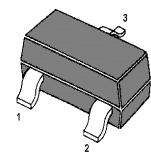


MMBTA92 / MMBTA93-AH

PNP Silicon High Voltage Transistors

Features

- AEC-Q101 Qualified
- Halogen and Antimony Free(HAF), RoHS compliant



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

Applications

- For high voltage switching and amplifier

Absolute Maximum Ratings (T_a = 25°C)

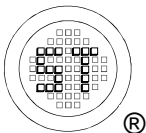
Parameter		Symbol	Value	Unit
Collector Base Voltage	MMBTA92 MMBTA93	-V _{CBO}	300 200	V
Collector Emitter Voltage	MMBTA92 MMBTA93	-V _{CEO}	300 200	V
Emitter Base Voltage		-V _{EBO}	5	V
Collector Current		-I _C	500	mA
Total Power Dissipation		P _{tot}	350	mW
Operating Junction Temperature Range		T _J	- 55 to + 150	°C
Storage Temperature Range		T _{stg}	- 55 to + 150	°C

Thermal Characteristics

Parameter	Symbol	Max.	Unit
Thermal Resistance from Junction to Ambient	R _{θJA}	357 ¹⁾ 250 ²⁾	°C/W

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

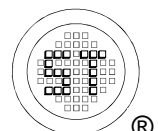
²⁾ Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate.



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

Parameter	Symbol	Min.	Max.	Unit
DC Current Gain at $-V_{CE} = 10\text{ V}$, $-I_C = 1\text{ mA}$	h_{FE}	25	-	-
at $-V_{CE} = 10\text{ V}$, $-I_C = 10\text{ mA}$	h_{FE}	80	200	-
at $-V_{CE} = 10\text{ V}$, $-I_C = 30\text{ mA}$	h_{FE}	25	-	-
Collector Base Cutoff Current at $-V_{CB} = 200\text{ V}$	$-I_{CBO}$	-	250	nA
at $-V_{CB} = 160\text{ V}$	$-I_{CBO}$	-	250	nA
Emitter Base Cutoff Current at $-V_{EB} = 3\text{ V}$	$-I_{EBO}$	-	100	nA
Collector Base Breakdown Voltage at $-I_C = 100\text{ }\mu\text{A}$	$-V_{(BR)CBO}$	300	-	V
	$-V_{(BR)CBO}$	200	-	V
Collector Emitter Breakdown Voltage at $-I_C = 1\text{ mA}$	$-V_{(BR)CEO}$	300	-	V
	$-V_{(BR)CEO}$	200	-	V
Emitter Base Breakdown Voltage at $-I_E = 100\text{ }\mu\text{A}$	$-V_{(BR)EBO}$	5	-	V
Collector Emitter Saturation Voltage at $-I_C = 20\text{ mA}$, $-I_B = 2\text{ mA}$	$-V_{CE(sat)}$	-	0.5	V
Base Emitter Saturation Voltage at $-I_C = 20\text{ mA}$, $-I_B = 2\text{ mA}$	$-V_{BE(sat)}$	-	0.9	V
Current Gain Bandwidth Product at $-V_{CE} = 20\text{ V}$, $-I_C = 10\text{ mA}$, $f = 100\text{ MHz}$	f_T	50	-	MHz
Collector Output Capacitance at $-V_{CB} = 20\text{ V}$, $f = 1\text{ MHz}$	C_{ob}	-	6	pF
		-	8	pF



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Electrical Characteristics Curves

