

# MMBT2132T3

## General Purpose Transistors

### NPN Bipolar Junction Transistor

#### Features

- Pb-Free Package is Available

#### MAXIMUM RATINGS ( $T_C = 25^\circ\text{C}$ unless otherwise noted)

| Rating   | Symbol          | Value       | Unit               |
|--|-----------------|-------------|--------------------|
| Collector-Emitter Voltage                          | $V_{CEO}$       | 30          | V                  |
| Collector-Base Voltage                             | $V_{CBO}$       | 40          | V                  |
| Emitter-Base Voltage                               | $V_{EBO}$       | 5.0         | V                  |
| Collector Current                                  | $I_C$           | 700         | mA                 |
| Base Current                                       | $I_B$           | 350         | mA                 |
| Total Power Dissipation @ $T_C = 25^\circ\text{C}$ | $P_D$           | 342         | mW                 |
| Total Power Dissipation @ $T_C = 85^\circ\text{C}$ | $P_D$           | 178         | mW                 |
| Thermal Resistance, Junction-to-Ambient (Note 1)   | $R_{\theta JA}$ | 366         | $^\circ\text{C/W}$ |
| Total Power Dissipation @ $T_C = 25^\circ\text{C}$ | $P_D$           | 665         | mW                 |
| Total Power Dissipation @ $T_C = 85^\circ\text{C}$ | $P_D$           | 346         | mW                 |
| Thermal Resistance, Junction-to-Ambient (Note 2)   | $R_{\theta JA}$ | 188         | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range            | $T_J, T_{stg}$  | -55 to +150 | $^\circ\text{C}$   |

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

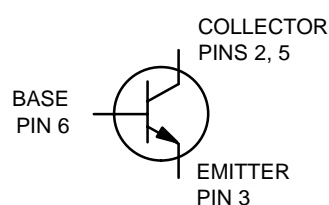
- Minimum FR-4 or G-10 PCB, Operating to Steady State.
- Mounted onto a 2" square FR-4 Board (1" sq 2 oz Cu 0.06" thick single sided), Operating to Steady State.



ON Semiconductor®

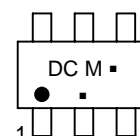
<http://onsemi.com>

**0.7 AMPS**  
**30 VOLTS –  $V_{(BR)CEO}$**   
**342 mW**



**TSOP-6/SC-74**  
**CASE 318F**  
**STYLE 2**

#### MARKING DIAGRAM



DC = Specific Device Code  
M = Date Code\*  
■ = Pb-Free Package

(Note: Microdot may be in either location)

\*Date Code orientation may vary depending upon manufacturing location.

#### ORDERING INFORMATION

| Device      | Package          | Shipping†          |
|-------------|------------------|--------------------|
| MMBT2132T3  | TSOP-6           | 10,000/Tape & Reel |
| MMBT2132T3G | TSOP-6 (Pb-Free) | 10,000/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.

