NEC

NPN SILICON POWER TRANSISTOR

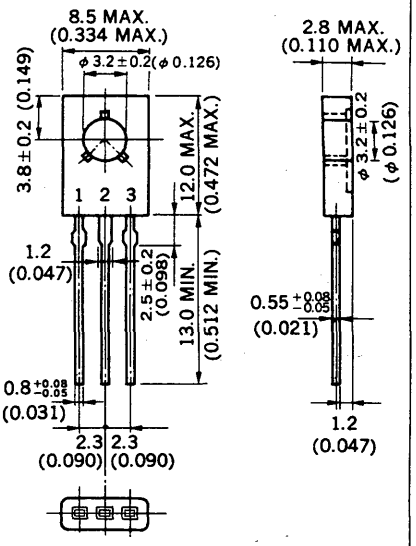
2SC4001

DESCRIPTION The 2SC4001 is designed for uses of high-resolution monitor TV applications. This makes it possible to raise the video band of high-resolution monitor TVs to 50 MHz.

FEATURES

- High f_T : f_T = 300 MHz TYP. (@V_{CE} = 30 V, I_E = –30 mA)
- Low C_{ob} : C_{ob} = 2.8 pF (@V_{CB} = 30 V)
- High Voltage : V_{CBO} = 300 V, V_{CEO} = 250 V
- High Total Power Dissipation :
  P_T (T_a/T_C = 25 °C) = 1.3 W/7 W
- Complementary to 2SA1546

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 Dissipation

- Total Power Dissipation (T_a = 25 °C) . . . . . 1.3 W
- Total Power Dissipation (T_C = 25 °C) . . . . . 7.0 W

Maximum Voltages and Current (T_a = 25 °C)

V_{CBO}	Collector to Base Voltage	300	V
V_{CEO}	Collector to Emitter Voltage	250	V
V_{EBO}	Emitter to Base Voltage	5.0	V
I_C	Collector Current	100	mA

ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
h_{FE}	DC Current Gain	60	200	320		V_{CE} = 10 V, I_C = 10 mA*
f_T	Gain Bandwidth Product	200	300		MHz	V_{CE} = 30 V, I_E = –30 mA
C_{ob}	Output Capacitance		2.8	3.5	pF	V_{CB} = 30 V, I_E = 0, f = 1 MHz
I_{CBO}	Collector Cutoff Current			100	nA	V_{CB} = 200 V, I_E = 0
I_{EBO}	Emitter Cutoff Current			100	nA	V_{EB} = 3.0 V, I_C = 0
$V_{CE(sat)}$	Collector Saturation Voltage		0.08	0.3	V	I_C = 10 mA, I_B = 1.0 mA*
$V_{BE(sat)}$	Base Saturation Voltage		0.72	1.2	V	I_C = 10 mA, I_B = 1.0 mA*
V_{ESDR}	Electrostatic Discharge-Resistant		1 000		V	C = 1 000 pF, E-B Reverse Bias

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

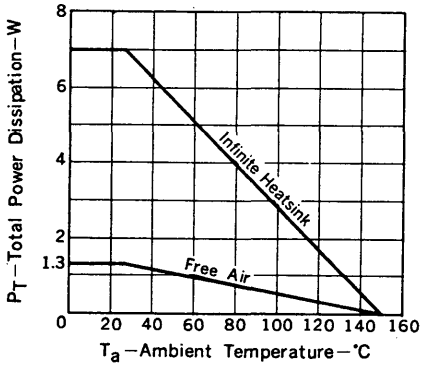
Classification of h_{FE}

Rank	M	L	K
Range	60 to 120	100 to 200	160 to 300

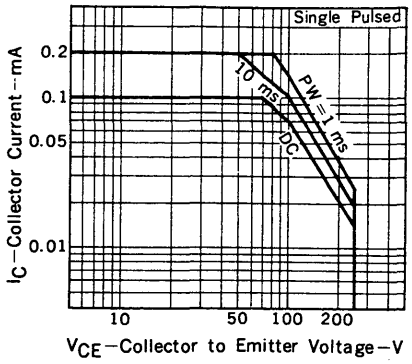
Test Conditions: V_{CE} = 10 V, I_C = 10 mA