Fig. 1 Output Characteristics Curve

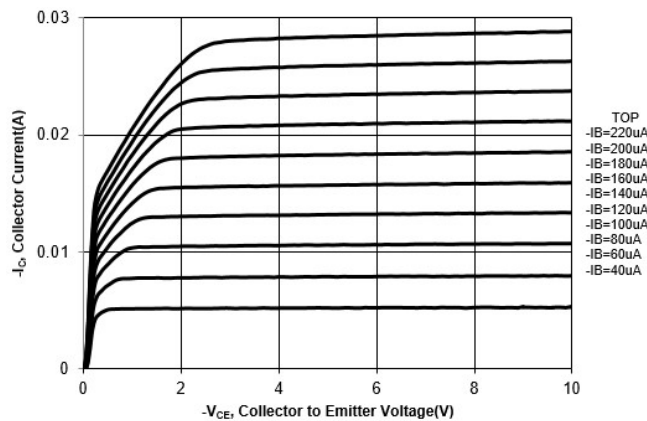


Fig. 2 Collector Current vs. Base to Emitter Voltage

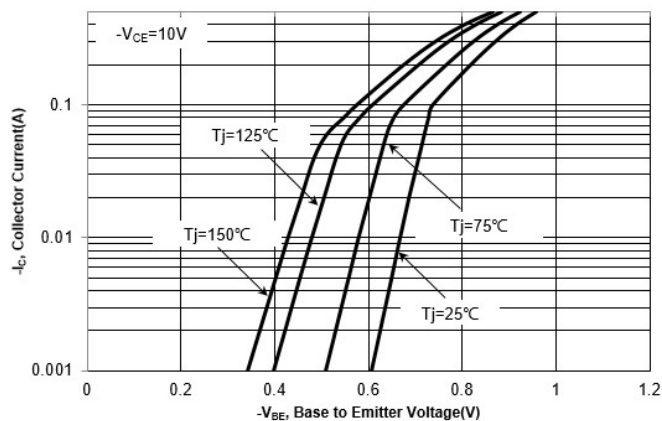


Fig. 3 DC Current Gain vs. Collector Current

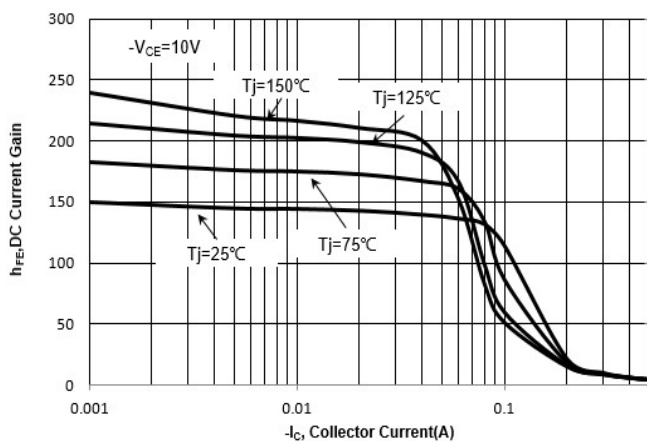
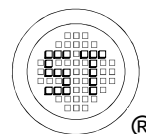
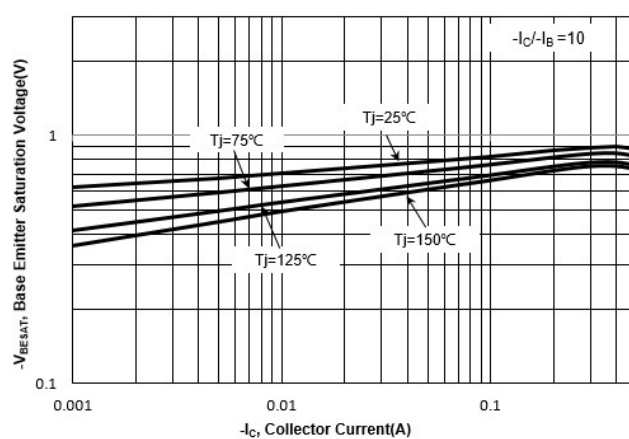


Fig. 4 V_{BESAT} vs. Collector Current



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Electrical Characteristics Curves