# MMBT2132T3

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

| Characteristic  | Symbol        | Min | Typ | Max       | Unit            |
|---|---------------|-----|-----|-----------|-----------------|
| <b>OFF CHARACTERISTICS</b>  |               |     |     |           |                 |
| Collector–Base Breakdown Voltage ( $I_C = 100\ \mu\text{Adc}$ )   | $V_{(BR)CBO}$ | 40  | –   | –         | Vdc             |
| Collector–Emitter Breakdown Voltage ( $I_C = 10\ \text{mAdc}$ )   | $V_{(BR)CEO}$ | 30  | –   | –         | Vdc             |
| Emitter–Base Breakdown Voltage ( $I_E = 100\ \mu\text{Adc}$ )   | $V_{(BR)EBO}$ | 5.0 | –   | –         | Vdc             |
| Collector Cutoff Current ( $V_{CB} = 25\ \text{Vdc}$ , $I_E = 0\ \text{Adc}$ )<br>( $V_{CB} = 25\ \text{Vdc}$ , $I_E = 0\ \text{Adc}$ , $T_A = 125^\circ\text{C}$ ) | $I_{CBO}$     | –   | –   | 1.0<br>10 | $\mu\text{Adc}$ |
| Emitter Cutoff Current ( $V_{EB} = 5.0\ \text{Vdc}$ , $I_C = 0\ \text{Adc}$ )   | $I_{EBO}$     | –   | –   | 10        | $\mu\text{Adc}$ |
| <b>ON CHARACTERISTICS</b>   |               |     |     |           |                 |
| DC Current Gain ( $V_{CE} = 3.0\ \text{Vdc}$ , $I_C = 100\ \text{mAdc}$ )   | $h_{FE}$      | 150 | –   | –         | Vdc             |
| Collector–Emitter Saturation Voltage ( $I_C = 500\ \text{mAdc}$ , $I_B = 50\ \text{mAdc}$ )   | $V_{CE(sat)}$ | –   | –   | 0.25      | Vdc             |
| Collector–Emitter Saturation Voltage ( $I_C = 700\ \text{mAdc}$ , $I_B = 70\ \text{mAdc}$ )   | $V_{CE(sat)}$ | –   | –   | 0.4       | Vdc             |
| Base–Emitter Saturation Voltage ( $I_C = 700\ \text{mAdc}$ , $I_B = 70\ \text{mAdc}$ )  | $V_{BE(sat)}$ | –   | –   | 1.1       | Vdc             |
| Collector–Emitter Saturation Voltage ( $I_C = 700\ \text{mAdc}$ , $V_{CE} = 1.0\ \text{Vdc}$ )  | $V_{BE(on)}$  | –   | –   | 1.0       | Vdc             |

