

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.

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
- These are Pb-Free Devices

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

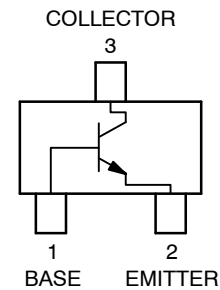
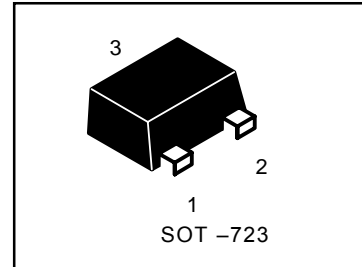
THERMAL CHARACTERISTICS

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	$^\circ\text{C}$

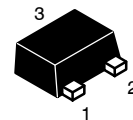
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

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

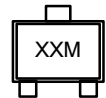
L2SC5658QM3T5G
L2SC5658RM3T5G



MARKING DIAGRAM



SOT-723



XX = Specific Device Code
(QM = L2SC5658QM3T5G
RM = L2SC5658RM3T5G)
M = Date Code

ORDERING INFORMATION

Device	Package	Shipping
L2SC5658QM3T5G	SOT-723 (Pb-Free)	8000/Tape & Reel

L2SC5658QM3T5G, L2SC5658RM3T5G
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	μA
Emitter-Base Cutoff Current ($V_{EB} = 4.0 \text{ Vdc}$, $I_B = 0$)	I_{EBO}	-	-	0.5	μA
Collector-Emitter Saturation Voltage (Note 2) ($I_C = 50 \text{ mAdc}$, $I_B = 5.0 \text{ mAdc}$)	$V_{CE(sat)}$	-	-	0.4	Vdc
DC Current Gain (Note 2) ($V_{CE} = 6.0 \text{ Vdc}$, $I_C = 1.0 \text{ mAdc}$) L2SC5658QM3T5G ($V_{CE} = 6.0 \text{ Vdc}$, $I_C = 1.0 \text{ mAdc}$) L2SC5658RM3T5G	h_{FE}	120 180	- -	270 390	-
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

