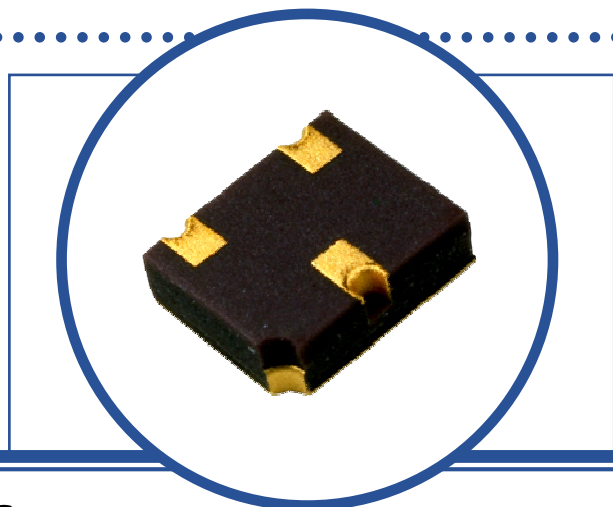


# SILICON EPITAXIAL NPN TRANSISTOR

## BC109CSM

- Hermetic Ceramic Surface Mount Package
- Designed For Low Noise General Purpose Amplifiers, Driver Stages and Signal Processing Applications
- Screening Options Available



### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C unless otherwise stated)

V <sub>CBO</sub>	Collector – Base Voltage		30V
V <sub>CEO</sub>	Collector – Emitter Voltage		20V
V <sub>EBO</sub>	Emitter – Base Voltage		5V
I <sub>C</sub>	Continuous Collector Current		100mA
I <sub>CM</sub>	Peak Collector Current		200mA
P <sub>D</sub>	Total Power Dissipation at	T <sub>A</sub> = 25°C	300mW
		Derate Above 25°C	2mW/°C
		T <sub>C</sub> = 25°C	750mW
		Derate Above 25°C	5mW/°C
T <sub>J</sub>	Junction Temperature Range		-65 to +175°C
T <sub>stg</sub>	Storage Temperature Range		-65 to +175°C

### THERMAL PROPERTIES

Symbols	Parameters	Min.	Typ.	Max.	Units
R <sub>θJA</sub>	Thermal Resistance, Junction To Ambient			500	°C/W
R <sub>θJC</sub>	Thermal Resistance, Junction To Case			200	°C/W

Semelab Limited reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.



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

Symbols	Parameters	Test Conditions	Min.	Typ	Max.	Units
$I_{CBO}$	Collector-Cut-Off Current	$V_{CB} = 20\text{V}$			15	nA
		$T_A = 150^\circ\text{C}$			15	$\mu\text{A}$
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 10\mu\text{A}$	30			V
$V_{(BR)CEO}^{(1)}$	Collector-Emitter Breakdown Voltage	$I_C = 10\text{mA}$	20			
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10\mu\text{A}$	5			
$V_{BE}^{(1)}$	Base-Emitter Voltage	$I_C = 2\text{mA}$ $V_{CE} = 5\text{V}$	550		700	mV
		$I_C = 10\text{mA}$ $V_{CE} = 5\text{V}$			700	
$V_{CE(sat)}^{(1)}$	Collector-Emitter Saturation Voltage	$I_C = 10\text{mA}$ $I_B = 0.5\text{mA}$			250	
		$I_C = 100\text{mA}$ $I_B = 5\text{mA}$			600	
$V_{BE(sat)}^{(1)}$	Base-Emitter Saturation Voltage	$I_C = 10\text{mA}$ $I_B = 0.5\text{mA}$		750		
		$I_C = 100\text{mA}$ $I_B = 5\text{mA}$		900		
$h_{FE}^{(1)}$	Forward-current transfer ratio	$I_C = 2\text{mA}$ $V_{CE} = 5\text{V}$	200		800	
		$I_C = 10\mu\text{A}$ $V_{CE} = 5\text{V}$	40			

## DYNAMIC CHARACTERISTICS

$f_T$	Transition Frequency	$I_C = 10\text{mA}$ $V_{CE} = 5\text{V}$ $f = 100\text{MHz}$	150			MHz
$h_{fe}$	Small-Signal Current Gain	$I_C = 2\text{mA}$ $V_{CE} = 5\text{V}$ $f = 1.0\text{KHz}$	240		900	
$C_{obo}$	Output Capacitance	$V_{CB} = 10\text{V}$ $I_E = 0$ $f = 1.0\text{MHz}$			6	$\mu\text{F}$
$C_{ibo}$	Input Capacitance	$V_{EB} = 0.5\text{V}$ $I_C = 0$ $f = 1.0\text{MHz}$		12		$\mu\text{F}$

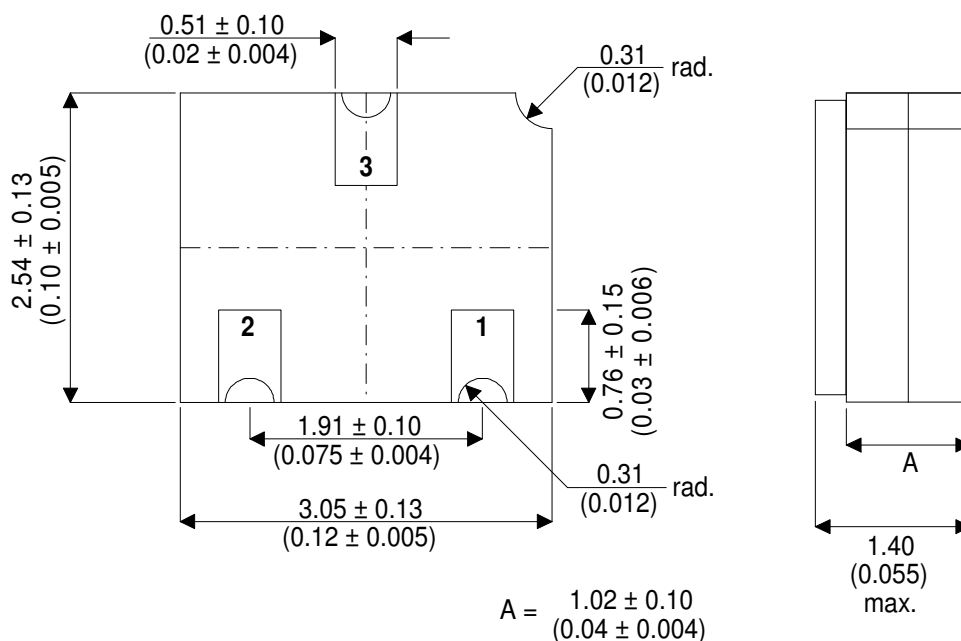
### Notes

(1) Pulse Width  $\leq 300\mu\text{s}$ ,  $\delta \leq 2\%$

# SILICON EPITAXIAL NPN TRANSISTOR BC109CSM

## MECHANICAL DATA

Dimensions in mm (inches)



### LCC1

#### Underside View

Pad 1 - Base

Pad 2 - Emitter

Pad 3 - Collector