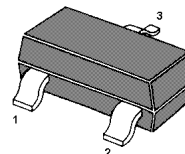


# MMBTSB1197A

## PNP Silicon Epitaxial Planar Power Transistor

### Features

- High collector current capability
- Excellent DC current gain characteristics



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

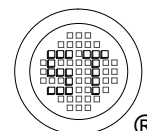
### Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

Parameter	Symbol	Value	Unit
Collector Base Voltage	$-V_{CBO}$	50	V
Collector Emitter Voltage	$-V_{CEO}$	50	V
Emitter Base Voltage	$-V_{EBO}$	7	V
Collector Current	$-I_C$	3	A
Peak Collector Current, Pulsed	$-I_{CM}$	3.5	A
Power Dissipation <sup>1)</sup>	$P_{tot}$	1.25	W
Operating Junction and Storage Temperature Range	$T_j, T_{stg}$	- 55 to + 150	$^\circ\text{C}$

### Thermal Characteristics

Parameter	Symbol	Max.	Unit
Thermal Resistance from Junction to Ambient <sup>1)</sup>	$R_{\theta JA}$	100	$^\circ\text{C/W}$

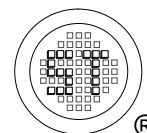
<sup>1)</sup> Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate in still air.



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

Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at $-V_{CE} = 2\text{ V}$ , $-I_C = 1\text{ mA}$	$h_{FE}$	100	-	-	-
at $-V_{CE} = 2\text{ V}$ , $-I_C = 0.5\text{ A}$	$h_{FE}$	100	-	400	-
at $-V_{CE} = 2\text{ V}$ , $-I_C = 1\text{ A}$	$h_{FE}$	100	-	-	-
at $-V_{CE} = 2\text{ V}$ , $-I_C = 2\text{ A}$	$h_{FE}$	50	-	-	-
Collector Base Cutoff Current at $-V_{CB} = 30\text{ V}$	$-I_{CBO}$	-	-	100	nA
Collector Emitter Cutoff Current at $-V_{CE} = 30\text{ V}$	$-I_{CES}$	-	-	100	nA
Emitter Base Cutoff Current at $-V_{EB} = 4\text{ V}$	$-I_{EBO}$	-	-	100	nA
Collector Base Breakdown Voltage at $-I_C = 0.1\text{ mA}$	$-V_{(BR)CBO}$	50	-	-	V
Collector Emitter Breakdown Voltage at $-I_C = 10\text{ mA}$	$-V_{(BR)CEO}$	50	-	-	V
Emitter Base Breakdown Voltage at $-I_E = 0.1\text{ mA}$	$-V_{(BR)EBO}$	7	-	-	V
Collector Emitter Saturation Voltage at $-I_C = 0.5\text{ A}$ , $-I_B = 50\text{ mA}$	$-V_{CE(sat)}$	-	-	150	mV
at $-I_C = 1\text{ A}$ , $-I_B = 100\text{ mA}$		-	-	200	
at $-I_C = 2\text{ A}$ , $-I_B = 200\text{ mA}$		-	-	500	
Base Emitter Saturation Voltage at $-I_C = 1\text{ A}$ , $-I_B = 100\text{ mA}$	$-V_{BE(sat)}$	-	-	1.1	V
Base Emitter Turn-on Voltage at $-I_C = 1\text{ A}$ , $-V_{CE} = 2\text{ V}$	$-V_{BE(on)}$	-	-	1.1	V
Transistion frequency at $-V_{CE} = 5\text{ V}$ , $-I_C = 100\text{ mA}$ , $f = 100\text{ MHz}$	$f_T$	-	160	-	MHz
Collector Output Capacitance at $-V_{CB} = 10\text{ V}$ , $f = 1\text{ MHz}$	$C_{ob}$	-	28	-	pF



