

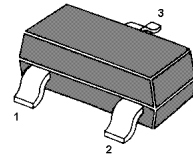
MMBTA92 / MMBTA93-AH

PNP Silicon High Voltage Transistors

for high voltage switching and amplifier applications.

Features

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



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

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

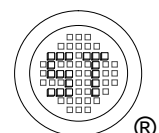
Parameter	Symbol	Value	Unit
Collector Base Voltage	$-V_{CBO}$	300 200	V
Collector Emitter Voltage	$-V_{CEO}$	300 200	V
Emitter Base Voltage	$-V_{EBO}$	5	V
Collector Current	$-I_C$	500	mA
Total Power Dissipation	P_{tot}	350	mW
Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	- 55 to + 150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Max.	Unit
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	357 ¹⁾ 250 ²⁾	$^\circ\text{C/W}$

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

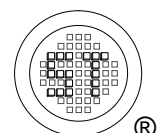
²⁾ Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate.



MMBTA92 / MMBTA93-AH

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 $-V_{CB} = 200\text{ V}$	MMBTA92	$-I_{CBO}$	-	0.25	μA
at $-V_{CB} = 160\text{ V}$	MMBTA93	$-I_{CBO}$	-	0.25	μA
Emitter Base Cutoff Current					
at $-V_{EB} = 3\text{ V}$		$-I_{EBO}$	-	0.1	μA
Collector Base Breakdown Voltage					
at $-I_C = 100\text{ }\mu\text{A}$	MMBTA92	$-V_{(BR)CBO}$	300	-	V
	MMBTA93	$-V_{(BR)CBO}$	200	-	V
Collector Emitter Breakdown Voltage					
at $-I_C = 1\text{ mA}$	MMBTA92	$-V_{(BR)CEO}$	300	-	V
	MMBTA93	$-V_{(BR)CEO}$	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 Base Capacitance					
at $-V_{CB} = 20\text{ V}$, $f = 1\text{ MHz}$	MMBTA92	C_{cb}	-	6	pF
	MMBTA93	C_{cb}	-	8	pF



MMBTA92 / MMBTA93-AH

Electrical Characteristics Curves (MMBTA92)

Fig.1 Output Curve

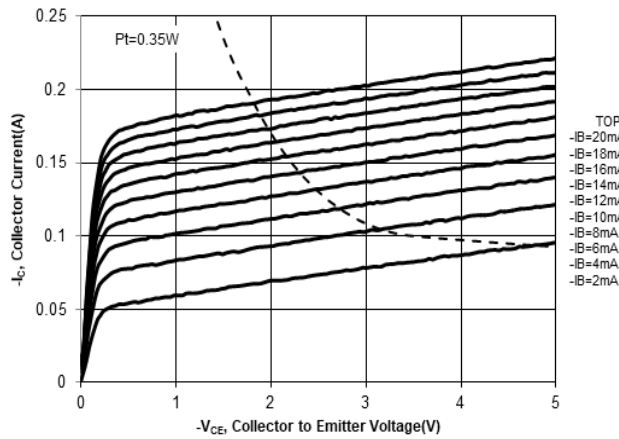


Fig.2 Output Curve

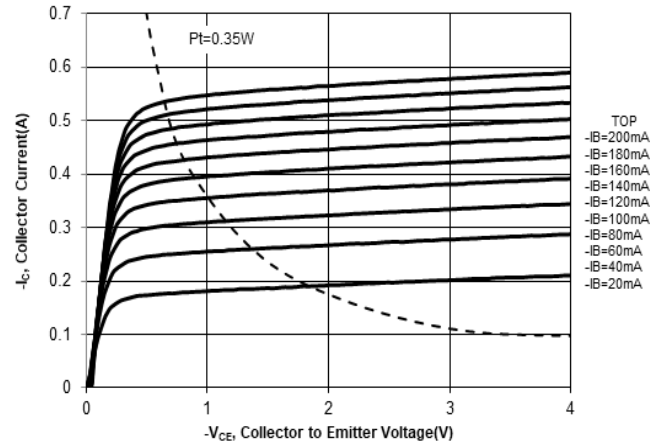


Fig.3 Collector Current vs. V_{BE}

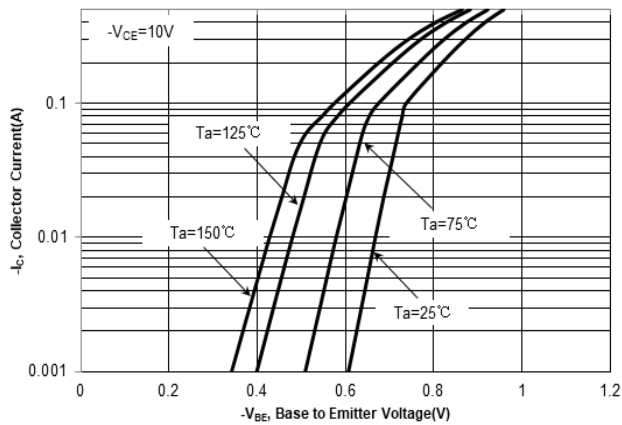
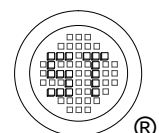
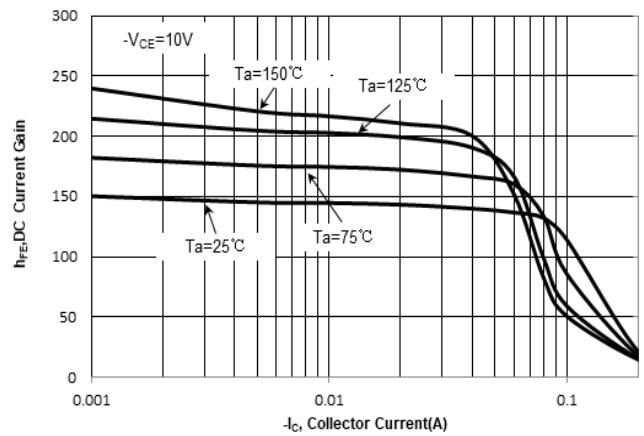


