Hometaxial-Base Silicon N-P-N Power Transistor 2N1700

General Purpose Type

for

Low Power Applications

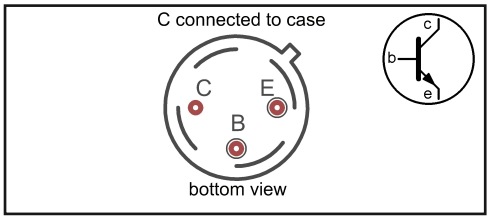
Features:

- **High temperature characterization**
- **High dc-beta at 200mA**
- **Full switching-time characterization at 200mA**

The 2N1700 is a hometaxial-base, silicon n-p-n power transistor intended for a wide variety of applications in industrial and military equipment. The device is particulary useful in power-switching circuits such as in dc-to-dc converters, choppers, solenoid and relay controls; in oscillator, regulator, and pulse amplifier circuits; and as class A and class B push-pull audio and servo amplifiers.

The 2N1700 is supplied in the JEDEC TO-39 hermetic package.

Terminal Designations



JEDEC TO-39

MAXIMUM RATINGS, *Absolute-Maximum Values:*

V_{CBO}	**60**	V
$V_{CEV}^{(SUS)}$ (V_{EB} = 1.5Volts)	**60**	V
$V_{CEO}^{(SUS)}$	**40**	V
V_{EBO}	**6**	V
I_C	**1**	A
I_B	**0.75**	A
P_T at case temperature of 25°C	**5**	W
T_{stg} T_J	**-65 to +200**	°C
T_L At distance ≥ 1/32 in. (0.8mm) from seating plane for 10s max.	**255**	°C

Electrical Characteristics, *at Case Temp. (T_C) = 25°C unless otherwise specified*

SYMBOL	TEST CONDITIONS						LIMITS		UNITS
	VOLTAGE V dc			CURRENT mA dc					
	V_{CB}	V_{CE}	V_{EB}	I_C	I_B	I_E	Min	Max	
I_{CBO}	30					0	-	75	µA
T_C=150°C	30					0	-	1000	
I_{EBO}			6	0			-	25	µA
V_{CEV}			1.5	0.5			60	-	V
$V_{CEO}^{(SUS)}$				50	0		-	-	
V_{BE}		4		100			-	2	V
$V_{CE}^{(sat)}$				200	10		-	-	V
h_{FE}		4		100			20	80	
h_{fe}		4		5			40 Typ.		
$r_{CE}^{(sat)}$				100	10		-	10	Ω
C_{ob}	40						150 Typ.		pF
T_1							10 Typ.		ms
$f_{\alpha b}$	28			5			1.5 Typ.		MHz
t_d•							0.2 Typ.		µs
t_r•							1 Typ.		
t_s•							0.6 Typ.		
t_f•							1 Typ.		
$R_{\theta JC}$							-	35	°C/W
$R_{\theta JF A}$							-	200	

Note ●: I_C = 200mA, I_{B1} = 20mA, I_{B2} = -85mA

Terms and Symbols

C_{ob} - common-base output capacitance
f_T - gain-bandwidth product (unity-gain frequency for devices in which gain roll-off has a -1 slope)
$f_{\alpha b}$ - base (alpha) cutoff frequency
h_{FE} - dc forward-current transfer ratio
h_{fe} - common-emitter, small-signal, short-circuit, forward-current transfer ratio
$|h_{fe}|$ - magnitude of common-emitter, small-signal, short-circuit, forward-current transfer ratio
I_C - continous collector current
I_{CM} - peak collector current
I_{CER} - collector-cutoff current with specified resistance between base and emitter
I_{CEX} - collector-cutoff current with specified circuit between base and emitter
I_B - continous base current
I_{EBO} - emitter-cutoff current, collector open
I_{CBO} - collector-cutoff current, emitter open
$I_{S/b}$ - forward-bias, second break-down collector current
P_T - transistor dissipation at specified temperature
$r_{CE}^{(sat)}$ - dc collector-to-emitter saturation resistance
R_{BE} - external base-to-emitter resistance
$R_{\theta JC}$ - thermal resistance, junction-to-case
$R_{\theta JFA}$ - thermal resistance, junction-to-free air
t_d - delay time
t_r - rise time
t_f - fall time
T_C - case temperature
T_{stg} - storage temperature
T_J - operating (junction) temperature
T_L - lead temperature during soldering
V_{CBO} - collector-to-base voltage, emitter open
V_{CEO} - collector-to-emitter voltage, base open
$V_{CEO}^{(sus)}$ - collector-to-emitter sustaining voltage, base open
$V_{CER}^{(sus)}$ - collector-to-emitter sustaining voltage with specified resistance between base and emitter
V_{EBO} - emitter-to-base voltage, collector open
V_{BE} - base-to-emitter voltage
V_{CE}^{sat} - collector-to-emitter saturation voltage
T - torque
θ - conduction angle