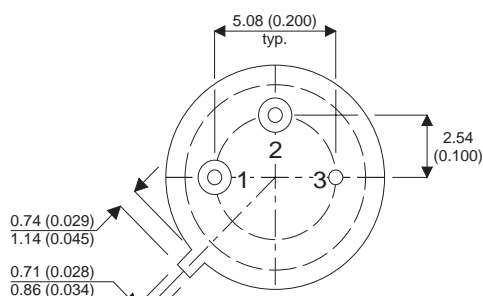
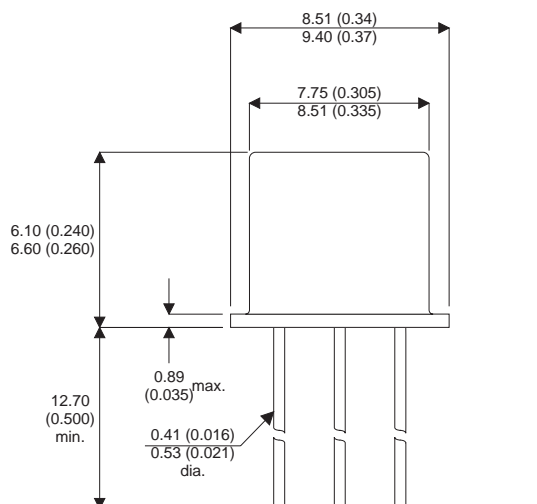


MECHANICAL DATA

Dimensions in mm (inches)



TO-39 PACKAGE

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

SILICON EPITAXIAL NPN TRANSISTOR

FEATURES

General purpose power transistor for switching and linear applications in a hermetic TO-39 package.

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

V_{CBO}	Collector – Base Voltage	80V
$V_{CER(sus)}$	Collector – Emitter Sustaining Voltage $R_{BE} = 100\Omega$	80V
$V_{CEO(sus)}$	Collector – Emitter Sustaining Voltage	65V
V_{EBO}	Emitter – Base Voltage	5V
I_C	Continuous Collector Current	3.5A
I_B	Continuous Collector Current	1A
P_D	Total Device Dissipation $T_A = 25^\circ\text{C}$	10W
	Derate above 25°C	0.057W/ $^\circ\text{C}$
P_D	Total Device Dissipation $T_C = 25^\circ\text{C}$	1W
	Derate above 25°C	0.0057W/ $^\circ\text{C}$
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-65 to +200 $^\circ\text{C}$
T_L	Lead temperature, $\geq 1/32"$ (0.8mm) from seating plane for 10 s max.	230 $^\circ\text{C}$

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 ($T_C = 25^\circ\text{C}$ unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CER} Collector Cut-off Current	$V_{\text{CE}} = 65\text{V}$			10	μA
	$R_{\text{BE}} = 100\Omega$ $T_C = 150^\circ\text{C}$			1	mA
I_{CEX} Collector Cut-off Current	$V_{\text{CE}} = 75\text{V}$ $V_{\text{BE}} = -1.5\text{V}$			10	μA
	$R_{\text{BE}} = 100\Omega$ $T_C = 150^\circ\text{C}$			1	mA
I_{CEO} Collector Cut-off Current	$V_{\text{CE}} = 50\text{V}$ $I_{\text{B}} = 0$			100	μA
I_{EBO} Emitter Cut-off Current	$V_{\text{BE}} = -5\text{V}$ $I_{\text{C}} = 0$			10	μA
h_{FE}^* DC Current Gain	$V_{\text{CE}} = 2\text{V}$ $I_{\text{C}} = 1\text{A}$	20		100	—
	$V_{\text{CE}} = 2\text{V}$ $I_{\text{C}} = 3.2\text{A}$	4			
$V_{\text{CEO(sus)}}^*$ Collector – Emitter Sustaining Voltage ¹	$I_{\text{C}} = 100\text{mA}$ $I_{\text{B}} = 0$	65			V
$V_{\text{CER(sus)}}^*$ Collector – Emitter Sustaining Voltage ¹	$I_{\text{C}} = 100\text{mA}$ $R_{\text{BE}} = 100\Omega$	80			
V_{BE} Base – Emitter Voltage	$V_{\text{CE}} = 2\text{V}$ $I_{\text{C}} = 1\text{A}$			1.5	V
$V_{\text{CE(sat)}}$ Collector – Emitter Saturation Voltage ²	$I_{\text{C}} = 1\text{A}$ $I_{\text{B}} = 100\text{mA}$			0.5	
$ h_{\text{fe}} $ Small Signal Common – Emitter Current Gain	$V_{\text{CE}} = -2\text{V}$ $I_{\text{C}} = 100\text{mA}$ $f = 200\text{kHz}$	5		20	—
h_{fe} Small Signal Common – Emitter Current Gain	$V_{\text{CE}} = 2\text{V}$ $I_{\text{C}} = 100\text{mA}$ $f = 1\text{kHz}$	25			—
t_{ON} Turn-on Time	$V_{\text{CE}} = 30\text{V}$ $I_{\text{C}} = 1\text{A}$ $I_{\text{B1}} = I_{\text{B2}} = 100\text{mA}$			5	μs
t_{OFF} Turn-off Time				15	
$R_{\theta\text{JC}}$ Thermal Resistance Junction – Case				17.5	$^\circ\text{C/W}$
$R_{\theta\text{JA}}$ Thermal Resistance Junction – Ambient				17.5	

NOTES

* Pulse Test: $t_p = 300\mu\text{s}$, $\delta = 1.8\%$.

- These tests *MUST NOT* be measured on a curve tracer.
- Measured $\frac{1}{4}$ " (6.35 mm) from case. Lead resistance is critical in this test.
- Measured at a frequency where $|h_{\text{fe}}|$ is decreasing at approximately 6dB per octave.