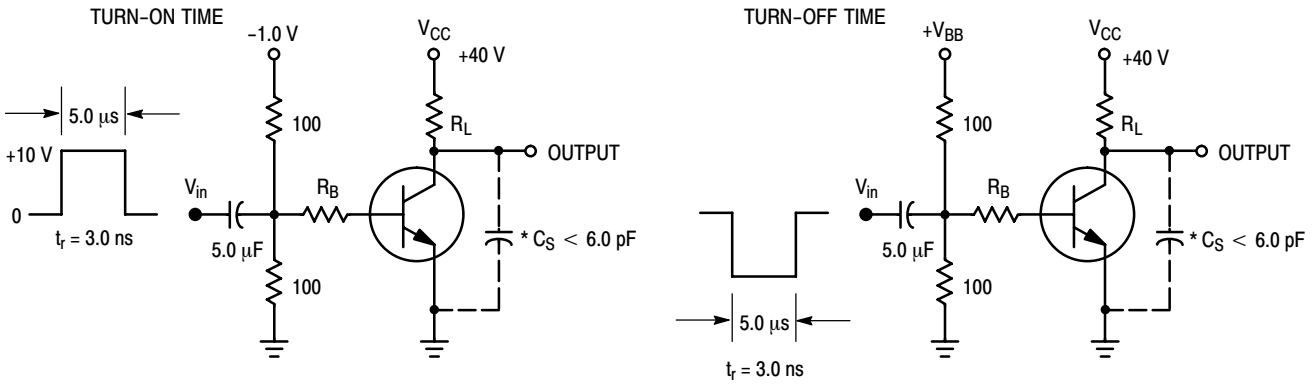
**ELECTRICAL CHARACTERISTICS** ($T_A$ = 25°C unless otherwise noted)

| Characteristic | | Symbol | Min | Max | Unit |
|---|---|---|---|---|---|
| **OFF CHARACTERISTICS** | | | | | |
| Collector−Emitter Breakdown Voltage (Note 3)<br>($I_C$ = −1.0 mAdc, $I_B$ = 0) | MMBTA55<br>MMBTA56 | $V_{(BR)CEO}$ | <br>−60<br>−80 | <br>−<br>− | Vdc |
| Emitter−Base Breakdown Voltage<br>($I_E$ = −100 μAdc, $I_C$ = 0) | | $V_{(BR)EBO}$ | −4.0 | − | Vdc |
| Collector Cutoff Current<br>($V_{CE}$ = −60 Vdc, $I_B$ = 0) | | $I_{CES}$ | − | −0.1 | μAdc |
| Collector Cutoff Current<br>($V_{CB}$ = −60 Vdc, $I_E$ = 0)<br>($V_{CB}$ = −80 Vdc, $I_E$ = 0) | <br>MMBTA55<br>MMBTA56 | $I_{CBO}$ | <br>−<br>− | <br>−0.1<br>−0.1 | μAdc |
| **ON CHARACTERISTICS** | | | | | |
| DC Current Gain<br>($I_C$ = −10 mAdc, $V_{CE}$ = −1.0 Vdc)<br>($I_C$ = −100 mAdc, $V_{CE}$ = −1.0 Vdc) | | $h_{FE}$ | <br>100<br>100 | <br>−<br>− | − |
| Collector−Emitter Saturation Voltage<br>($I_C$ = −100 mAdc, $I_B$ = −10 mAdc) | | $V_{CE(sat)}$ | − | −0.25 | Vdc |
| Base−Emitter On Voltage<br>($I_C$ = −100 mAdc, $V_{CE}$ = −1.0 Vdc) | | $V_{BE(on)}$ | − | −1.2 | Vdc |
| **SMALL−SIGNAL CHARACTERISTICS** | | | | | |
| Current−Gain − Bandwidth Product (Note 4)<br>($I_C$ = −100 mAdc, $V_{CE}$ = −1.0 Vdc, f = 100 MHz) | | $f_T$ | 50 | − | MHz |

3. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.
4. $f_T$ is defined as the frequency at which $|h_{fe}|$ extrapolates to unity.




