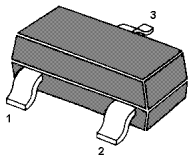
MMBTSD1781

NPN Silicon Epitaxial Planar Transistor

Medium Power Transistor

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



1. Base 2. Emitter 3. Collector
SOT-23 Plastic Package

Absolute Maximum Ratings (T_a = 25 °C)

Parameter	Symbol	Value	Unit
Collector Base Voltage	V_{CBO}	40	V
Collector Emitter Voltage	V_{CEO}	32	V
Emitter Base Voltage	V_{EBO}	5	V
Collector Current	I_C	0.8	A (DC)
	I_{CP}	1.5	A (Pulse) [1]
Power Dissipation	P_{tot}	200	mW
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{stg}	- 55 to + 150	°C

[1] Single pulse Pw = 100 ms

Characteristics at T_a = 25 °C

Parameter		Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at V_{CE} = 3 V, I_C = 100 mA						
Current Gain Group	Q	h_{FE}	120	-	270	-
	R	h_{FE}	180	-	390	-
Collector Emitter Breakdown Voltage at I_C = 1 mA		$V_{(BR)CEO}$	32	-	-	V
Collector Base Breakdown Voltage at I_C = 50 µA		$V_{(BR)CBO}$	40	-	-	V
Emitter Base Breakdown Voltage at I_E = 50 µA		$V_{(BR)EBO}$	5	-	-	V
Collector Cutoff Current at V_{CB} = 20 V		I_{CBO}	-	-	0.5	µA
Emitter Cutoff Current at V_{EB} = 4 V		I_{EBO}	-	-	0.5	µA
Collector Emitter Saturation Voltage at I_C = 500 mA, I_B = 50 mA		$V_{CE(sat)}$	-	-	0.4	V
Transition Frequency at V_{CE} = 5 V, $-I_E$ = 50 mA, f = 100 MHz		f_T	-	150	-	MHz
Output Capacitance at V_{CB} = 10 V, I_E = 0 A, f = 1 MHz		C_{ob}	-	15	-	pF

●**Electrical characteristic curves**

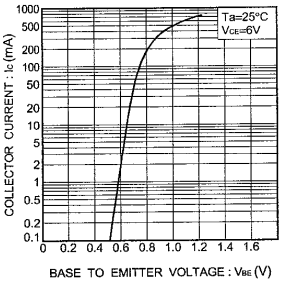


Fig.1 Grounded emitter propagation characteristics

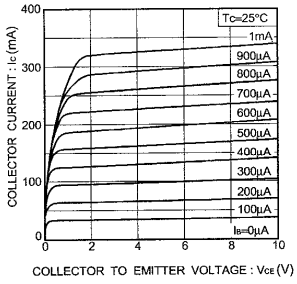


Fig.2 Grounded emitter output characteristics

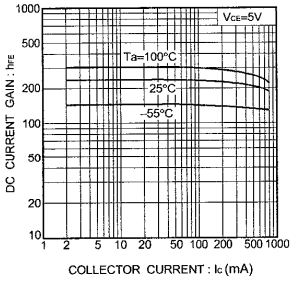


Fig.3 DC current gain vs. collector current

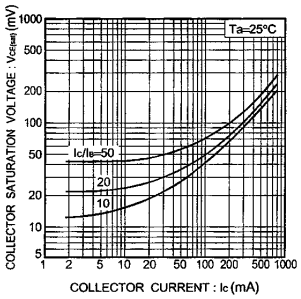


Fig.4 Collector-emitter saturation voltage vs. collector current (I)

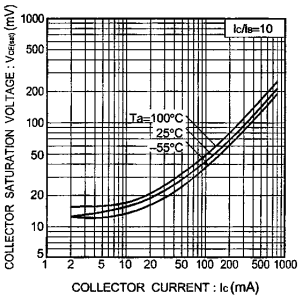


Fig.5 Collector-emitter saturation voltage vs. collector current (II)

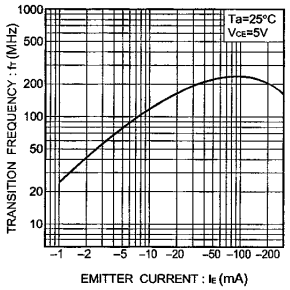


Fig.6 Gain bandwidth product vs. emitter current

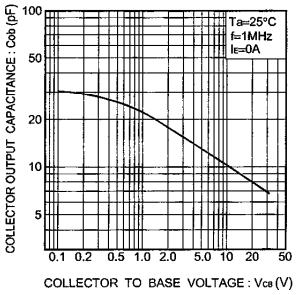


Fig.7 Collector output capacitance vs. collector-base voltage

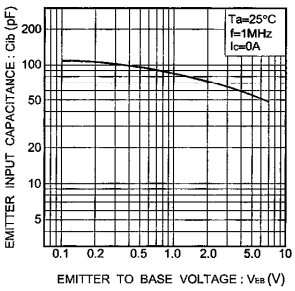


Fig.8 Emitter input capacitance vs. emitter-base voltage