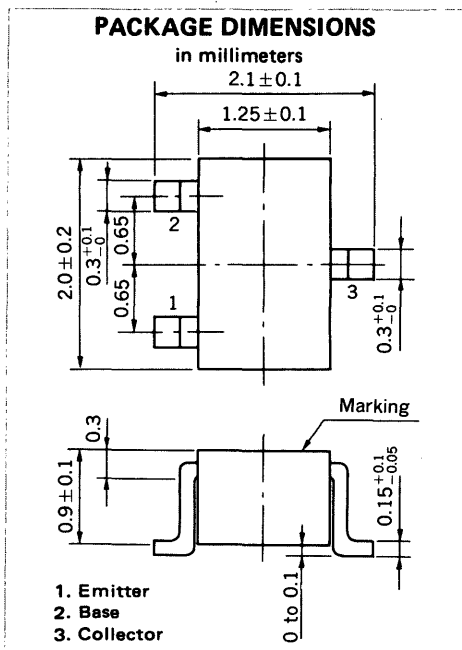


SILICON TRANSISTORS  
**2SC4181, 2SC4181A**

AUDIO FREQUENCY AMPLIFIER, SWITCHING  
NPN SILICON EPITAXIAL TRANSISTORS



**FEATURES**

- High DC Current Gain :  $h_{FE} = 1\ 000$  to  $3\ 200$
- Low  $V_{CE(sat)}$  :  $V_{CE(sat)} = 0.07\ V$  TYP.
- High  $V_{EBO}$  :  $V_{EBO} = 15\ V$  (2SC4181A)

**ABSOLUTE MAXIMUM RATINGS**

Maximum Voltages and Current ( $T_a = 25\ ^\circ C$ )		2SC4181	2SC4181A	
Collector to Base Voltage	$V_{CBO}$	60		V
Collector to Emitter Voltage	$V_{CEO}$	50		V
Emitter to Base Voltage	$V_{EBO}$	12	15	V
Collector Current (DC)	$I_C$	150		mA
Maximum Power Dissipation				
Total Power Dissipation				
at $25\ ^\circ C$ Ambient Temperature	$P_T$	150		mW
Maximum Temperatures				
Junction Temperature	$T_j$	150		$^\circ C$
Storage Temperature Range	$T_{stg}$	-55 to +150		$^\circ C$

