NEC

NPN SILICON POWER TRANSISTORS

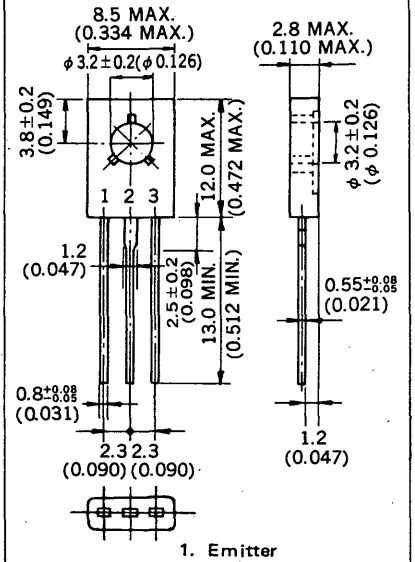
2SC2690,2SC2690A

DESCRIPTION The 2SC2690, 2SC2690A are general purpose transistors designed for use in audio and radio frequency power amplifiers.

FEATURES

- Suitable for use in driver stage of 50 to 100 W audio amplifiers and output stage of TV vertical deflection circuit.
- High Voltage and High f_T
  V_{CEO} = 120 V/160 V (2SC2690, 2SC2690A)
  f_T = 175 MHz (@V_{CE} = 5.0 V, I_C = 0.2 A)
- Complementary to the NEC 2SA1220, 2SA1220A PNP Transistors.

PACKAGE DIMENSIONS
in millimeters (inches)



1. Emitter
2. Collector connected to mounting plane
3. Base

ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures

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

Maximum Power Dissipations

- Total Power Dissipation (T_a = 25 °C) . . . . . 1.2 W
- Total Power Dissipation (T_c = 25 °C) . . . . . 20 W

Maximum Voltages and Currents (T_a = 25 °C)

		2SC2690	2SC2690A	
V_{CBO}	Collector to Base Voltage	120	160	V
V_{CEO}	Collector to Emitter Voltage	120	160	V
V_{EBO}	Emitter to Base Voltage	5.0		V
$I_{C(DC)}$	Collector Current	1.2		A
$I_{C(pulse)}$ *	Collector Current	2.5		A
$I_{B(DC)}$	Base Current	0.3		A

* PW ≦ 10 ms, Duty Cycle ≦ 50 %

ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
h_{FE1} **	DC Current Gain	35	150		—	V_{CE} = 5.0 V, I_C = 5.0 mA
h_{FE2} **	DC Current Gain	60	140	320	—	V_{CE} = 5.0 V, I_C = 0.3 A
f_T	Gain Bandwidth Product		175		MHz	V_{CE} = 5.0 V, I_C = 0.2 A
C_{ob}	Output Capacitance		26		pF	V_{CB} = 10 V, I_E = 0, f = 1.0 MHz
I_{CBO}	Collector Cutoff Current			1.0	μA	V_{CB} = 120 V, I_E = 0
I_{EBO}	Emitter Cutoff Current			1.0	μA	V_{EB} = 3.0 V, I_C = 0
$V_{CE(sat)}$ **	Collector Saturation Voltage		0.4	0.7	V	I_C = 1.0 A, I_B = 0.2 A
$V_{BE(sat)}$ **	Base Saturation Voltage		1.0	1.3	V	I_C = 1.0 A, I_B = 0.2 A

** Pulsed / PW ≦ 350 μs, Duty Cycle ≦ 2 %

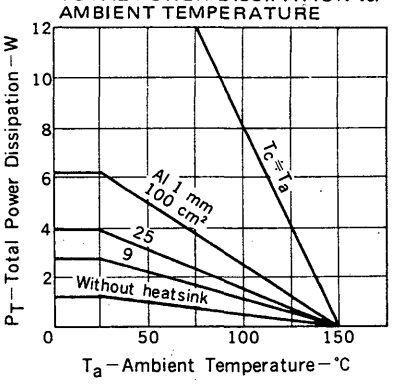
Classification of h_{FE2}

Rank	R	Q	P
Range	60 to 120	100 to 200	160 to 320

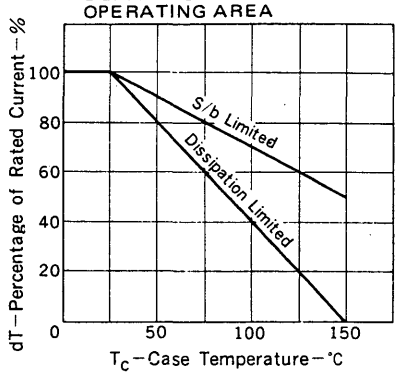
Test Condition: V_{CE} = 5.0 V, I_C = 0.3 A

