NPN Silicon General Purpose Amplifier Transistor

2SC5658M3T5G, 2SC5658RM3T5G

This NPN transistor is designed for general purpose amplifier applications. This device is housed in the SOT-723 package which is designed for low power surface mount applications, where board space is at a premium.

Features

- Reduces Board Space
- High h_{FE}, 210−460 (typical)
- Low $V_{CE(sat)}$, < 0.5 V
- ESD Performance: Human Body Model; > 2000 V, Machine Model; > 200 V
- Available in 8 mm, 7-inch/3000 Unit Tape and Reel
- NSV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These are Pb-Free Devices

MAXIMUM RATINGS (T_A = 25 °C)

Rating	Symbol	Value	Unit
Collector-Base Voltage	$V_{(BR)CBO}$	50	Vdc
Collector-Emitter Voltage	$V_{(BR)CEO}$	50	Vdc
Emitter-Base Voltage	$V_{(BR)EBO}$	7.0	Vdc
Collector Current − Continuous	I_C	150	mAdc

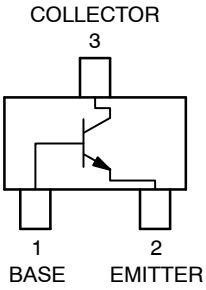
THERMAL CHARACTERISTICS

Rating	Symbol	Max	Unit
Power Dissipation (Note 2)	P_D	260	mW
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{stg}	−55 ~ +150	°C

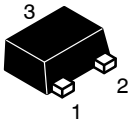
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

2. Device mounted on a FR-4 glass epoxy printed circuit board using the minimum recommended footprint.

NPN GENERAL PURPOSE AMPLIFIER TRANSISTORS SURFACE MOUNT



MARKING DIAGRAM



SOT-723
CASE 631AA



XX = Specific Device Code
(B9 = 2SC5658M3T5G
RM = 2SC5658RM3T5G)
M = Date Code

ORDERING INFORMATION

Device	Package	Shipping†
2SC5658RM3T5G	SOT-723 (Pb-Free)	8000 / Tape & Reel

DISCONTINUED (Note 1)

2SC5658M3T5G	SOT-723 (Pb-Free)	8000 / Tape & Reel
NSV2SC5658M3T5G	SOT-723 (Pb-Free)	8000 / 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.

1. **DISCONTINUED:** These devices are not available. Please contact your **onsemi** representative for information. The most current information on these devices may be available on www.onsemi.com.

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ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

Characteristic	Symbol	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage (I_C = 50 μAdc, I_E = 0)	$V_{(BR)CBO}$	50	–	–	Vdc
Collector-Emitter Breakdown Voltage (I_C = 1.0 mAdc, I_B = 0)	$V_{(BR)CEO}$	50	–	–	Vdc
Emitter-Base Breakdown Voltage (I_E = 50 μAdc, I_E = 0)	$V_{(BR)EBO}$	7.0	–	–	Vdc
Collector-Base Cutoff Current (V_{CB} = 30 Vdc, I_E = 0)	I_{CBO}	–	–	0.5	μA
Emitter-Base Cutoff Current (V_{EB} = 4.0 Vdc, I_B = 0)	I_{EBO}	–	–	0.5	μA
Collector-Emitter Saturation Voltage (Note 3) (I_C = 50 mAdc, I_B = 5.0 mAdc)	$V_{CE(sat)}$	–	–	0.4	Vdc
DC Current Gain (Note 3) (V_{CE} = 6.0 Vdc, I_C = 1.0 mAdc) 2SC5658M3T5G (V_{CE} = 6.0 Vdc, I_C = 1.0 mAdc) 2SC5658RM3T5G	h_{FE}	 120 215	 – –	 560 375	–
Transition Frequency (V_{CE} = 12 Vdc, I_C = 2.0 mAdc, f = 30 MHz)	f_T	–	180	–	MHz
Output Capacitance (V_{CB} = 12 Vdc, I_C = 0 Adc, f = 1.0 MHz)	C_{OB}	–	2.0	–	pF

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

* Include NSV-prefix devices where applicable.

3. Pulse Test: Pulse Width ≤ 300 μs, D.C. ≤ 2%.

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TYPICAL ELECTRICAL CHARACTERISTICS

Figure 1.