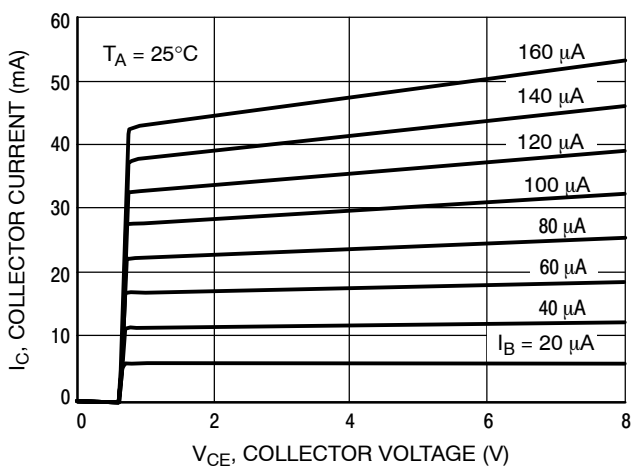


Figure 1. $I_C - V_{CE}$

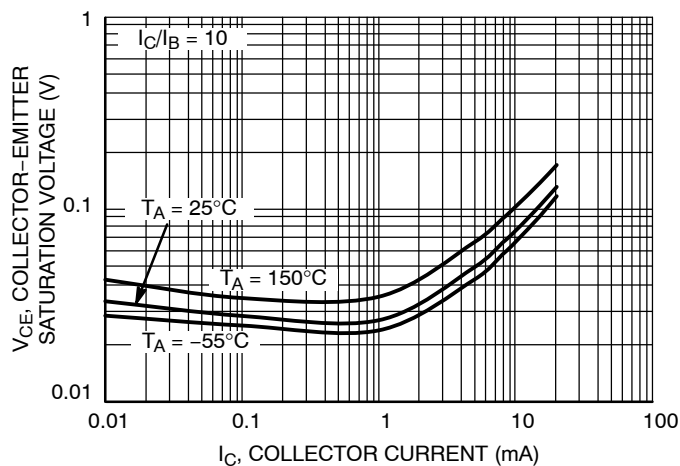


Figure 2. Collector-Emitter Saturation Voltage vs. Collector Current

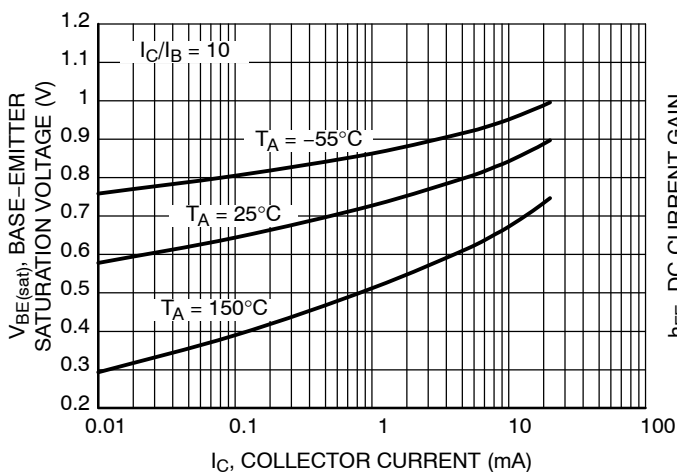


Figure 3. Base-Emitter Saturation Voltage vs. Collector Current

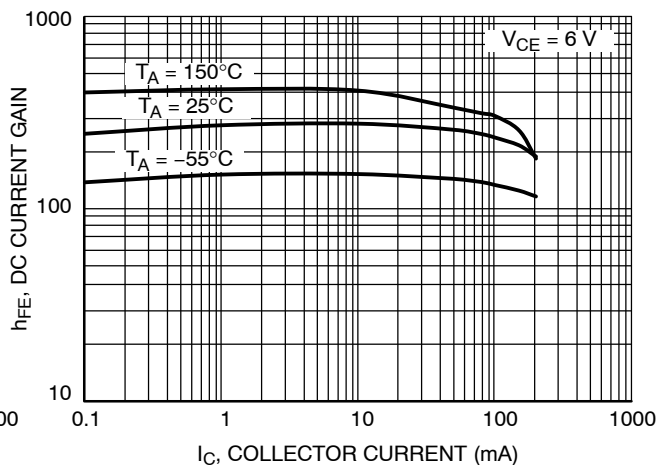


Figure 4. DC Current Gain vs. Collector Current

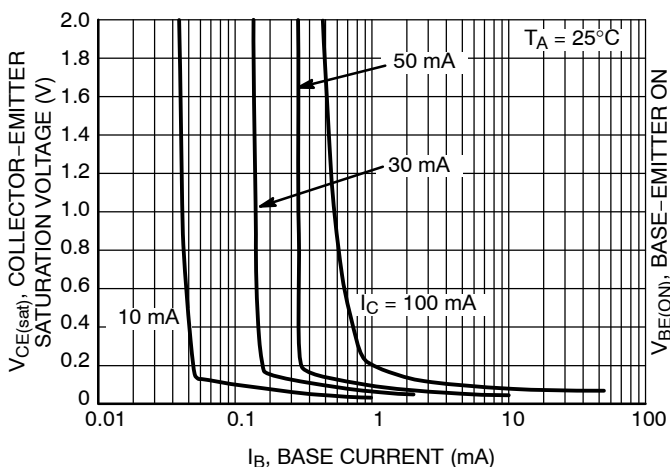


Figure 5. Saturation Region

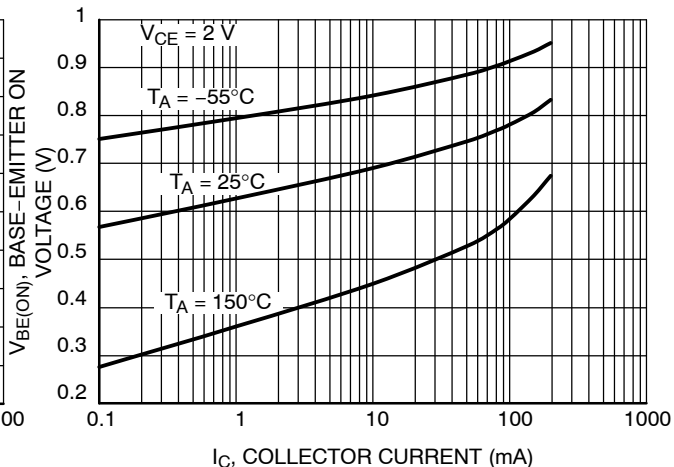
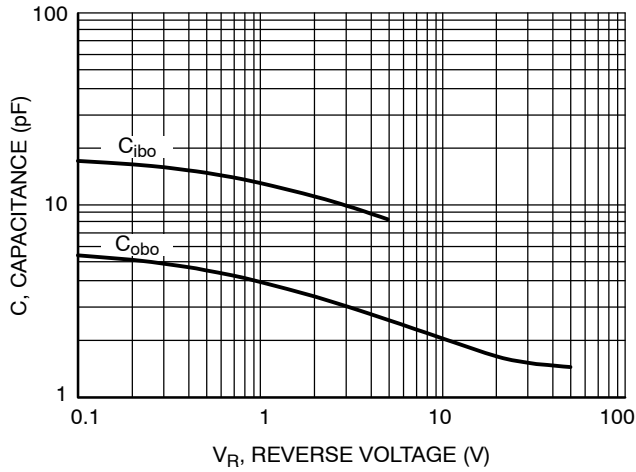
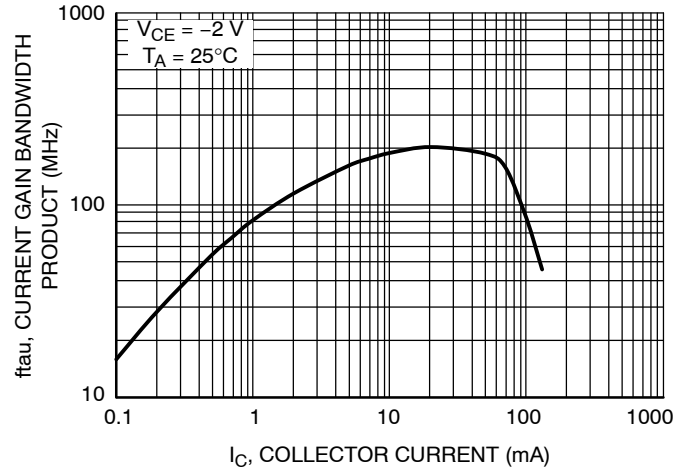
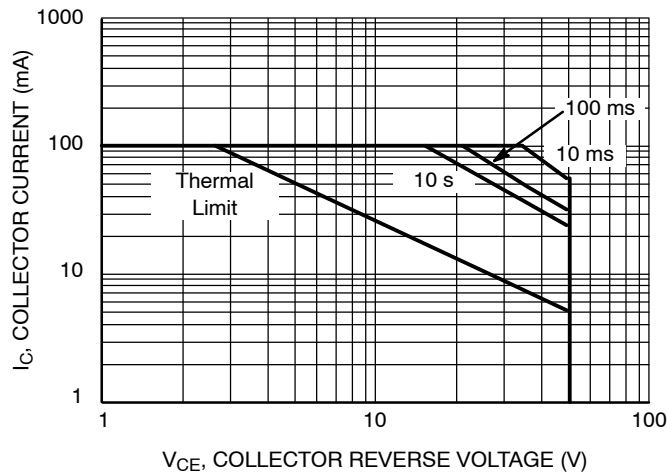
