

MMBTA92LT1

Preferred Device

High Voltage Transistor

PNP Silicon

Features

- Pb-Free Package May be Available. The G-Suffix Denotes a Pb-Free Lead Finish

MAXIMUM RATINGS

Rating	Symbol	MMBTA92	Unit
Collector – Emitter Voltage	V_{CEO}	-300	Vdc
Collector – Base Voltage	V_{CBO}	-300	Vdc
Emitter – Base Voltage	V_{EBO}	-5.0	Vdc
Collector Current – Continuous	I_C	-500	mAdc

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board, (Note 1) $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	225 1.8	mW mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	556	$^\circ\text{C}/\text{W}$
Total Device Dissipation Alumina Substrate, (Note 2) $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	300 2.4	mW mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	417	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

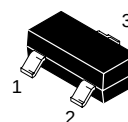
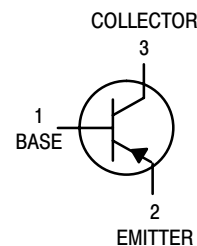
1. FR-5 = 1.0 x 0.75 x 0.062 in.

2. Alumina = 0.4 x 0.3 x 0.024 in. 99.5% alumina.



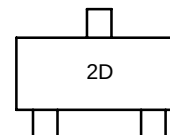
ON Semiconductor®

<http://onsemi.com>



SOT-23 (TO-236AF)
CASE 318
Style 6

MARKING DIAGRAM



2D = Specific Device Code

ORDERING INFORMATION

Device	Package	Shipping [†]
MMBTA92LT1	SOT-23	3000 / Tape & Reel
MMBTA92LT1G	SOT-23	3000 / Tape & Reel
MMBTA92LT3	SOT-23	10000 / Tape & Reel

[†]For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

Preferred devices are recommended choices for future use and best overall value.

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ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector – Emitter Breakdown Voltage (Note 3) ($I_C = -1.0\text{ mAdc}$, $I_E = 0$)	$V_{(BR)CEO}$	-300	–	Vdc
Collector – Base Breakdown Voltage ($I_C = -100\text{ }\mu\text{Adc}$, $I_E = 0$)	$V_{(BR)CBO}$	-300	–	Vdc
Emitter – Base Breakdown Voltage ($I_E = -100\text{ }\mu\text{Adc}$, $I_C = 0$)	$V_{(BR)EBO}$	-5.0	–	Vdc
Collector Cutoff Current ($V_{CB} = -200\text{ Vdc}$, $I_E = 0$)	I_{CBO}	–	-0.25	μAdc
Emitter Cutoff Current ($V_{EB} = -3.0\text{ Vdc}$, $I_C = 0$)	I_{EBO}	–	-0.1	μAdc
ON CHARACTERISTICS (Note 3)				
DC Current Gain ($I_C = -1.0\text{ mAdc}$, $V_{CE} = -10\text{ Vdc}$) ($I_C = -10\text{ mAdc}$, $V_{CE} = -10\text{ Vdc}$) ($I_C = -30\text{ mAdc}$, $V_{CE} = -10\text{ Vdc}$)	h_{FE}	25 40 25	– – –	–
Collector – Emitter Saturation Voltage ($I_C = -20\text{ mAdc}$, $I_E = -2.0\text{ mAdc}$)	$V_{CE(sat)}$	–	-0.5	Vdc
Base – Emitter Saturation Voltage ($I_C = -20\text{ mAdc}$, $I_E = -2.0\text{ mAdc}$)	$V_{BE(sat)}$	–	-0.9	Vdc
SMALL – SIGNAL CHARACTERISTICS				
Current – Gain – Bandwidth Product ($I_C = -10\text{ mAdc}$, $V_{CE} = -20\text{ Vdc}$, $f = 100\text{ MHz}$)	f_T	50	–	MHz
Collector – Base Capacitance ($V_{CB} = -20\text{ Vdc}$, $I_E = 0$, $f = 1.0\text{ MHz}$)	C_{cb}	–	6.0	pF

