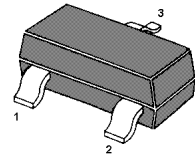


MMBT4240

NPN Silicon General Purpose Transistor



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

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

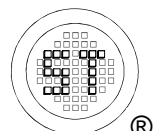
Parameter	Symbol	Value	Unit
Collector Base Voltage	V_{CB0}	40	V
Collector Emitter Voltage	V_{CE0}	40	V
Emitter Base Voltage	V_{EB0}	5	V
Collector Current (DC)	I_C	2	A
Peak Collector Current	I_{CM}	3	A
Peak Base Current	I_{BM}	300	mA
Total Power Dissipation	P_{tot}	350 ¹⁾ 480 ²⁾	mW
Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	- 65 to + 150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Max.	Unit
Thermal Resistance - Junction to Ambient	$R_{\theta JA}$	357 ¹⁾ 260 ²⁾	$^\circ\text{C/W}$

¹⁾ Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.

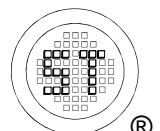
²⁾ Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate.



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

Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain					
at $V_{CE} = 2\text{ V}$, $I_C = 100\text{ mA}$	h_{FE}	350	-	-	-
at $V_{CE} = 2\text{ V}$, $I_C = 500\text{ mA}$	h_{FE}	300	-	-	-
at $V_{CE} = 2\text{ V}$, $I_C = 1\text{ A}$	h_{FE}	250	-	-	-
at $V_{CE} = 2\text{ V}$, $I_C = 2\text{ A}$	h_{FE}	80	-	-	-
Collector Base Cutoff Current at $V_{CB} = 30\text{ V}$	I_{CBO}	-	-	100	nA
Emitter Base Cutoff Current at $V_{EB} = 4\text{ V}$	I_{EBO}	-	-	100	nA
Collector Emitter Saturation Voltage					
at $I_C = 100\text{ mA}$, $I_B = 1\text{ mA}$	$V_{CE(sat)}$	-	-	70	mV
at $I_C = 500\text{ mA}$, $I_B = 50\text{ mA}$		-	-	100	
at $I_C = 750\text{ mA}$, $I_B = 15\text{ mA}$		-	-	180	
at $I_C = 1\text{ A}$, $I_B = 50\text{ mA}$		-	-	180	
at $I_C = 2\text{ A}$, $I_B = 200\text{ mA}$		-	-	320	
Base Emitter Saturation Voltage at $I_C = 2\text{ A}$, $I_B = 200\text{ mA}$	$V_{BE(sat)}$	-	-	1.1	V
Base Emitter Turn-on Voltage at $V_{CE} = 2\text{ V}$, $I_C = 100\text{ mA}$	$V_{BE(on)}$	-	-	0.75	V
Transition Frequency at $V_{CE} = 10\text{ V}$, $I_C = 100\text{ mA}$, $f = 100\text{ MHz}$	f_T	100	230	-	MHz
Collector Output Capacitance at $V_{CB} = 10\text{ V}$, $f = 1\text{ MHz}$	C_{ob}	-	10	20	pF



