

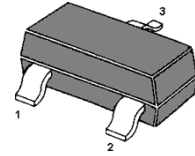
MMBTSD1781

NPN Silicon Epitaxial Planar Transistor

Medium Power Transistor

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

MARKING:Y2



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

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

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 $P_w = 100$ ms

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

Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at $V_{CE} = 3$ V, $I_C = 100$ mA	h_{FE} h_{FE}	120 180	- -	270 390	- -
Current Gain Group Q R					
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

Typical Characteristics

●Electrical characteristic curves

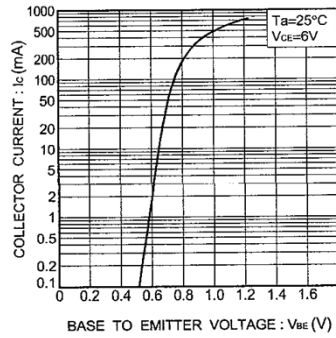


Fig.1 Grounded emitter propagation characteristics

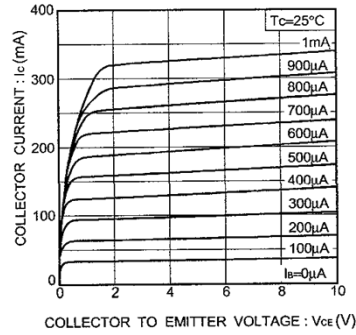


Fig.2 Grounded emitter output characteristics

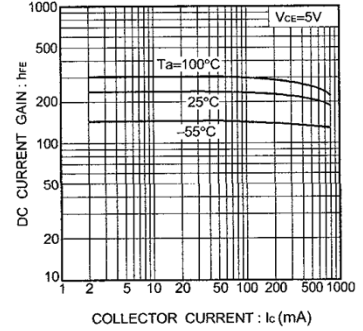


Fig.3 DC current gain vs. collector current

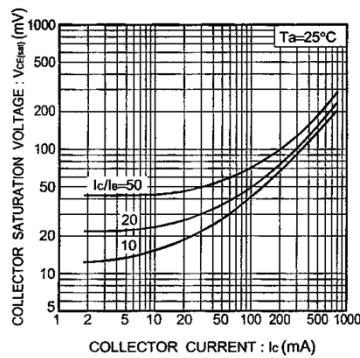


Fig.4 Collector-emitter saturation voltage vs. collector current (I)

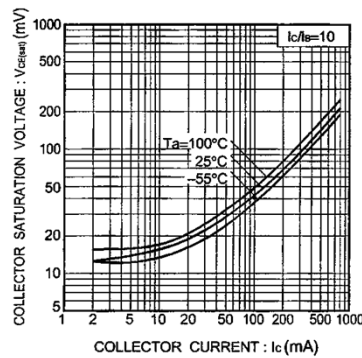


Fig.5 Collector-emitter saturation voltage vs. collector current (II)

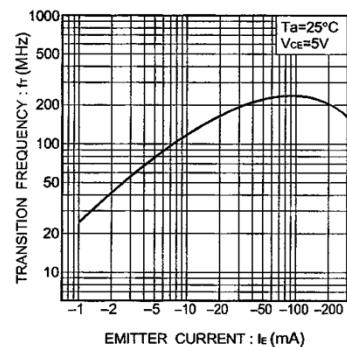


Fig.6 Gain bandwidth product vs. emitter current

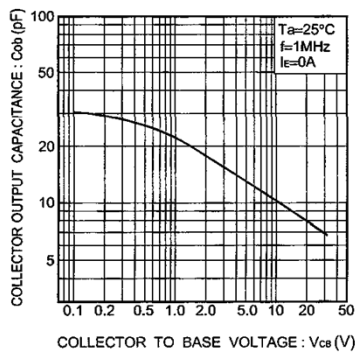


Fig.7 Collector output capacitance vs. collector-base voltage

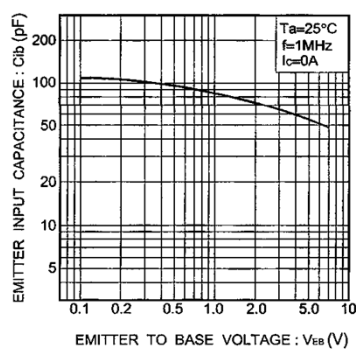
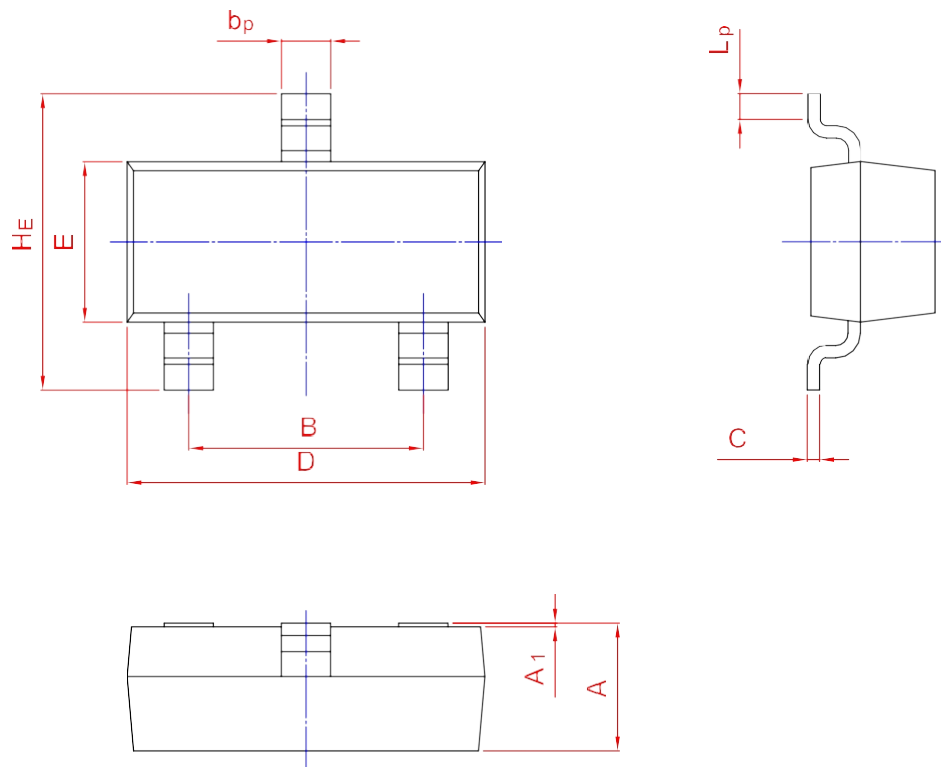


Fig.8 Emitter input capacitance vs. emitter-base voltage

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



UNIT	A	B	b_p	C	D	E	H_E	A_1	L_p
mm	1.40 0.95	2.04 1.78	0.50 0.35	0.19 0.08	3.10 2.70	1.65 1.20	3.00 2.20	0.100 0.013	0.50 0.20