NEC

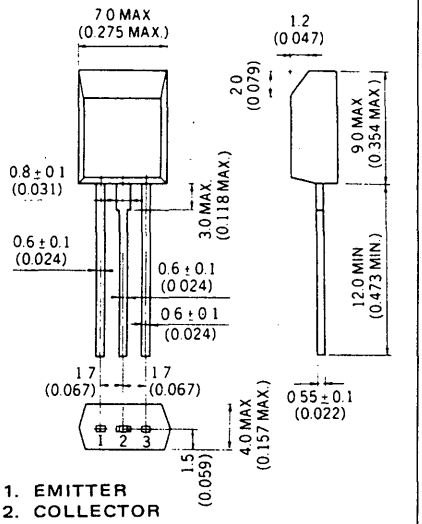
NPN SILICON TRANSISTOR
2SC1940

DESCRIPTION The 2SC1940 is designed for use in driver stages of audio frequency amplifiers.

FEATURES

- High total power dissipation and high breakdown voltage: 1.0 W at 25 °C ambient temperature/V_{CEO}=120 V
- Complementary to the NEC 2SA915 PNP transistor.

PACKAGE DIMENSIONS
in millimeters (inches)



1. EMITTER
2. COLLECTOR
3. BASE

ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures

- Storage Temperature . . . . . −55 to +150 °C
- Junction Temperature . . . . . +150 °C Maximum

Maximum Power Dissipation (Ta = 25 °C)

- Total Power Dissipation . . . . . 1.0 W
- Thermal Resistance(Junction to Ambient) . . . . . 125 °C/W

Maximum Voltages and Currents (Ta = 25 °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

ELECTRICAL CHARACTERISTICS (Ta = 25 °C)

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
h_{FE1}	DC Current Gain	90	200	400	–	V_{CE} = 10 V, I_C=10 mA
h_{FE2}	DC Current Gain	50	180		–	V_{CE} = 10 V, I_C=1.0 mA
f_T	Gain Bandwidth Product	50	120		MHz	V_{CE} = 10 V, I_E=−10 mA
C_{ob}	Output Capacitance		2.3	3.0	pF	V_{CB} = 10 V, I_E=0, f=1.0 MHz
I_{CBO}	Collector Cutoff Current			100	nA	V_{CB} = 120 V, I_E=0
I_{EBO}	Emitter Cutoff Current			100	nA	V_{EB} = 5.0 V, I_C=0
V_{BE}	Base to Emitter Voltage	650	685	750	mV	V_{CE} = 10 V, I_C=10 mA
$V_{CE(sat)}$	Collector Saturation Voltage		0.07	0.6	V	I_C = 20 mA, I_B=2.0 mA
$V_{BE(sat)}$	Base Saturation Voltage		0.75	1.0	V	I_C = 20 mA, I_B=2.0 mA

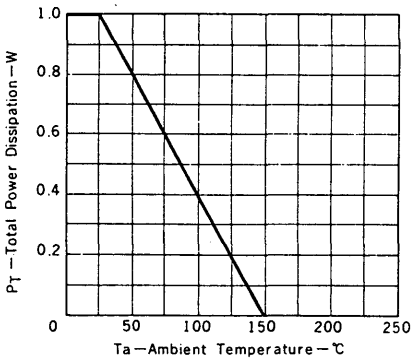
Classification of h_{FE1}

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

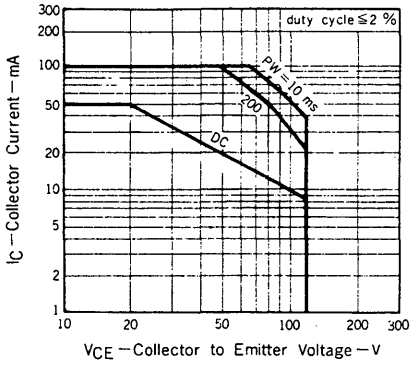
h_{FE1} Test Conditions: V_{CE} = 10 V, I_C = 10 mA