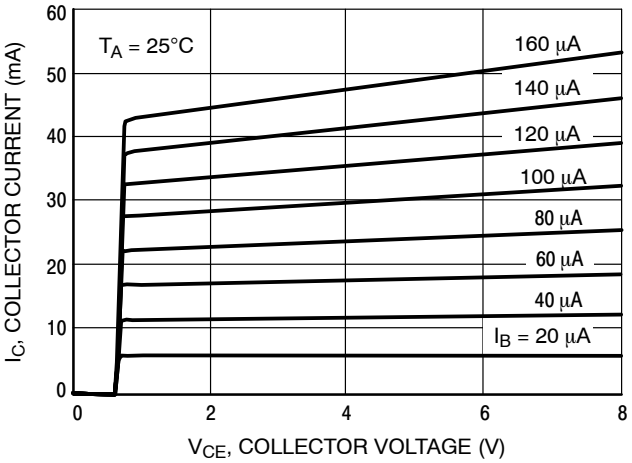

Figure 2. $I_C - V_{CE}$

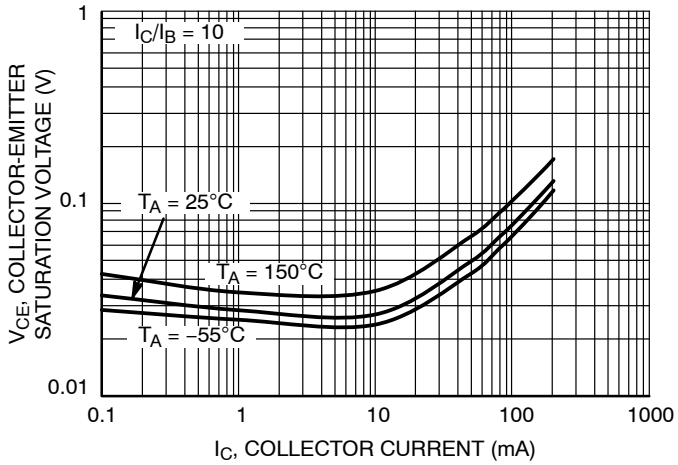

Figure 3. Collector Emitter Saturation Voltage vs. Collector Current

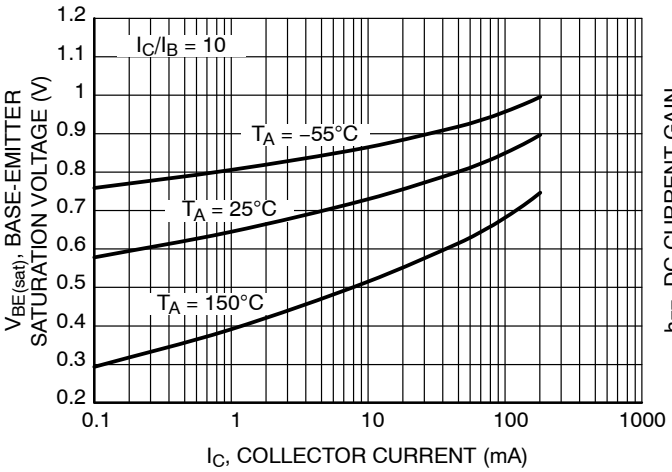

Figure 4. Base Emitter Saturation Voltage vs. Collector Current

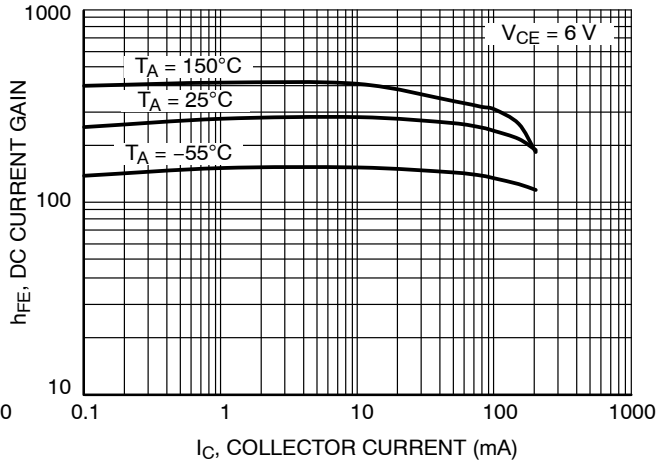