*Total Shunt Capacitance of Test Jig and Connectors For PNP Test Circuits, Reverse All Voltage Polarities

**Figure 1. Switching Time Test Circuits**



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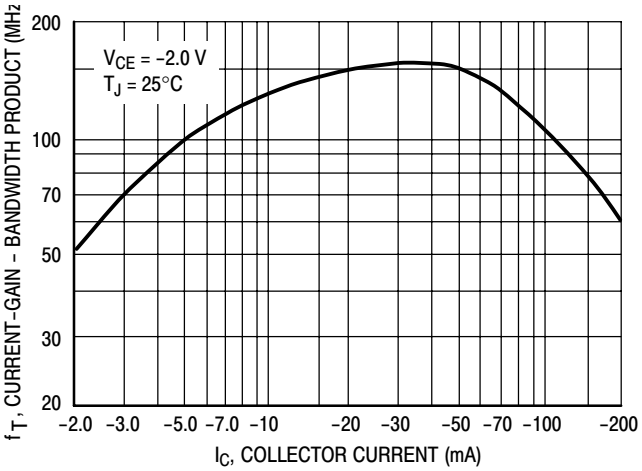


**Figure 2. Current−Gain — Bandwidth Product**

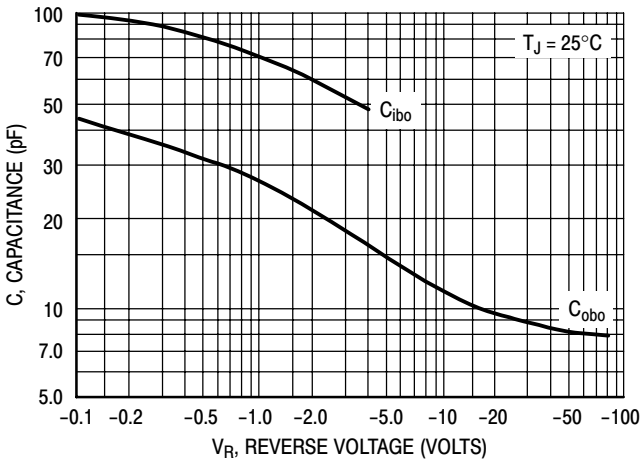


