

# MSKSEMI 美森科

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

## 2SC5658

Product specification

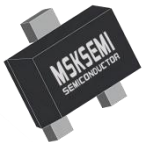
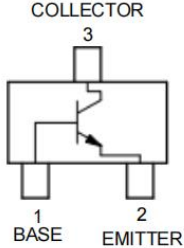


## General Description

- 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.

## General Features

- Reduces Board Space
- High hFE, 210–460 (typical)
- Low VCE(sat), < 0.5 V
- Available in 8 mm, 7-inch/3000 Unit Tape and Reel
- These are Pb-Free Devices

## Reference News

PACKAGE OUTLINE	Pin Configuration	Marking	
			
SOT-723		2SC5658-R-MS	2SC5658-Q-MS

**MAXIMUM RATINGS(Ta = 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	$V_{(BR)EBO}$	5.0	Vdc
Collector Current – Continuous	$I_C$	100	mAdc

**THERMAL CHARACTERISTICS**

Rating	Symbol	Max	Unit
Power Dissipation (Note 1)	$P_D$	260	W
Junction Temperature	$T_J$	150	°C
Storage Temperature Range	$T_{stg}$	- 55 ~ + 150	°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.

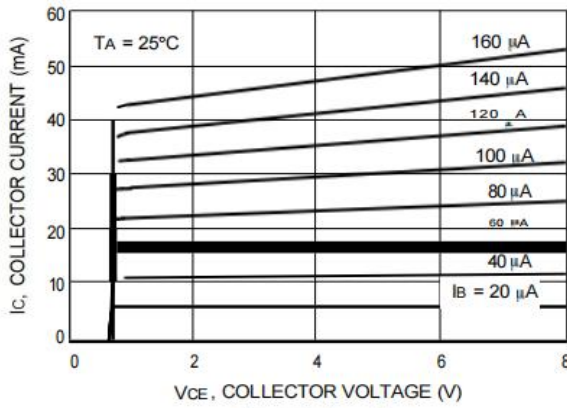
1. Device mounted on a FR-4 glass epoxy printed circuit board using the minimum recommended footprint.

**ELECTRICAL CHARACTERISTICS (TA = 25°C)**

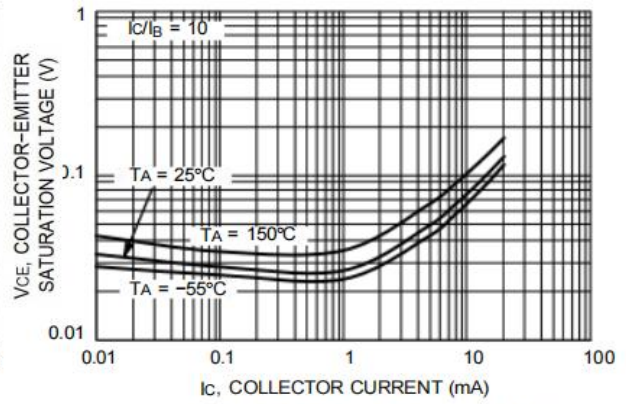
Characteristic	Symbol	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage ( $I_C = 50 \mu\text{Adc}$ , $I_E = 0$ )	$V_{(BR)CBO}$	50	-	-	Vdc
Collector-Emitter Breakdown Voltage ( $I_C = 1.0 \text{ mAdc}$ , $I_B = 0$ )	$V_{(BR)CEO}$	50	-	-	Vdc
Emitter-Base Breakdown Voltage ( $I_E = 50 \mu\text{Adc}$ , $I_C = 0$ )	$V_{(BR)EBO}$	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) ( $I_C = 50 \text{ mAdc}$ , $I_B = 5.0 \text{ mAdc}$ )	$V_{CE(sat)}$	-	-	0.4	Vdc
DC Current Gain (Note 2) ( $V_{CE} = 6.0 \text{ Vdc}$ , $I_C = 1.0 \text{ mAdc}$ ) ( $V_{CE} = 6.0 \text{ Vdc}$ , $I_C = 1.0 \text{ mAdc}$ )	$h_{FE}$	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	-	$P_F$

