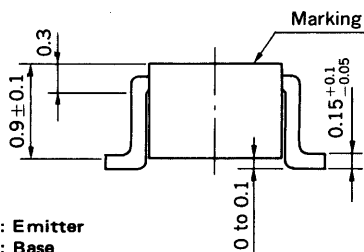
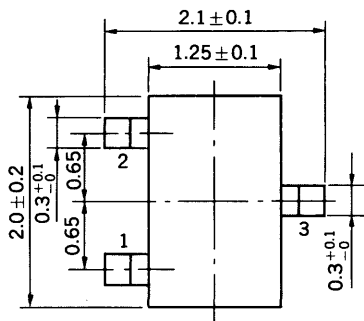


**SILICON TRANSISTOR**  
**2SC4177**

**AUDIO FREQUENCY GENERAL PURPOSE AMPLIFIER**  
**NPN SILICON EPITAXIAL TRANSISTOR**

**PACKAGE DIMENSIONS**  
in millimeters



1 : Emitter  
2 : Base  
3 : Collector

**FEATURES**

- Complementary to 2SA1611
- High DC Current Gain:  $h_{FE} = 200$  TYP. ( $V_{CE} = 6.0$  V,  $I_C = 1.0$  mA)
- High Voltage:  $V_{CEO} = 50$  V

**ABSOLUTE MAXIMUM RATINGS**

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

Collector to Base Voltage	$V_{CBO}$	60	V
Collector to Emitter Voltage	$V_{CEO}$	50	V
Emitter to Base Voltage	$V_{EBO}$	5.0	V
Collector Current (DC)	$I_C$	100	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 ( $T_a = 25^\circ\text{C}$ )**

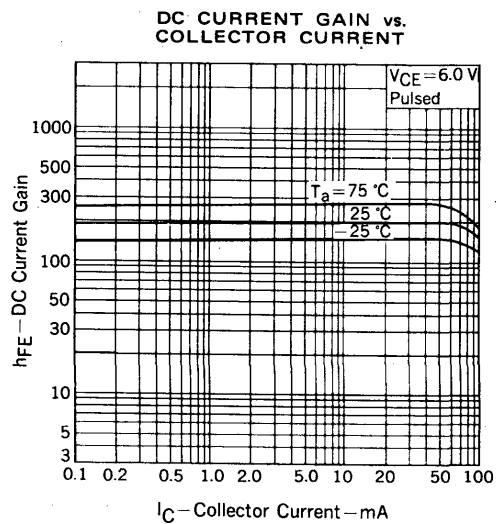
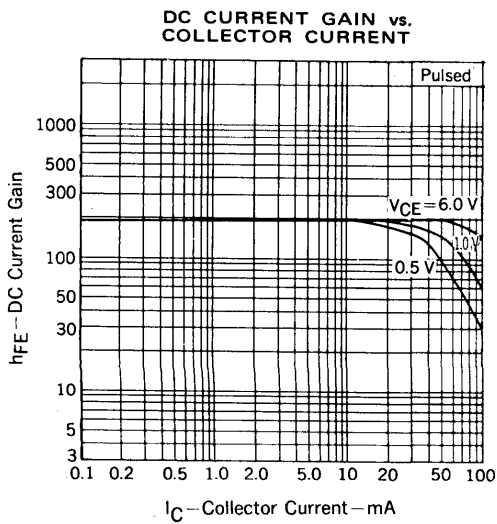
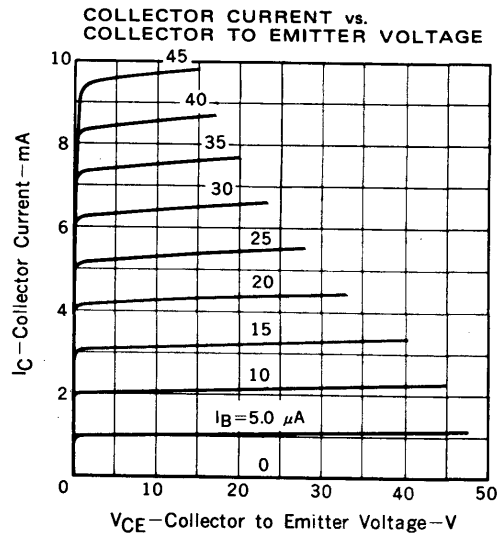
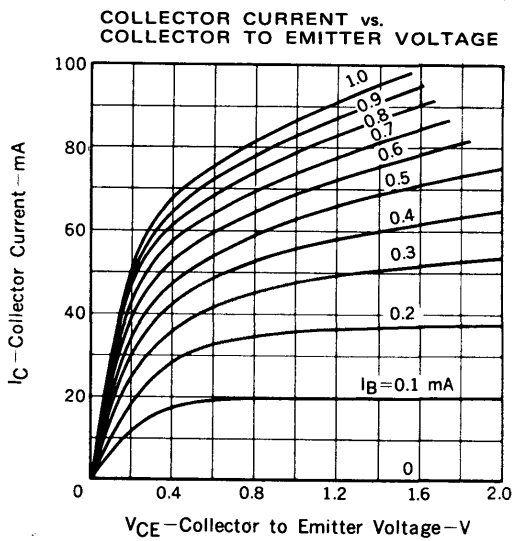
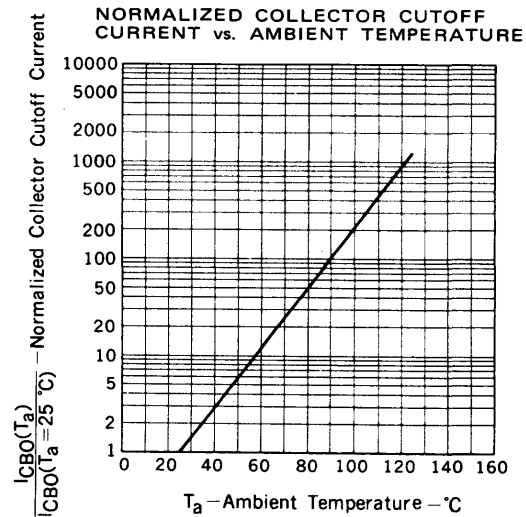
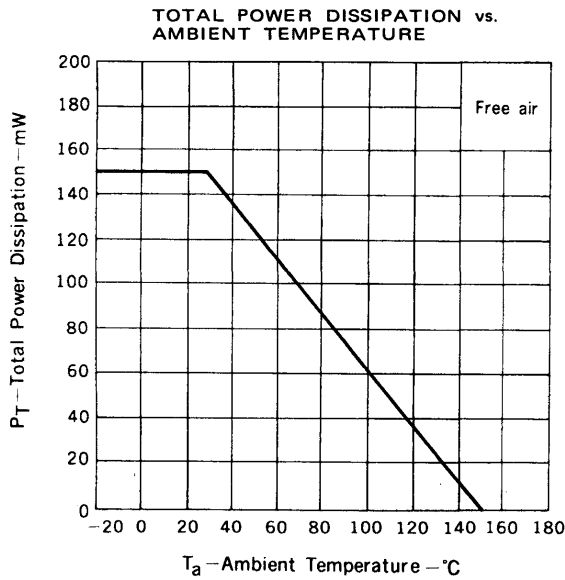
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	$I_{CBO}$			0.1	$\mu\text{A}$	$V_{CB} = 60$ V, $I_E = 0$
Emitter Cutoff Current	$I_{EBO}$			0.1	$\mu\text{A}$	$V_{EB} = 5.0$ V, $I_C = 0$
DC Current Gain	$h_{FE}$	90	200	600		$V_{CE} = 6.0$ V, $I_C = 1.0$ mA*
Collector Saturation Voltage	$V_{CE(sat)}$		0.15	0.3	V	$I_C = 100$ mA, $I_B = 10$ mA
Base to Saturation Voltage	$V_{BE(sat)}$		0.86	1.0	V	$I_C = 100$ mA, $I_B = 10$ mA
Base Emitter Voltage	$V_{BE}$	0.55	0.62	0.65	V	$V_{CE} = 6.0$ V, $I_C = 1.0$ mA
Gain Bandwidth Product	$f_T$		250		MHz	$V_{CE} = 6.0$ V, $I_E = -10$ mA
Output Capacitance	$C_{ob}$		3.0		pF	$V_{CB} = 6.0$ V, $I_E = 0$ , $f = 1.0$ MHz

