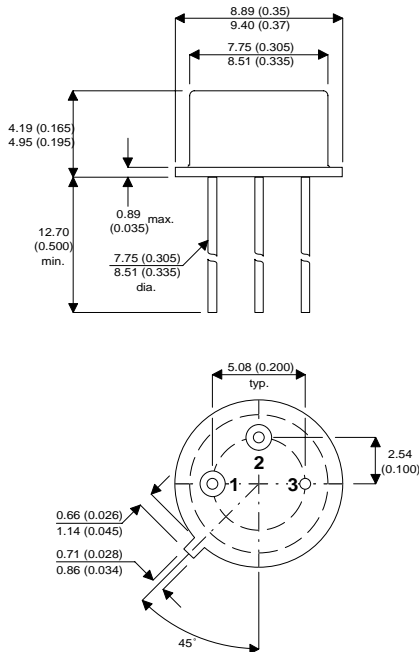


**MECHANICAL DATA**

Dimensions in mm (inches)



**TO39 PACKAGE**

Pin 1 = Emitter      Pin 2 = Base      Pin 3 = Collector

**HIGH VOLTAGE  
NPN TRANSISTORS**

**FEATURES**

- DUAL SILICON PLANAR EPITAXIAL NPN TRANSISTOR
- HIGH VOLTAGE

**APPLICATIONS:**

These devices are particularly suited as drivers in high-voltage low current inverters, switing and series regulators.

**ABSOLUTE MAXIMUM RATINGS**

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

		<b>2N3439</b>	<b>2N3440</b>
$V_{CBO}$	Collector – Base Voltage ( $I_E = 0$ )	450V	300V
$V_{CEO}$	Collector – Emitter Voltage ( $I_B = 0$ )	350V	250V
$V_{EBO}$	Emitter – Base Voltage ( $I_C = 0$ )		7V
$I_C$	Collector Current		1A
$I_B$	Base Current		0.5A
$P_{tot}$	Total Power Dissipation at $T_{case} \leq 25^{\circ}C$ $T_{amb} \leq 50^{\circ}C$		5W 1W
$T_{stg}$	Storage Temperature		-55 to 200°C
$T_j$	Junction Temperature		200°C

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_{CEO(sus)}$ * Collector – Emitter Sustaining Voltage ( $I_B = 0$ )	$I_C = 50mA$ <b>2N3439</b>	350			V
	$I_C = 50mA$ <b>2N3440</b>	250			
$I_{CEO}$ Collector Cut-off Current ( $I_B = 0$ )	$V_{CE} = 300V$ <b>2N3439</b>			20	$\mu A$
	$V_{CE} = 200V$ <b>2N3440</b>			50	
$I_{CEX}$ Collector Cut-off Current ( $V_{BE} = -1.5V$ )	$V_{CE} = 450V$ <b>2N3439</b>			500	$\mu A$
	$V_{CE} = 300V$ <b>2N3440</b>			500	
$I_{CBO}$ Collector – Base Cut-off Current ( $I_E = 0$ )	$V_{CB} = 350V$ <b>2N3439</b>			20	$\mu A$
	$V_{CB} = 250V$ <b>2N3440</b>			20	
$I_{EBO}$ Emitter Cut-off Current ( $I_C = 0$ )	$V_{EB} = 6V$			20	$\mu A$
$V_{CE(sat)}$ * Collector – Emitter Saturation Voltage	$I_C = 50mA$ $I_B = 4mA$			0.5	V
$V_{BE(sat)}$ * Base – Emitter Saturation Voltage	$I_C = 50mA$ $I_B = 4mA$			1.3	V
$h_{FE}$ * DC Current Gain	$I_C = 20mA$ $V_{CE} = 10V$	40		160	—
	$I_C = 2mA$ $V_{CE} = 10V$ <b>2N3439 only</b>	30			—

\* Pulse test  $t_p = 300\mu s$ ,  $\delta \leq 2\%$

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$f_T$ Transition Frequency	$I_C = 10mA$ $V_{CE} = 10V$ $f = 5MHz$	15			MHz
$C_{ob}$ Output Capacitance	$V_{CB} = 10V$ $f = 1MHz$			10	pF
$h_{fe}$ Small Signal Current Gain	$I_C = 5mA$ $V_{CE} = 10V$ $f = 1kHz$	25			—

**THERMAL DATA**

Parameter	Min.	Typ.	Max.	Unit
$R_{\theta JA}$ Thermal Resistance Junction to Ambient			175	$^{\circ}C/W$
$R_{\theta JC}$ Thermal Resistance Junction to Case			35	$^{\circ}C/W$