**Figure 3. Capacitance**

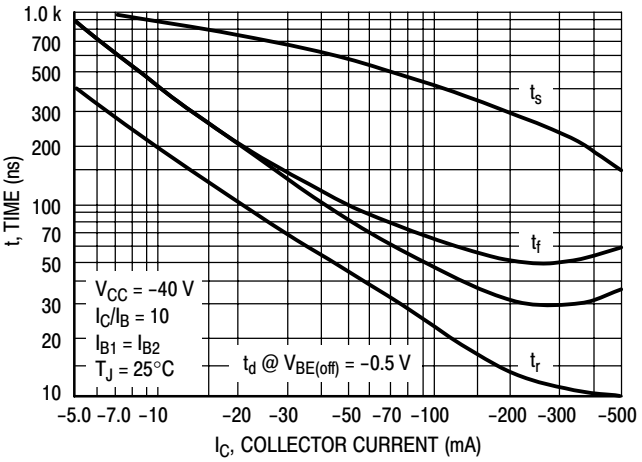


**Figure 4. Switching Time**

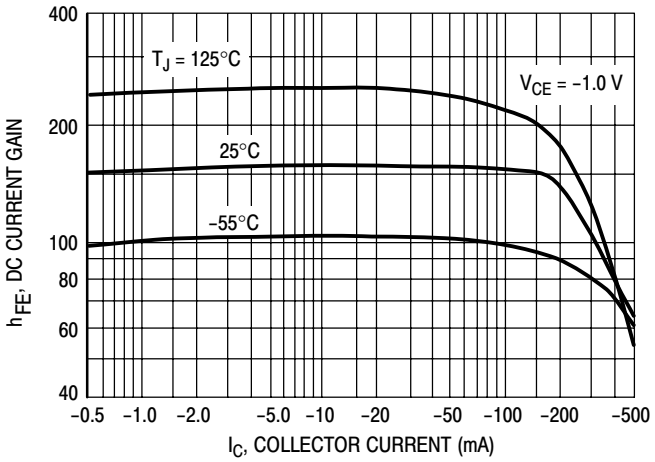


**Figure 5. DC Current Gain**

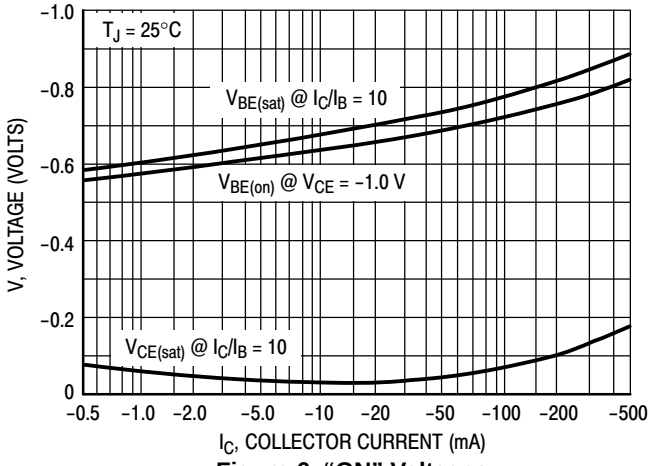


**Figure 6. “ON” Voltages**



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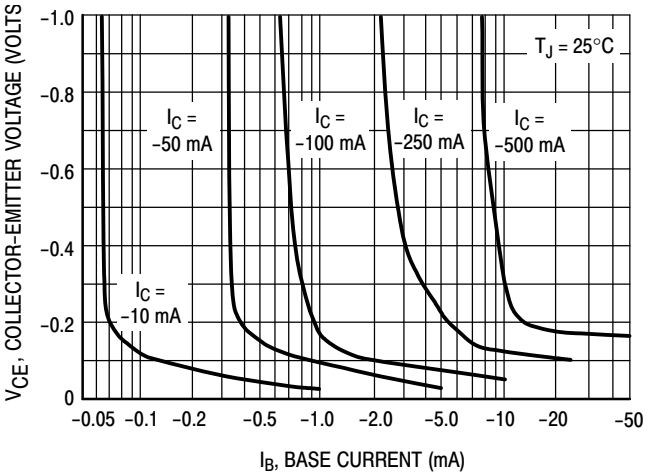


