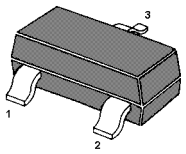
MMBT5401-HAF

PNP Silicon Epitaxial Planar Transistor



1. Base 2. Emitter 3. Collector
TO-236 Plastic Package

Features

• Halogen and Antimony Free(HAF), RoHS compliant

Applications

• For high voltage amplifier applications

Absolute Maximum Ratings (T_a = 25℃)

Parameter	Symbol	Value	Unit
Collector Base Voltage	$-V_{CBO}$	160	V
Collector Emitter Voltage	$-V_{CEO}$	150	V
Emitter Base Voltage	$-V_{EBO}$	5	V
Collector Current Continuous	$-I_C$	600	mA
Power Dissipation	P_{tot}	200	mW
Junction Temperature	T_j	150	℃
Storage Temperature Range	T_{stg}	- 55 to + 150	℃

Thermal Characteristics

Parameter	Symbol	Max.	Unit
Thermal Resistance from Junction to Ambient [1)]	$R_{\theta JA}$	625	℃/W

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

Characteristics at T_a = 25℃

Parameter	Symbol	Min.	Max.	Unit
DC Current Gain at $-V_{CE}$ = 5 V, $-I_C$ = 1 mA at $-V_{CE}$ = 5 V, $-I_C$ = 10 mA at $-V_{CE}$ = 5 V, $-I_C$ = 50 mA	 h_{FE} h_{FE} h_{FE}	 50 60 50	 - 240 -	 - - -
Collector Base Cutoff Current at $-V_{CB}$ = 120 V	$-I_{CBO}$	-	50	nA
Emitter Base Cutoff Current at $-V_{EB}$ = 3 V	$-I_{EBO}$	-	50	nA
Collector Base Breakdown Voltage at $-I_C$ = 100 μA	$-V_{(BR)CBO}$	160	-	V
Collector Emitter Breakdown Voltage at $-I_C$ = 1 mA	$-V_{(BR)CEO}$	150	-	V
Emitter Base Breakdown Voltage at $-I_E$ = 10 μA	$-V_{(BR)EBO}$	5	-	V
Collector Emitter Saturation Voltage at $-I_C$ = 10 mA, $-I_B$ = 1 mA at $-I_C$ = 50 mA, $-I_B$ = 5 mA	$-V_{CE(sat)}$	 - -	 0.2 0.5	V
Base Emitter Saturation Voltage at $-I_C$ = 10 mA, $-I_B$ = 1 mA at $-I_C$ = 50 mA, $-I_B$ = 5 mA	$-V_{BE(sat)}$	 - -	 1 1	V
Gain Bandwidth Product at $-V_{CE}$ = 10 V, $-I_C$ = 10 mA, f = 100 MHz	f_T	100	300	MHz
Output Capacitance at $-V_{CB}$ = 10 V, f = 1 MHz	C_{obo}	-	6	pF

