

# 2SA2029M3T5G

## PNP Silicon General Purpose Amplifier Transistor

This PNP 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 4 mm, 8000 Unit Tape & Reel
- This is a Pb-Free Device

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

Rating	Symbol	Value	Unit
Collector-Base Voltage	$V_{(BR)CBO}$	-60	Vdc
Collector-Emitter Voltage	$V_{(BR)CEO}$	-50	Vdc
Emitter-Base Voltage	$V_{(BR)EBO}$	-6.0	Vdc
Collector Current - Continuous	$I_C$	-100	mAdc

### THERMAL CHARACTERISTICS

Rating	Symbol	Max	Unit
Power Dissipation (Note 1)	$P_D$	265	mW
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-55 ~ +150	$^\circ\text{C}$

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

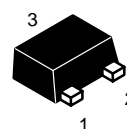
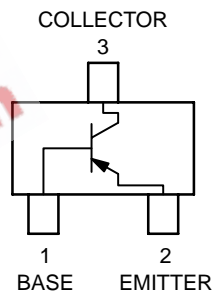
1. Device mounted on a FR-4 glass epoxy printed circuit board using the minimum recommended footprint.



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### PNP GENERAL PURPOSE AMPLIFIER TRANSISTORS SURFACE MOUNT



SOT-723  
CASE 631AA

### MARKING DIAGRAM



F9 = Specific Device Code  
M = Date Code

### ORDERING INFORMATION

Device	Package	Shipping†
2SA2029M3T5G	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.

## 2SA2029M3T5G

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

Characteristic	Symbol	Min	Typ	Max	Unit
Collector–Base Breakdown Voltage ( $I_C = -50 \mu\text{Adc}$ , $I_E = 0$ )	$V_{(BR)CBO}$	-60	-	-	Vdc
Collector–Emitter Breakdown Voltage ( $I_C = -1.0 \text{ mAdc}$ , $I_B = 0$ )	$V_{(BR)CEO}$	-50	-	-	Vdc
Emitter–Base Breakdown Voltage ( $I_E = -50 \mu\text{Adc}$ , $I_C = 0$ )	$V_{(BR)EBO}$	-6.0	-	-	Vdc
Collector–Base Cutoff Current ( $V_{CB} = -30 \text{ Vdc}$ , $I_E = 0$ )	$I_{CBO}$	-	-	-0.5	nA
Emitter–Base Cutoff Current ( $V_{EB} = -7.0 \text{ Vdc}$ , $I_B = 0$ )	$I_{EBO}$	-	-	-0.1	$\mu\text{A}$
Collector–Emitter Saturation Voltage (Note 2) ( $I_C = -50 \text{ mAdc}$ , $I_B = -5.0 \text{ mAdc}$ )	$V_{CE(sat)}$	-	-	-0.5	Vdc
DC Current Gain (Note 2) ( $V_{CE} = -6.0 \text{ Vdc}$ , $I_C = -1.0 \text{ mAdc}$ )	$h_{FE}$	120	-	560	-
Transition Frequency ( $V_{CE} = -12 \text{ Vdc}$ , $I_C = -2.0 \text{ mAdc}$ , $f = 30 \text{ MHz}$ )	$f_T$	-	140	-	MHz
Output Capacitance ( $V_{CB} = -12 \text{ Vdc}$ , $I_E = 0 \text{ Adc}$ , $f = 1.0 \text{ MHz}$ )	$C_{OB}$	-	3.5	-	pF

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

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## TYPICAL ELECTRICAL CHARACTERISTICS