# MMBT5B1197A

## Electrical Characteristics Curves

Fig. 1 Output Characteristics Curve

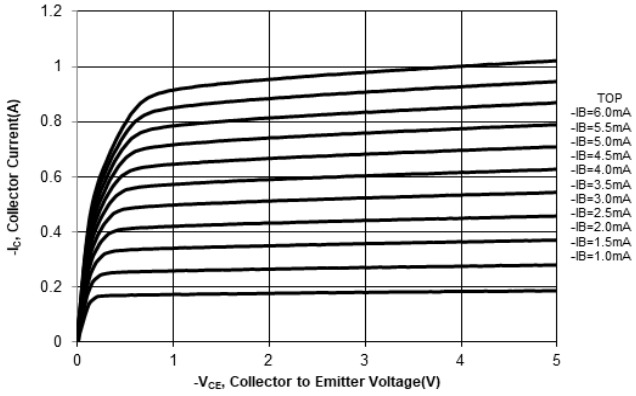


Fig. 2 Output Characteristics Curve

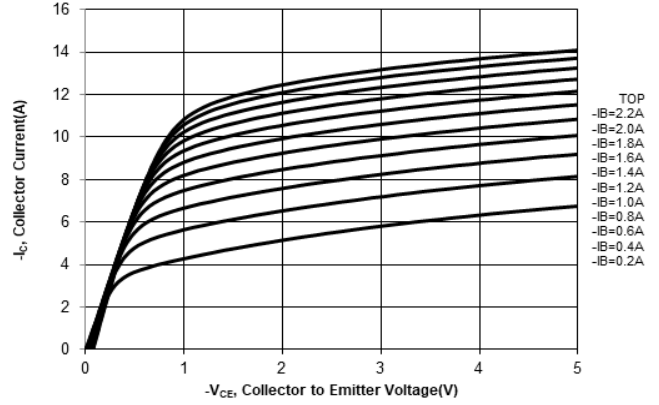


Fig. 3 Collector Current vs.  $V_{BE}$

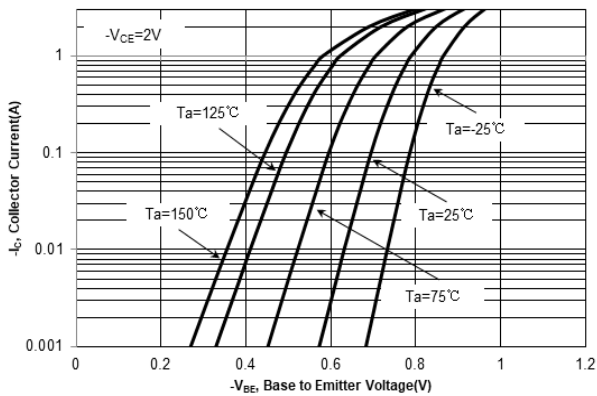
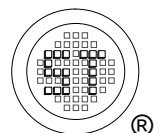
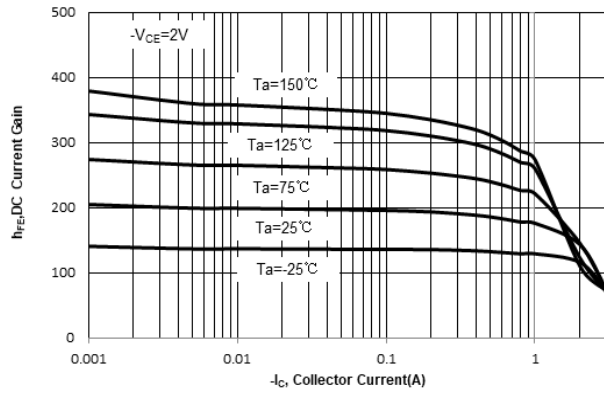


