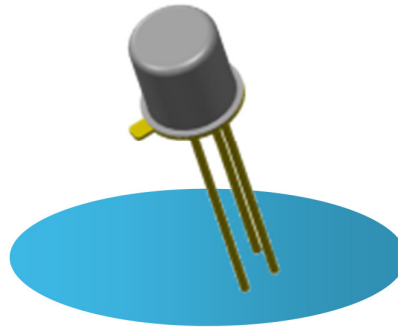


High Speed Switching PNP Silicon Bipolar Transistor

2N4209

- Hermetic TO-18 Metal Package
- Silicon Planar Epitaxial PNP Transistor
- High Speed Low Saturation Switching
- High Reliability Screening Options Available



ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise stated)

V _{CBO}	Collector - Base Voltage		-15V
V _{CEO}	Collector - Emitter Voltage		-15V
V _{EBO}	Emitter - Base Voltage		-4.5V
I _C	Continuous Collector Current		-50mA
P _D	Power Dissipation	T _A = 25°C	360mW
		Derate Above 25°C	2.05mW/°C
		Total Power Dissipation	547mW
		T _C = 25°C	
		Derate Above 25°C	3.13mW/°C
T _J	Junction Temperature Range		-65 to +200°C
T _{stg}	Storage Temperature Range		-65 to +200°C

THERMAL PROPERTIES

Symbols	Parameters	Max.	Units
R _{θJC}	Thermal Resistance, Junction To Case	320	°C/W
R _{θJA}	Thermal Resistance, Junction To Ambient	486	°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.

High Speed Switching PNP Silicon Bipolar Transistor 2N4209



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

Symbols	Parameters	Test Conditions	Min.	Typ.	Max.	Units
$V_{(BR)CEO}^{(1)}$	Collector - Emitter Breakdown Voltage	$I_C = -3\text{mA}$	-15			V
$V_{(BR)CES}$	Collector - Emitter Breakdown Voltage	$I_C = -100\mu\text{A}$	-15			
I_{CES}	Collector - Emitter Cut Off Current	$V_{CE} = -10\text{V}$ $T_A = 125^\circ\text{C}$			-10 -5.0	nA μA
I_{EBO}	Emitter Cut Off Current	$V_{EB} = -4.5\text{V}$ $V_{EB} = -3.5\text{V}$			-10 -10	μA nA
I_{CBO}	Collector Cut Off Current	$V_{CB} = -15\text{V}$ $I_E = 0$			-10	μA
$h_{FE}^{(1)}$	Forward Current Transfer Ratio	$I_C = -1.0\text{mA}$ $V_{CE} = -0.5\text{V}$	35			
		$I_C = -10\text{mA}$ $V_{CE} = -0.3\text{V}$	50		120	
		$I_C = -10\text{mA}$ $V_{CE} = -1.0\text{V}$	55		125	
		$I_C = -50\text{mA}$ $V_{CE} = -1.0\text{V}$ $T_A = -55^\circ\text{C}$	25			
$V_{CE(sat)}^{(1)}$	Collector-Emitter Saturation Voltage	$I_C = -1.0\text{mA}$ $I_B = -0.1\text{mA}$			-0.15	V
		$I_C = -10\text{mA}$ $I_B = -1.0\text{mA}$			-0.18	
		$I_C = -50\text{mA}$ $I_B = -5.0\text{mA}$			-0.60	
$V_{BE(sat)}^{(1)}$	Base-Emitter Saturation Voltage	$I_C = -1.0\text{mA}$ $I_B = -0.1\text{mA}$			-0.80	V
		$I_C = -10\text{mA}$ $I_B = -1.0\text{mA}$	-0.70		-0.95	
		$I_C = -50\text{mA}$ $I_B = -5.0\text{mA}$			-1.50	

High Speed Switching PNP Silicon Bipolar Transistor 2N4209



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

Symbols	Parameters	Test Conditions	Min.	Typ.	Max.	Units
$ h_{fe} $	Small Signal Forward Current Transfer Ratio	$I_C = -10\text{mA}$ $V_{CE} = -10\text{V}$ $f = 100\text{MHz}$	8.5			
C_{obo}	Output Capacitance $f = 1.0\text{MHz}$	$V_{CB} = -5.0\text{V}$ $I_E = 0$			3.0	pF
C_{ibo}	Input Capacitance $f = 1.0\text{MHz}$	$V_{BE} = -0.5\text{V}$ $I_C = 0$			3.5	
t_{on}	Turn-On Time	$V_{CC} = -1.5\text{V}$ $I_C = -10\text{mA}$ $I_B = -1.0\text{mA}$			25	ns
t_{off}	Turn-Off Time				20	
$T_{d(on)}$	Turn-On Delay Time				15	
t_r	Rise Time				10	

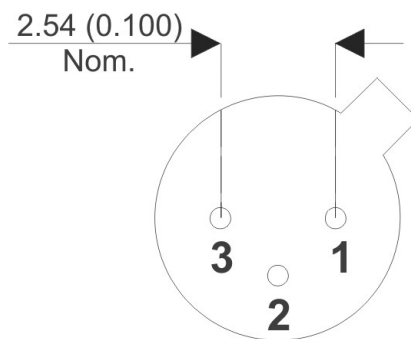
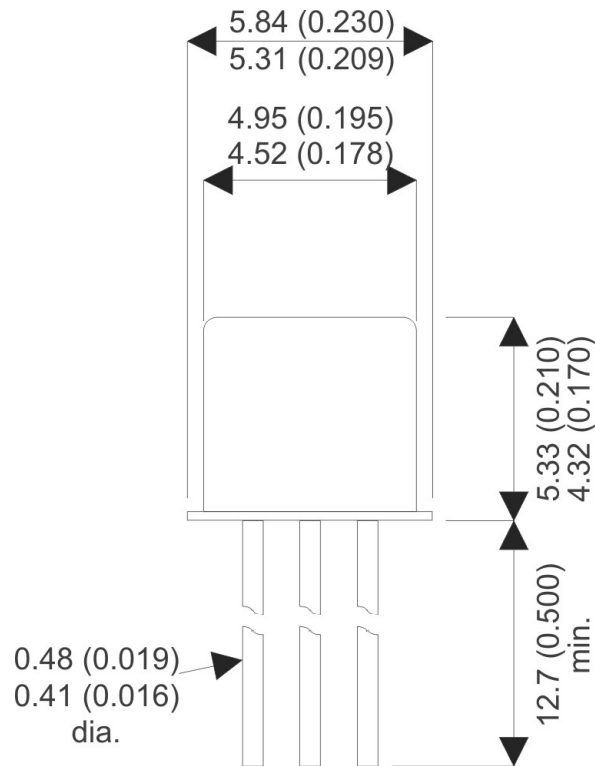
Notes

(1) Pulse Width $\leq 380\mu\text{s}$, duty cycle $\delta \leq 2\%$

High Speed Switching PNP Silicon Bipolar Transistor 2N4209

MECHANICAL DATA

Dimensions in mm (inches)



TO-18 (TO-206AA) METAL PACKAGE

Underside View

Pin 1 - Emitter

Pin 2 - Base

Pin 3 - Collector