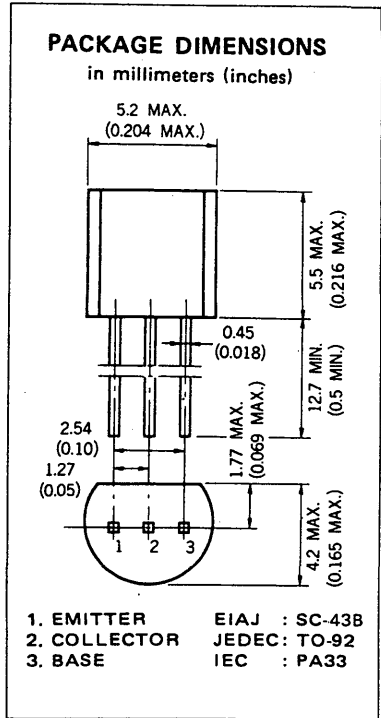


DESCRIPTION The 2SA953 is designed for use in driver stage of high voltage audio equipment.

- FEATURES**
- High total power dissipation.
 $P_T = 600 \text{ mW}$
 - High h_{FE} and high voltage.
 $h_{FE} (I_C = -50 \text{ mA}) : 200 \text{ TYP.}$
 $V_{CEO} : -60 \text{ V}$

ABSOLUTE MAXIMUM RATINGS

- Maximum Temperatures
- Storage Temperature $-55 \text{ to } +150 \text{ }^\circ\text{C}$
 - Junction Temperature $+150 \text{ }^\circ\text{C}$ Maximum
- Maximum Power Dissipation ($T_a = 25 \text{ }^\circ\text{C}$)
- Total Power Dissipation 600 mW
- Maximum Voltages and Currents ($T_a = 25 \text{ }^\circ\text{C}$)
- V_{CBO} Collector to Base Voltage -60 V
 - V_{CEO} Collector to Emitter Voltage -60 V
 - V_{EBO} Emitter to Base Voltage -5.0 V
 - I_C Collector Current -300 mA
 - I_B Base Current -60 mA



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

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
h_{FE1}^*	DC Current Gain	90	200	400	—	$V_{CE} = -1.0 \text{ V}, I_C = -50 \text{ mA}$
h_{FE2}^*	DC Current Gain	30	80		—	$V_{CE} = -1.0 \text{ V}, I_C = -300 \text{ mA}$
C_{ob}	Collector to Base Capacitance		13	25	pF	$V_{CB} = -6.0 \text{ V}, I_E = 0, f = 1.0 \text{ MHz}$
f_T	Gain Bandwidth Product	50	100		MHz	$V_{CE} = -6.0 \text{ V}, I_E = 10 \text{ mA}$
V_{BE}^*	Base to Emitter Voltage	-600	-660	-700	mV	$V_{CE} = -6.0 \text{ V}, I_C = -10 \text{ mA}$
$V_{CE(sat)}^*$	Collector Saturation Voltage	-0.15	-0.6		V	$I_C = -300 \text{ mA}, I_B = -30 \text{ mA}$
$V_{BE(sat)}^*$	Base Saturation Voltage	-0.85	-1.2		V	$I_C = -300 \text{ mA}, I_B = -30 \text{ mA}$
I_{CBO}	Collector Cutoff Current			-100	nA	$V_{CB} = -60 \text{ V}, I_E = 0$
I_{EBO}	Emitter Cutoff Current			-100	nA	$V_{EB} = -5.0 \text{ V}, I_C = 0$

* Pulsed $PW \leq 350 \mu\text{s}$, duty cycle $\leq 2.0 \%$

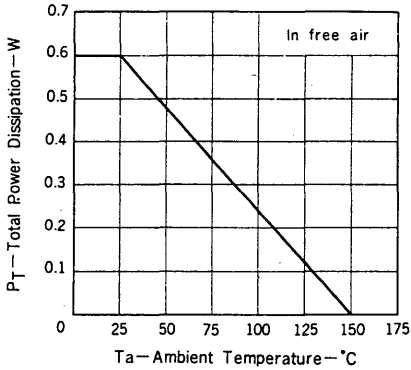
Classification of h_{FE1}

Rank	M	L	K
Range	90 - 180	135 - 270	200 - 400

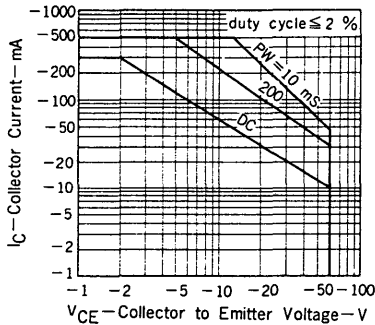
h_{FE} Test Conditions : $V_{CE} = -1.0 \text{ V}, I_C = -50 \text{ mA}$

