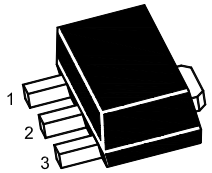
NPN Silicon Epitaxial Planar Transistor

For low frequency power amplification

The transistor is subdivided into two groups, Q and R, according to its DC current gain.



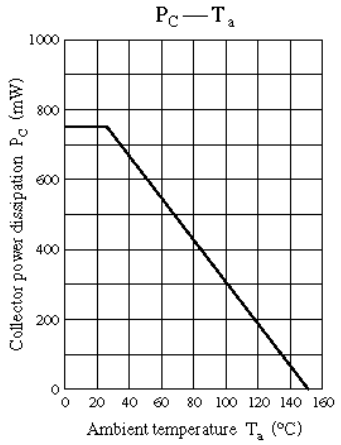
1.Base 2.Collector 3.Emitter
SOT-89 Plastic Package

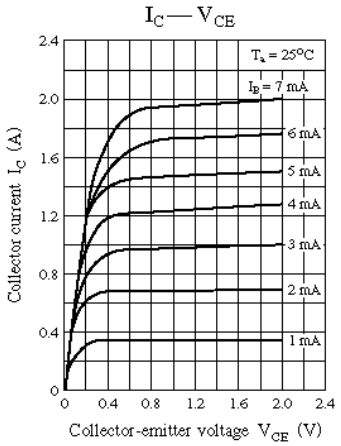
Absolute Maximum Ratings (T_a = 25 °C)

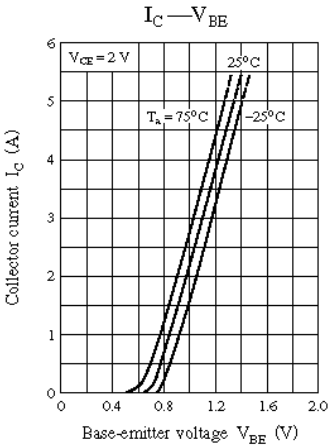
Parameter	Symbol	Value	Unit
Collector to Base Voltage	V_{CBO}	40	V
Collector to Emitter Voltage	V_{CEO}	20	V
Emitter to Base Voltage	V_{EBO}	7	V
Collector Current	I_C	5	A
Peak Collector Current	I_{CP}	8	A
Total power dissipation	P_{tot}	0.75	W
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{Stg}	- 55 to + 150	°C

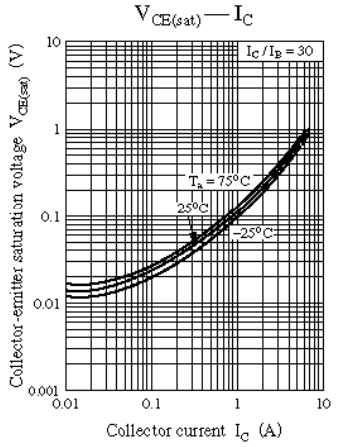
Characteristics at T_a = 25 °C

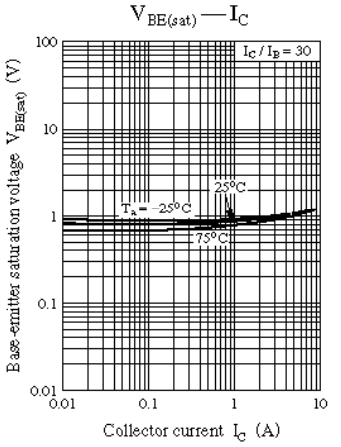
Parameter		Symbol	Min.	Typ.	Max.	Unit
DC Current Gain						
at V_{CE} = 2 V, I_C = 0.5 A Current Gain Group	Q	h_{FE}	230	-	380	-
	R	h_{FE}	340	-	600	-
at V_{CE} = 2 V, I_C = 2 A		h_{FE}	150	-	-	-
Collector Emitter Breakdown Voltage at I_C = 1 mA		V_{CEO}	20	-	-	V
Emitter Base Breakdown Voltage at I_E = 10 µA		V_{EBO}	7	-	-	V
Collector Cutoff Current at V_{CB} = 10 V		I_{CBO}	-	-	0.1	µA
Collector Cutoff Current at V_{CE} = 10 V		I_{CEO}	-	-	1	µA
Emitter Cutoff Current at V_{EB} = 7 V		I_{EBO}	-	-	0.1	µA
Collector Emitter Saturation Voltage at I_C = 3 A, I_B = 0.1 A		$V_{CE(sat)}$	-	-	1	V
Transition Frequency at V_{CB} = 6 V, $-I_E$ = 50 mA, f = 200 MHz		f_T	-	150	-	MHz
Collector Output Capacitance at V_{CB} = 20 V, f = 1 MHz		C_{ob}	-	-	50	pF

