

Dual Bias Resistor Transistor

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

IMD10AMT1G

- High Current: $I_C = 500$ mA max
- NSV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

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

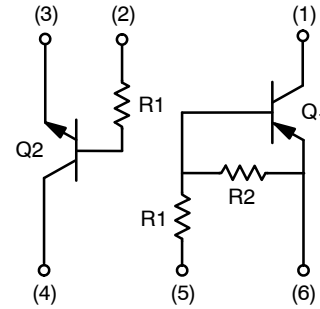
Rating	Symbol	Value	Unit
Collector-Base Voltage	$V_{(BR)CBO}$	50	Vdc
Collector-Emitter Voltage	$V_{(BR)CEO}$	50	Vdc
Emitter-Base Voltage	$V_{(BR)EBO}$	5.0	Vdc
Collector Current - Continuous	I_C	500	mAdc

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.



SC-74

MARKING DIAGRAM



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

ORDERING INFORMATION

Device	Package	Shipping†
IMD10AMT1G	SC-74R (Pb-Free)	3000 / Tape & Reel
NSVIMD10AMT1G	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 Specification Brochure, [BRD8011/D](#).

IMD10AMT1G

ELECTRICAL CHARACTERISTICS

(T_A = 25°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 µAdc, I _E = 0 A)	V _{(BR)CBO}	50	–	Vdc
Collector–Emitter Breakdown Voltage (I _C = 1.0 mAdc, I _B = 0 A)	V _{(BR)CEO}	50	–	Vdc
Emitter–Base Breakdown Voltage (I _E = 50 µAdc, I _C = 0 A)	V _{(BR)EBO}	5.0	–	Vdc
Collector–Base Cutoff Current (V _{CB} = 50 Vdc, I _E = 0 A)	I _{CBO}	–	100	nA
Emitter–Base Cutoff Current Q1 (PNP) (V _{EB} = 6.0 Vdc, I _C = 0 A)	I _{EBO}	–	1.0	mA
Q2 (NPN)		–	0.5	
Collector–Emitter Cutoff Current (V _{CE} = 25 Vdc, I _B = 0 A)	I _{CES}	–	100	nA

ON CHARACTERISTICS (Note 1)

DC Current Gain (V _{CE} = 5.0 V, I _C = 100 mA) Q1 (PNP) (V _{CE} = 5.0 V, I _C = 1.0 mA) Q2 (NPN)	h _{FE}	68 100	– 600	
Collector–Emitter Saturation Voltage (I _C = 10 mA, I _B = 1.0 mA)	V _{CE(sat)}	–	0.3	Vdc
Output Voltage (on) (V _{CC} = 5.0 V, V _B = 2.5 V, R _L = 1.0 kΩ)	V _{OL}	–	0.2	Vdc
Output Voltage (off) (V _{CC} = 5.0 V, V _B = 0.25 V, R _L = 1.0 kΩ)	V _{OH}	4.9	–	Vdc
Input Resistor Q1 (PNP) Q2 (NPN)	R1	70 7.0	130 13	Ω kΩ
Resistor Ratio Q1 (PNP) Q2 (NPN)	R1/R2	0.008 –	0.012 –	

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

IMD10AMT1G

TYPICAL CHARACTERISTICS (NPN)

