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IMD10AMT1G

Dual Bias Resistor Transistor

NPN and PNP Silicon Surface Mount Transistors with Monolithic Bias Resistor Network

- High Current: $I_C = 500$ mA max
- This is a Pb-Free Device

MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$)

| Rating | Symbol | Value | Unit |
|--------------------------------|---------------|-------|------|
| Collector-Base Voltage | $V_{(BR)CBO}$ | 50 | Vdc |
| Collector-Emitter Voltage | $V_{(BR)CEO}$ | 50 | Vdc |
| Emitter-Base Voltage | $V_{(BR)EBO}$ | 5.0 | Vdc |
| Collector Current - Continuous | I_C | 500 | mAdc |

THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max | Unit |
|----------------------|-----------|-------------|------------------|
| Power Dissipation* | P_D | 285 | mW |
| Junction Temperature | T_J | 150 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | -55 to +150 | $^\circ\text{C}$ |

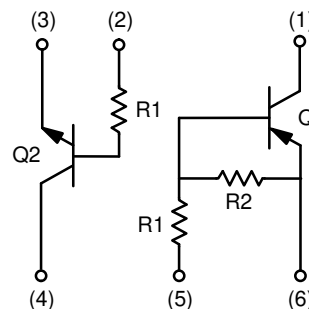
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

*Total for both Transistors.



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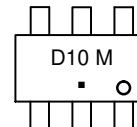


SC-74

MARKING DIAGRAM



SC-74R
318AA
Style 21



D10 = Specific Device Code
M = Date Code
■ = Pb-Free Package

ORDERING INFORMATION

| Device | Package | Shipping† |
|------------|---------------------|--------------------|
| IMD10AMT1G | SC-74R (Pb-Free) | 3000 / 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.

IMD10AMT1G

ELECTRICAL CHARACTERISTICS

($T_A = 25^\circ\text{C}$ unless otherwise noted, common for Q₁ and Q₂, – minus sign for Q₁(PNP) omitted)

| Characteristic | Symbol | Min | Max | Unit |
|---|---------------|-----|------------|------|
| OFF CHARACTERISTICS | | | | |
| Collector–Base Breakdown Voltage ($I_C = 50\ \mu\text{A}$, $I_E = 0\ \text{A}$) | $V_{(BR)CBO}$ | 50 | – | Vdc |
| Collector–Emitter Breakdown Voltage ($I_C = 1.0\ \text{mA}$, $I_B = 0\ \text{A}$) | $V_{(BR)CEO}$ | 50 | – | Vdc |
| Emitter–Base Breakdown Voltage ($I_E = 50\ \mu\text{A}$, $I_C = 0\ \text{A}$) | $V_{(BR)EBO}$ | 5.0 | – | Vdc |
| Collector–Base Cutoff Current ($V_{CB} = 50\ \text{Vdc}$, $I_E = 0\ \text{A}$) | I_{CBO} | – | 100 | nA |
| Emitter–Base Cutoff Current ($V_{EB} = 6.0\ \text{Vdc}$, $I_C = 0\ \text{A}$) | I_{EBO} | – | 1.0 0.5 | mA |
| Collector–Emitter Cutoff Current ($V_{CE} = 15\ \text{Vdc}$, $I_B = 0\ \text{A}$) | I_{CEO} | – | 500 | nA |
| Collector–Emitter Cutoff Current ($V_{CE} = 25\ \text{Vdc}$, $I_B = 0\ \text{A}$) | I_{CES} | – | 100 | nA |

ON CHARACTERISTICS (Note 1)

| | | | | |
|---|---------------|------------|------------|------------------------|
| DC Current Gain ($V_{CE} = 5.0\ \text{V}$, $I_C = 100\ \text{mA}$) Q1(PNP) ($V_{CE} = 5.0\ \text{V}$, $I_C = 1.0\ \text{mA}$) Q2(NPN) | h_{FE} | 68 100 | – 600 | |
| Collector–Emitter Saturation Voltage ($I_C = 10\ \text{mA}$, $I_B = 1.0\ \text{mA}$) | $V_{CE(sat)}$ | – | 0.3 | Vdc |
| Output Voltage (on) ($V_{CC} = 5.0\ \text{V}$, $V_B = 2.5\ \text{V}$, $R_L = 1.0\ \text{k}\Omega$) | V_{OL} | – | 0.2 | Vdc |
| Output Voltage (off) ($V_{CC} = 5.0\ \text{V}$, $V_B = 0.25\ \text{V}$, $R_L = 1.0\ \text{k}\Omega$) | V_{OL} | 4.9 | – | Vdc |
| Input Resistor Q1(PNP) Q2(NPN) | R1 | 70 7.0 | 130 13 | Ω k Ω |
| Resistor Ratio Q1(PNP) Q2(NPN) | R1/R2 | 0.008 – | 0.012 – | |