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

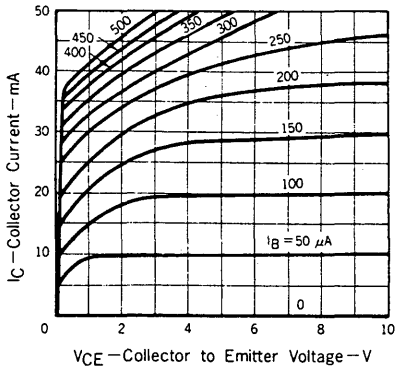
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



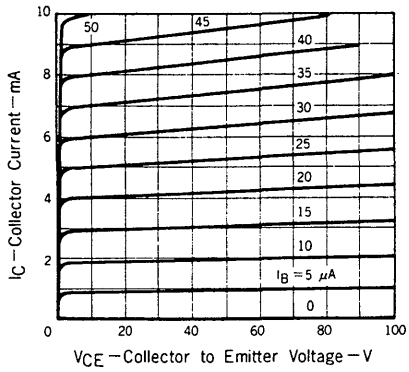
SAFE OPERATING AREAS (TRANSIENT THERMAL RESISTANCE METHOD)



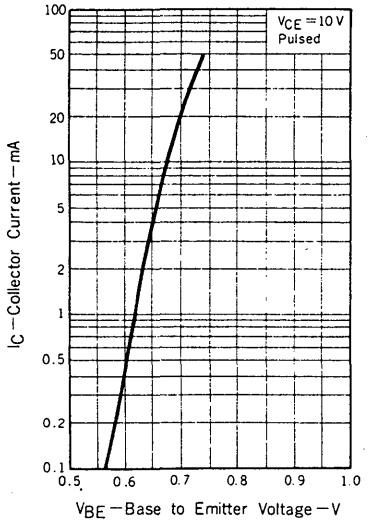
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



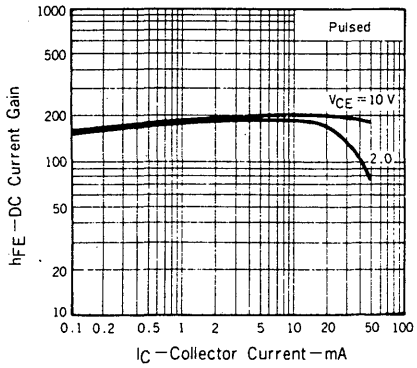
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



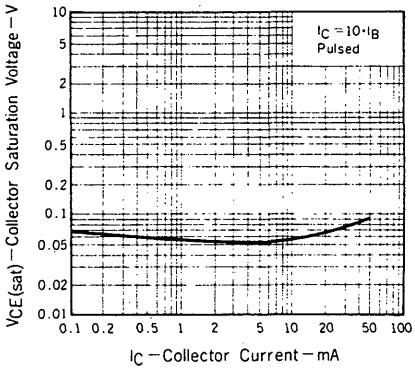
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



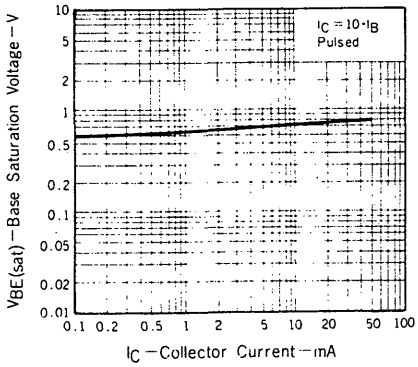
DC CURRENT GAIN vs. COLLECTOR CURRENT



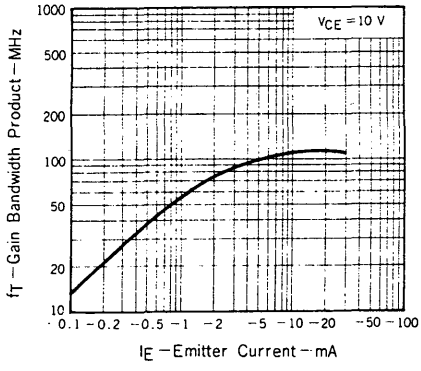
COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT



BASE SATURATION VOLTAGE vs. COLLECTOR CURRENT



GAIN BANDWIDTH PRODUCT vs. EMITTER CURRENT



INPUT AND OUTPUT CAPACITANCE
vs. REVERSE VOLTAGE