Figure 5. DC Current Gain vs. Collector Current

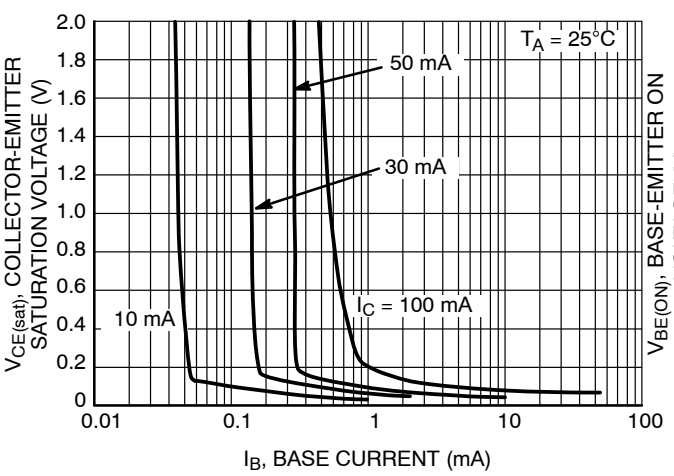

Figure 6. Saturation Region

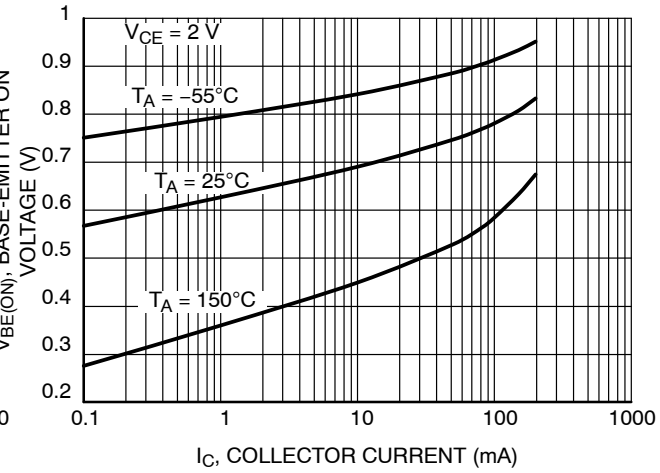

Figure 7. Base-Emitter Turn-ON Voltage vs. Collector Current

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TYPICAL ELECTRICAL CHARACTERISTICS

