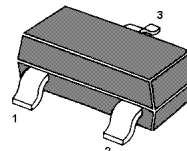


NPN Silicon Epitaxial Planar Transistor

Medium Power Transistor

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

MARKING:Y2



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

Absolute Maximum Ratings ($T_a = 25\text{ }^\circ\text{C}$)

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	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	- 55 to + 150	$^\circ\text{C}$

¹⁾ Single pulse $P_w = 100\text{ ms}$

Characteristics at $T_a = 25\text{ }^\circ\text{C}$

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

●Electrical characteristic curves

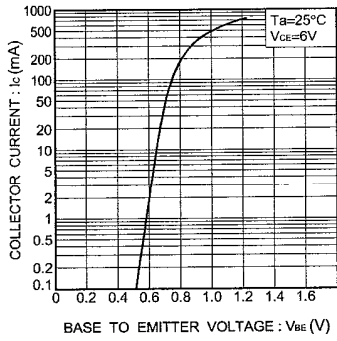


Fig.1 Grounded emitter propagation characteristics

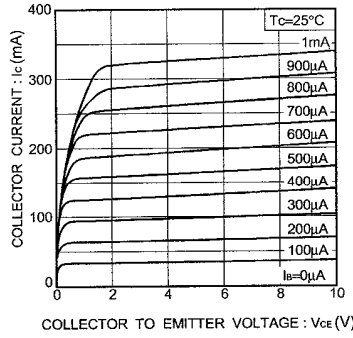


Fig.2 Grounded emitter output characteristics

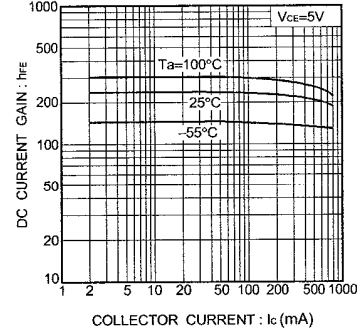


Fig.3 DC current gain vs. collector current

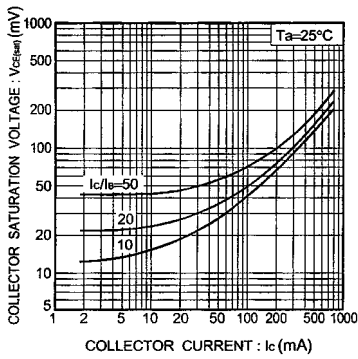


Fig.4 Collector-emitter saturation voltage vs. collector current (I)

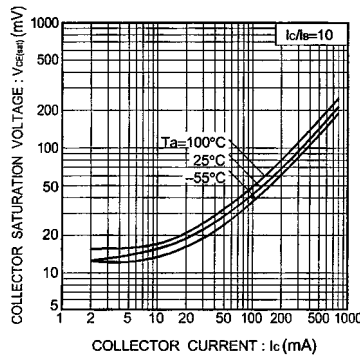


Fig.5 Collector-emitter saturation voltage vs. collector current (II)

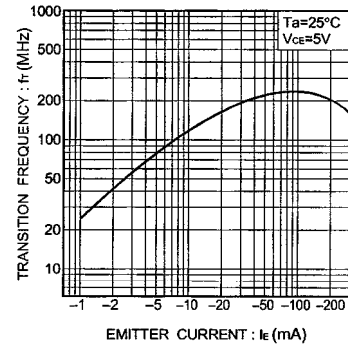


Fig.6 Gain bandwidth product vs. emitter current

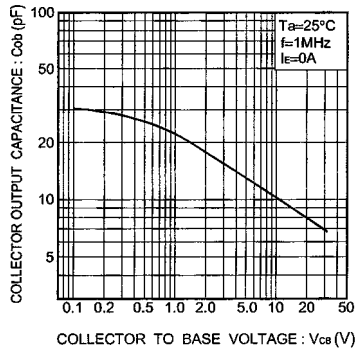


Fig.7 Collector output capacitance vs. collector-base voltage

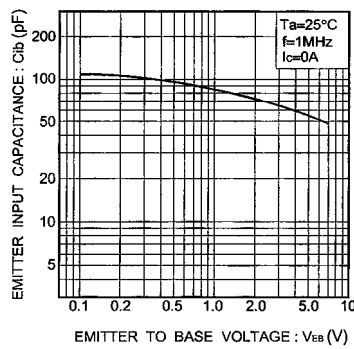


Fig.8 Emitter input capacitance vs. emitter-base voltage



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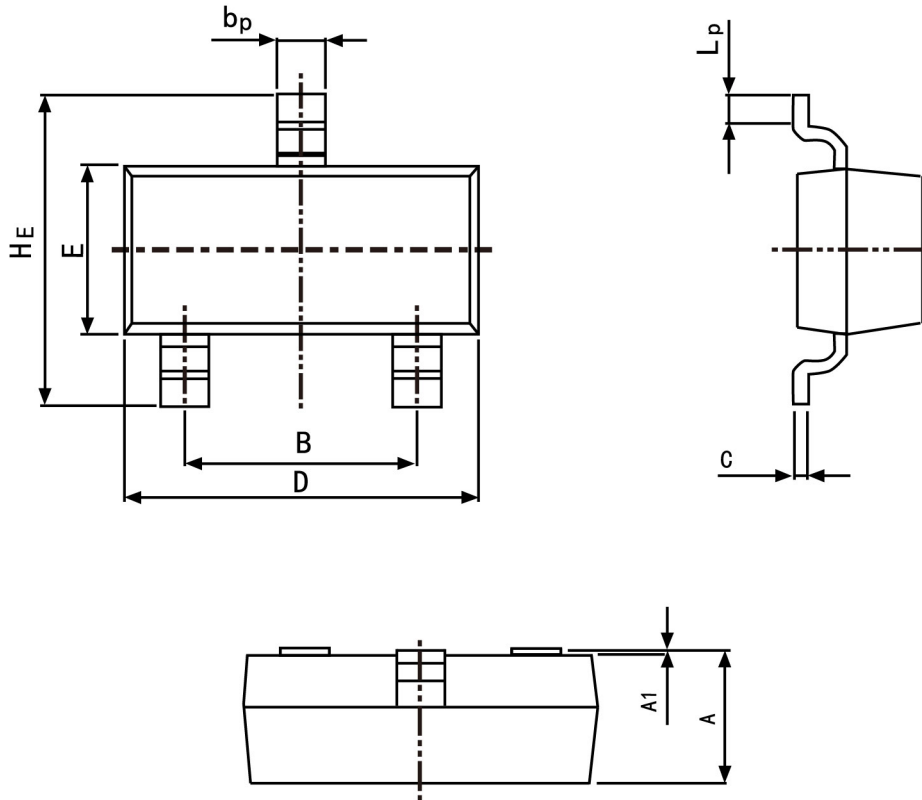
MMBTSD1781

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PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



Symbol	Dimension in Millimeters	
	Min	Max
A	0.95	1.40
B	1.78	2.04
bp	0.35	0.50
C	0.08	0.19
D	2.70	3.10
E	1.20	1.65
HE	2.20	3.00
A1	0.100	0.013
Lp	0.20	0.50