**ELECTRICAL CHARACTERISTICS ( $T_a = 25\ ^\circ C$ )**

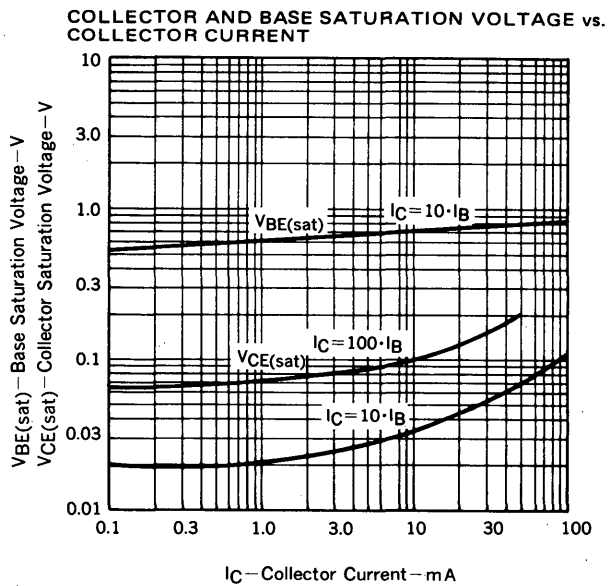
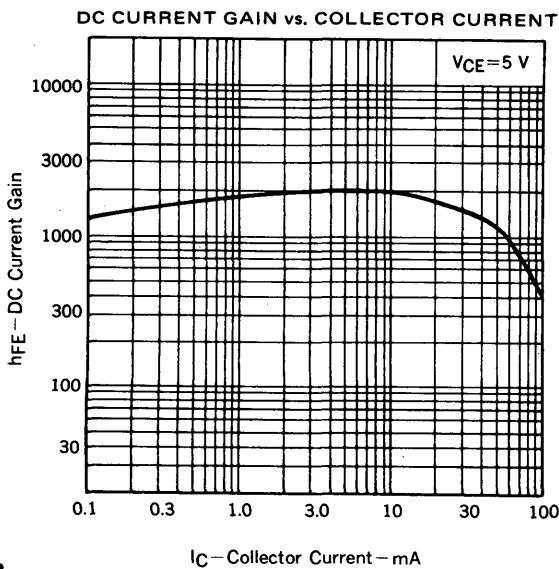
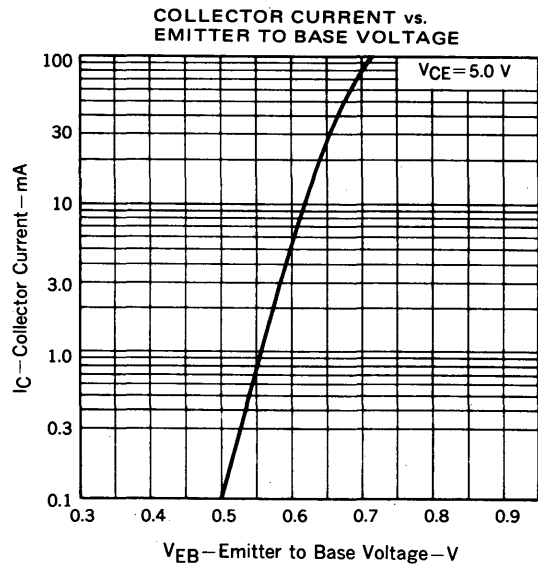
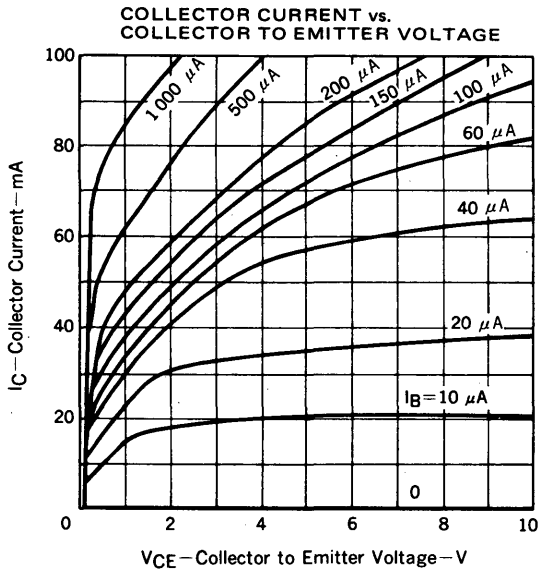
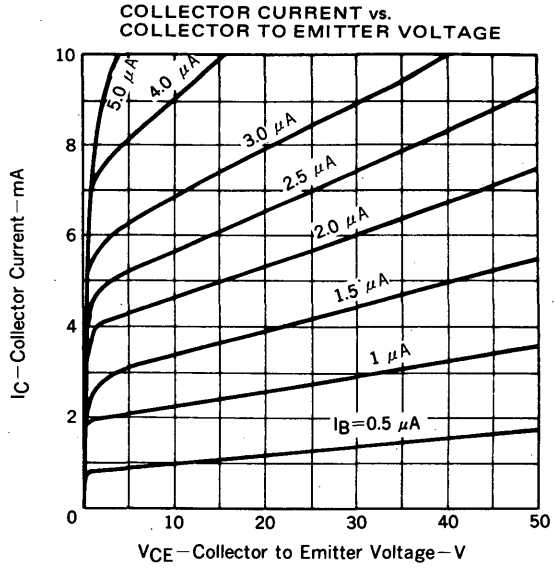
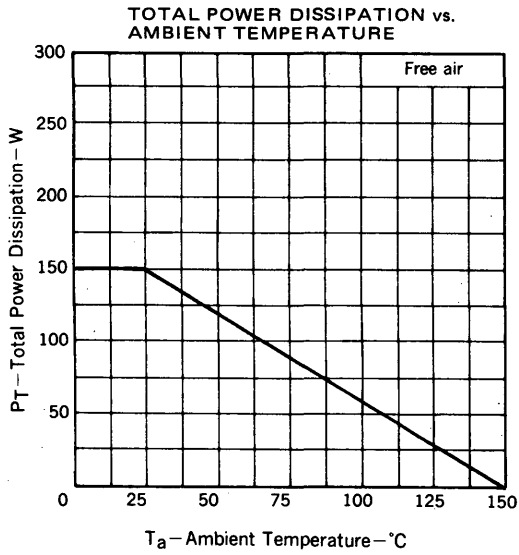
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	$I_{CBO}$			100	nA	$V_{CB} = 50\ V, I_E = 0$
Emitter Cutoff Current	$I_{EBO}$			100	nA	$V_{EB} = 10\ V, I_C = 0$
DC Current Gain	$h_{FE1}^*$	1000	1800	3200		$V_{CE} = 5.0\ V, I_C = 1.0\ mA$
DC Current Gain	$h_{FE2}^*$	200	350			$V_{CE} = 5.0\ V, I_C = 100\ mA$
Base to Emitter Voltage	$V_{BE}^*$		0.56		V	$V_{CE} = 5.0\ V, I_C = 1.0\ mA$
Collector Saturation Voltage	$V_{CE(sat)}^*$		0.07	0.3	V	$I_C = 50\ mA, I_B = 5.0\ mA$
Base Saturation Voltage	$V_{BE(sat)}^*$		0.8	1.2	V	$I_C = 50\ mA, I_B = 5.0\ mA$
Gain Bandwidth Product	$f_T$		250		MHz	$V_{CE} = 5.0\ V, I_E = -10\ mA$
Output Capacitance	$C_{ob}$		3.0		pF	$V_{CB} = 5\ V, I_E = 0, f = 1.0\ MHz$
Turn-on Time	$t_{on}$		0.13		ns	$V_{CC} = 10\ V, V_{BE(off)} = -2.7\ V$
Storage Time	$t_{stg}$		0.72		ns	$I_C = 50\ mA$
Turn-off Time	$t_{off}$		1.22		ns	$I_{B1} = -I_{B2} = 1.0\ mA$

