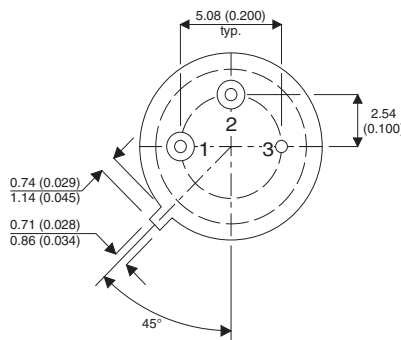
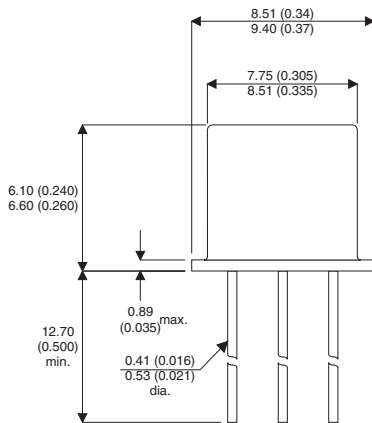


**MECHANICAL DATA**

Dimensions in mm (inches)

**PNP SILICON TRANSISTOR**



**TO-39 (TO-205AD) METAL PACKAGE**

**Underside View**

PIN 1 – Emitter    PIN 2 – Base    PIN 3 – Collector

**FEATURES**

- High Voltage Switching
- Low Power Amplifier Applications
- Hermetic TO39 Package

**APPLICATIONS:**

- General Purpose
- High Speed Saturated Switching

**ABSOLUTE MAXIMUM RATINGS** ( $T_{case} = 25^{\circ}C$  unless otherwise stated)

$V_{CEO}$	Collector – Emitter Voltage	-140V
$V_{CBO}$	Collector – Base Voltage	-140V
$V_{EBO}$	Emitter – Base Voltage	-5V
$I_C$	Collector Current	-1A
$P_D$	Total Device Dissipation @ $T_A = 25^{\circ}C$	1W
	Derate above $25^{\circ}C$	5.71mW/ $^{\circ}C$
$P_D$	Total Device Dissipation @ $T_C = 25^{\circ}C$	5W
	Derate above $25^{\circ}C$	28.6mW / $^{\circ}C$
$T_J, T_{STG}$	Operating and Storage Junction Temperature Range	-65 to +200 $^{\circ}C$

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
<b>OFF CHARACTERISTICS</b>					
$BV_{CEO}$	Collector–Emitter Breakdown Voltage <sup>1</sup>	$I_C = -10\text{mA}$ $I_B = 0$	-140		V
$BV_{CBO}$	Collector – Base Breakdown Voltage <sup>1</sup>	$I_C = -100\mu\text{A}$ $I_E = 0$	-140		
$BV_{EBO}$	Emitter – Base Breakdown Voltage <sup>1</sup>	$I_C = 0$ $I_E = -10\mu\text{A}$	-5.0		
$I_{EBO}$	Emitter Cut-off Current	$V_{BE} = -3.0\text{V}$ $I_C = 0$		-50	nA
$I_{CBO}$	Collector Cut-off Current	$V_{CB} = -100\text{V}$ $I_E = 0$		-100	
<b>ON CHARACTERISTICS</b>					
$h_{FE}$	DC Current Gain <sup>1</sup>	$I_C = -0.1\text{mA}$ $V_{CE} = -10\text{V}$	80		–
		$I_C = -1.0\text{mA}$ $V_{CE} = -10\text{V}$	90		
		$I_C = -10\text{mA}$ $V_{CE} = -10\text{V}$	100		
		$I_C = -50\text{mA}$ $V_{CE} = -10\text{V}$	100	300	
		$I_C = -150\text{mA}$ $V_{CE} = -10\text{V}$	50		
$V_{CE(sat)}$	Collector – Emitter Saturation Voltage <sup>1</sup>	$I_C = -10\text{mA}$ $I_B = -1.0\text{mA}$		-0.3	V
		$I_C = -50\text{mA}$ $I_B = -5\text{mA}$		-0.5	
$V_{BE(sat)}$	Base – Emitter Saturation Voltage <sup>1</sup>	$I_C = -10\text{mA}$ $I_B = -1.0\text{mA}$		-0.8	V
		$I_C = -50\text{mA}$ $I_B = -5\text{mA}$	-0.65	-0.9	
<b>SMALL SIGNAL CHARACTERISTICS</b>					
$f_t$	Current Gain Bandwidth Product	$V_{CE} = -30\text{V}$ $I_C = -30\text{mA}$ $f = 100\text{MHz}$	100		MHz
$C_{ob}$	Output Capacitance	$V_{CB} = -20\text{V}$ $I_E = 0$ $f = 100\text{kHz}$		10	pF
$C_{ib}$	Input Capacitance	$V_{BE} = 1.0\text{V}$ $I_C = 0$ $f = 1.0\text{MHz}$		75	pF
$h_{ie}$	Input Impedance		200	1200	$\Omega$
$h_{re}$	Voltage Feedback Ratio	$V_{CE} = -10\text{V}$ $I_C = -10\text{mA}$		3.0	$\times 10^{-4}$
$h_{fe}$	Small Signal Current Gain	$f = 1.0\text{kHz}$	80	320	—
$h_{oe}$	Output Admittance			200	$\mu\text{mhos}$
NF	Noise Figure	$V_{CE} = -10\text{V}$ $I_C = -0.5\text{mA}$ $R_S = 1.0\text{K}\Omega$ $f = 1.0\text{kHz}$		3.0	dB
<b>SWITCHING CHARACTERISTICS</b>					
$t_{on}$	Turn–On Time	$V_{CC} = -100\text{V}$ $V_{BE} = 4.0\text{V}$		400	ns
$t_{off}$	Turn–Off Time	$I_C = -50\text{mA}$ $I_{B1} = I_{B2} = -5\text{mA}$		600	

1) Pulse test : Pulse Width < 300 $\mu\text{s}$  ,Duty Cycle < 2%

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Document Number 5943

Issue 2