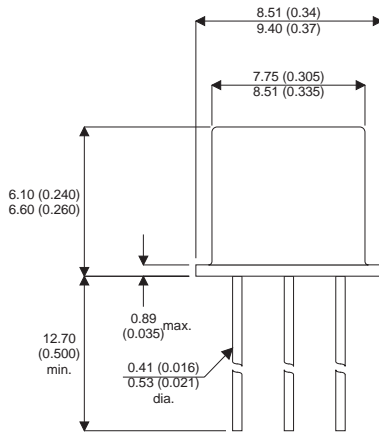




MECHANICAL DATA

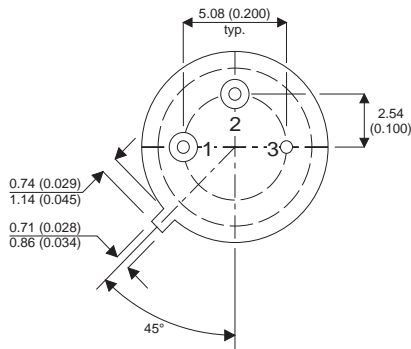
Dimensions in mm (inches)



NPN EPITAXIAL PLANAR BIPOLAR TRANSISTOR

FEATURES

- SILICON PLANAR EPITAXIAL NPN TRANSISTOR
- CECC SCREENING OPTIONS
- JAN LEVEL SCREENING OPTIONS



TO-39 (TO-205AD) PACKAGE
Underside View

APPLICATIONS:

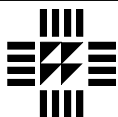
- General Purpose Amplifier
- High Voltage

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

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

V_{CEO}	Collector – Emitter Voltage ($I_B = 0$)	300V
V_{CBO}	Collector – Base Voltage ($I_E = 0$)	300V
V_{EBO}	Emitter – Base Voltage ($I_C = 0$)	7V
I_C	Collector Current	150mA
P_D	Total Device Dissipation @ $T_A = 25^{\circ}C$	1.0W
	Derate above $25^{\circ}C$	6.67mW / $^{\circ}C$
P_D	Total Device Dissipation @ $T_C = 25^{\circ}C$	5.0W
	Derate above $25^{\circ}C$	33.3mW / $^{\circ}C$
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-65 to +200 $^{\circ}C$

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
$V_{(BR)CEO}^*$ Collector – Emitter Breakdown Voltage	$I_C = 30\text{mA}$ $I_B = 0$	300			V
$V_{(BR)CBO}$ Collector – Base Breakdown Voltage	$I_C = 100\mu\text{A}$ $I_E = 0$	300			
$V_{(BR)EBO}$ Emitter – Base Breakdown Voltage	$I_E = 100\mu\text{A}$ $I_C = 0$	7.0			
I_{CBO} Collector Cut-off Current	$V_{CB} = 100\text{V}$ $I_E = 0$			0.05	μA
	$T_A = +125^\circ\text{C}$			20	
I_{EBO} Emitter Cut-off Current	$V_{BE} = 5\text{V}$ $I_C = 0$			10	nA
$V_{CE(sat)}^*$ Collector – Emitter Saturation Voltage	$I_C = 30\text{mA}$ $I_B = 3\text{mA}$			1.0	V
$V_{BE(sat)}^*$ Base – Emitter Saturation Voltage	$I_C = 30\text{mA}$ $I_B = 3\text{mA}$			0.85	
$V_{BE(on)}^*$ Base – Emitter On Voltage	$I_C = 30\text{mA}$ $V_{CE} = 25\text{V}$			0.82	
h_{FE}^* DC Current Gain	$I_C = 5\text{mA}$ $V_{CE} = 25\text{V}$	10			—
	$I_C = 30\text{mA}$ $V_{CE} = 25\text{V}$	35		150	
	$T_A = -55^\circ\text{C}$	10			
	$I_C = 100\text{mA}$ $V_{CE} = 25\text{V}$	35			

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
f_t Transistion Frequency ¹	$V_{CE} = 25\text{V}$ $I_C = 10\text{mA}$ $f = 20\text{MHz}$	30		160	MHz
C_{ob} Output Capacitance	$V_{CB} = 10\text{V}$ $I_E = 0$ $f = 1\text{MHz}$			10	pF
C_{ib} Input Capacitance	$V_{BE} = 0.5\text{V}$ $I_C = 0$ $f = 1\text{MHz}$			75	

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

Parameter	Min.	Typ.	Max.	Unit
$R_{\theta JC}$ Thermal Resistance Junction To Case			30	$^\circ\text{C} / \text{W}$
$R_{\theta JA}$ Thermal Resistance Junction To Ambient			150	

* Pulse Test: $t_p \leq 300\text{ms}$, $d \leq 2\%$.

1) f_t is defined as the frequency at which $|h_{fe}|$ extrapolates to unity.