3. Pulse Test: Pulse Width $\leq 300\text{ }\mu\text{s}$, Duty Cycle $\leq 2.0\%$.

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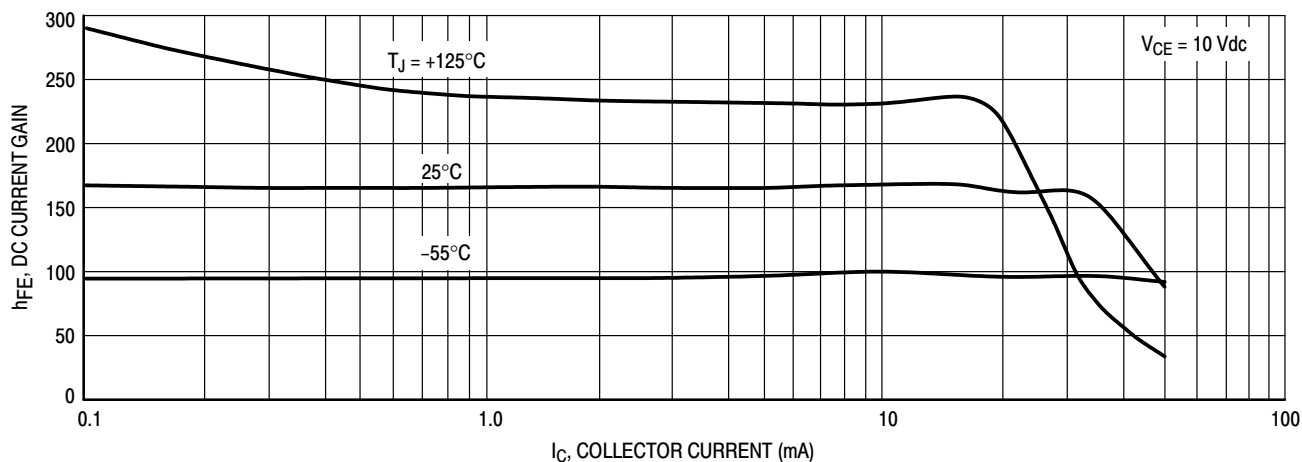


