

# PNP SILICON TRANSISTOR

## 2SA988

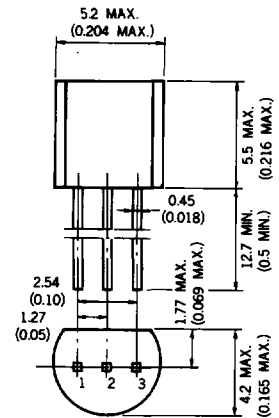
**DESCRIPTION** The 2SA988 is designed for use in driver stage of AF amplifier.

- FEATURES**
- High Voltage.  $V_{CE0} : -120\text{ V}$
  - Low Output Capacitance.  $C_{ob} : 2.0\text{ pF TYP. } (V_{CB} = -30\text{ V})$
  - High  $h_{FE}$ .  $h_{FE} : 500\text{ TYP. } (V_{CE} = -6.0\text{ V, } I_C = -1.0\text{ mA})$

**ABSOLUTE MAXIMUM RATINGS**

Maximum Temperatures	
Storage Temperature	-55 to +125 °C
Junction Temperature	+125 °C Maximum
Maximum Power Dissipation ( $T_a = 25\text{ °C}$ )	
Total Power Dissipation	500 mW
Maximum Voltages and Currents ( $T_a = 25\text{ °C}$ )	
$V_{CBO}$ Collector to Base Voltage	-120 V
$V_{CEO}$ Collector to Emitter Voltage	-120 V
$V_{EBO}$ Emitter to Base Voltage	-5.0 V
$I_C$ Collector Current	-50 mA
$I_B$ Base Current	-10 mA

**PACKAGE DIMENSIONS**  
in millimeters (inches)



1. EMITTER EIAJ : SC-43  
2. COLLECTOR JEDEC : TO-92  
3. BASE IEC : PA33

**ELECTRICAL CHARACTERISTICS ( $T_a = 25\text{ °C}$ )**

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
$h_{FE1}$	DC Current Gain	150	500		-	$V_{CE} = -6.0\text{ V, } I_C = -0.1\text{ mA}$
$h_{FE2}$	DC Current Gain	200	500	800	-	$V_{CE} = -6.0\text{ V, } I_C = -1.0\text{ mA}$
$f_T$	Gain Bandwidth Product	50	100		MHz	$V_{CE} = -6.0\text{ V, } I_C = -1.0\text{ mA}$
$C_{ob}$	Output Capacitance		2.0	3.0	pF	$V_{CB} = -30\text{ V, } I_E = 0, f = 1.0\text{ MHz}$
$I_{CBO}$	Collector Cutoff Current			-50	nA	$V_{CB} = -120\text{ V, } I_E = 0$
$I_{CEO}$	Collector Cutoff Current			-1.0	$\mu\text{A}$	$V_{CE} = -100\text{ V, } R_{BE} = \infty$
$I_{EBO}$	Emitter Cutoff Current			-50	nA	$V_{EB} = -5.0\text{ V, } I_C = 0$
$V_{BE}$	Base to Emitter Voltage	-0.55	-0.61	-0.65	V	$V_{CE} = -6.0\text{ V, } I_C = -1.0\text{ mA}$
$V_{CE(sat)}$	Collector Saturation Voltage		-0.09	-0.30	V	$I_C = -10\text{ mA, } I_B = -1.0\text{ mA}$

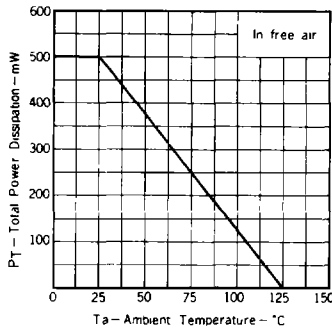
**Classification of  $h_{FE2}$**

Rank	P	F	E
Range	200 - 400	300 - 600	400 - 800

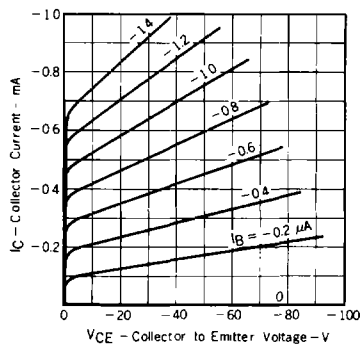
$h_{FE}$  Test Conditions :  $V_{CE} = -6.0\text{ V, } I_C = -1.0\text{ mA}$

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

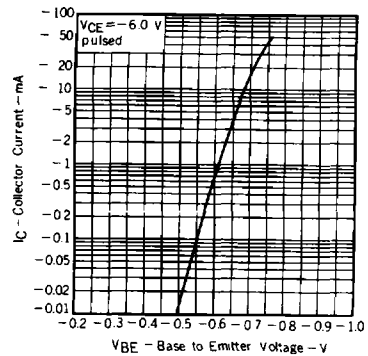
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE

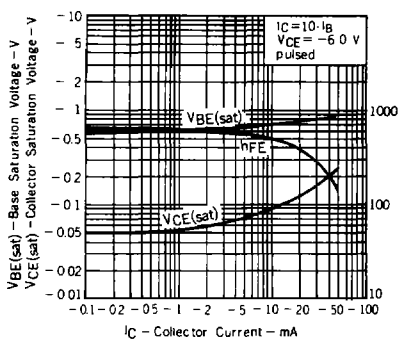


COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE

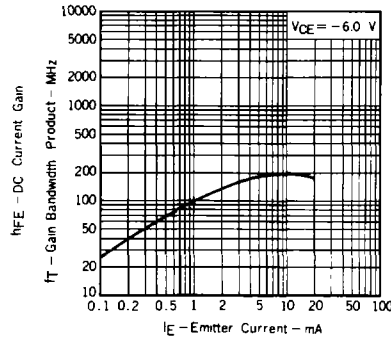


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COLLECTOR AND BASE SATURATION VOLTAGE, DC CURRENT GAIN vs. COLLECTOR CURRENT



GAIN BANDWIDTH PRODUCT vs. EMITTER CURRENT



OUTPUT CAPACITANCE vs. COLLECTOR TO BASE VOLTAGE