Fig 4. DC Current Gain



Electrical Characteristics Curves (MMBTA92)

Fig 5. V_{BESAT} vs. Collector Current

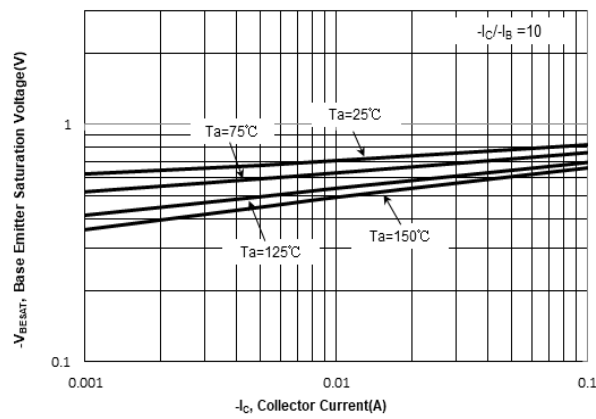


Fig 6. V_{CESAT} vs. Collector Current

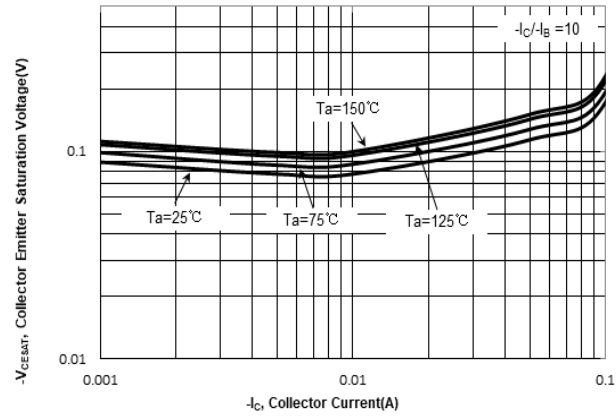
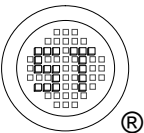
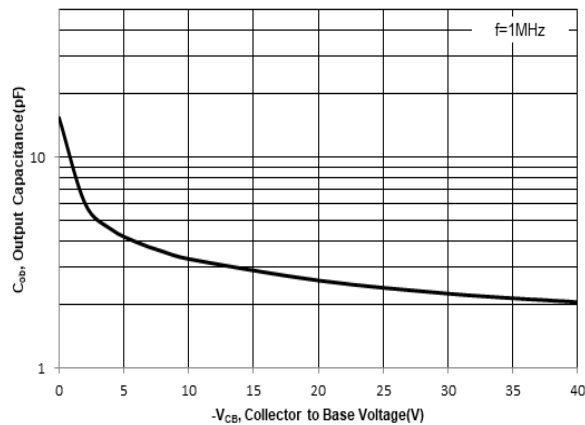


Fig 7. Capacitance

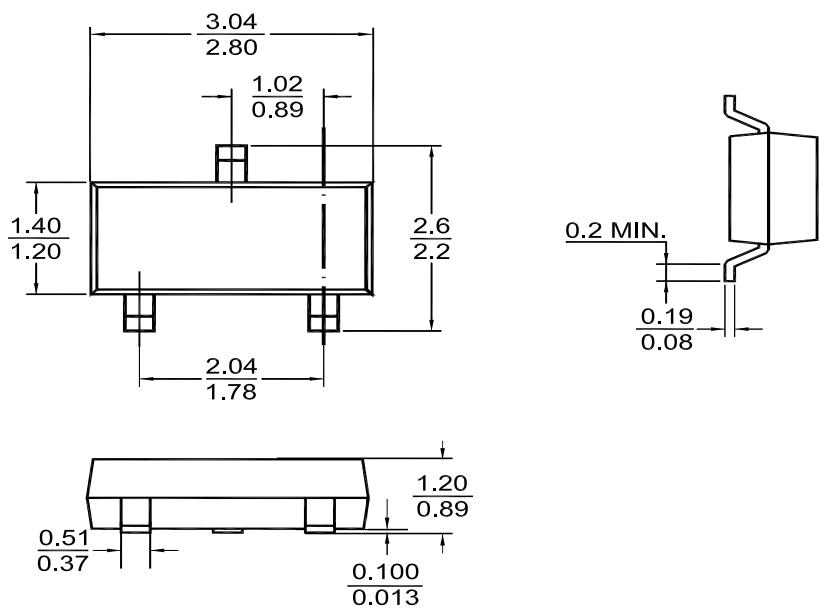


MMBTA92 / MMBTA93-AH

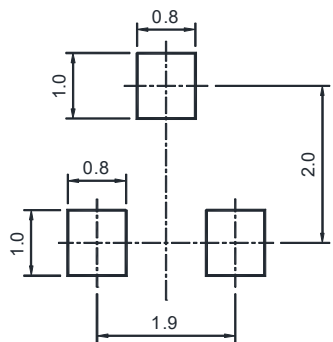
PACKAGE OUTLINE

Plastic surface mounted package (Dimensions in mm)

TO-236



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

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

