

NPN SILICON POWER TRANSISTOR

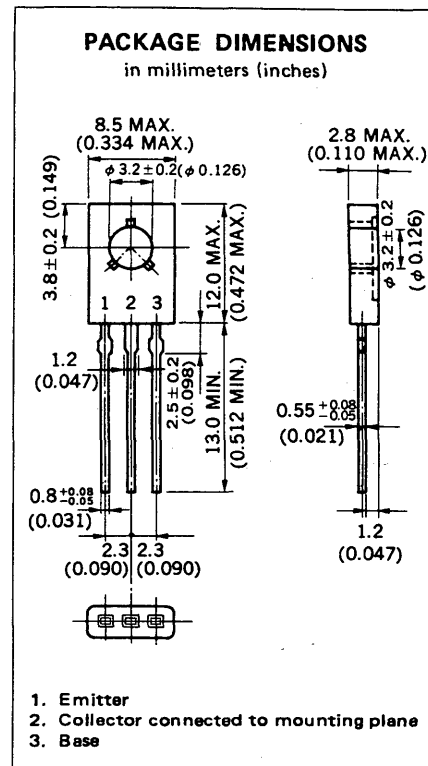
2SC4001

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 ($T_a/T_c = 25^\circ\text{C}$) = 1.3 W/7 W
 - Complementary to 2SA1546

ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures		
Storage Temperature		-55 to $+150^\circ\text{C}$
Junction Temperature		150°C Maximum
Maximum Power Dissipation		
Total Power Dissipation ($T_a = 25^\circ\text{C}$)		1.3 W
Total Power Dissipation ($T_c = 25^\circ\text{C}$)		7.0 W
Maximum Voltages and Current ($T_a = 25^\circ\text{C}$)		
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 ($T_a = 25^\circ\text{C}$)

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 $\leq 2\%$

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

TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE

The graph plots Total Power Dissipation (P_T) in Watts on the y-axis against Ambient Temperature (T_a) in degrees Celsius on the x-axis. The y-axis has major ticks at 0, 1.3, 2, 4, 6, and 8. The x-axis has major ticks at 0, 20, 40, 60, 80, 100, 120, 140, and 160. Two curves are shown: 'Infinite Heatsink' and 'Free Air'. The 'Infinite Heatsink' curve is a straight line from (20, 7) to (150, 0). The 'Free Air' curve is a piecewise linear line from (0, 1.3) to (20, 1.3) to (150, 0).

Ambient Temperature (T_a) - °C	Power Dissipation (P_T) - W (Infinite Heatsink)	Power Dissipation (P_T) - W (Free Air)
0	-	1.3
20	7.0	1.3
40	6.0	1.2
60	5.0	1.1
80	4.0	1.0
100	3.0	0.9
120	2.0	0.8
140	1.0	0.7
150	0.0	0.0