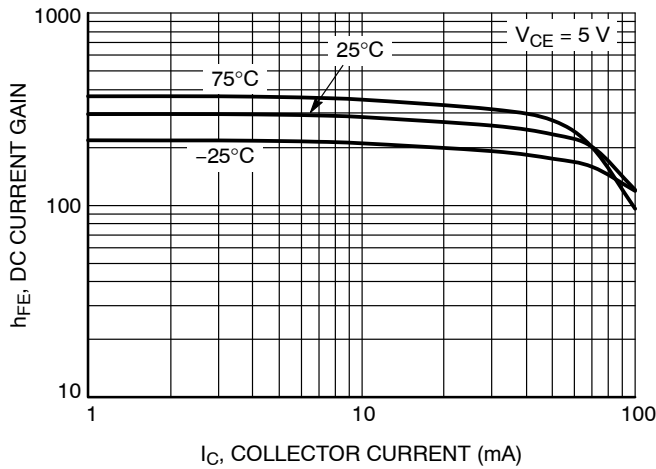


Figure 1. DC Current Gain

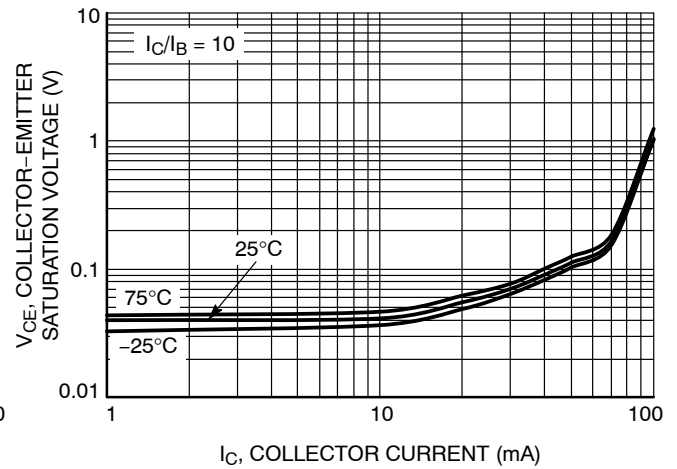


Figure 2. Collector-Emitter Saturation Voltage

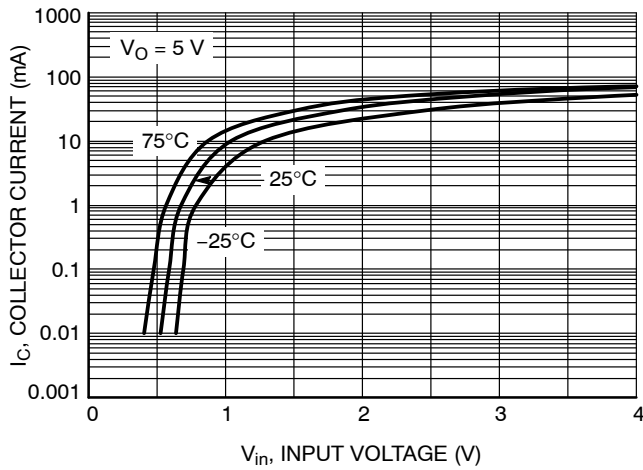


Figure 3. Output Current vs. Input Voltage

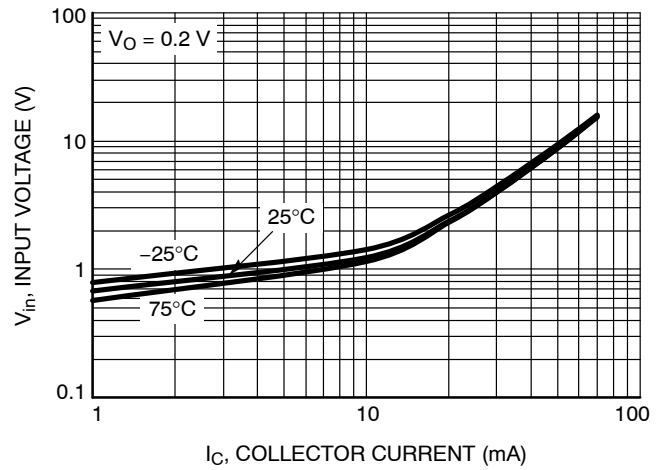


Figure 4. Input Voltage vs. Output Current

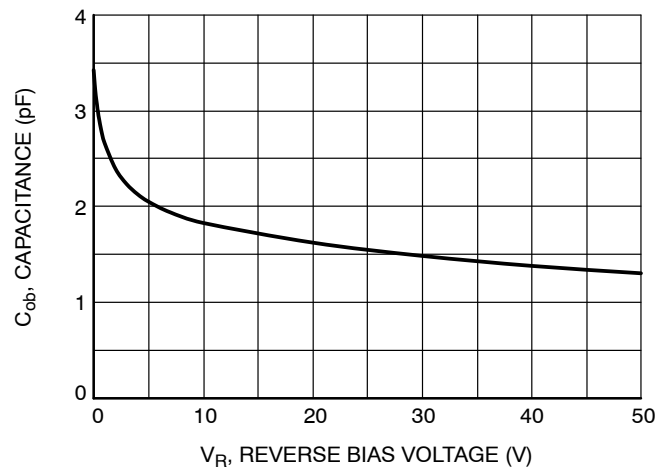


Figure 5. Output Capacitance

IMD10AMT1G

TYPICAL CHARACTERISTICS (PNP)

