

# 2SC5658M3T5G

## NPN Silicon General Purpose Amplifier Transistor

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.

- 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
- 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	$I_C$	100	mAdc

### THERMAL CHARACTERISTICS

Rating	Symbol	Max	Unit
Power Dissipation (Note 1)	$P_D$	260	mW
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-55 ~ +150	$^\circ\text{C}$

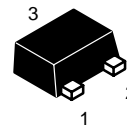
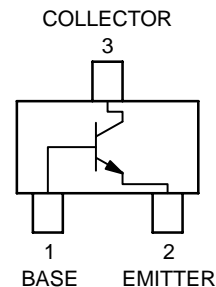
1. Device mounted on a FR-4 glass epoxy printed circuit board using the minimum recommended footprint.



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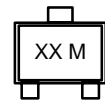
<http://onsemi.com>

### NPN GENERAL PURPOSE AMPLIFIER TRANSISTORS SURFACE MOUNT



### MARKING DIAGRAM

SOT-723  
CASE 631AA



XX = Specific Device Code  
M = Date Code

### ORDERING INFORMATION

Device	Package	Shipping†
2SC5658M3T5G	SOT-723	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.

## 2SC5658M3T5G

### ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ )

Characteristic	Symbol	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage ( $I_C = 50 \mu\text{Adc}$ , $I_E = 0$ )	$V_{(BR)CBO}$	50	–	–	Vdc
Collector-Emitter Breakdown Voltage ( $I_C = 1.0 \text{ mAdc}$ , $I_B = 0$ )	$V_{(BR)CEO}$	50	–	–	Vdc
Emitter-Base Breakdown Voltage ( $I_E = 50 \mu\text{Adc}$ , $I_C = 0$ )	$V_{(BR)EBO}$	5.0	–	–	Vdc
Collector-Base Cutoff Current ( $V_{CB} = 30 \text{ Vdc}$ , $I_E = 0$ )	$I_{CBO}$	–	–	0.5	$\mu\text{A}$
Emitter-Base Cutoff Current ( $V_{EB} = 4.0 \text{ Vdc}$ , $I_B = 0$ )	$I_{EBO}$	–	–	0.5	$\mu\text{A}$
Collector-Emitter Saturation Voltage (Note 2) ( $I_C = 60 \text{ mAdc}$ , $I_B = 5.0 \text{ mAdc}$ )	$V_{CE(sat)}$	–	–	0.4	Vdc
DC Current Gain (Note 2) ( $V_{CE} = 6.0 \text{ Vdc}$ , $I_C = 1.0 \text{ mAdc}$ )	$h_{FE}$	120	–	560	–
Transition Frequency ( $V_{CE} = 12 \text{ Vdc}$ , $I_C = 2.0 \text{ mAdc}$ , $f = 30 \text{ MHz}$ )	$f_T$	–	180	–	MHz
Output Capacitance ( $V_{CB} = 12 \text{ Vdc}$ , $I_C = 0 \text{ Adc}$ , $f = 1.0 \text{ MHz}$ )	$C_{OB}$	–	2.0	–	pF