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

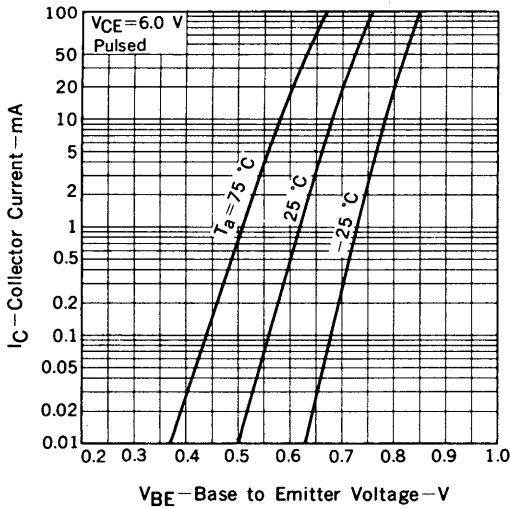
$h_{FE}$  Classification

Marking	L4	L5	L6	L7
$h_{FE}$	90 to 180	135 to 270	200 to 400	300 to 600

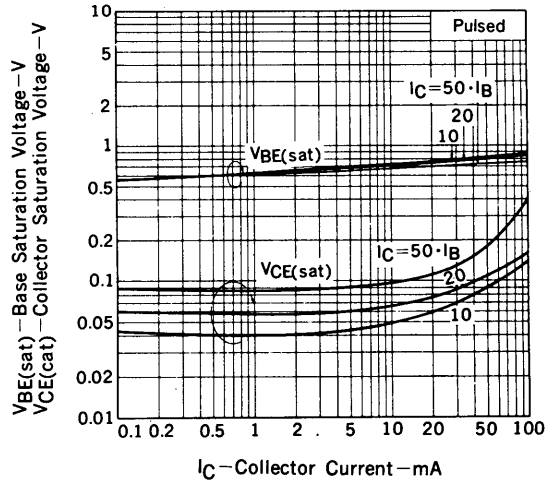
TYPICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )



