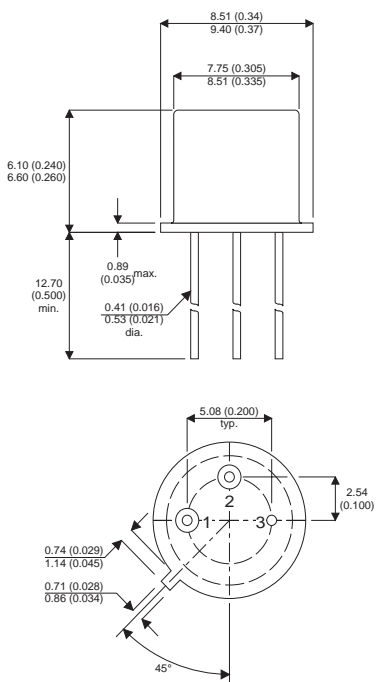


MECHANICAL DATA

Dimensions in mm (inches)



TO-39 (TO-205AD)

Underside View

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

**HIGH SPEED
MEDIUM POWER, NPN
SWITCHING TRANSISTOR**

FEATURES

- SILICON PLANAR EPITAXIAL NPN TRANSISTOR
- HIGH SPEED SATURATED SWITCHING
- ALSO AVAILABLE IN CERAMIC SURFACE MOUNT PACKAGE

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

V_{CBO}	Collector – Base Voltage	60V
V_{CEO}	Collector – Emitter Voltage	30V
V_{EBO}	Emitter – Base Voltage	5V
I_C	Collector Current	800mA
P_D	Total Device Dissipation @ $T_A = 25^\circ\text{C}$	0.8W
P_D	Total Device Dissipation @ $T_C = 25^\circ\text{C}$	3W
T_{STG}	Storage Temperature Range	-65 to +200°C
T_J	Junction Temperature	175°C
$R_{\theta ja}$	Thermal Resistance Junction to Ambient	187.5°C/W
$R_{\theta jc}$	Thermal Resistance Junction to Case	50°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	
OFF CHARACTERISTICS						
$V_{(BR)CEO}$	Collector – Emitter Breakdown Voltage	$I_C = 10\text{mA}$	$I_B = 0$	30	V	
$V_{(BR)CBO}$	Collector – Base Breakdown Voltage	$I_C = 10\mu\text{A}$	$I_E = 0$	60	V	
$V_{(BR)EBO}$	Emitter – Base Breakdown Voltage	$I_E = 10\mu\text{A}$	$I_C = 0$	5	V	
I_{EBO}	Emitter Cut-off Current	$I_C = 0$	$V_{EB} = 3\text{V}$	10	nA	
I_{CBO}	Collector – Base Cut-off Current	$I_E = 0$	$V_{CB} = 50\text{V}$ $T_A = 150^\circ\text{C}$	10	nA μA	
ON CHARACTERISTICS						
$V_{CE(sat)}^1$	Collector – Emitter Saturation Voltage	$I_C = 150\text{mA}$	$I_B = 15\text{mA}$	0.4	V	
		$I_C = 500\text{mA}$	$I_B = 50\text{mA}$	1.6		
$V_{BE(sat)}^1$	Base – Emitter Saturation Voltage	$I_C = 150\text{mA}$	$I_B = 15\text{mA}$	1.3	V	
		$I_C = 500\text{mA}$	$I_C = 50\text{mA}$	2.6		
h_{FE}	DC Current Gain	$I_C = 0.1\text{mA}$	$V_{CE} = 10\text{V}$	35	—	
		$I_C = 1.0\text{mA}$	$V_{CE} = 10\text{V}$	50		
		$I_C = 10\text{mA}$	$V_{CE} = 10\text{V}$	75		
		$I_C = 150\text{mA}$	$V_{CE} = 10\text{V}^1$	100		300
		$I_C = 500\text{mA}$	$V_{CE} = 10\text{V}^1$	30		
		$I_C = 150\text{mA}$	$V_{CE} = 1.0\text{V}^1$	50		
f_T	Transition Frequency ²	$I_C = 20\text{mA}$ $f = 100\text{MHz}$	$V_{CE} = 20\text{V}$	250	MHz	
C_{CBO}	Collector Base Capacitance	$V_{CB} = 10\text{V}$ $f = 100\text{kHz}$	$I_E = 0$	8	pF	

NOTES:

- 1) Pulse test: $t_p \leq 300\mu\text{s}$, $\delta \leq 2\%$
- 2) f_T is defined as the frequency at which h_{FE} extrapolates to unity.