2. Pulse Test: Pulse Width  $\leq 300 \mu\text{s}$ , D.C.  $\leq 2\%$ .

TYPICAL ELECTRICAL CHARACTERISTICS

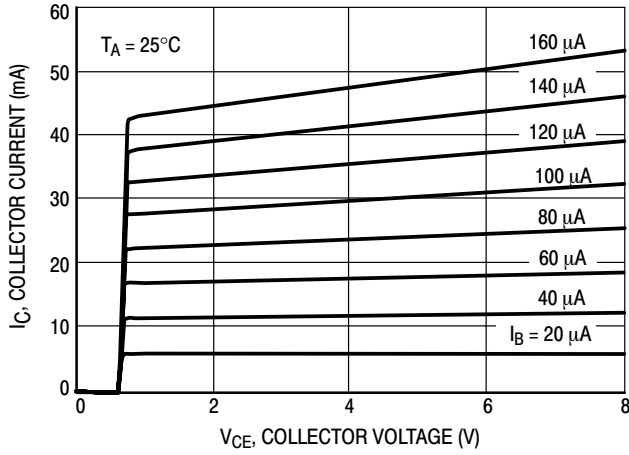


Figure 1.  $I_C - V_{CE}$

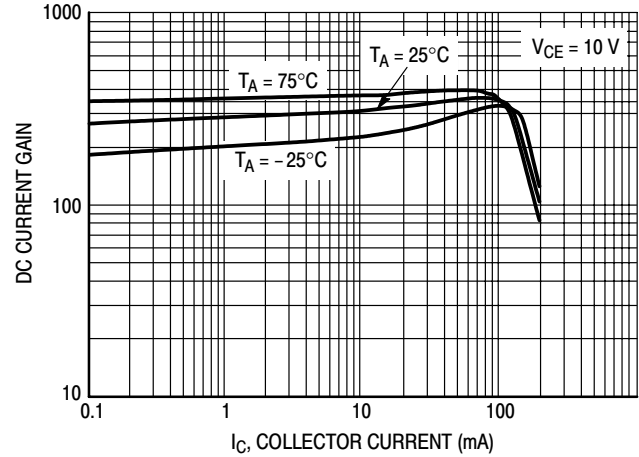


Figure 2. DC Current Gain

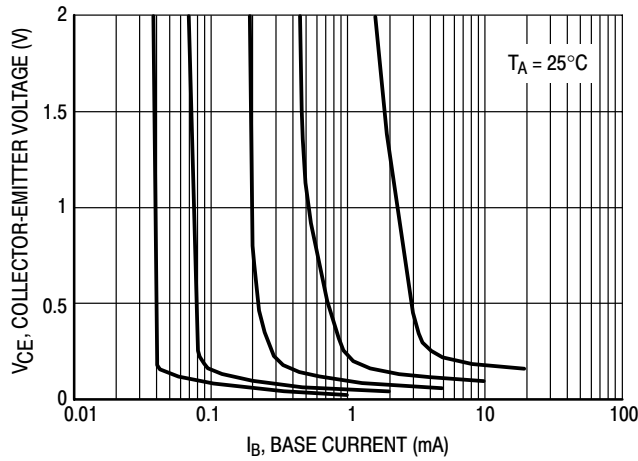


Figure 3. Collector Saturation Region

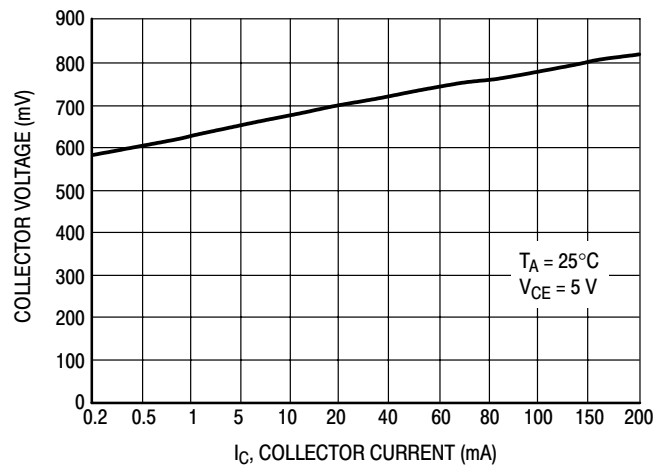


Figure 4. On Voltage

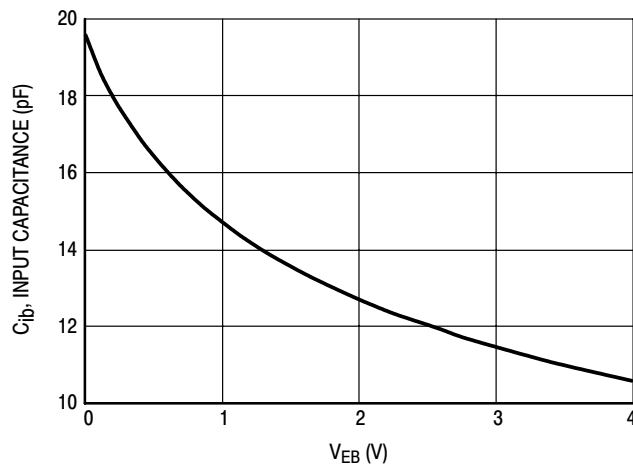


Figure 5. Capacitance

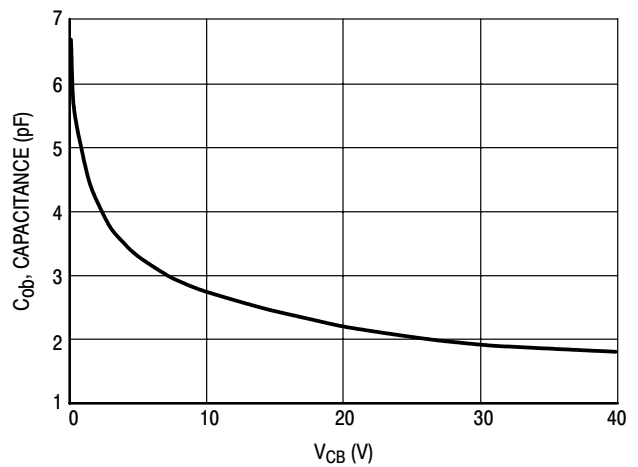
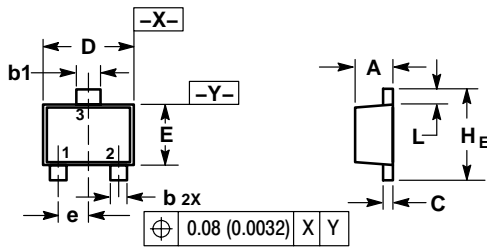


Figure 6. Capacitance

# 2SC5658M3T5G

## PACKAGE DIMENSIONS

SOT-723  
CASE 631AA-01  
ISSUE A

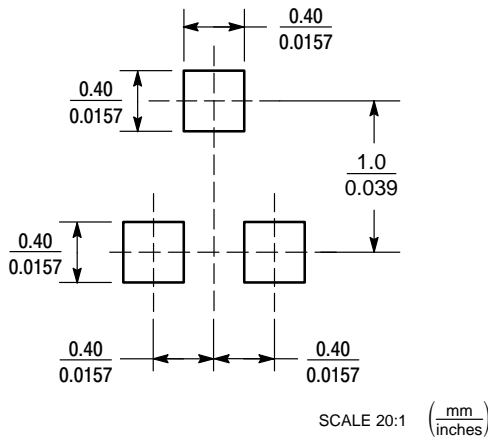


NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
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			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.45	0.50	0.55	0.018	0.020	0.022
b	0.15	0.20	0.27	0.0059	0.0079	0.0106
b1	0.25	0.3	0.35	0.010	0.012	0.014
C	0.07	0.12	0.17	0.0028	0.0047	0.0067
D	1.15	1.20	1.25	0.045	0.047	0.049
E	0.75	0.80	0.85	0.03	0.032	0.034
e	0.40 BSC			0.016 BSC		
H E	1.15	1.20	1.25	0.045	0.047	0.049
L	0.15	0.20	0.25	0.0059	0.0079	0.0098

### SOLDERING FOOTPRINT\*



### SOT-723

\*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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