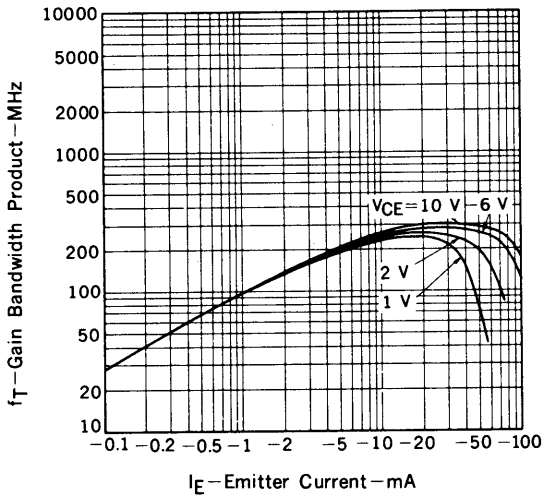
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



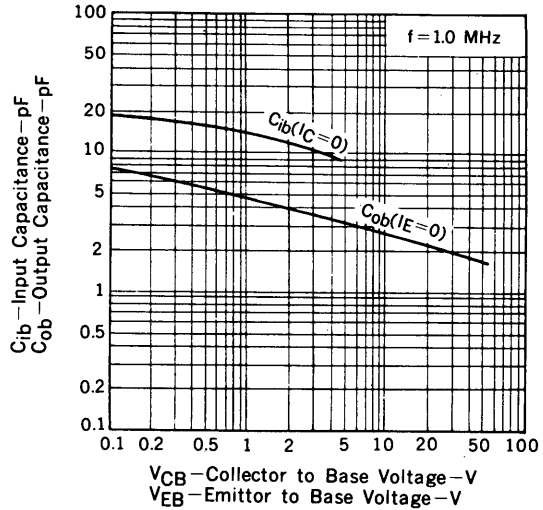
COLLECTOR AND BASE SATURATION VOLTAGE vs. COLLECTOR CURRENT



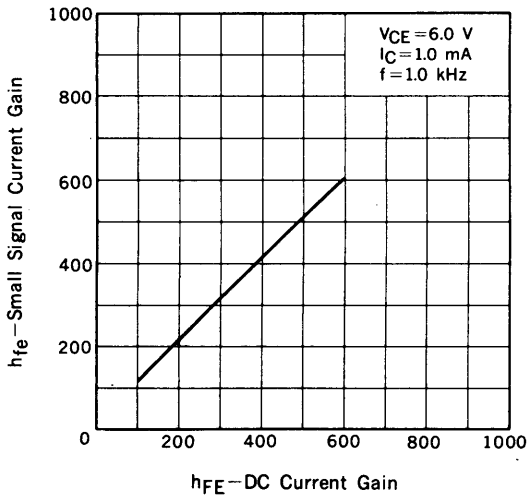
GAIN BANDWIDTH PRODUCT vs. EMITTER CURRENT



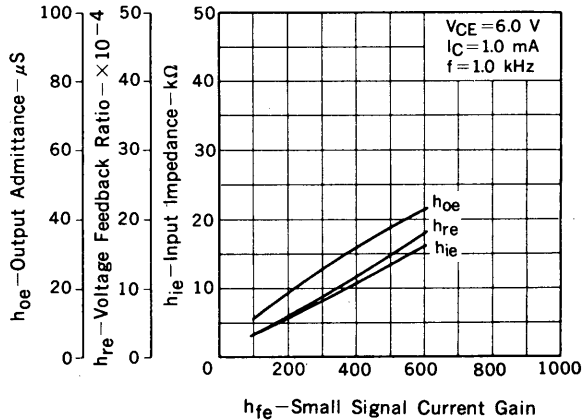
OUTPUT AND INPUT CAPACITANCE vs. REVERSE VOLTAGE



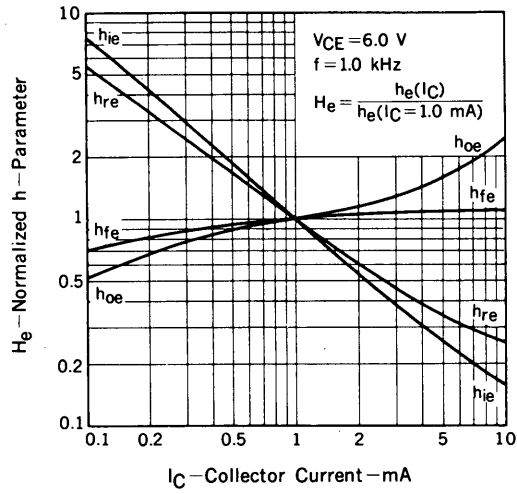
SMALL SIGNAL CURRENT GAIN vs. DC CURRENT GAIN



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



NORMALIZED h-PARAMETER vs. COLLECTOR CURRENT



NORMALIZED h-PARAMETER vs. COLLECTOR TO EMITTER VOLTAGE

