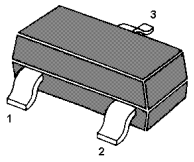
MMBT4403-HAF

PNP Silicon General Purpose Transistor

Features

• Halogen and Antimony Free(HAF), RoHS compliant



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

Absolute Maximum Ratings (T_a = 25℃)

Parameter	Symbol	Value	Unit
Collector Base Voltage	$-V_{CBO}$	40	V
Collector Emitter Voltage	$-V_{CEO}$	40	V
Emitter Base Voltage	$-V_{EBO}$	5	V
Collector Current Continuous	$-I_C$	600	mA
Total Device Dissipation [1)]	P_{tot}	300	mW
Junction and Storage Temperature Range	T_j, T_{stg}	- 55 to + 150	℃

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance from Junction to Ambient [1)]	$R_{\theta JA}$	417	℃/W

[1)] Device mounted on FR-4 substrate PC board, with minimum recommended pad layout.

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Characteristics at T_a = 25℃

Parameter	Symbol	Min.	Max.	Unit
DC Current Gain				
at $-V_{CE}$ = 1 V, $-I_C$ = 0.1 mA	h_{FE}	30	-	-
at $-V_{CE}$ = 1 V, $-I_C$ = 1 mA	h_{FE}	60	-	-
at $-V_{CE}$ = 1 V, $-I_C$ = 10 mA	h_{FE}	100	-	-
at $-V_{CE}$ = 2 V, $-I_C$ = 150 mA	h_{FE}	100	300	-
at $-V_{CE}$ = 2 V, $-I_C$ = 500 mA	h_{FE}	20	-	-
Collector Base Cutoff Current at $-V_{CB}$ = 35 V	$-I_{CBO}$	-	0.1	μA
Emitter Base Cutoff Current at $-V_{EB}$ = 5 V	$-I_{EBO}$	-	0.1	μA
Collector Base Breakdown Voltage at $-I_C$ = 0.1 mA	$-V_{(BR)CBO}$	40	-	V
Collector Emitter Breakdown Voltage at $-I_C$ = 1 mA	$-V_{(BR)CEO}$	40	-	V
Emitter Base Breakdown Voltage at $-I_E$ = 0.1 mA	$-V_{(BR)EBO}$	5	-	V
Collector Emitter Saturation Voltage				
at $-I_C$ = 150 mA, $-I_B$ = 15 mA	$-V_{CE(sat)}$	-	0.4	V
at $-I_C$ = 500 mA, $-I_B$ = 50 mA	$-V_{CE(sat)}$	-	0.75	V
Base Emitter Saturation Voltage				
at $-I_C$ = 150 mA, $-I_B$ = 15 mA	$-V_{BE(sat)}$	0.75	0.95	V
at $-I_C$ = 500 mA, $-I_B$ = 50 mA	$-V_{BE(sat)}$	-	1.3	V
Current Gain Bandwidth Product at $-V_{CE}$ = 10 V, $-I_C$ = 20 mA, f = 100 MHz	f_T	200	-	MHz
Collector Base Capacitance at $-V_{CB}$ = 10 V, $-I_E$ = 0, f = 1 MHz	C_{ob}	-	8.5	pF
Delay Time at $-V_{CC}$ = 30 V, $-V_{EB}$ = 2 V, $-I_C$ = 150 mA, $-I_{B1}$ = 15 mA	t_d	-	15	ns
Rise Time at $-V_{CC}$ = 30 V, $-V_{EB}$ = 2 V, $-I_C$ = 150 mA, $-I_{B1}$ = 15 mA	t_r	-	20	ns
Storage Time at $-V_{CC}$ = 30 V, $-I_C$ = 150 mA, $-I_{B1}$ = $-I_{B2}$ = 15 mA	t_s	-	225	ns
Fall Time at $-V_{CC}$ = 30 V, $-I_C$ = 150 mA, $-I_{B1}$ = $-I_{B2}$ = 15 mA	t_f	-	30	ns