**Figure 7. Collector Saturation Region**

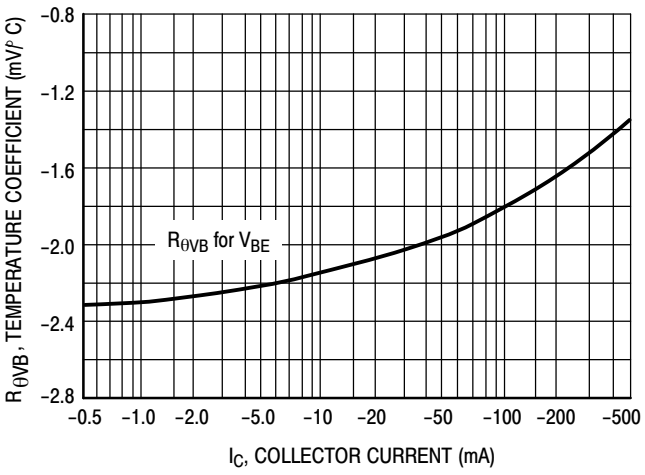


**Figure 8. Base−Emitter Temperature Coefficient**

## ORDERING INFORMATION

| Device Order Number | Package Type | Shipping† |
|---|---|---|
| MMBTA55LT1 | SOT−23 | 3,000 / Tape & Reel |
| MMBTA55LT1G | SOT−23 (Pb−Free) | 3,000 / Tape & Reel |
| MMBTA55LT3 | SOT−23 | 10,000 / Tape & Reel |
| MMBTA55LT3G | SOT−23 (Pb−Free) | 10,000 / Tape & Reel |
| MMBTA56LT1 | SOT−23 | 3,000 / Tape & Reel |
| MMBTA56LT1G | SOT−23 (Pb−Free) | 3,000 / Tape & Reel |
| MMBTA56LT3 | SOT−23 | 10,000 / Tape & Reel |
| MMBTA56LT3G | SOT−23 (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.



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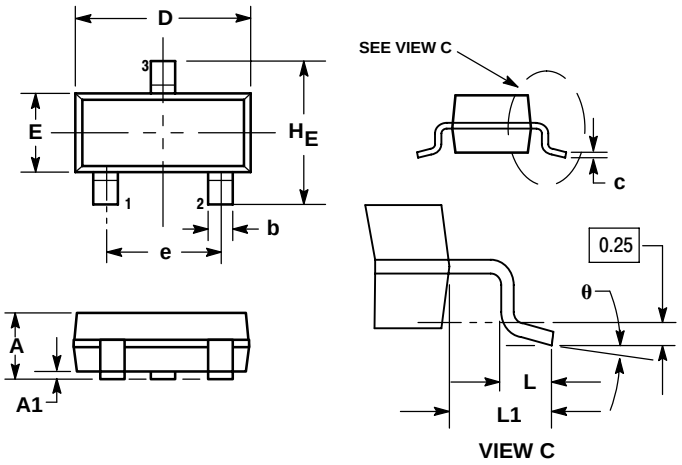
## PACKAGE DIMENSIONS

**SOT−23 (TO−236)**
CASE 318−08
ISSUE AN

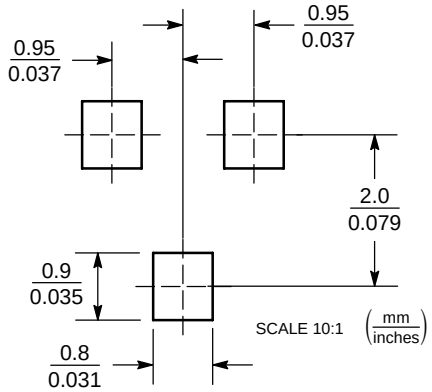



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. 318−01 THRU −07 AND −09 OBSOLETE, NEW STANDARD 318−08.

| | MILLIMETERS | | | INCHES | | |
|---|---|---|---|---|---|---|
| DIM | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 0.89 | 1.00 | 1.11 | 0.035 | 0.040 | 0.044 |
| A1 | 0.01 | 0.06 | 0.10 | 0.001 | 0.002 | 0.004 |
| b | 0.37 | 0.44 | 0.50 | 0.015 | 0.018 | 0.020 |
| c | 0.09 | 0.13 | 0.18 | 0.003 | 0.005 | 0.007 |
| D | 2.80 | 2.90 | 3.04 | 0.110 | 0.114 | 0.120 |
| E | 1.20 | 1.30 | 1.40 | 0.047 | 0.051 | 0.055 |
| e | 1.78 | 1.90 | 2.04 | 0.070 | 0.075 | 0.081 |
| L | 0.10 | 0.20 | 0.30 | 0.004 | 0.008 | 0.012 |
| L1 | 0.35 | 0.54 | 0.69 | 0.014 | 0.021 | 0.029 |
| $H_E$ | 2.10 | 2.40 | 2.64 | 0.083 | 0.094 | 0.104 |

STYLE 6:
PIN 1. BASE
2. EMITTER
3. COLLECTOR

## SOLDERING FOOTPRINT*




*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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