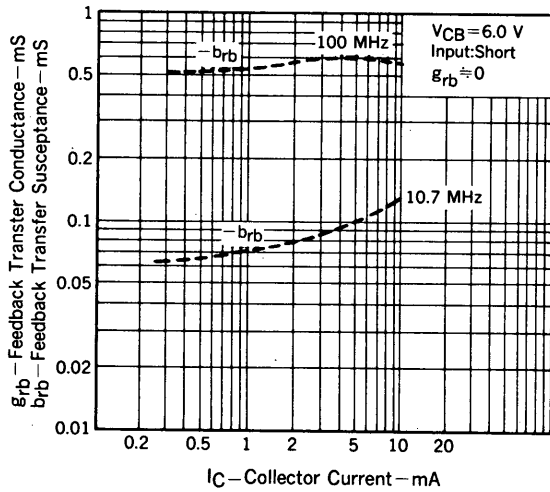
OUTPUT ADMITTANCE ( $y_{oe}$ ) vs. COLLECTOR CURRENT



INPUT ADMITTANCE ( $y_{ib}$ ) vs. COLLECTOR CURRENT



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



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

