

# 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) $T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$        | $P_D$           | 225         | mW                        |
|  |                 | 1.8         | 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) $T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | $P_D$           | 300         | mW                        |
|  |                 | 2.4         | 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 | $^\circ\text{C}$          |

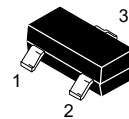
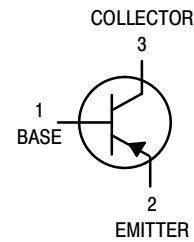
1. FR-5 = 1.0 x 0.75 x 0.062 in.

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



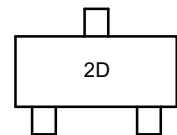
ON Semiconductor®

<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.

# MMBTA92LT1

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)

| Characteristic   | Symbol               | Min            | Max         | Unit             |
|--|----------------------|----------------|-------------|------------------|
| <b>OFF CHARACTERISTICS</b>   |                      |                |             |                  |
| Collector-Emitter Breakdown Voltage (Note 3)<br>(I <sub>C</sub> = -1.0 mA <sub>dc</sub> , I <sub>B</sub> = 0)  | V <sub>(BR)CEO</sub> | -300           | -           | V <sub>dc</sub>  |
| Collector-Base Breakdown Voltage<br>(I <sub>C</sub> = -100 μA <sub>dc</sub> , I <sub>E</sub> = 0)  | V <sub>(BR)CBO</sub> | -300           | -           | V <sub>dc</sub>  |
| Emitter-Base Breakdown Voltage<br>(I <sub>E</sub> = -100 μA <sub>dc</sub> , I <sub>C</sub> = 0)  | V <sub>(BR)EBO</sub> | -5.0           | -           | V <sub>dc</sub>  |
| Collector Cutoff Current<br>(V <sub>CB</sub> = -200 V <sub>dc</sub> , I <sub>E</sub> = 0)  | I <sub>CBO</sub>     | -              | -0.25       | μA <sub>dc</sub> |
| Emitter Cutoff Current<br>(V <sub>EB</sub> = -3.0 V <sub>dc</sub> , I <sub>C</sub> = 0)  | I <sub>EBO</sub>     | -              | -0.1        | μA <sub>dc</sub> |
| <b>ON CHARACTERISTICS (Note 3)</b>   |                      |                |             |                  |
| DC Current Gain<br>(I <sub>C</sub> = -1.0 mA <sub>dc</sub> , V <sub>CE</sub> = -10 V <sub>dc</sub> )<br>(I <sub>C</sub> = -10 mA <sub>dc</sub> , V <sub>CE</sub> = -10 V <sub>dc</sub> )<br>(I <sub>C</sub> = -30 mA <sub>dc</sub> , V <sub>CE</sub> = -10 V <sub>dc</sub> ) | h <sub>FE</sub>      | 25<br>40<br>25 | -<br>-<br>- | -                |
| Collector-Emitter Saturation Voltage<br>(I <sub>C</sub> = -20 mA <sub>dc</sub> , I <sub>B</sub> = -2.0 mA <sub>dc</sub> )  | V <sub>CE(sat)</sub> | -              | -0.5        | V <sub>dc</sub>  |
| Base-Emitter Saturation Voltage<br>(I <sub>C</sub> = -20 mA <sub>dc</sub> , I <sub>B</sub> = -2.0 mA <sub>dc</sub> )   | V <sub>BE(sat)</sub> | -              | -0.9        | V <sub>dc</sub>  |
| <b>SMALL-SIGNAL CHARACTERISTICS</b>  |                      |                |             |                  |
| Current-Gain - Bandwidth Product<br>(I <sub>C</sub> = -10 mA <sub>dc</sub> , V <sub>CE</sub> = -20 V <sub>dc</sub> , f = 100 MHz)  | f <sub>T</sub>       | 50             | -           | MHz              |
| Collector-Base Capacitance<br>(V <sub>CB</sub> = -20 V <sub>dc</sub> , I <sub>E</sub> = 0, f = 1.0 MHz)  | C <sub>cb</sub>      | -              | 6.0         | pF               |

3. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

# MMBTA92LT1

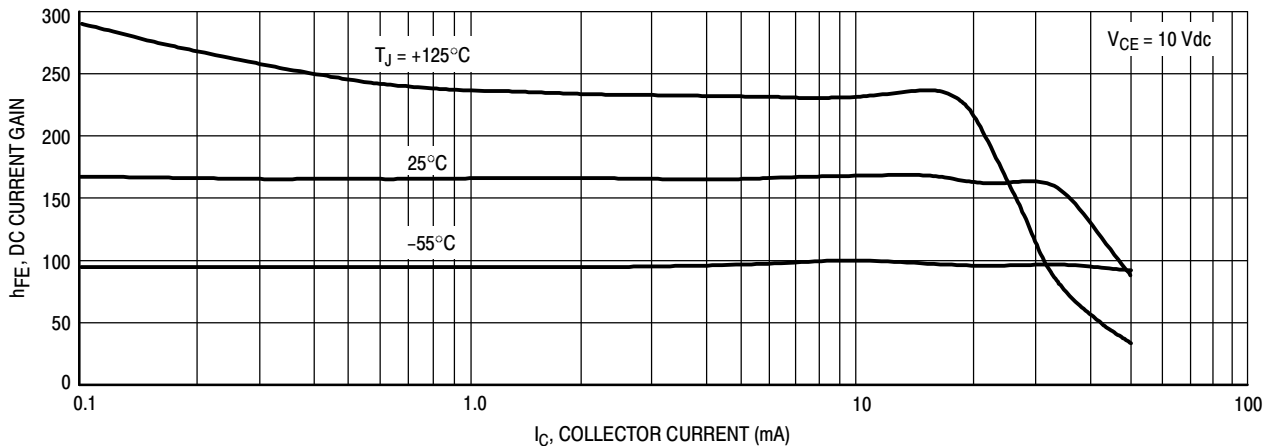


Figure 1. DC Current Gain

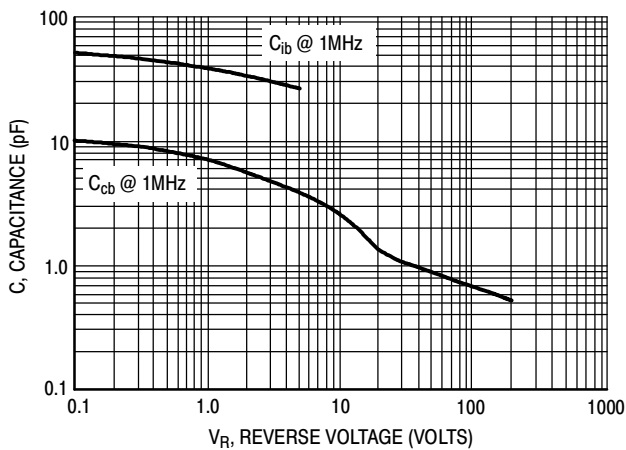


Figure 2. Capacitance

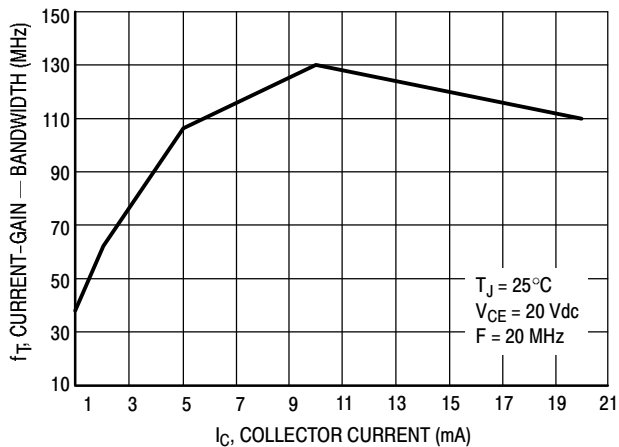


Figure 3. Current-Gain - Bandwidth

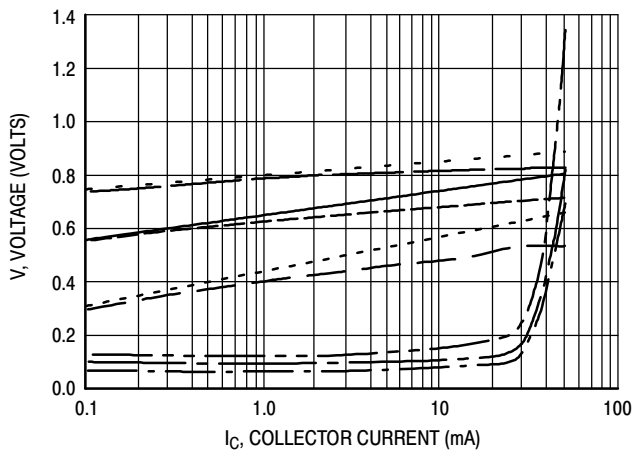


Figure 4. "ON" Voltages

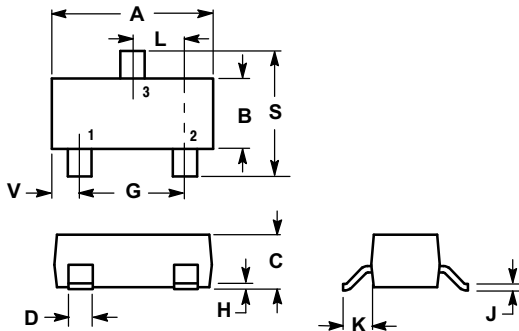
# MMBTA92LT1

## 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.

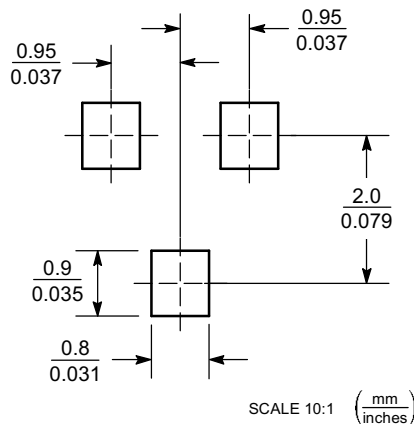


| DIM | INCHES |        | MILLIMETERS |       |
|-----|--------|--------|-------------|-------|
|     | MIN    | MAX    | MIN         | MAX   |
| A   | 0.1102 | 0.1197 | 2.80        | 3.04  |
| B   | 0.0472 | 0.0551 | 1.20        | 1.40  |
| C   | 0.0350 | 0.0440 | 0.89        | 1.11  |
| D   | 0.0150 | 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:**


1. BASE
2. EMITTER
3. 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, SOLDERRM/D.

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