Electrical Characteristics Curves

Fig. 1 Output Characteristics Curve

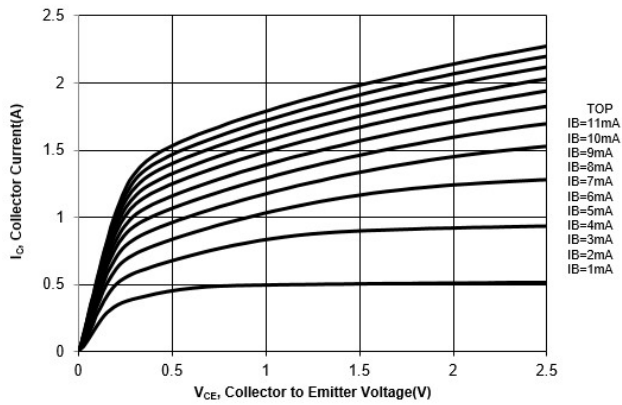


Fig. 2 Output Characteristics Curve

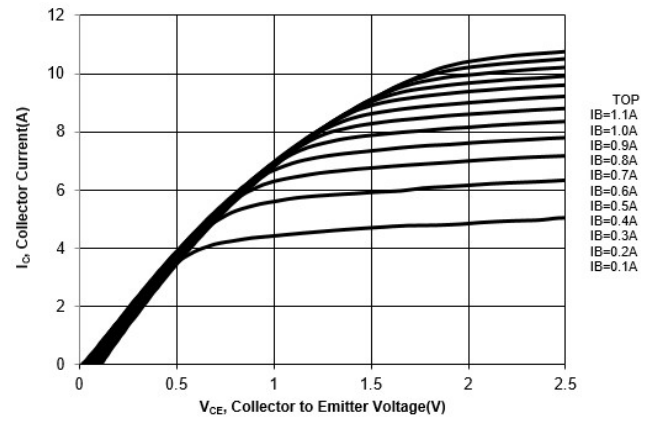


Fig. 3 Base to Emitter Voltage vs. Collector Current

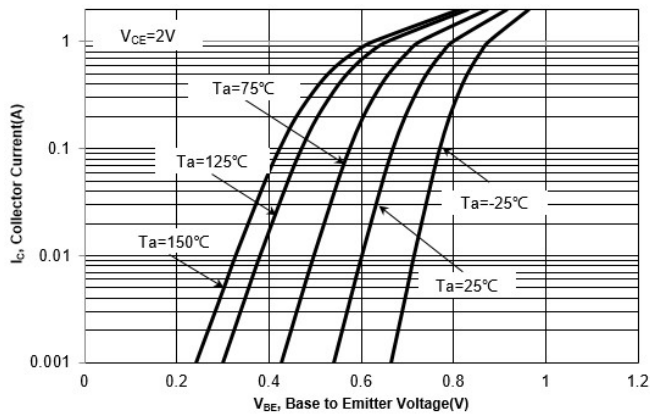
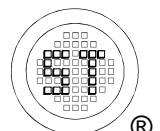
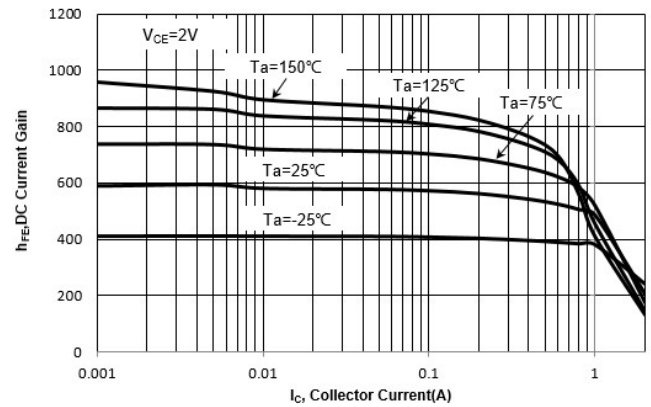