Electrical Characteristics Curves

Fig. 1 Output Characteristics Curve

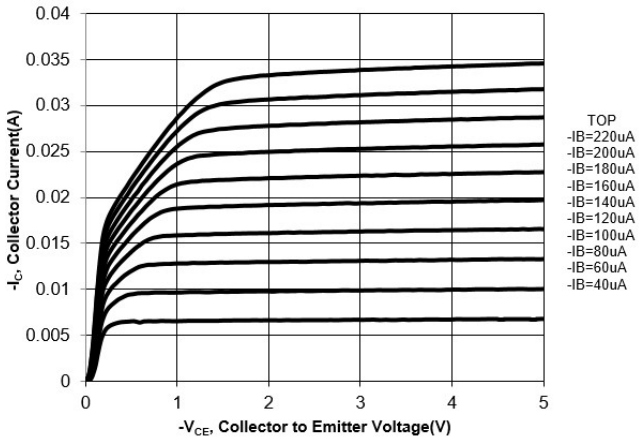


Fig. 2 Output Characteristics Curve

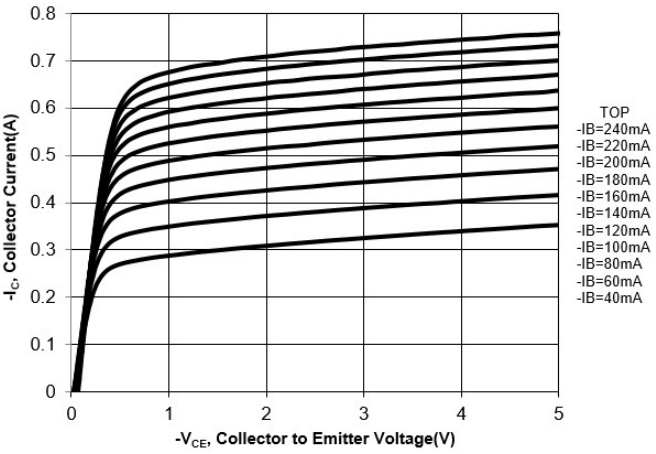


Fig. 3 Collector Current vs. V_{BE}

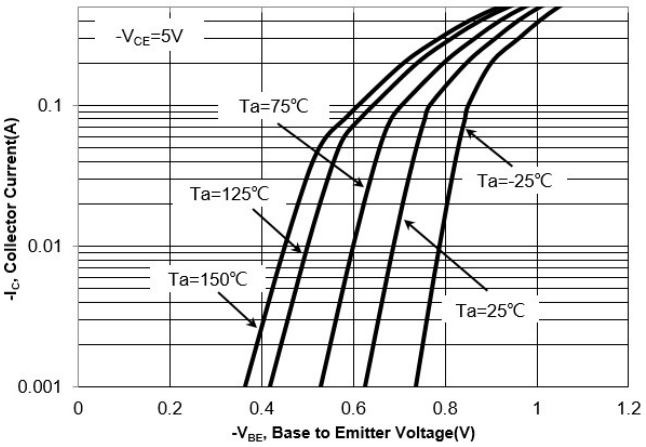
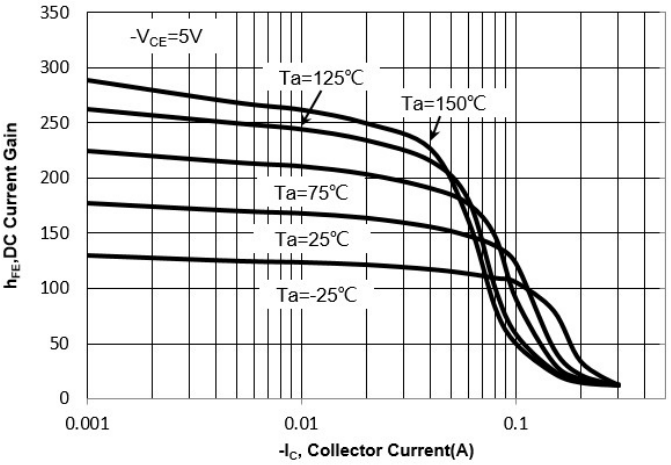


