

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	$V_{EB} = -4.5\text{V}$			-10	μA
		$V_{EB} = -3.5\text{V}$			-10	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 40			
$V_{CE(sat)}^{(1)}$	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	

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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

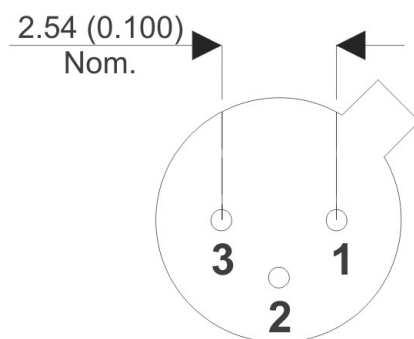
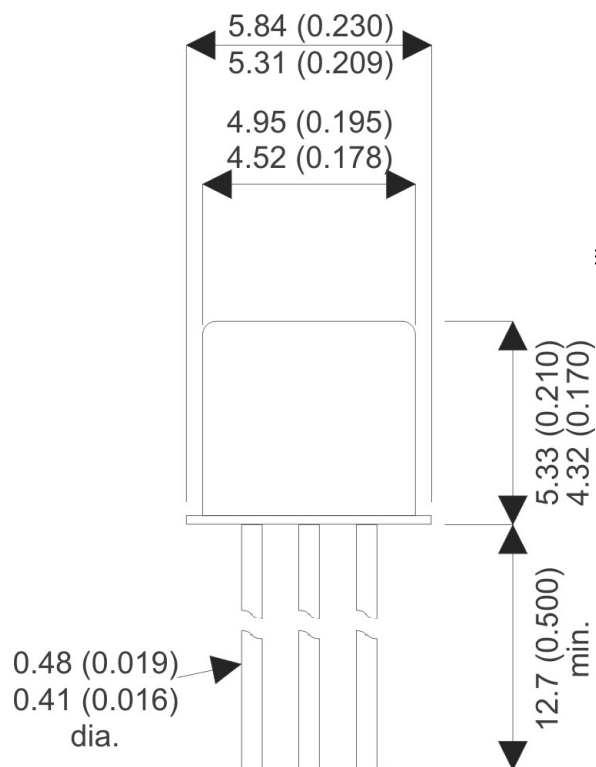
(1) Pulse Width $\leq 380\mu\text{s}$, duty cycle $\delta \leq 2\%$

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MECHANICAL DATA

Dimensions in mm (inches)



TO-18 (TO-206AA) METAL PACKAGE
Underside View

Pin 1 - Emitter

Pin 2 - Base

Pin 3 - Collector

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