TYPICAL CHARACTERISTICS (Ta = 25 °C unless otherwise noted)

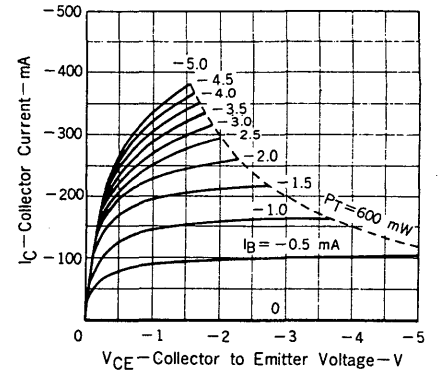
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



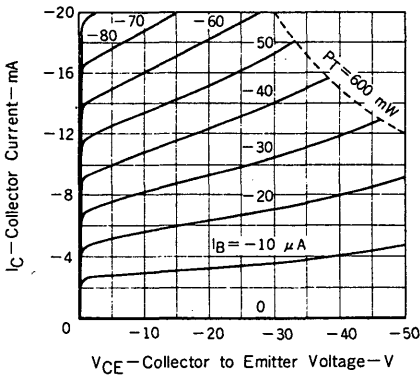
SAFE OPERATING AREAS (TRANSIENT THERMAL RESISTANCE)



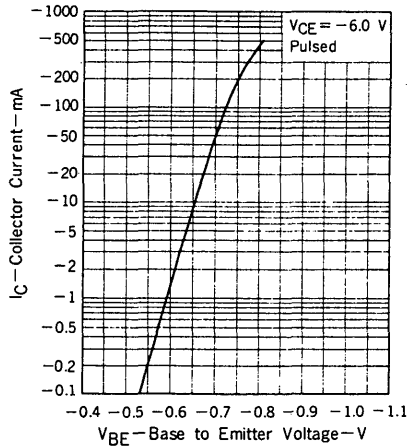
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



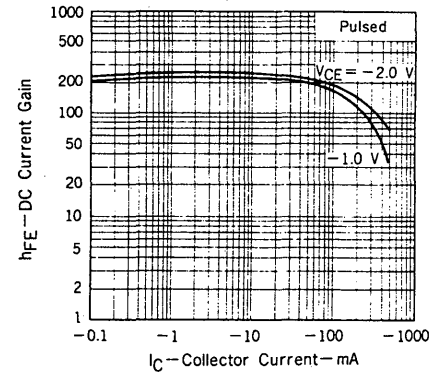
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



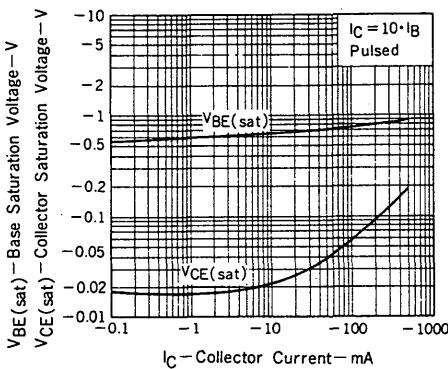
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



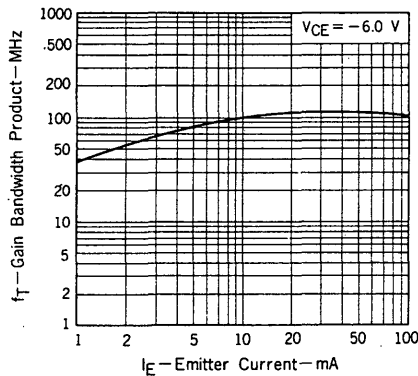
DC CURRENT GAIN vs. COLLECTOR CURRENT



BASE AND COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT



GAIN BANDWIDTH PRODUCT vs. EMITTER CURRENT



EMITTER TO BASE AND COLLECTOR TO BASE CAPACITANCE vs. REVERSE VOLTAGE