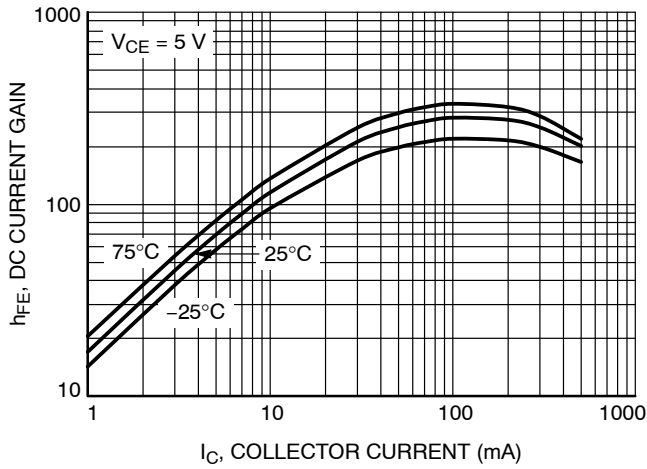


Figure 6. DC Current Gain

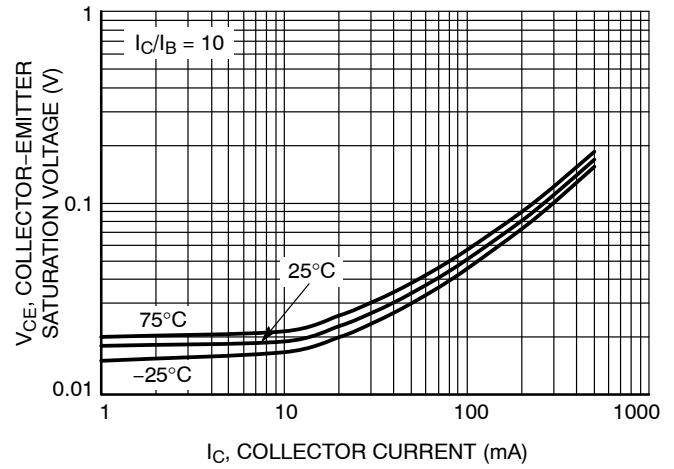


Figure 7. Collector-Emitter Saturation Voltage

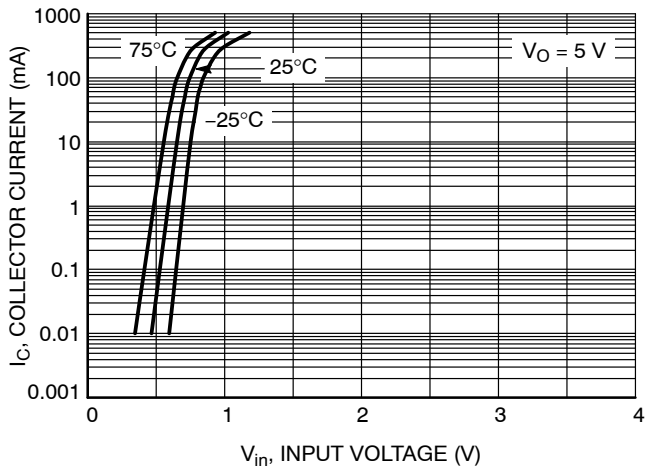


Figure 8. Output Current vs. Input Voltage

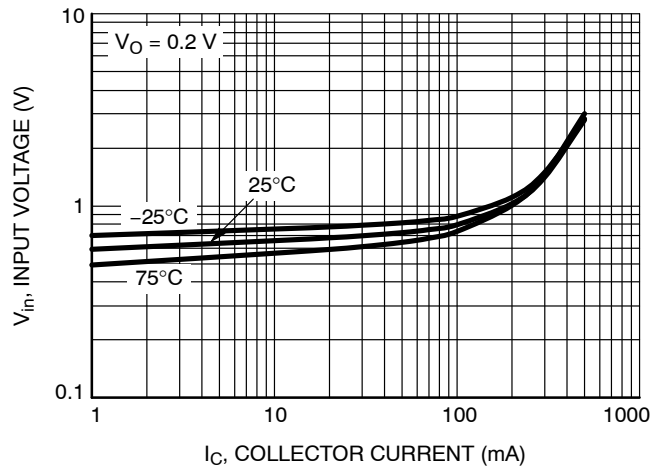


Figure 9. Input Voltage vs. Output Current

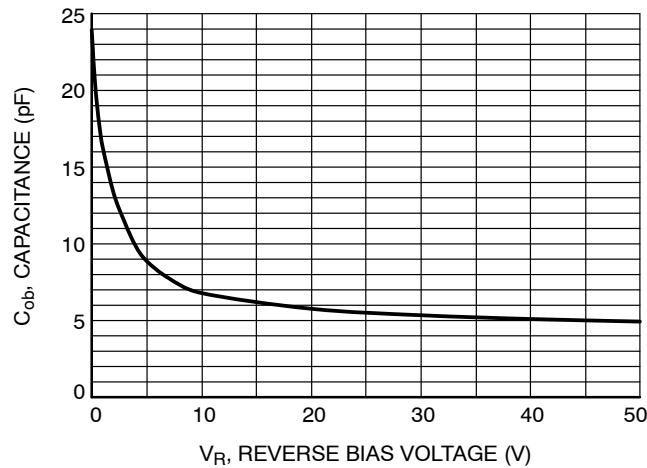
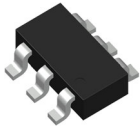
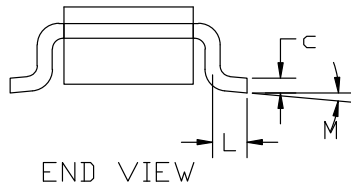
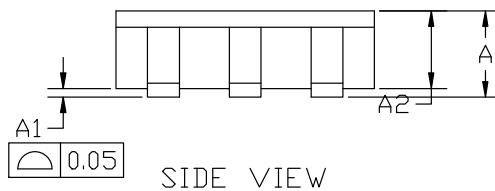
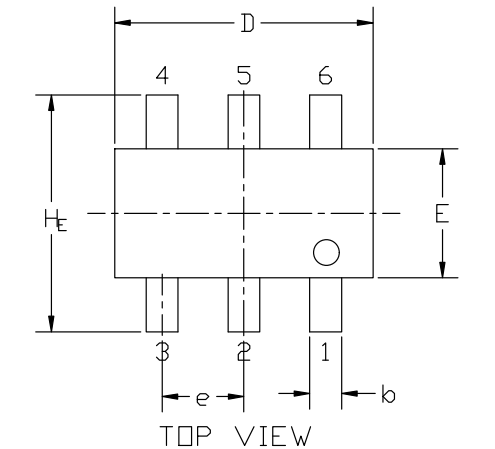


Figure 10. Output Capacitance

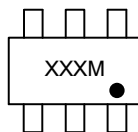


SC74-6 3.00x1.50x0.90, 0.95P
CASE 318AA
ISSUE C

DATE 22 AUG 2023



**GENERIC
MARKING DIAGRAM***



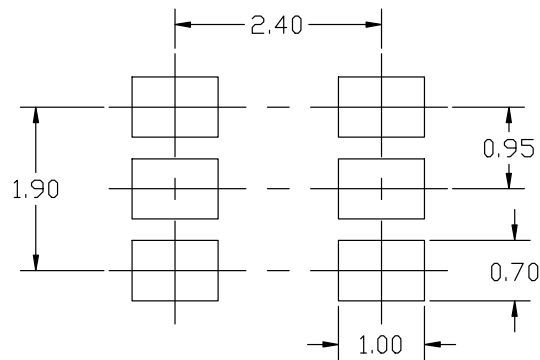
XXX = Specific Device Code
M = Date Code
▪ = Pb-Free Package

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

NOTES:

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

MILLIMETERS			
DIM	MIN.	NOM.	MAX.
A	0.90	1.00	1.10
A1	0.01	0.06	0.10
A2	0.80	0.90	1.00
b	0.25	0.37	0.50
c	0.10	0.18	0.26
D	2.90	3.00	3.10
E	1.30	1.50	1.70
e	0.85	0.95	1.05
L	0.20	0.40	0.60
H _E	2.50	2.75	3.00
M	0°	—	10°



**RECOMMENDED
MOUNTING 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.

STYLE 20:
PIN 1. COLLECTOR 1
2. BASE 2
3. EMITTER 2
4. COLLECTOR 2
5. BASE 1
6. EMITTER 1

STYLE 21:
PIN 1. COLLECTOR 1
2. EMITTER 2
3. BASE 2
4. COLLECTOR 2
5. EMITTER 1
6. BASE 1

DOCUMENT NUMBER:	98AON13505D	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
DESCRIPTION:	SC74-6 3.00x1.50x0.90, 0.95P	PAGE 1 OF 1

onsemi and onsemi are trademarks of Semiconductor Components Industries, LLC dba onsemi or its subsidiaries in the United States and/or other countries. onsemi reserves the right to make changes without further notice to any products herein. onsemi makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does onsemi assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. onsemi does not convey any license under its patent rights nor the rights of others.

onsemi, **Onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:

Technical Library: www.onsemi.com/design/resources/technical-documentation
onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support

For additional information, please contact your local Sales Representative at
www.onsemi.com/support/sales