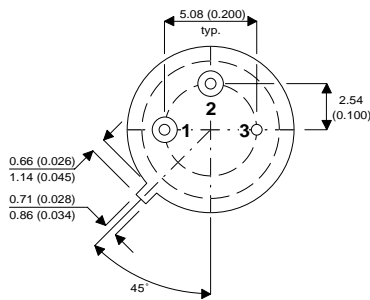
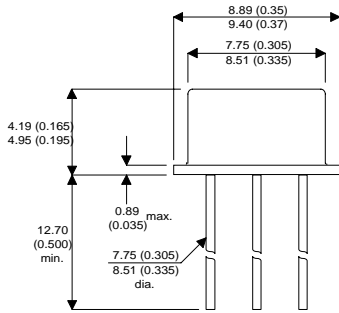


**MECHANICAL DATA**

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	140V
$V_{CEO}$	Collector – Emitter Voltage	80V
$V_{EBO}$	Emitter – Base Voltage	7V
$I_C$	Collector Current	1A
$P_D$	Total Device Dissipation @ $T_A = 25^{\circ}C$	0.8W
$P_D$	Derate above $25^{\circ}C$	4.6mW / $^{\circ}C$
$P_D$	Total Device Dissipation @ $T_C = 25^{\circ}C$	5W
$P_D$	Derate above $25^{\circ}C$	28.6mW / $^{\circ}C$
$T_j$	Max Junction Temperature	200 $^{\circ}C$
$T_{stg}$	Storage Temperature	-55 to 200 $^{\circ}C$
$R_{jc}$	Thermal Resistance Junction to Case	16.5 $^{\circ}C$ / W
$R_{ja}$	Thermal Resistance Junction to Ambient	89.5 $^{\circ}C$ / W

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

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

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

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$f_T$ Transition Frequency	$I_C = 50mA$ $V_{CE} = 10V$ $f = 20MHz$	100		400	MHz
$C_{obo}$ Output Capacitance	$V_{CB} = 10V$ $I_E = 0$ $f = 1.0MHz$			12	pF
$C_{ibo}$ Input Capacitance	$V_{BE} = 0.5V$ $I_C = 0$ $f = 1.0MHz$			60	pF
$h_{fe}$ Small Signal Current Gain	$I_C = 1mA$ $V_{CE} = 5V$ $f = 1kHz$		80	400	—
$rb \cdot C_c$ Collector Base Time Constant	$I_E = 10mA$ $V_{CB} = 10V$ $f = 79.8MHz$	15		400	ps
NF Noise Figure	$I_C = 100\mu A$ $V_{CE} = 10V$ $f = 1kHz$ $R_S = 1K\Omega$			4	db