Electrical Characteristics Curves

Fig. 1 Output Characteristics Curve

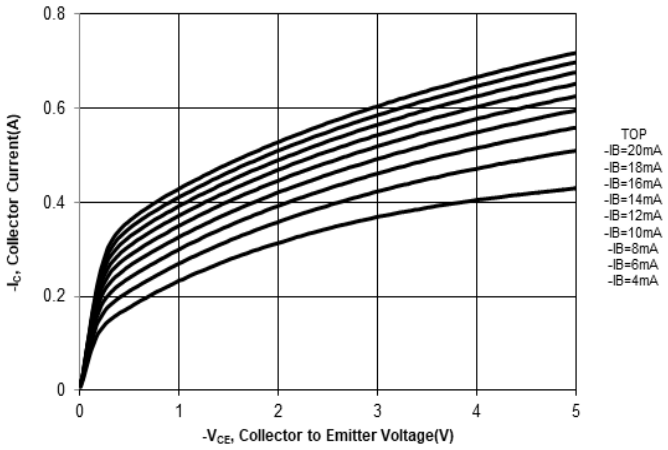


Fig. 2 Output Characteristics Curve

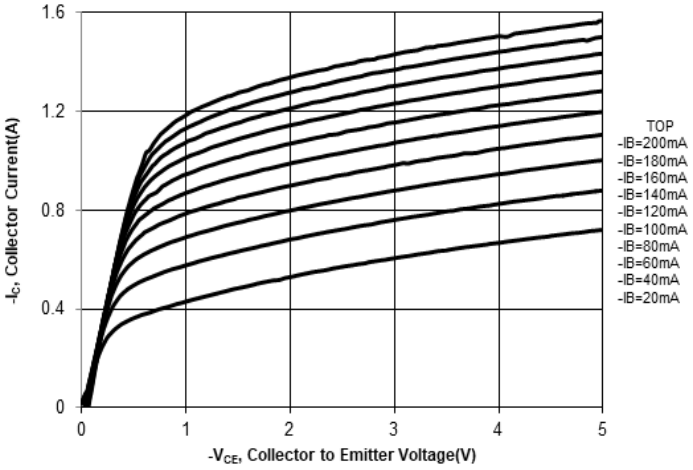


Fig. 3 Collector Current vs. Base-Emitter Voltage

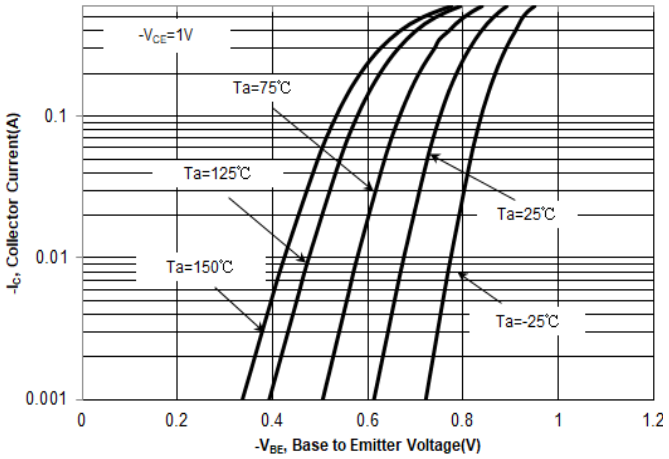
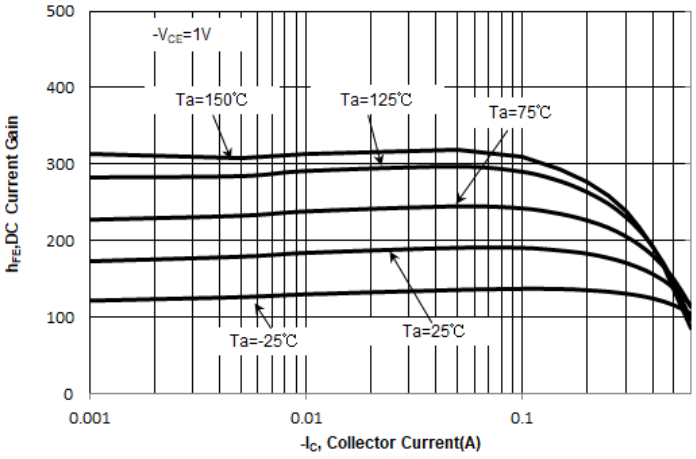