Fig. 4  $h_{FE}$  vs. Collector Current



# MMBTSB1197A

## Electrical Characteristics Curves

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

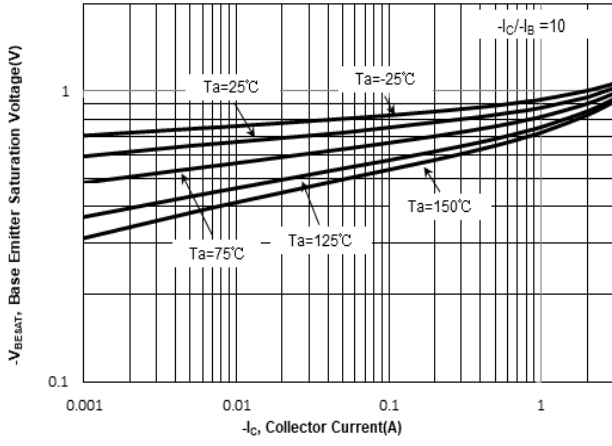


Fig. 6  $V_{CE(sat)}$  vs. Collector Current

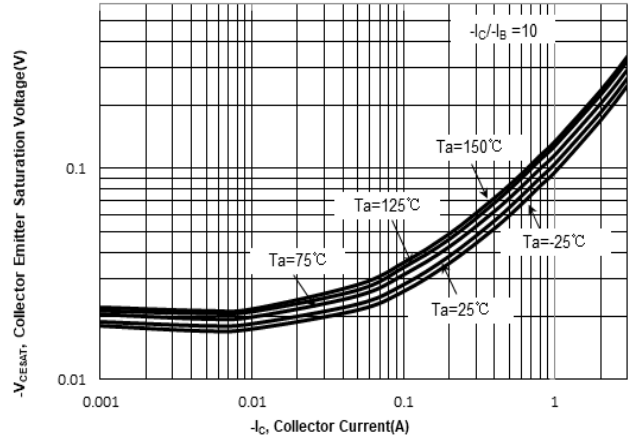


Fig 7. Output Capacitance

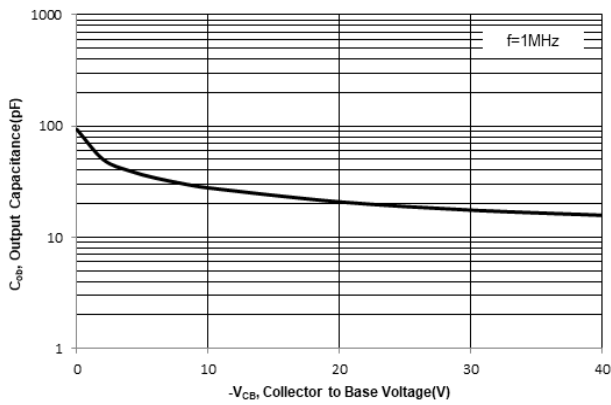
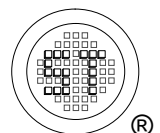
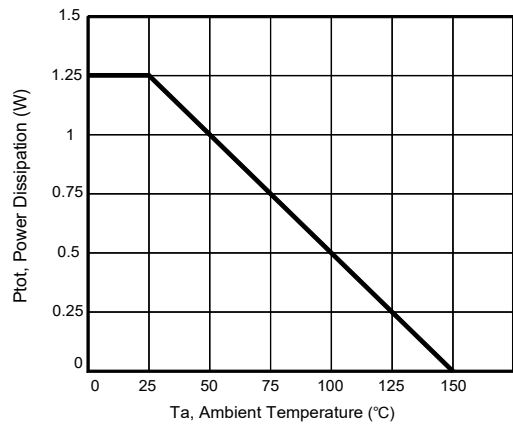


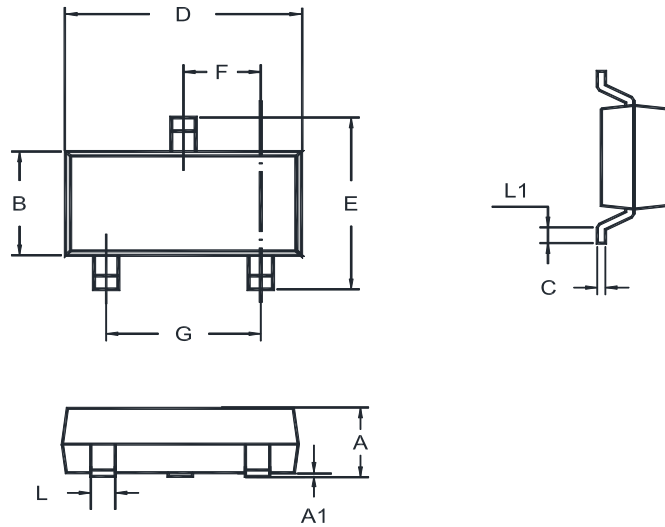
Fig 8. Power Derating Curve



# MMBTSB1197A

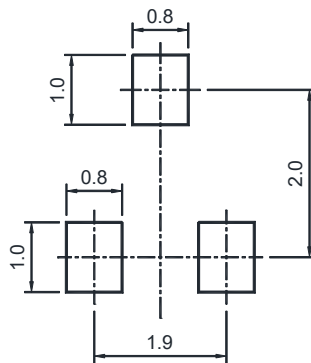
## Package Outline (Dimensions in mm)

SOT-23



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

"9A1" = Part No.

"YM" = Date Code Marking

"Y" = Year

"M" = Month

Font type: Arial