TYPICAL CHARACTERISTICS (T_a = 25 °C)

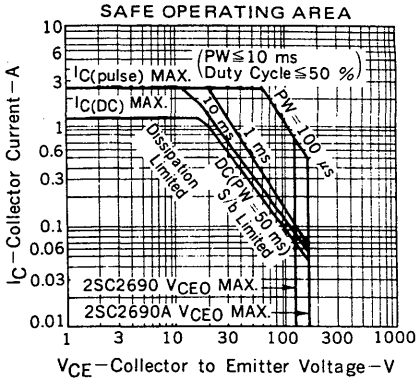
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



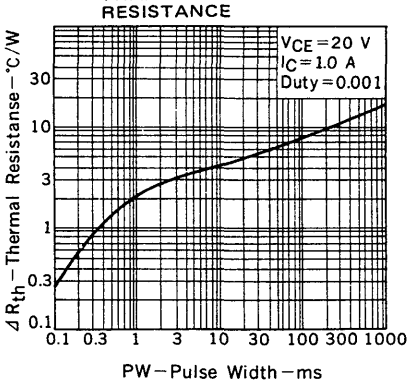
DERATING CURVE OF SAFE OPERATING AREA



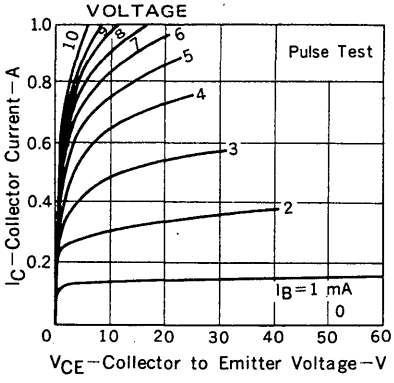
SAFE OPERATING AREA



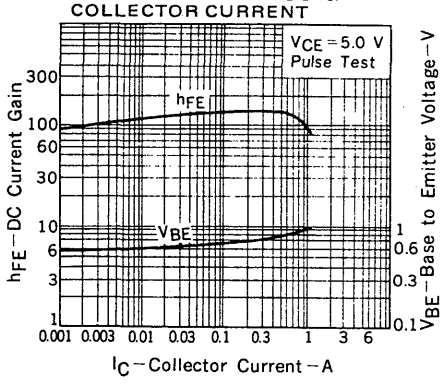
TRANSIENT THERMAL RESISTANCE



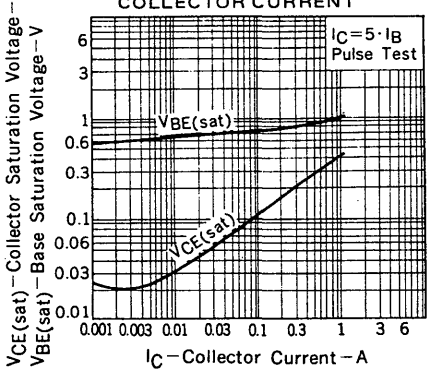
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



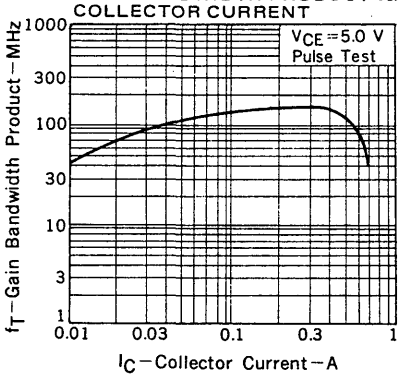
DC CURRENT GAIN AND BASE TO EMITTER VOLTAGE vs. COLLECTOR CURRENT



COLLECTOR AND BASE SATURATION VOLTAGE vs. COLLECTOR CURRENT



GAIN BANDWIDTH PRODUCT vs. COLLECTOR CURRENT



OUTPUT AND INPUT CAPACITANCE vs. REVERSE VOLTAGE