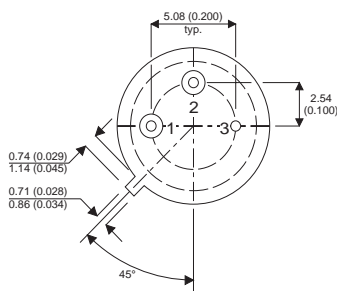
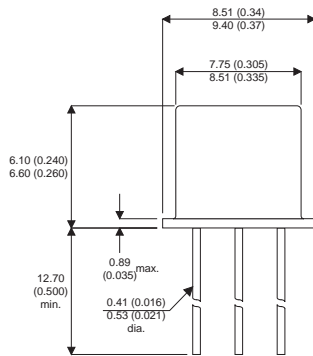


MECHANICAL DATA

Dimensions in mm (inches)



TO39 PACKAGE (TO-205AD)

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, switching and series regulators.

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

		2N3439	2N3440
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		-65 to 200°C
T_j	Junction Temperature		200°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 ($T_{\text{case}} = 25^{\circ}\text{C}$ unless otherwise stated)

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

* Pulse test $t_{\text{p}} = 300\mu\text{s}$, $\delta \leq 2\%$

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

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

THERMAL DATA

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

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