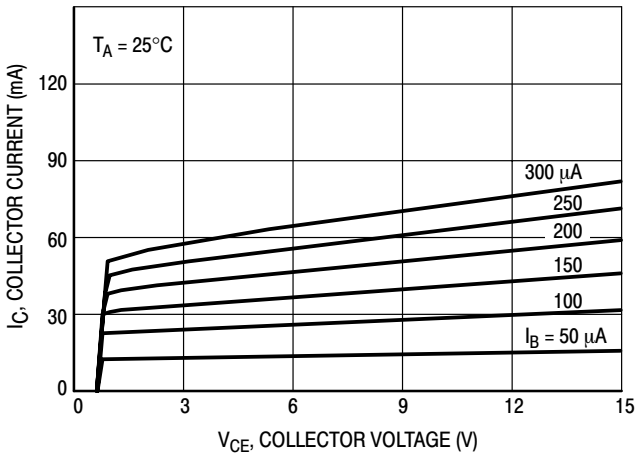


Figure 1.  $I_C - V_{CE}$

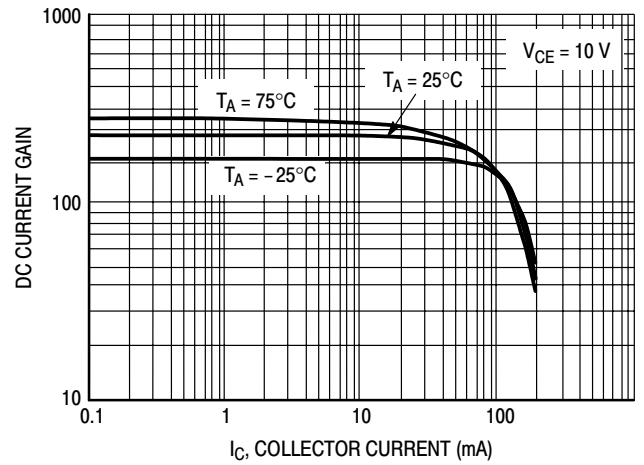


Figure 2. DC Current Gain

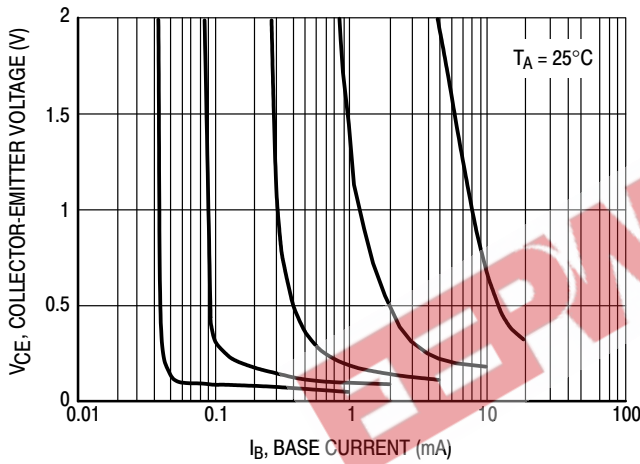


Figure 3. Collector Saturation Region

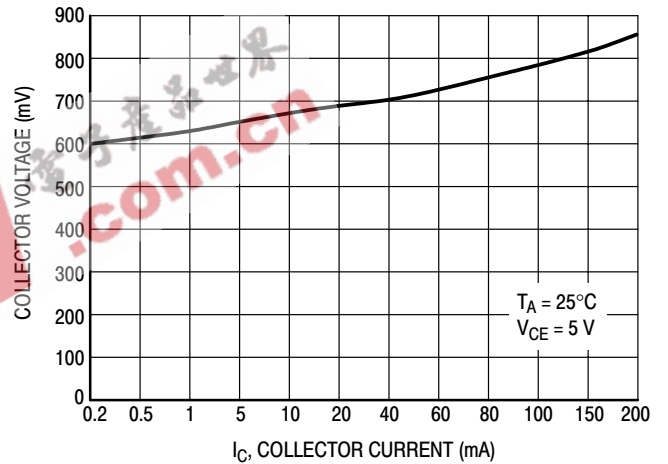


Figure 4. On Voltage

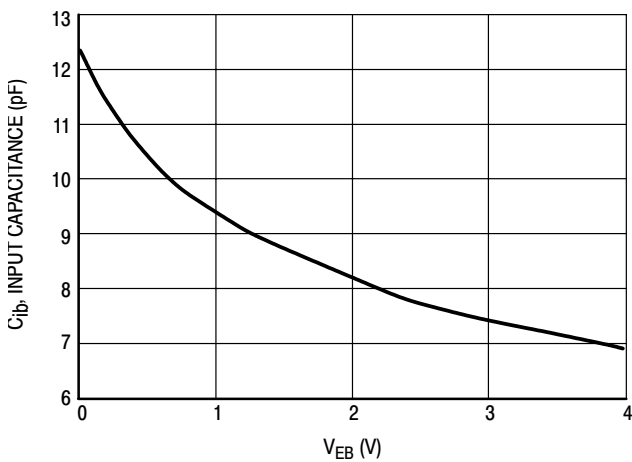


Figure 5. Capacitance

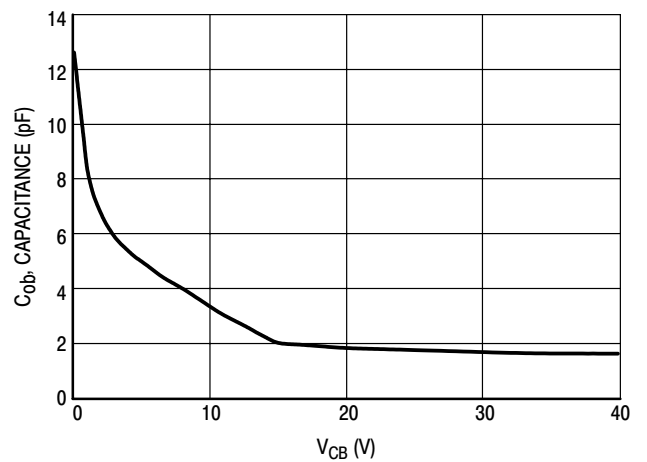


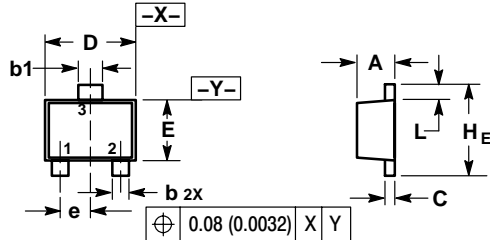
Figure 6. Capacitance

# 2SA2029M3T5G

## PACKAGE DIMENSIONS

### SOT-723

CASE 631AA-01  
ISSUE B

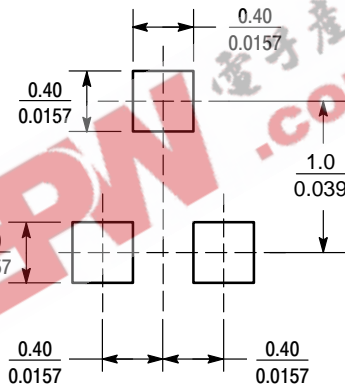


#### NOTES:

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


### SOLDERING FOOTPRINT\*



SCALE 20:1 (mm/inches)

### 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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