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

IMD10AMT1G

TYPICAL CHARACTERISTICS (NPN)

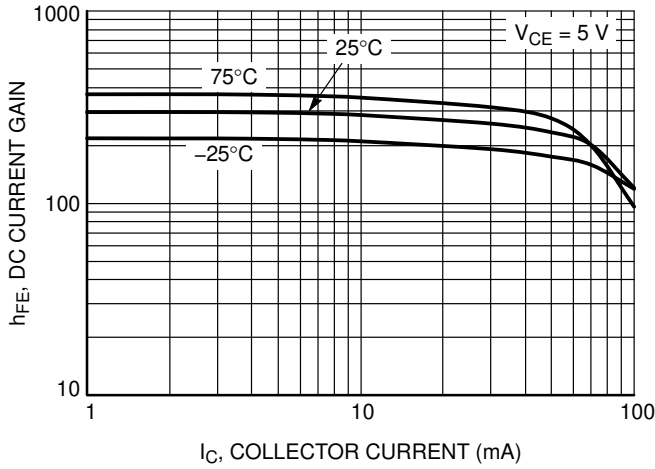


Figure 1. DC Current Gain

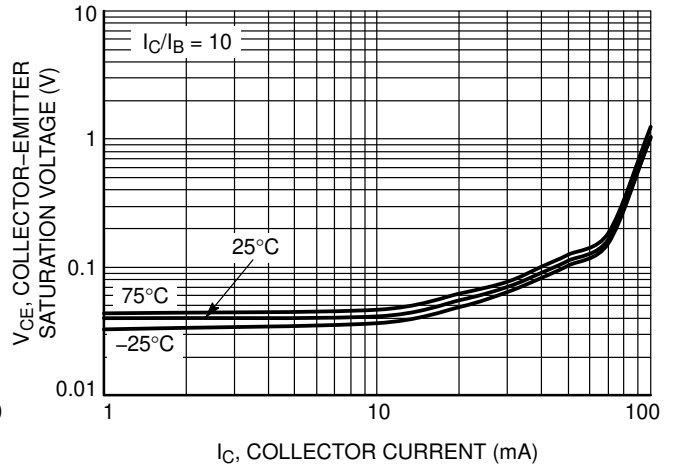


Figure 2. Collector-Emitter Saturation Voltage

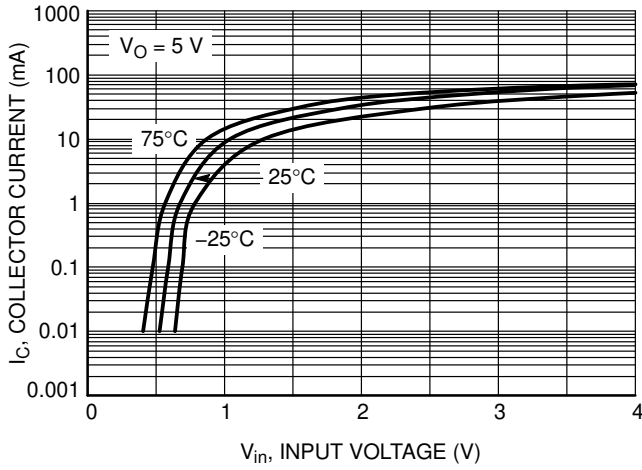


Figure 3. Output Current vs. Input Voltage

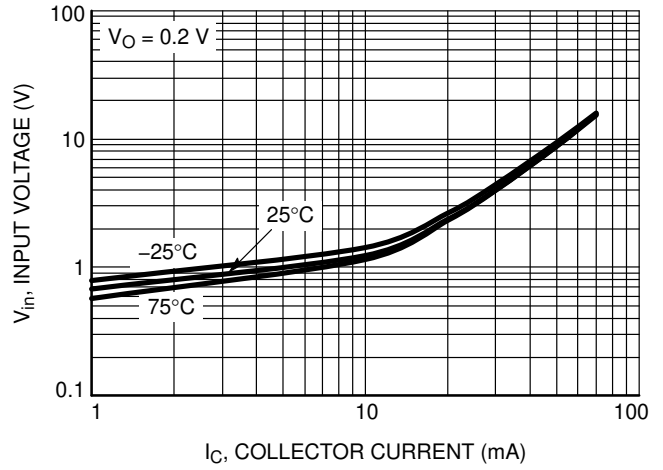


Figure 4. Input Voltage vs. Output Current

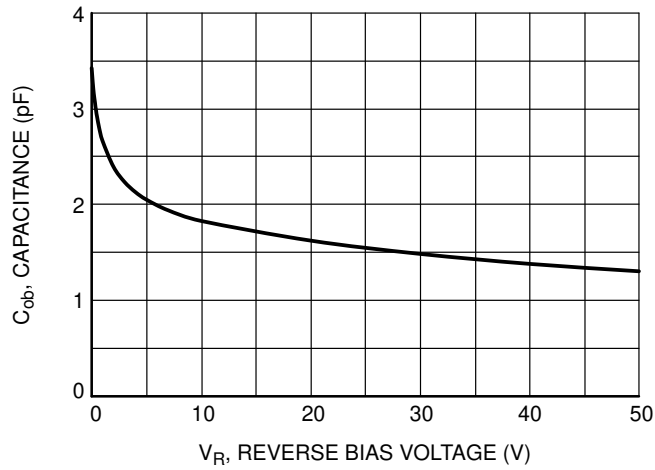


Figure 5. Output Capacitance

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TYPICAL CHARACTERISTICS (PNP)