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

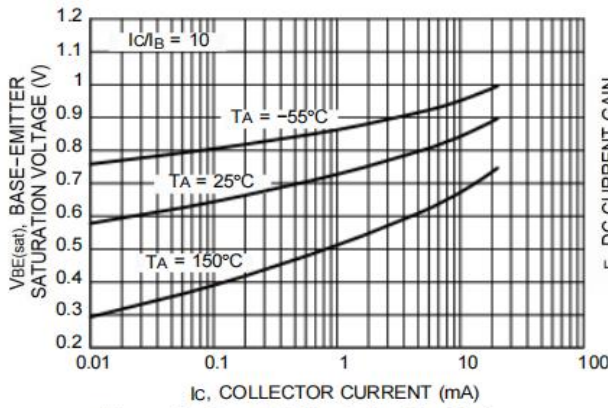
**ELECTRICAL CHARACTERISTICS CURVES**



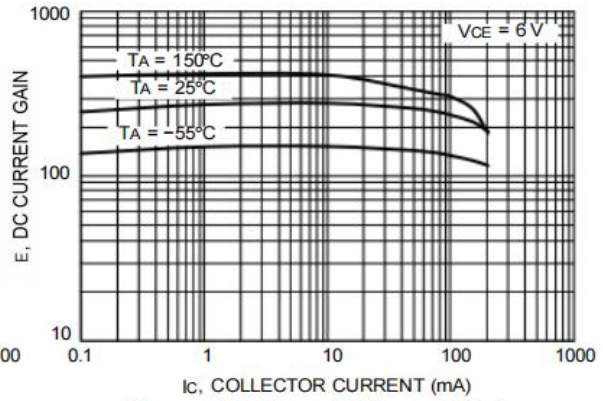
**Figure 1.  $I_c - V_{ce}$**



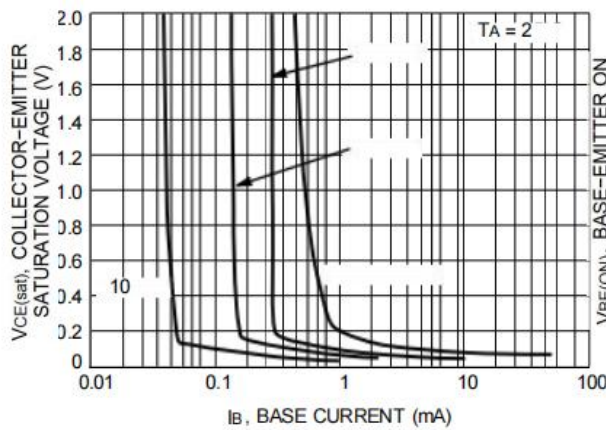
**Figure 2. Collector-Emitter Saturation Voltage vs. Collector Current**



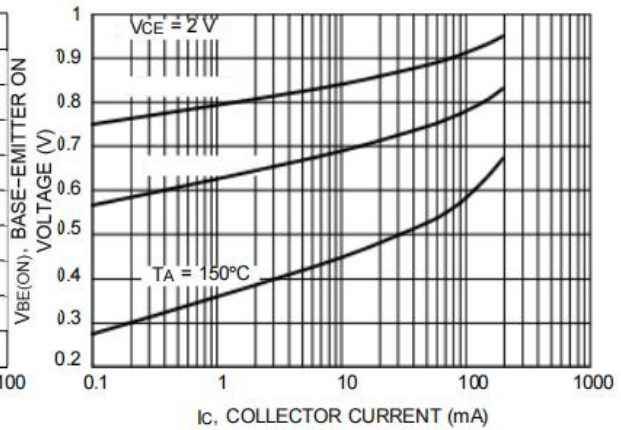
**Figure 3. Base-Emitter Saturation Voltage vs. Collector Current**



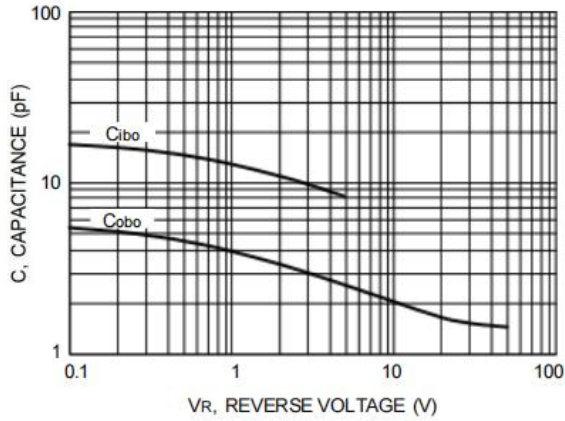
**Figure 4. DC Current Gain vs. Collector Current**