Fig. 4 DC Current Gain vs. Collector Current



Electrical Characteristics Curves

Fig. 5 $V_{BE\text{SAT}}$ vs. Collector Current

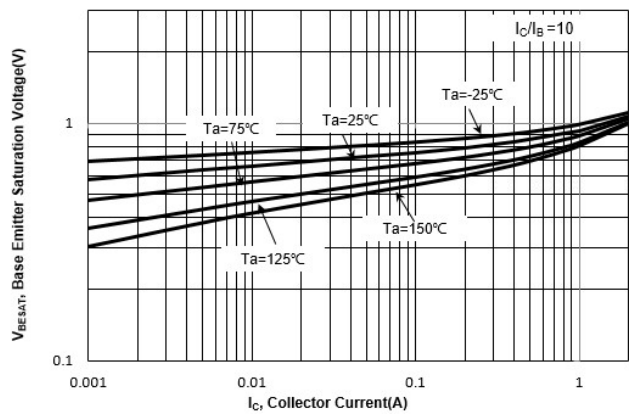


Fig. 6 $V_{CE\text{SAT}}$ vs. Collector Current

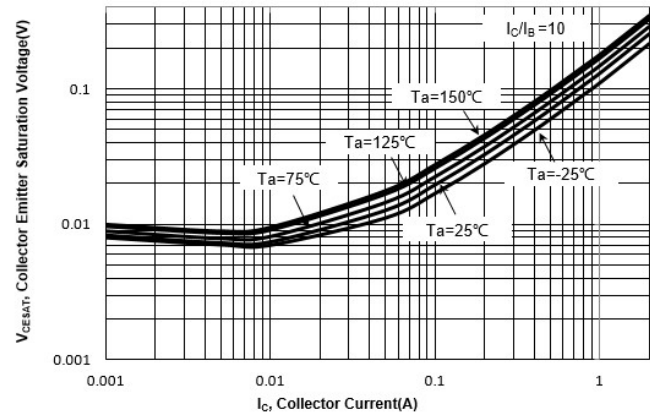
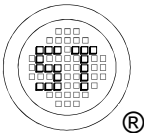
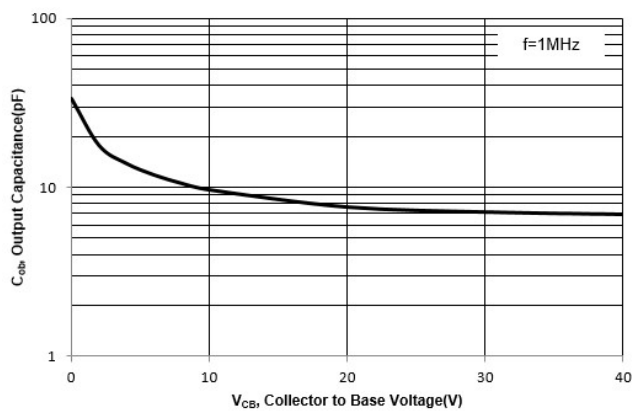


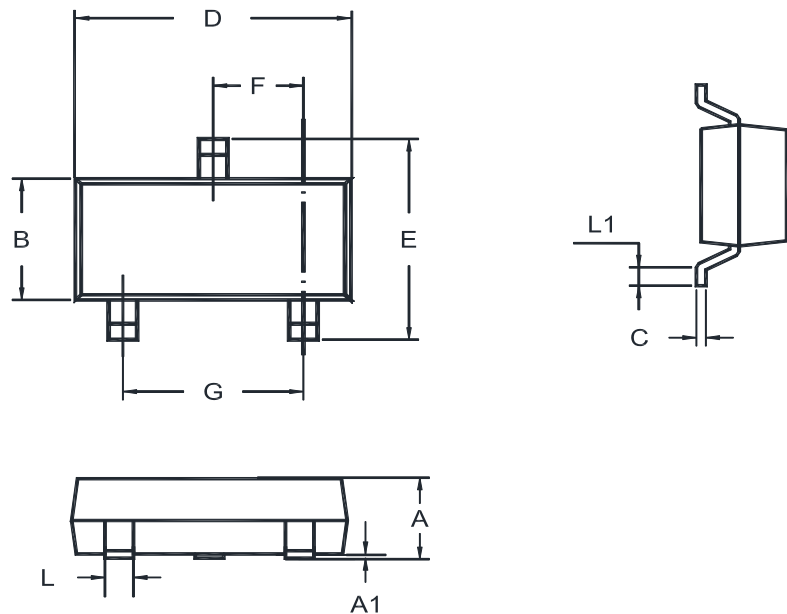
Fig. 7 Output Capacitance



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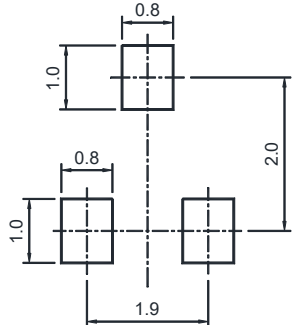
Package Outline (Dimensions in mm)

SOT-23



Unit	A	A1	B	C	D	E	F	G	L	L1
mm	1.20 0.89	0.100 0.013	1.40 1.20	0.19 0.08	3.04 2.80	2.6 2.2	1.02 0.89	2.04 1.78	0.51 0.37	0.2 MIN

Recommended Soldering Footprint



Packing information

Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
SOT-23	8	4 ± 0.1	0.157 ± 0.004	178	7	3,000

Marking information

" 9R " = Part No.
"YM" = Date Code Marking
"Y" = Year
"M" = Month
Font type: Arial