Fig. 4 h_{FE},DC Current Gain vs. Collector Current



Electrical Characteristics Curves

Fig. 5 $V_{BE(sat)}$ vs. Collector Current

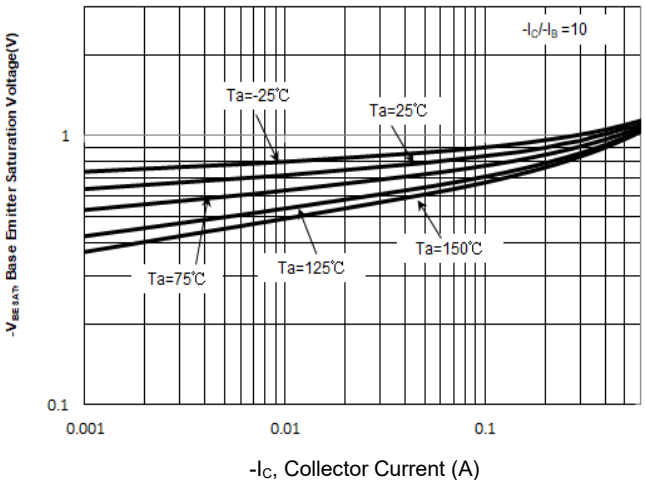


Fig. 6 $V_{CE(sat)}$ vs. Collector Current

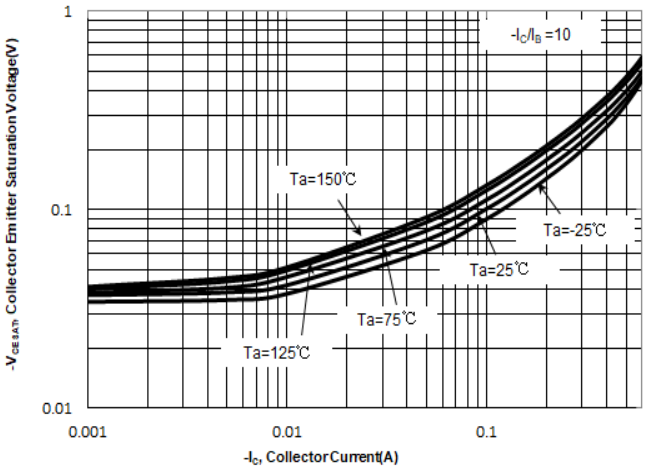


Fig. 7 Capacitance

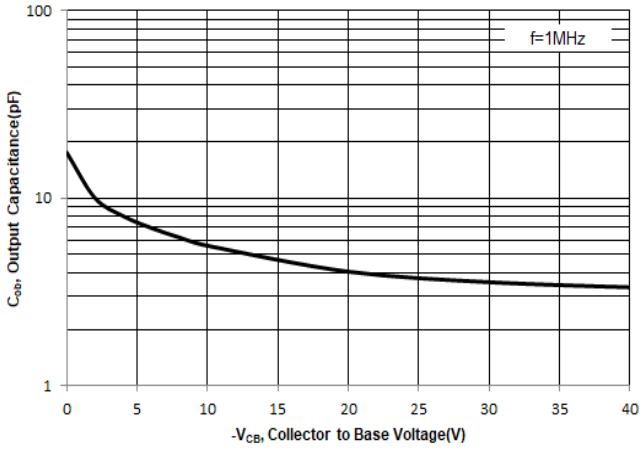
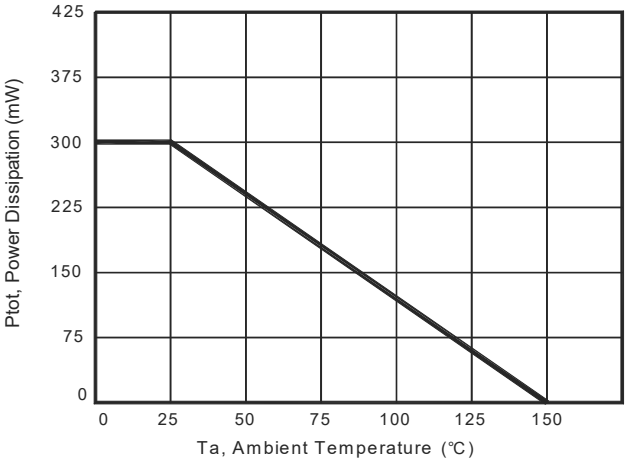


Fig 8. Power Derating Curve



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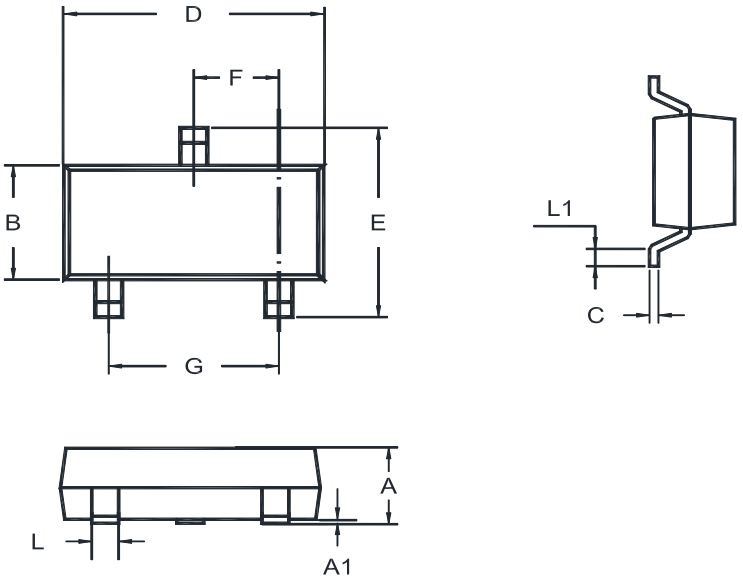
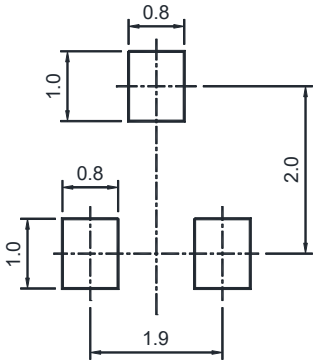
Package Outline (Dimensions in mm)

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

" 2T " = Part No.

" • " = HAF (Halogen and Antimony Free)

"YM" = Date Code Marking

"Y" = Year

"M" = Month

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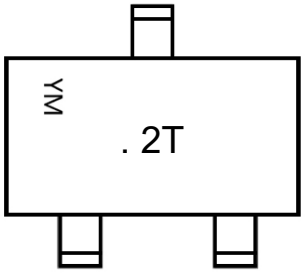

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