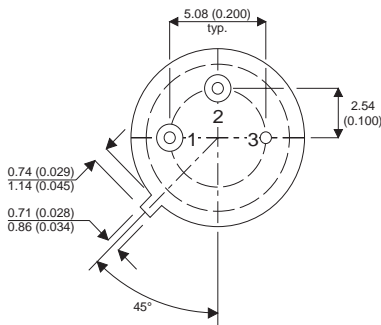
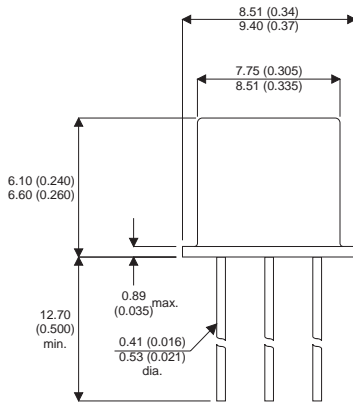


**MECHANICAL DATA**

Dimensions in mm (inches)



**TO39 PACKAGE**

**Underside View**

Pin 1 = Emitter    Pin 2 = Base    Pin 3 = Collector

**NPN SILICON TRANSISTOR**

**FEATURES**

- NPN High Voltage Planar Transistor
- Hermetic TO39 Package
- Full Screening Options Available

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

$V_{CBO}$	Collector – Base Voltage	150V
$V_{CEO}$	Collector – Emitter Voltage ( $I_B = 0$ )	150V
$V_{EBO}$	Emitter – Base Voltage ( $I_B = 0$ )	6V
$I_C$	Collector Current	300mA
$P_D$	Total Device Dissipation $T_A = 25^{\circ}C$	1W
$P_D$	Derate above $25^{\circ}C$	5.71mW / $^{\circ}C$
$T_{stg}$	Storage Temperature	-65 to $200^{\circ}C$
$R_{ja}$	Thermal Resistance Junction to Ambient	175 $^{\circ}C/W$

Semelab Plc 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.

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit	
<b>OFF CHARACTERISTICS</b>						
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage <sup>1</sup>	$I_C = 10\text{mA}$	$I_B = 0$	150		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 10\mu\text{A}$	$I_E = 0$	150		
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10\mu\text{A}$	$I_C = 0$	6		
$I_{CBO}$	Collector Cutoff Current	$V_{CB} = 75\text{V}$	$I_E = 0$		0.05	$\mu\text{A}$
		$V_{CB} = 75\text{V}$	$I_E = 0$	$T_A = 150^\circ\text{C}$	50	
$I_{EBO}$	Emitter Cutoff Current	$V_{EB(off)} = 4\text{V}$	$I_C = 0$		25	nA
<b>ON CHARACTERISTICS</b>						
$h_{FE}$	DC Current Gain	$I_C = 0.1\text{mA}$	$V_{CE} = 10\text{V}$	35		—
		$I_C = 1\text{mA}$	$V_{CE} = 10\text{V}$	50		
		$I_C = 10\text{mA}$	$V_{CE} = 10\text{V}^1$	75		
		$I_C = 150\text{mA}$	$V_{CE} = 10\text{V}^1$	100	300	
		$I_C = 300\text{mA}$	$V_{CE} = 10\text{V}^1$	20		
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage <sup>1</sup>	$I_C = 10\text{mA}$	$I_B = 1\text{mA}$		0.2	V
		$I_C = 50\text{mA}$	$I_B = 5\text{mA}$		0.25	
		$I_C = 150\text{mA}$	$I_B = 15\text{mA}$		0.4	
$V_{BE(SAT)}$	Base-Emitter Saturation Voltage <sup>1</sup>	$I_C = 10\text{mA}$	$I_B = 1\text{mA}$		0.8	V
		$I_C = 50\text{mA}$	$I_B = 5\text{mA}$		0.9	
		$I_C = 150\text{mA}$	$I_B = 15\text{mA}$		1.2	
<b>SMALL SIGNAL CHARACTERISTICS</b>						
$f_T$	Current-Gain–Bandwidth Product <sup>2</sup>	$V_{CE} = 20\text{V}$	$I_C = 20\text{mA}$ $f = 100\text{MHz}$	150		MHz
$C_{obo}$	Output Capacitance	$V_{CB} = 10\text{V}$	$I_E = 0$ $f = 1\text{MHz}$		8	$\text{pF}$
$C_{ibo}$	Input Capacitance	$V_{EB} = 0.5\text{V}$	$I_C = 0$ $f = 1\text{MHz}$		80	
$h_{ie}$	Input Impedance	$V_{CE} = 10\text{V}$	$I_C = 10\text{mA}$ $f = 1\text{KHz}$	0.25	1.25	$\Omega$
$h_{re}$	Voltage Feedback Ratio	$V_{CE} = 10\text{V}$	$I_C = 10\text{mA}$ $f = 1\text{KHz}$		4	$\times 10^{-4}$
$h_{fe}$	Small-Signal Current Gain	$V_{CE} = 10\text{V}$	$I_C = 10\text{mA}$ $f = 1\text{KHz}$		375	—
$h_{oe}$	Output Admittance	$V_{CE} = 10\text{V}$	$I_C = 10\text{mA}$ $f = 1\text{KHz}$		200	$\Omega$

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit	
<b>SWITCHING CHARACTERISTICS</b>						
$t_d$	Delay Time	$I_C = 150\text{mA}$ $V_{CC} = 100\text{V}$	$I_{B1} = 15\text{mA}$ $V_{EB(off)} = -2\text{V}$		20	ns
$t_r$	Rise Time	$I_C = 150\text{mA}$ $V_{CC} = 100\text{V}$	$I_{B1} = 15\text{mA}$ $V_{EB(off)} = -2\text{V}$		35	ns
$t_s$	Storage Time	$I_C = 150\text{mA}$ $I_{B1} = I_{B2} = 15\text{mA}$	$V_{CC} = 100\text{V}$		800	ns
$t_f$	Fall Time	$I_C = 150\text{mA}$ $I_{B1} = I_{B2} = 15\text{mA}$	$V_{CC} = 100\text{V}$		80	ns

- 1) Pulse test : Pulse Width <  $300\mu\text{s}$  ,Duty Cycle < 2%
- 2)  $f_t$  is defined as the frequency at which  $|h_{fe}|.f_{\text{test}}$