TYPICAL CHARACTERISTICS (T_a = 25 °C)

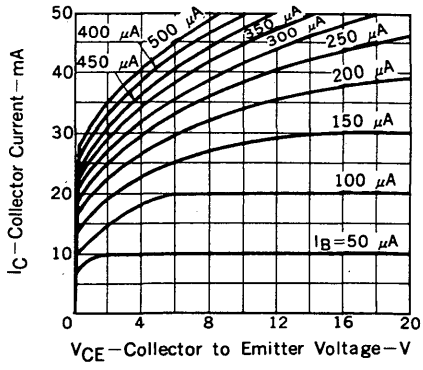
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



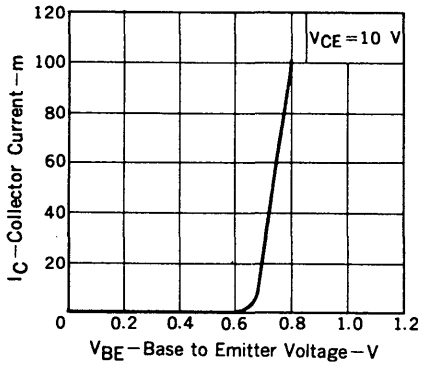
FORWARD BIAS SAFE OPERATING AREA



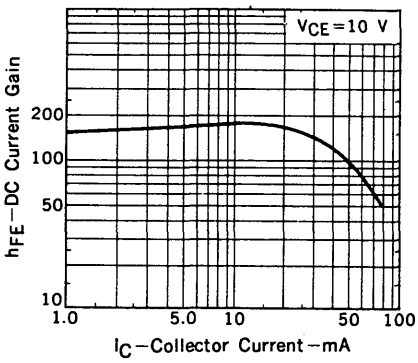
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



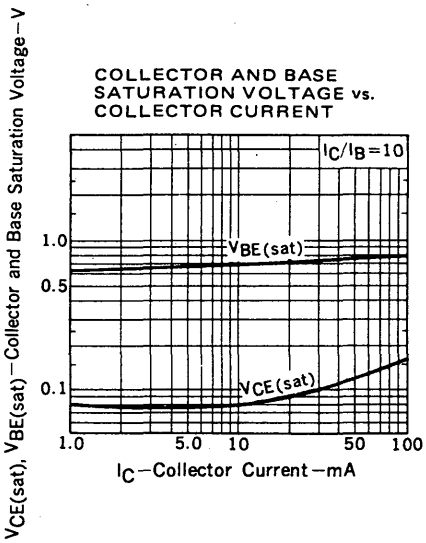
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



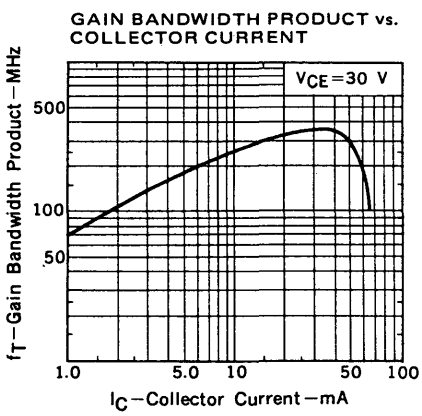
DC CURRENT GAIN vs. COLLECTOR CURRENT



COLLECTOR AND BASE SATURATION VOLTAGE vs. COLLECTOR CURRENT



GAIN BANDWIDTH PRODUCT vs. COLLECTOR CURRENT



OUTPUT CAPACITANCE vs. COLLECTOR TO BASE VOLTAGE