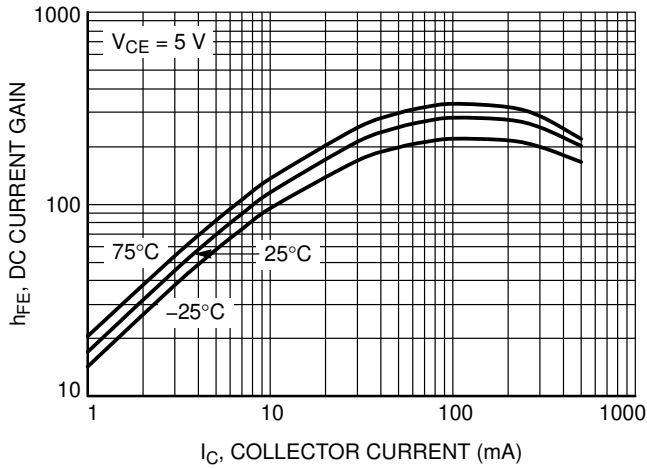


Figure 6. DC Current Gain

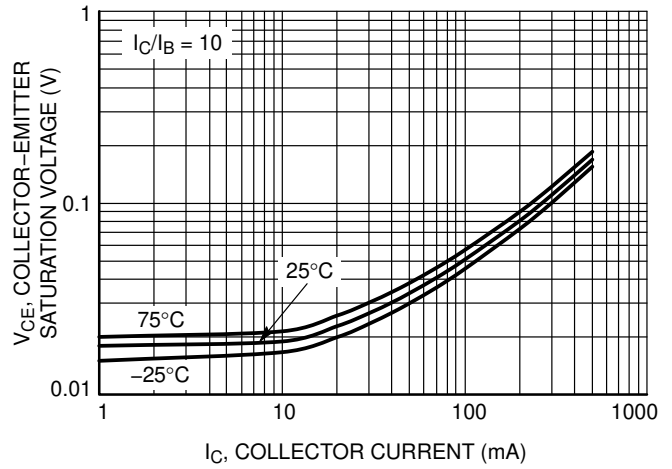


Figure 7. Collector-Emitter Saturation Voltage

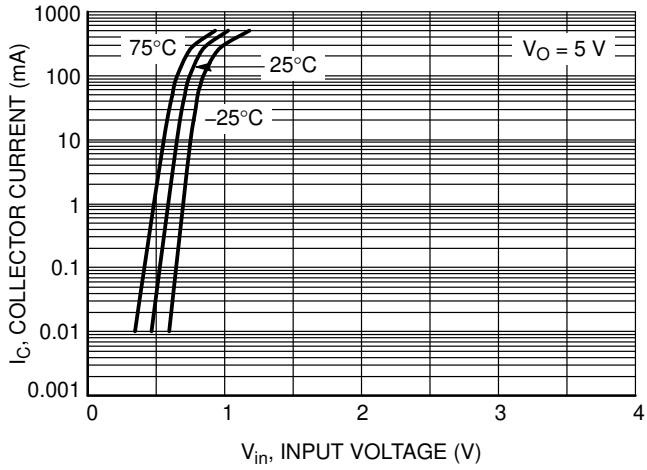


Figure 8. Output Current vs. Input Voltage

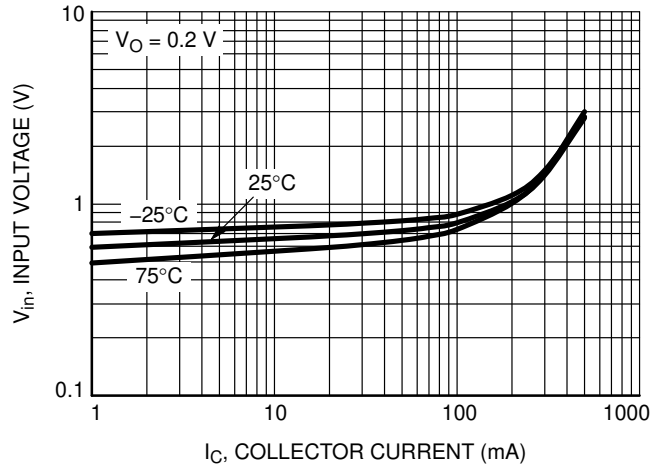


Figure 9. Input Voltage vs. Output Current

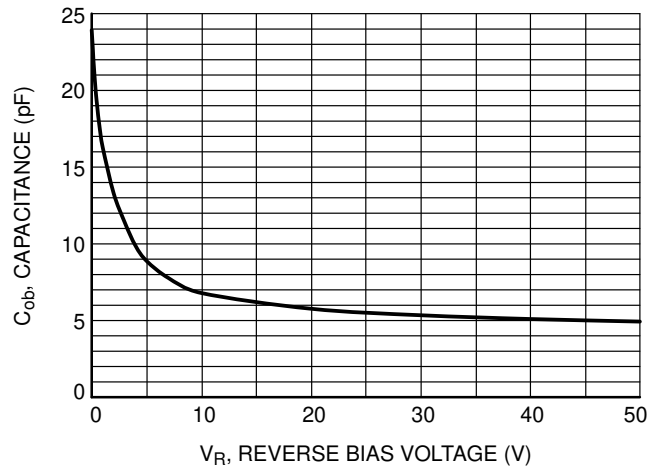
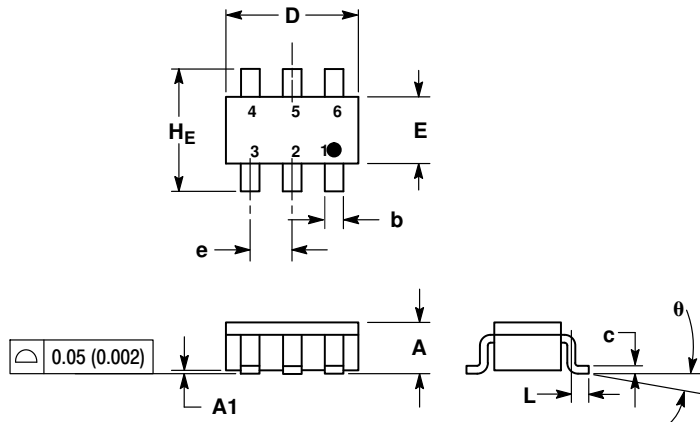


Figure 10. Output Capacitance

IMD10AMT1G

PACKAGE DIMENSIONS

SC-74R CASE 318AA ISSUE B



NOTES:

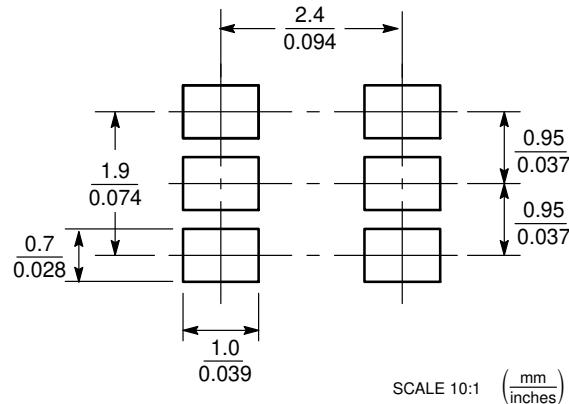
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

| 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 21:

- PIN 1: COLLECTOR 1
 2. EMITTER 2
 3. BASE 2
 4. COLLECTOR 2
 5. EMITTER 1
 6. BASE 1

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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