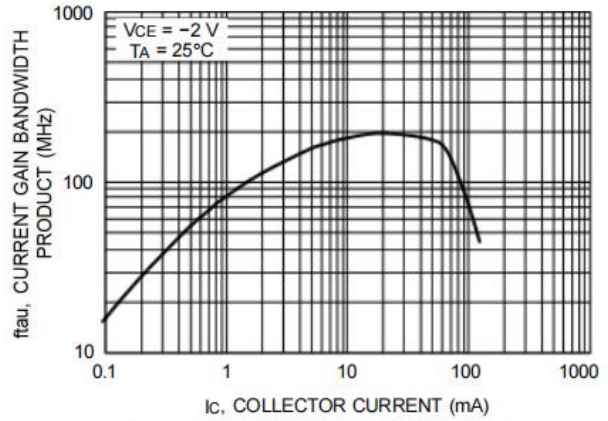
**Figure 5. Saturation Region**



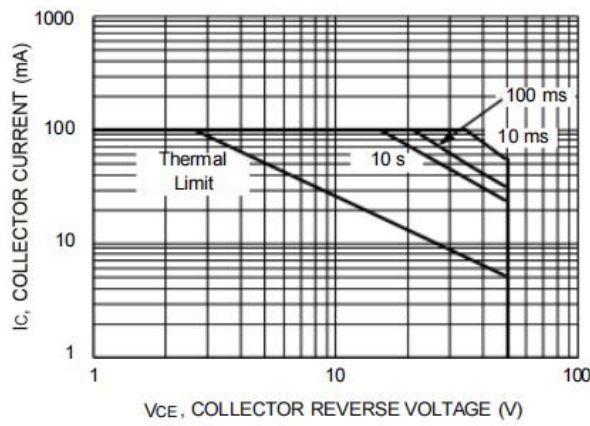
**Figure 6. Base-Emitter Turn-ON Voltage vs. Collector Current**



**Figure 7. Capacitance**

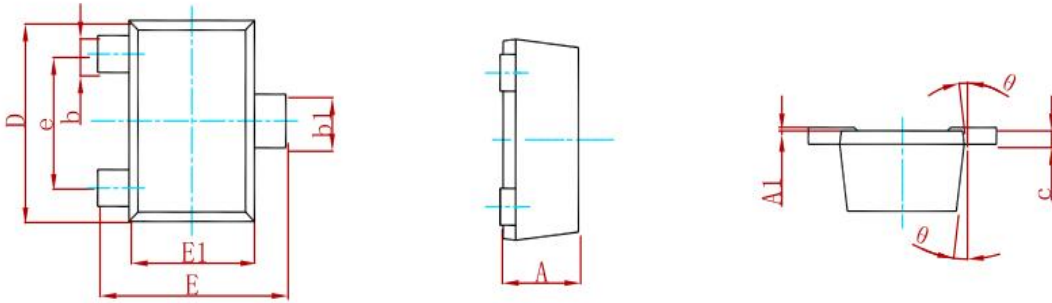


**Figure 8. Current Gain Bandwidth Product vs. Collector Current**



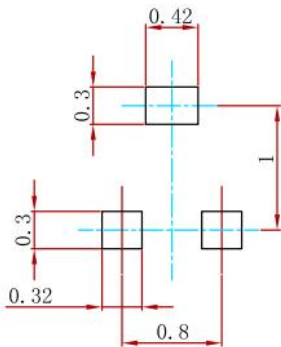
**Figure 9. Safe Operating Area**

**PACKAGE MECHANICAL DATA**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.430	0.500	0.017	0.020
A1	0.000	0.050	0.000	0.002
b	0.170	0.270	0.007	0.011
b1	0.270	0.370	0.011	0.015
c	0.080	0.150	0.003	0.006
D	1.150	1.250	0.045	0.049
E	1.150	1.250	0.045	0.049
E1	0.750	0.850	0.030	0.033
e	0.800TYP		0.031TYP	
θ	7° REF.		7° REF.	

**Suggested Pad Layout**



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: ±0.05mm.
3. The pad layout is for reference purposes only.

**REEL SPECIFICATION**

P/N	PKG	QTY
2SC5658	SOT-723	8000

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