Figure 1. DC Current Gain

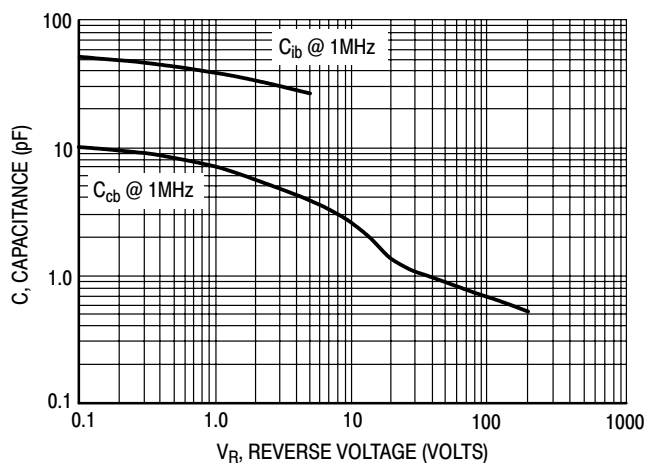


Figure 2. Capacitance

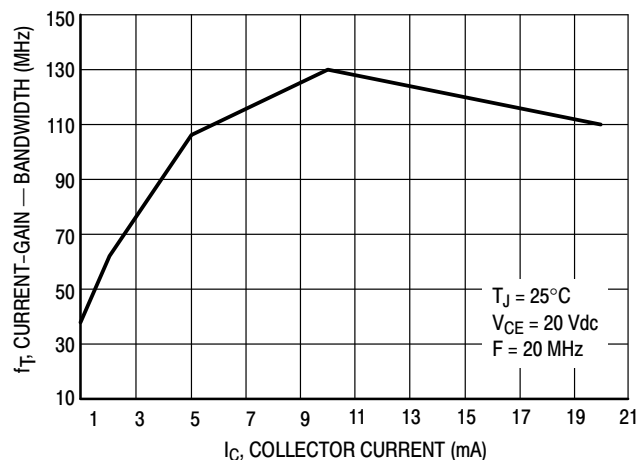


Figure 3. Current-Gain - Bandwidth

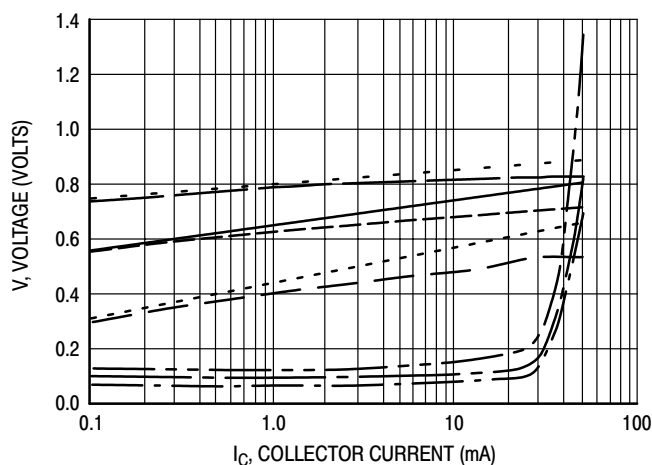


Figure 4. "ON" Voltages

$V_{CE(sat)}$ @ 25°C , $I_C/I_B = 10$
 $V_{CE(sat)}$ @ 125°C , $I_C/I_B = 10$
 $V_{CE(sat)}$ @ -55°C , $I_C/I_B = 10$
 $V_{BE(sat)}$ @ 25°C , $I_C/I_B = 10$
 $V_{BE(sat)}$ @ 125°C , $I_C/I_B = 10$
 $V_{BE(sat)}$ @ -55°C , $I_C/I_B = 10$
 $V_{BE(on)}$ @ 25°C , $V_{CE} = 10 \text{ V}$
 $V_{BE(on)}$ @ 125°C , $V_{CE} = 10 \text{ V}$
 $V_{BE(on)}$ @ -55°C , $V_{CE} = 10 \text{ V}$

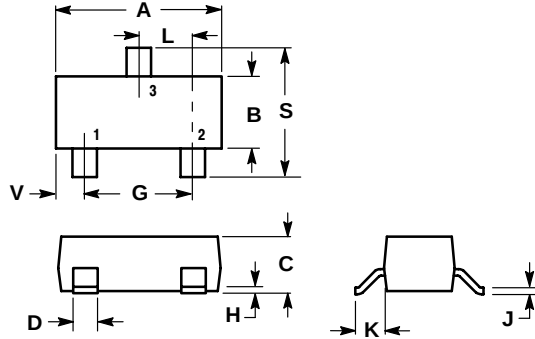
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PACKAGE DIMENSIONS

SOT-23 (TO-236) CASE 318-08 ISSUE AH

NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. 318-03 AND -07 OBSOLETE, NEW STANDARD 318-08.



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0140	0.0285	0.35	0.69
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.1039	2.10	2.64
V	0.0177	0.0236	0.45	0.60

STYLE 6:

- PIN 1. BASE
- EMITTER
- COLLECTOR

SOLDERING FOOTPRINT*

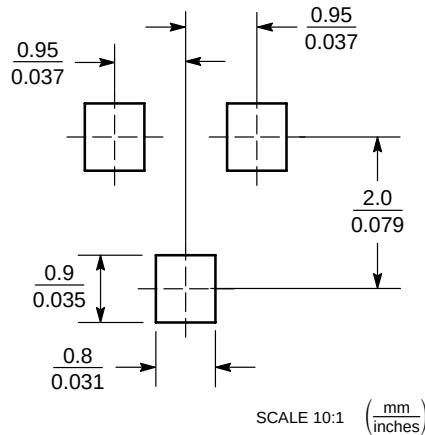


Figure 5. SOT-23

*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERM/D.

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