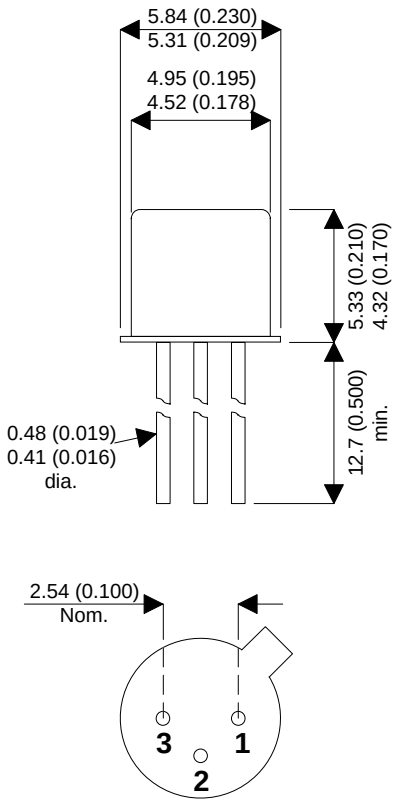
2N3209X

MECHANICAL DATA

Dimensions in mm (inches)



TO-18 (TO-206AA)

Pin 1 – Emitter Pin 2 – Base Pin 3 – Collector

HIGH SPEED PNP SWITCHING TRANSISTOR FOR HIGH RELIABILITY APPLICATIONS

FEATURES

- **SILICON PLANAR EPITAXIAL PNP TRANSISTOR**
- **SCREENING OPTIONS AVAILABLE**
- **SPACE QUALITY LEVEL OPTIONS**
- **HIGH SPEED SATURATED SWITCHING**

APPLICATIONS

For high reliability general purpose applications requiring small size and low weight devices.

ABSOLUTE MAXIMUM RATINGS

T_{CASE} = 25℃ unless otherwise stated			
V_{CBO}	Collector - Base Voltage		-20V
V_{CEO}	Collector - Emitter Voltage (I_B = 0)		-20V
V_{EBO}	Emitter – Base Voltage (I_C = 0)		-4.0V
I_C	Continuous Collector Current		-200mA
P_D	Total Power Dissipation at	T_{case} ≤ 25℃	1.2W
		T_{amb} ≤ 25℃	0.36W
T_{stg}, T_J	Operating and Storage Temperature Range		-65 to +200℃

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THERMAL DATA

$R_{thj-case}$	Thermal Resistance Junction - Case	Max	146	℃/W
$R_{thj-amb}$	Thermal Resistance Junction - Ambient	Max	486	℃/W

ELECTRICAL CHARACTERISTICS (T_{case}=25℃ unless otherwise stated)

	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
$V_{(BR)CEO}$*	Collector - Emitter Breakdown Voltage	I_C = 10mA		-20	-	-	V
$V_{(BR)CBO}$*	Collector - Base Breakdown Voltage	I_C = 10µA		-20	-	-	
$V_{(BR)EBO}$*	Emitter - Base Breakdown Voltage	I_C = 0	I_E = 10µA	-4.0	-	-	
I_{CES}*	Collector Cut-Off Current	V_{BE} = 0V	V_{CE} = -10V	-	-	-80	nA
			T_C = 125℃	-	-	-10	µA
$V_{CE(sat)}$*	Collector - Emitter Saturation Voltage	I_C = -10mA	I_B = -1.0mA	-	-	-0.20	V
		I_C = -30mA	I_B = -3mA	-	-	-0.25	
		I_C = -100mA	I_B = -10mA	-	-	-0.75	
$V_{BE(sat)}$*	Base - Emitter Saturation Voltage	I_C = -10mA	I_B = -1.0mA	-0.78	-	-0.98	V
		I_C = -30mA	I_B = -3mA	-0.85	-	-1.2	
		I_C = -100mA	I_B = -10mA	-	-	-1.7	
h_{FE}*	DC Current Gain	I_C = -10mA	V_{CE} = -0.3V	25	-	-	
		I_C = -30mA	V_{CE} = -0.5V	30	-	120	
			T_{AMB} = -55℃	12	-	-	
		I_C = -100mA	V_{CE} = -1.0V	15	-	-	

DYNAMIC CHARACTERISTICS (T_{case}=25℃ unless otherwise stated)

f_T	Transition Frequency	I_C = -30mA f = 100MHz	V_{CE} = -10V	400	-	-	MHz
C_{IBO}	Emitter - Base Capacitance	I_C = 0 f = 1.0MHz	V_{EB} = -0.5V	-	-	6	pF
C_{OBO}	Collector - Base Capacitance	I_E = 0 f = 1.0MHz	V_{CB} = -5V	-	-	5	pF
t_{on}	Turn-On Time	V_{CC} = -2V	I_C = -30mA	-	-	60	ns
t_{off}	Turn-Off Time	I_{B1}=-1.5mA	I_{B2}=- I_{B1}	-	-	90	

* Pulse test t_p = 300µs, δ < 2%

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Issue 1