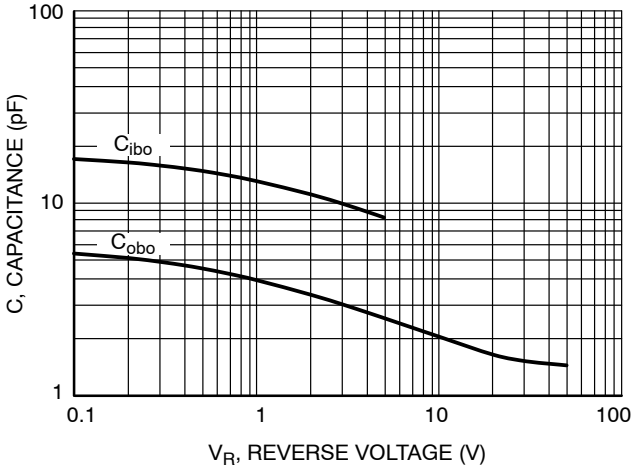

Figure 8. Capacitance

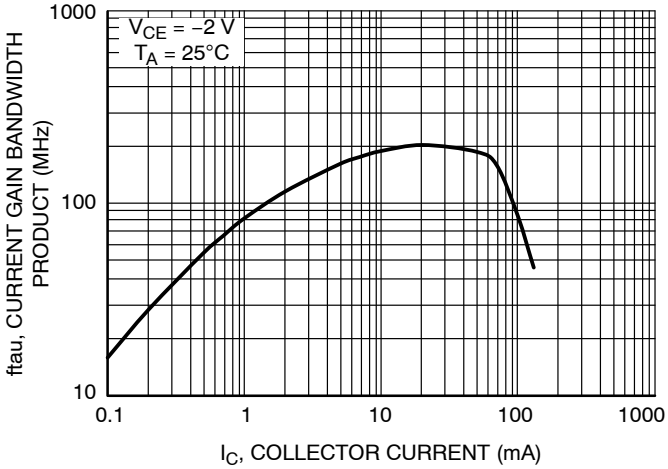

Figure 9. Current Gain Bandwidth Product vs. Collector Current

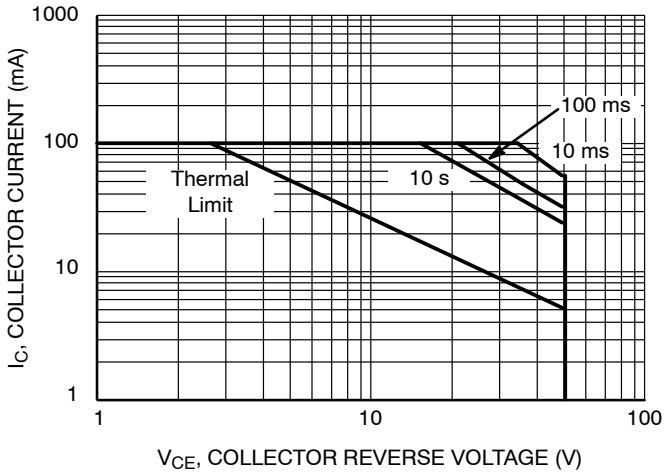

Figure 10. Safe Operating Area

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REVISION HISTORY

Revision	Description of Changes	Date
7	2SC5658M3T5G, NSV2SC5658M3T5G OPNs Marked as Discontinued.	1/13/2026

This document has undergone updates prior to the inclusion of this revision history table. The changes tracked here only reflect updates made on the noted approval dates.

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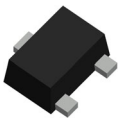
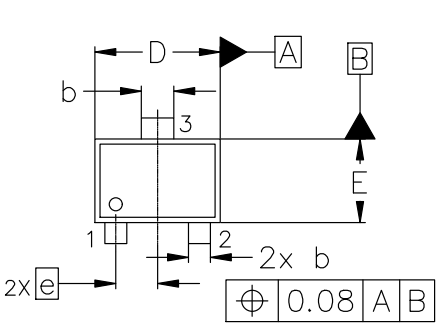


SOT−723−3 1.20x0.80x0.50, 0.40P
CASE 631AA
ISSUE F

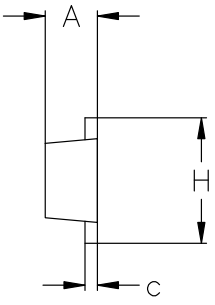
DATE 18 NOV 2026

NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2018.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.

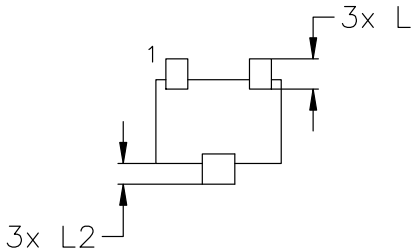
DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.45	0.50	0.55
b	0.15	0.21	0.27
b1	0.25	0.31	0.37
c	0.07	0.12	0.17
D	1.15	1.20	1.25
E	0.75	0.80	0.85
e	0.40 BSC		
H	1.15	1.20	1.25
L	0.29 REF		
L2	0.15	0.20	0.25



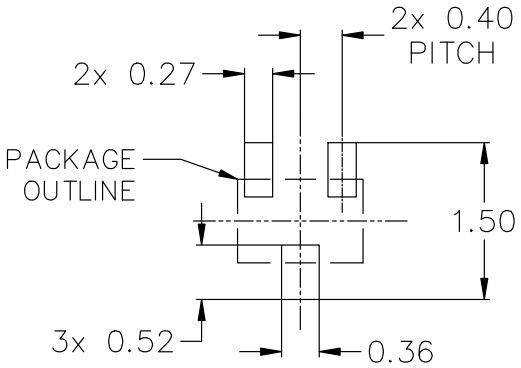
TOP VIEW



SIDE VIEW



BOTTOM VIEW



RECOMMENDED MOUNTING FOOTPRINT

*For additional information on our Pb-Free strategy and soldering details, please download the onsemi Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

GENERIC MARKING DIAGRAM*



XX = Specific Device Code
M = Date Code

*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.

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

STYLE 2:
PIN 1. ANODE
2. N/C
3. CATHODE

STYLE 3:
PIN 1. ANODE
2. ANODE
3. CATHODE

STYLE 4:
PIN 1. CATHODE
2. CATHODE
3. ANODE

STYLE 5:
PIN 1. GATE
2. SOURCE
3. DRAIN

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DESCRIPTION:	**SOT−723−3 1.20x0.80x0.50, 0.40P**	**PAGE 1 OF 1**

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