Fig. 5 V_{CESAT} vs. Collector Current

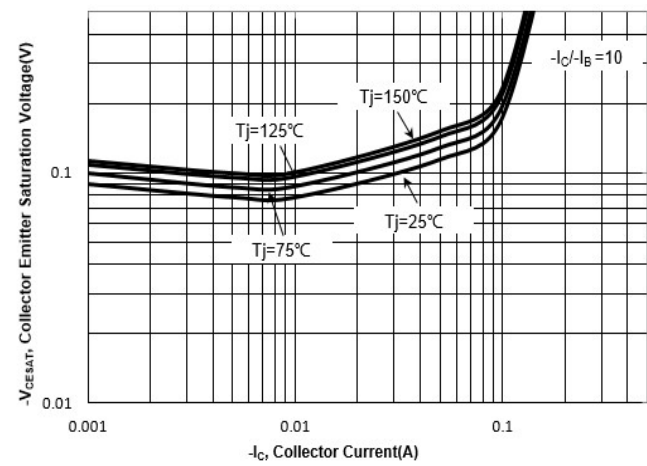


Fig. 6 Output Capacitance

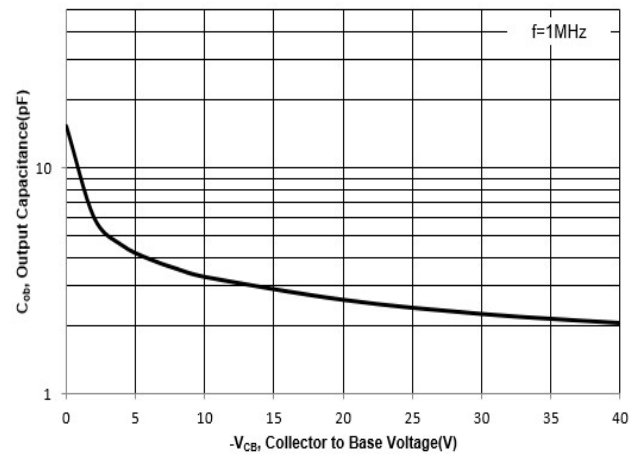
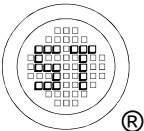
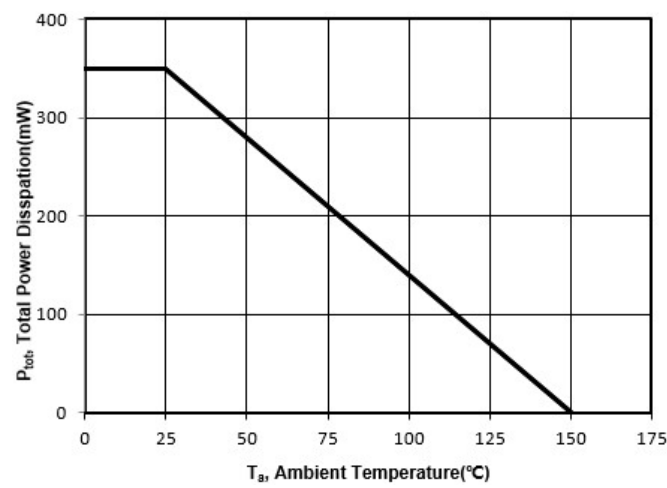


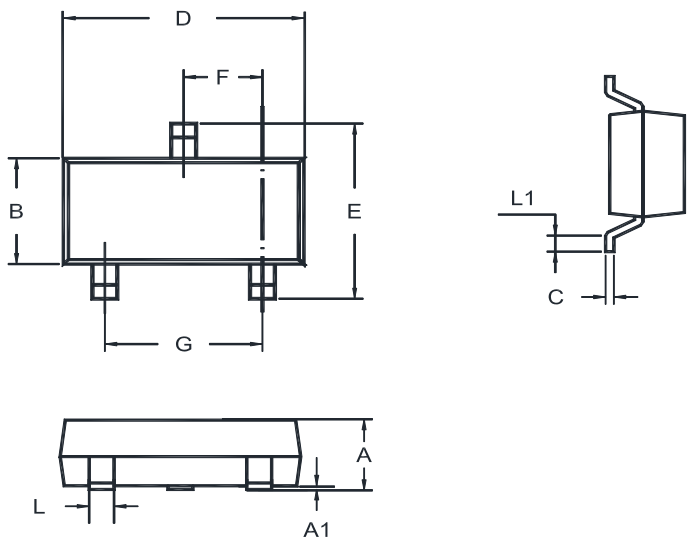
Fig. 7 Power Derating Curve



MMBTA92 / MMBTA93-AH

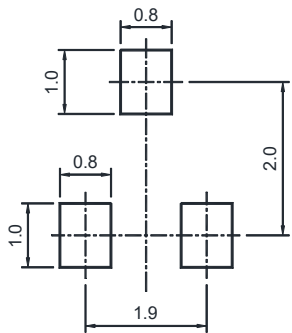
Package Outline (Dimensions in mm)

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

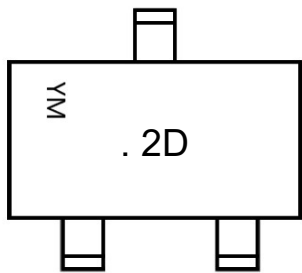


Packing information

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

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



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