

# 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/ $V_{CE0}=120$  V
  - Complementary to the NEC 2SA915 PNP transistor.

### ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures

Storage Temperature ..... -55 to +150 °C

Junction Temperature ..... +150 °C Maximum

Maximum Power Dissipation ( $T_a = 25$  °C)

Total Power Dissipation ..... 1.0 W

Thermal Resistance(Junction to Ambient) ..... 125 °C/W

Maximum Voltages and Currents ( $T_a = 25$  °C)

$V_{CBO}$  Collector to Base Voltage ..... 120 V

$V_{CEO}$  Collector to Emitter Voltage ..... 120 V

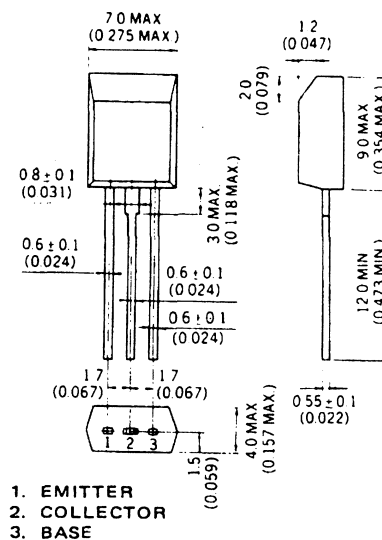
$V_{EBO}$  Emitter to Base Voltage ..... 5.0 V

$I_C$  Collector Current ..... 50 mA

$I_B$  Base Current ..... 10 mA

### PACKAGE DIMENSIONS

in millimeters (inches)



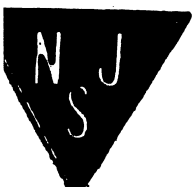
### ELECTRICAL CHARACTERISTICS ( $T_a = 25$ °C)

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