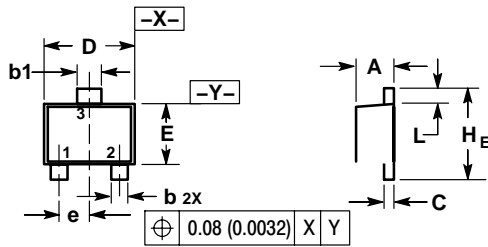


Figure 6. Base-Emitter Turn-ON Voltage vs. Collector Current

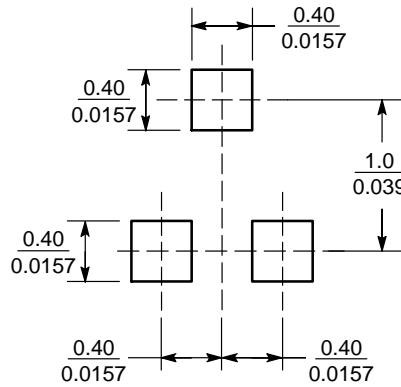
TYPICAL ELECTRICAL CHARACTERISTICS

Figure 7. Capacitance

Figure 8. Current Gain Bandwidth Product vs. Collector Current

Figure 9. Safe Operating Area

SOT-723

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	0.21	0.27	0.0059	0.0083	0.0106
b1	0.25	0.31	0.37	0.010	0.012	0.015
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

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

SOLDERING FOOTPRINT*


SCALE 20:1 $\left(\frac{\text{mm}}{\text{inches}} \right)$