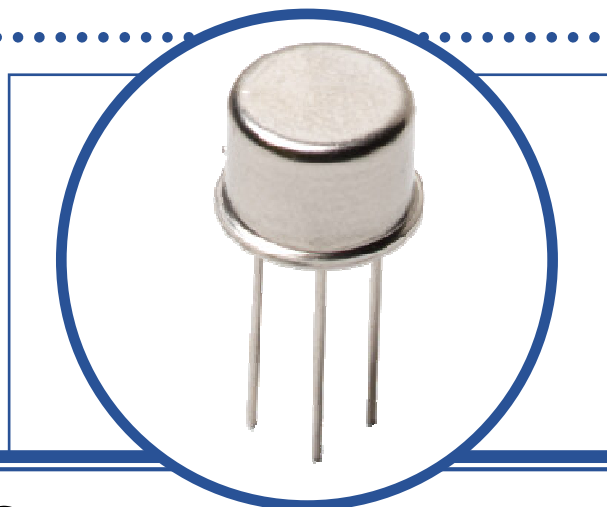


# SILICON PLANAR EPITAXIAL NPN TRANSISTOR

## 2N4001

- Low Power
- Hermetic TO-39 Metal package.
- Ideally suited for Medium Speed Switching and General Purpose Applications
- Screening Options Available



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

$V_{CBO}$	Collector – Base Voltage	120V
$V_{CEO}$	Collector – Emitter Voltage	100V
$V_{EBO}$	Emitter – Base Voltage	8V
$I_C$	Continuous Collector Current	1.0A
$P_D$	Total Power Dissipation at $T_A = 25^\circ\text{C}$ Derate Above $25^\circ\text{C}$	1.0W 5.71mW/ $^\circ\text{C}$
$T_J$	Junction Temperature Range	-65 to +200 $^\circ\text{C}$
$T_{stg}$	Storage Temperature Range	-65 to +200 $^\circ\text{C}$

### THERMAL PROPERTIES

Symbols	Parameters	Max.	Units
$R_{\theta JA}$	Thermal Resistance, Junction To Ambient	175	$^\circ\text{C/W}$

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

Symbols	Parameters	Test Conditions	Min.	Typ	Max.	Units
$V_{(BR)CEO}^{(1)}$	Collector-Emitter Breakdown Voltage	$I_C = 10\text{mA}$ $I_B = 0$	100			V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 100\mu\text{A}$ $I_E = 0$	120			
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 1.0\text{mA}$ $I_C = 0$	8			
$V_{CE(sat)}^{(1)}$	Collector-Emitter Saturation Voltage	$I_C = 1.0\text{A}$ $I_B = 100\text{mA}$			0.5	V
$h_{FE}^{(1)}$	Forward-current transfer ratio	$I_C = 500\text{mA}$ $V_{CE} = 2\text{V}$	40		120	

## DYNAMIC CHARACTERISTICS

$f_T$	Transition Frequency	$I_C = 100\text{mA}$ $V_{CE} = 10\text{V}$ $f = 10\text{MHz}$	30	40		MHz
$C_{obo}$	Output Capacitance	$V_{CB} = 10\text{V}$ $I_E = 0$ $f = 1.0\text{MHz}$			60	pF
$t_{on}$	Turn-On Time	$I_C = 500\text{mA}$ $V_{CC} = 30\text{V}$ $I_{B1} = 50\text{mA}$			300	ns
$t_{off}$	Turn-Off Time	$I_C = 500\text{mA}$ $V_{CC} = 30\text{V}$ $I_{B1} = -I_{B2} = 50\text{mA}$			2000	

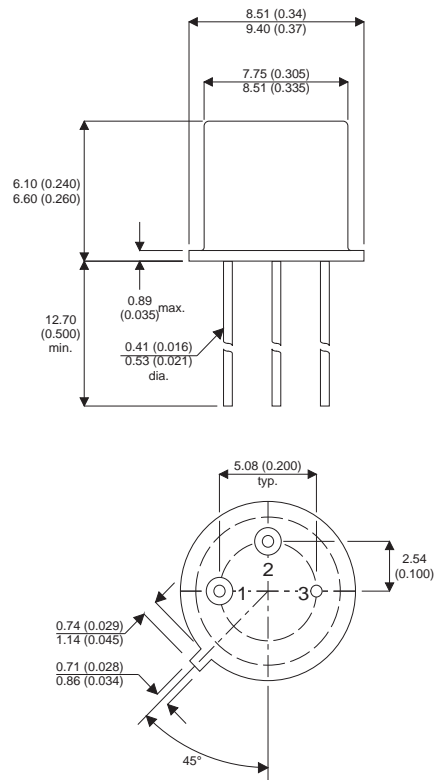
### Notes

(1) Pulse Width  $\leq 300\mu\text{s}$ ,  $\delta \leq 2\%$

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## MECHANICAL DATA

Dimensions in mm (inches)



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

Pin 1 - Emitter

Pin 2 - Base

Pin 3 - Collector