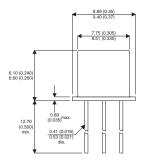
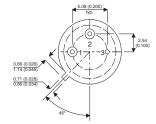




### **MECHANICAL DATA**

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** ( $T_{case} = 25$ °C unless otherwise stated)

$V_{CBO}$	Collector – Base Voltage	140V
$V_{CEO}$	Collector – Emitter Voltage	80V
$V_{EBO}$	Emitter – Base Voltage	7V
$I_{\mathbb{C}}$	Collector Current	1A
$P_{D}$	Total Device Dissipation @ T <sub>A</sub> = 25°C	0.8W
$P_{D}$	Derate above 25°C	4.6mW / °C
$P_{D}$	Total Device Dissipation @ T <sub>C</sub> = 25°C	5W
$P_{D}$	Derate above 25°C	28.6mW / °C
T <sub>i</sub>	Max Junction Temperature	200°C
T <sub>stg</sub>	Storage Temperature	–55 to 200°C
R <sub>jc</sub>	Thermal Resistance Junction to Case	16.5°C / W
R <sub>ja</sub>	Thermal Resistance Junction to Ambient	89.5°C / W

Semelab PIc 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.

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# **ELECTRICAL CHARACTERISTICS** ( $T_{case} = 25^{\circ}C$ unless otherwise stated)

	Parameter	Test Conditions	Min.	Тур.	Max.	Unit
V <sub>(BR)CEO</sub>	Collector – Emitter Breakdown Voltage	$I_C = 30 \text{mA}$ $I_B = 0$	80			V
V <sub>(BR)CBO*</sub>	Collector – Base Breakdown Voltage	$I_C = 100 \mu A$ $I_E = 0$	140			V
V <sub>(BR)EBO*</sub>	Emitter – Base Breakdown Voltage	$I_E = 100 \mu A$ $I_C = 0$	7			V
I <sub>CBO</sub>		$V_{CB} = 90V$ $I_E = 0$			0.01	μА
	Collector Cut-off Current	$V_{CB} = 90V$ $I_E = 0$			10	
		$T_{amb} = 150$ °C			10	
I <sub>EBO</sub>	Emitter Cut-off Current	$V_{BE} = 5V$ $I_C = 0$			0.010	μΑ
V <sub>CE(sat)</sub>	Collector – Emitter Saturation Voltage	$I_C = 150 \text{mA}$ $I_B = 15 \text{mA}$			0.20	V
	Collector – Emitter Saturation voltage	$I_C = 500$ mA $I_B = 50$ mA			0.50	
V <sub>BE(sat)</sub>	Base – Emitter Saturation Voltage	$I_{C} = 150 \text{mA}$ $I_{B} = 15 \text{mA}$			1.1	V
h <sub>FE*</sub>		$I_C = 0.1 \text{mA}$ $V_{CE} = 10 \text{V}$	50			
		$I_C = 10$ mA $V_{CE} = 10$ V	90			
	DC Current Gain	I <sub>C</sub> = 150mA V <sub>CE</sub> = 10V	100		300	_
		$I_C = 500$ mA $V_{CE} = 10$ V	50			
		$I_C = 1A$ $V_{CE} = 10V$	15			
	$T_C = -55^{\circ}C$	$I_C = 150 \text{mA}$ $V_{CE} = 0.5 \text{V}$	40			

 $t^{\star}$  Pulse test  $t_p$  = 300 $\mu s$  ,  $\delta \leq 1\%$ 

## **DYNAMIC CHARACTERISTICS** (T<sub>case</sub> = 25°C unless otherwise stated)

Parameter		Test Conditions			Min.	Тур.	Max.	Unit
f <sub>T</sub>	Transition Frequency	$I_C = 50 \text{mA}$	V <sub>CE</sub> = 10V	f = 20MHz	100		400	MHz
C <sub>obo</sub>	Output Capacitance	V <sub>CB</sub> = 10V	$I_E = 0$	f = 1.0MHz			12	pF
C <sub>ibo</sub>	Input Capacitance	$V_{BE} = 0.5V$	I <sub>C</sub> = 0	f = 1.0MHz			60	pF
h <sub>fe</sub>	Small Signal Current Gain	$I_C = 1mA$	$V_{CE} = 5V$	f = 1kHz		80	400	_
rb'C <sub>c</sub>	Collector Base Time Constant	I <sub>E</sub> = 10mA	V <sub>CB</sub> = 10V	f = 79.8MHz	15		400	ps
NF	Noise Figure	I <sub>C</sub> = 100μA	V <sub>CE</sub> = 10V	f = 1kHz			4	db
			$R_S = 1K\Omega$					

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