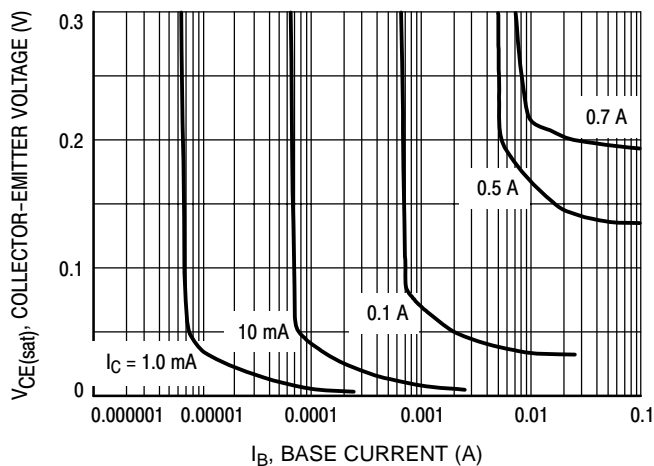


Figure 1. Collector Saturation Region

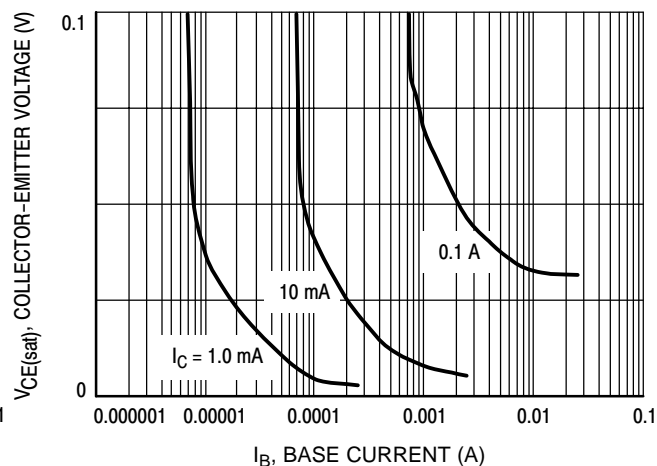


Figure 2. Collector Saturation Region

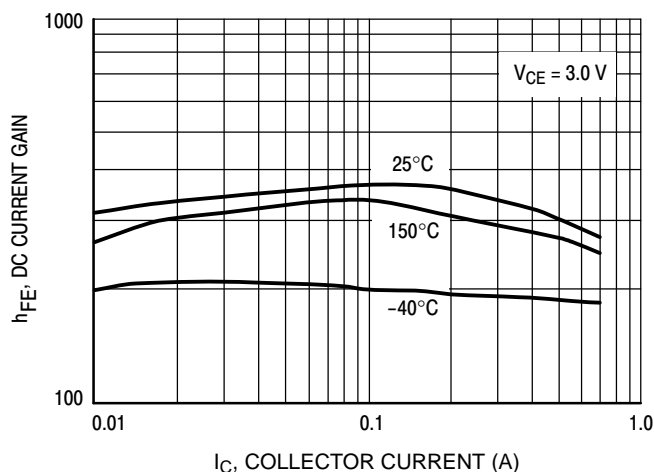


Figure 3. DC Current Gain

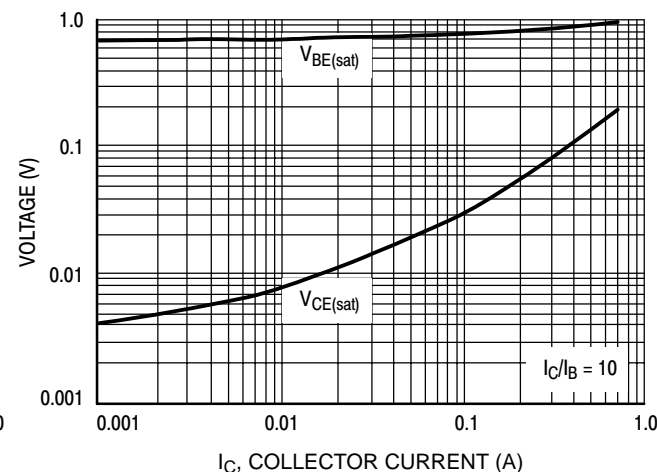


Figure 4. "ON" Voltages

# MMBT2132T3

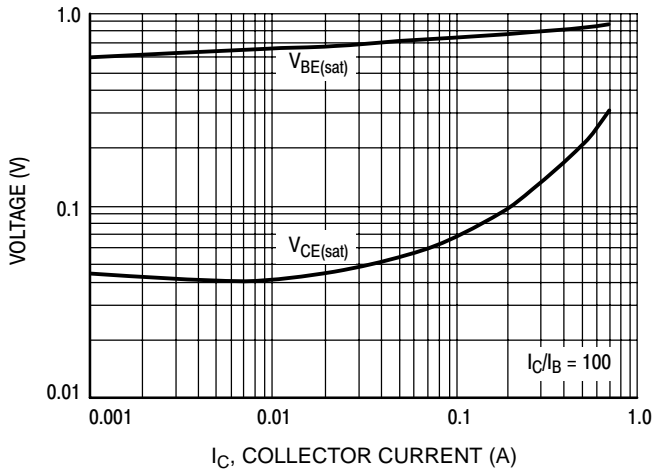