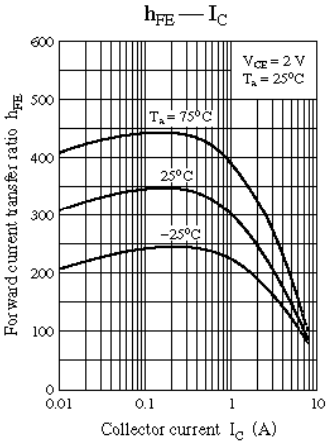

P_C — T_a
Collector power dissipation P_C (mW)
Ambient temperature T_a (°C)

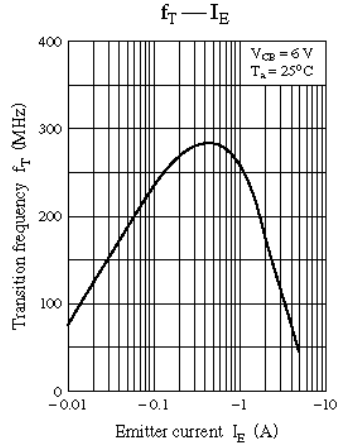

I_C — V_{CE}
T_a = 25°C
I_B = 7 mA
6 mA
5 mA
4 mA
3 mA
2 mA
1 mA
Collector current I_C (A)
Collector-emitter voltage V_{CE} (V)

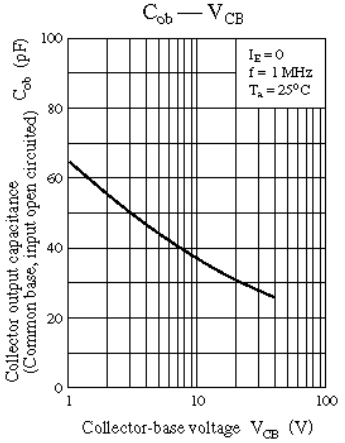

I_C — V_{BE}
V_{CE} = 2 V
25°C
T_a = 75°C
−25°C
Collector current I_C (A)
Base-emitter voltage V_{BE} (V)

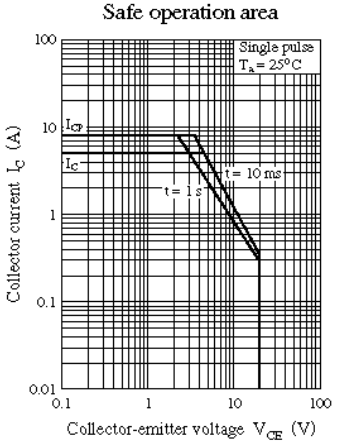

$V_{CE(sat)}$ — I_C
I_C / I_B = 30
T_a = 75°C
25°C
−25°C
Collector-emitter saturation voltage $V_{CE(sat)}$ (V)
Collector current I_C (A)


$V_{BE(sat)}$ — I_C
I_C / I_B = 30
T_a = −25°C
25°C
75°C
Base-emitter saturation voltage $V_{BE(sat)}$ (V)
Collector current I_C (A)


h_{FE} — I_C
V_{CE} = 2 V
T_a = 25°C
T_a = 75°C
25°C
−25°C
Forward current transfer ratio h_{FE}
Collector current I_C (A)


f_T — I_E
V_{CB} = 6 V
T_a = 25°C
Transition frequency f_T (MHz)
Emitter current I_E (A)


C_{ob} — V_{CB}
I_E = 0
f = 1 MHz
T_a = 25°C
Collector output capacitance (Common base, input open circuited) C_{ob} (pF)
Collector-base voltage V_{CB} (V)


Safe operation area
Single pulse
T_a = 25°C
I_{CP}
I_C
t = 10 ms
t = 1 s
Collector current I_C (A)
Collector-emitter voltage V_{CE} (V)