Fig 4. DC Current Gain vs. Collector Current



Electrical Characteristics Curves

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

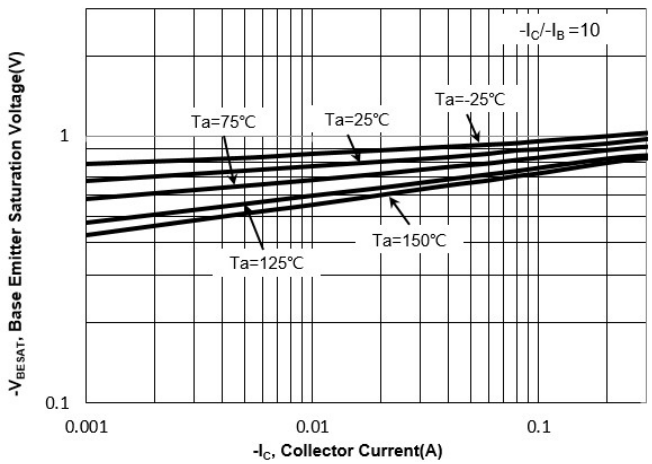


Fig 6. $V_{CE(sat)}$ vs. Collector Current

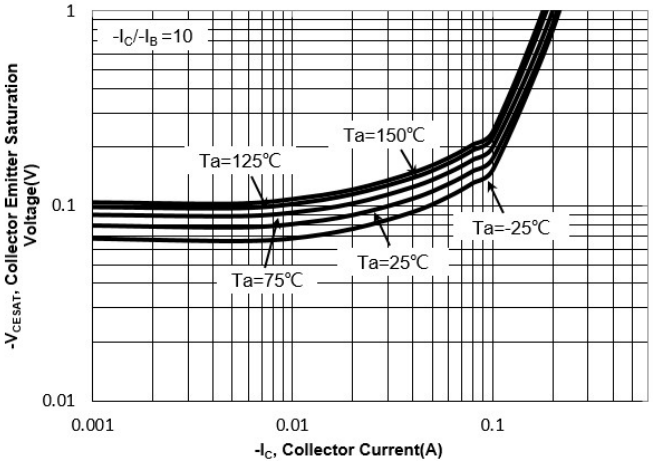


Fig 7. Capacitance Characteristics

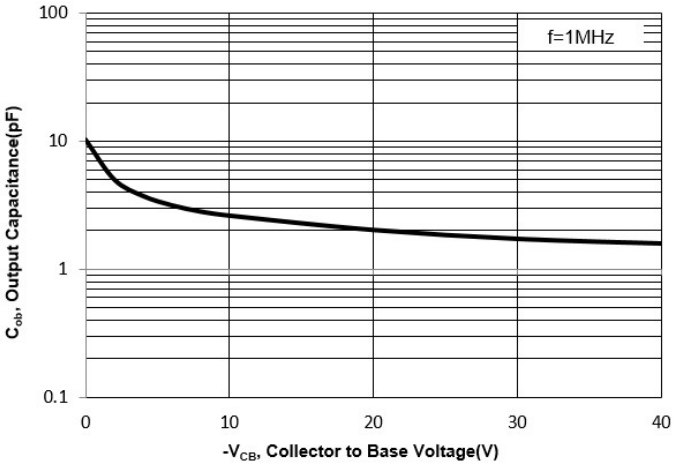
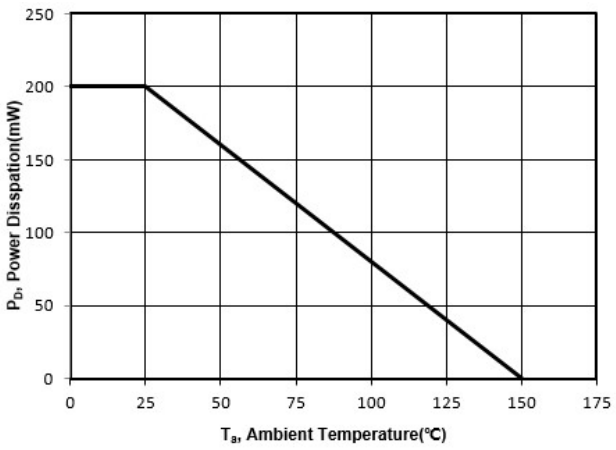


Fig 8. Power Derating Curve



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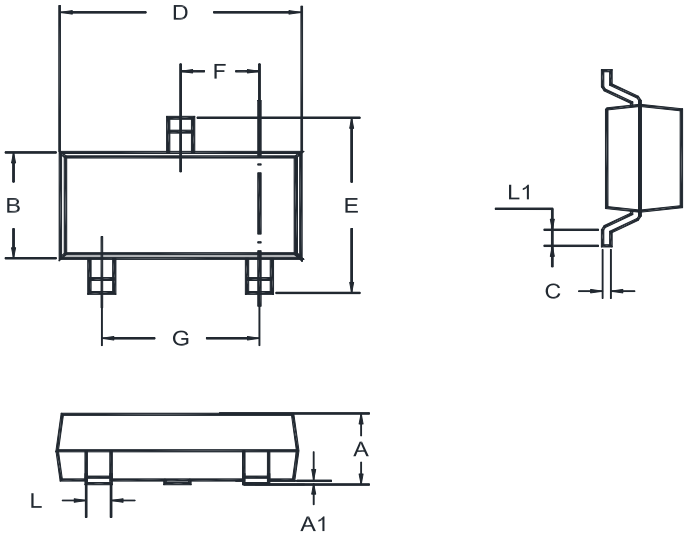
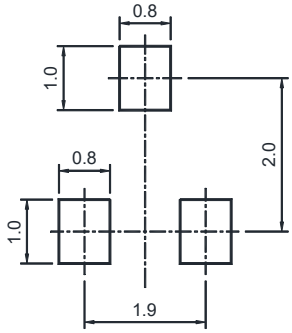
Package Outline (Dimensions in mm) TO-236



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	
TO-236	8	4 ± 0.1	0.157 ± 0.004	178	7	3,000

Marking information

" 2L " = Part No.
" • " = HAF (Halogen and Antimony Free)
"YM" = Date Code Marking
"Y" = Year
"M" = Month
Font type: Arial