Figure 5. "ON" Voltages

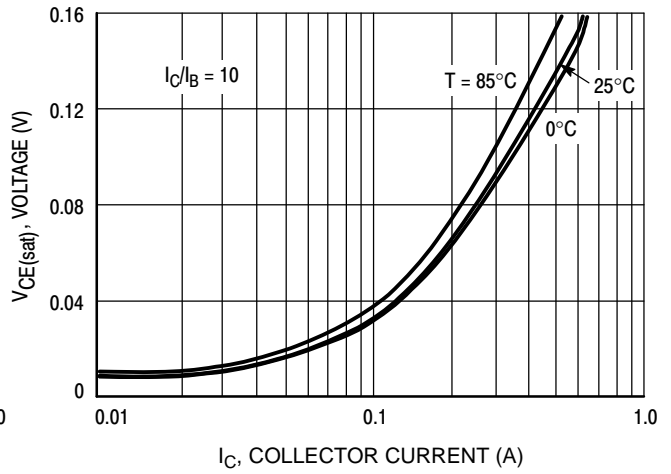


Figure 6. Collector-Emitter Saturation Voltage

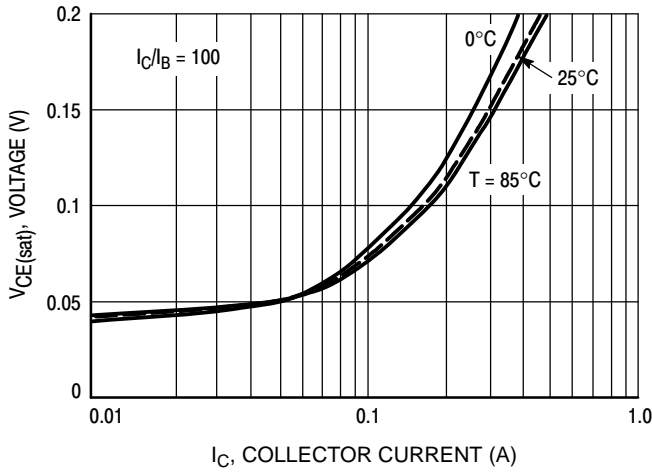


Figure 7. Collector-Emitter Saturation Voltage

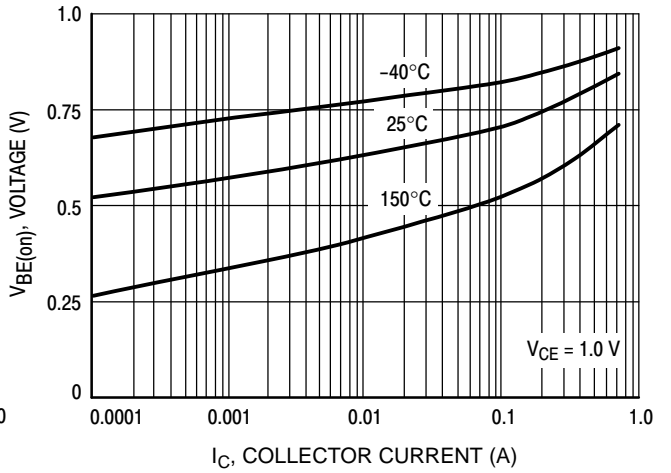


Figure 8.  $V_{BE(on)}$  Voltage

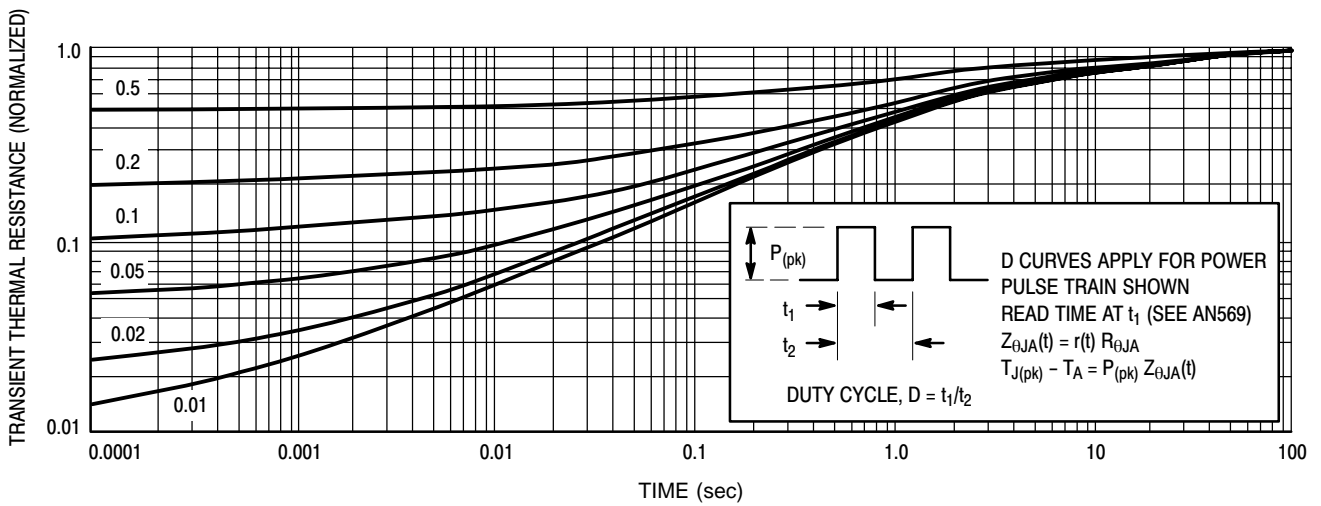
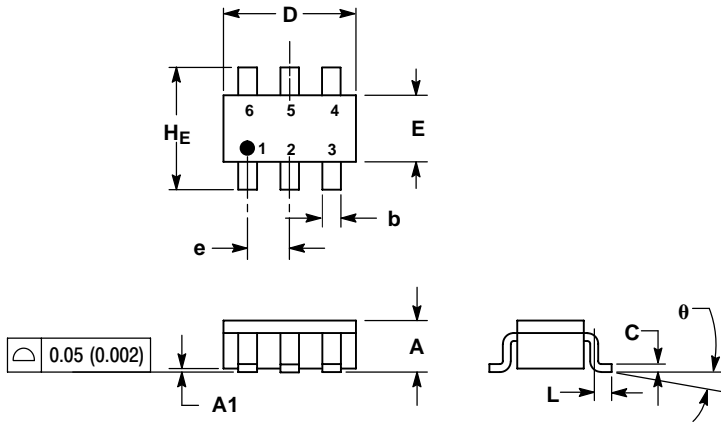