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

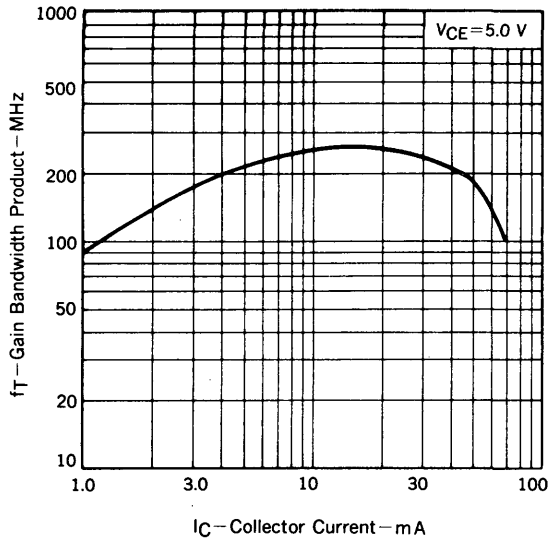
**$h_{FE}$  Classification**

Marking	2SC4181	L17	L18
	2SC4181A	L15	L16
$h_{FE1}$	1000 to 2000	1600 to 3200	

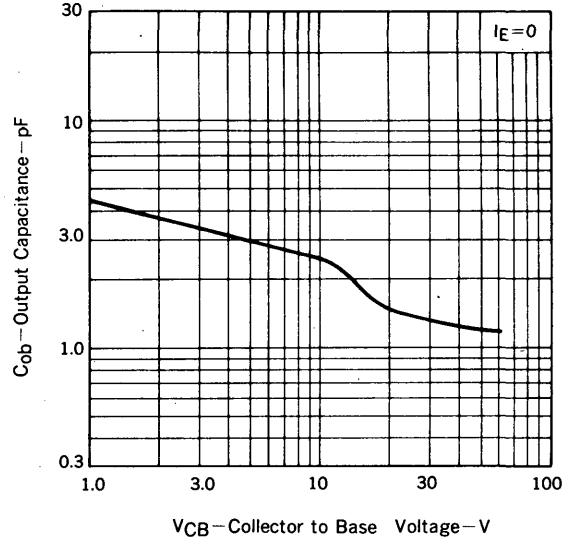
TYPICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )



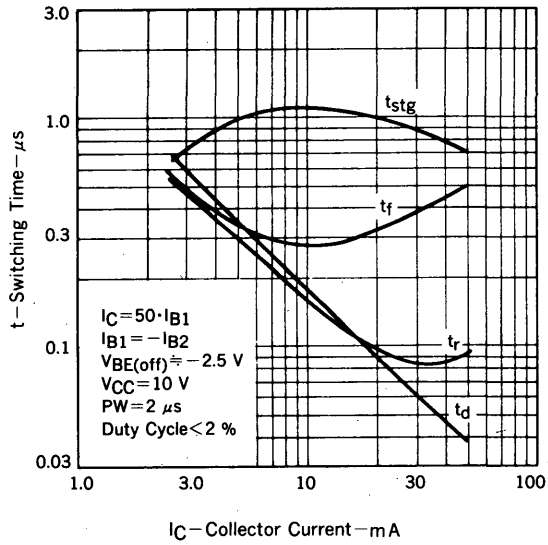
GAIN BANDWIDTH PRODUCT vs. COLLECTOR CURRENT



OUTPUT CAPACITANCE vs. COLLECTOR TO BASE VOLTAGE



SWITCHING TIME vs. COLLECTOR CURRENT



**[MEMO]**

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