Figure 9. Thermal Response Curve

# MMBT2132T3

## PACKAGE DIMENSIONS

SC-74  
CASE 318F-05  
ISSUE L



**NOTES:**

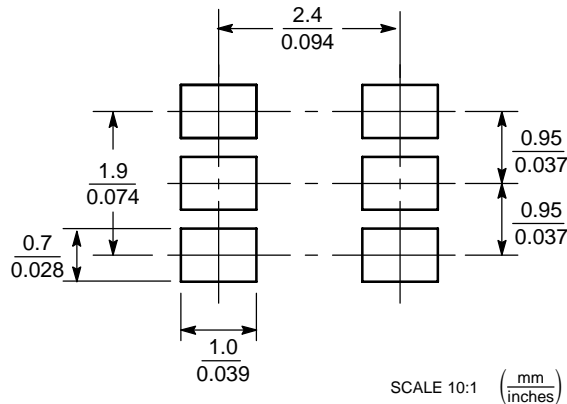
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. 318F-01, -02, -03 OBSOLETE. NEW STANDARD 318F-04.

| DIM | MILLIMETERS |      |      | INCHES |       |       |
|-----|-------------|------|------|--------|-------|-------|
|     | MIN         | NOM  | MAX  | MIN    | NOM   | MAX   |
| A   | 0.90        | 1.00 | 1.10 | 0.035  | 0.039 | 0.043 |
| A1  | 0.01        | 0.06 | 0.10 | 0.001  | 0.002 | 0.004 |
| b   | 0.25        | 0.37 | 0.50 | 0.010  | 0.015 | 0.020 |
| c   | 0.10        | 0.18 | 0.26 | 0.004  | 0.007 | 0.010 |
| D   | 2.90        | 3.00 | 3.10 | 0.114  | 0.118 | 0.122 |
| E   | 1.30        | 1.50 | 1.70 | 0.051  | 0.059 | 0.067 |
| e   | 0.85        | 0.95 | 1.05 | 0.034  | 0.037 | 0.041 |
| L   | 0.20        | 0.40 | 0.60 | 0.008  | 0.016 | 0.024 |
| HE  | 2.50        | 2.75 | 3.00 | 0.099  | 0.108 | 0.118 |
| θ   | 0°          | -    | 10°  | 0°     | -     | 10°   |

**STYLE 2:**

1. NO CONNECTION
2. COLLECTOR
3. EMITTER
4. NO CONNECTION
5. COLLECTOR
6. BASE

### SOLDERING FOOTPRINT\*



\*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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