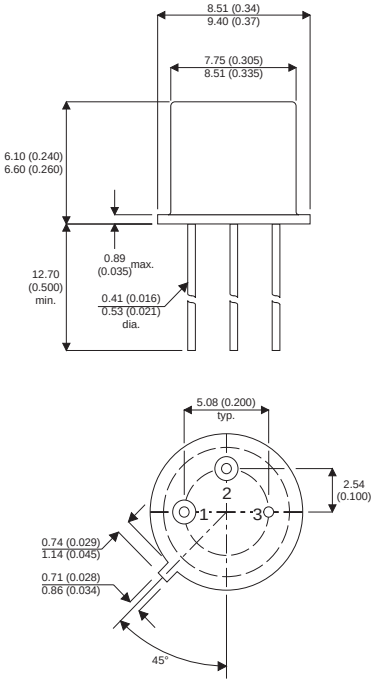
# 2N3439
# 2N3440

## HIGH VOLTAGE NPN TRANSISTORS

**MECHANICAL DATA**
Dimensions in mm (inches)




**TO39 PACKAGE (TO-205AD)**

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

### 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°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 $T_{case} \leq 25°C$ | 5W | |
| | $T_{amb} \leq 50°C$ | 1W | |
| $T_{stg}$ | Storage Temperature | –65 to 200°C | |
| $T_j$ | Junction Temperature | 200°C | |



**Semelab plc.** Telephone +44(0)1455 556565. Fax +44(0)1455 552612.
E-mail: sales@semelab.co.uk Website: http://www.semelab.co.uk

Document Number 3066
Issue: 1

# 2N3439
# 2N3440

## ELECTRICAL CHARACTERISTICS ($T_{case}$ = 25°C unless otherwise stated)

| | Parameter | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| $V_{CEO(sus)}$* | Collector – Emitter Sustaining Voltage ($I_B$ = 0) | $I_C$ = 50mA | **2N3439** | 350 | | | V |
| | | $I_C$ = 50mA | **2N3440** | 250 | | | |
| $I_{CEO}$ | Collector Cut-off Current ($I_B$ = 0) | $V_{CE}$ = 300V | **2N3439** | | | 20 | µA |
| | | $V_{CE}$ = 200V | **2N3440** | | | 50 | |
| $I_{CEX}$ | Collector Cut-off Current ($V_{BE}$ = -1.5V) | $V_{CE}$ = 450V | **2N3439** | | | 500 | µA |
| | | $V_{CE}$ = 300V | **2N3440** | | | 500 | |
| $I_{CBO}$ | Collector – Base Cut-off Current ($I_E$ = 0) | $V_{CB}$ = 350V | **2N3439** | | | 20 | µA |
| | | $V_{CB}$ = 250V | **2N3440** | | | 20 | |
| $I_{EBO}$ | Emitter Cut-off Current ($I_C$ = 0) | $V_{EB}$ = 6V | | | | 20 | µA |
| $V_{CE(sat)}$* | 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 | **2N3439 only** | 30 | | | — |

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

## DYNAMIC CHARACTERISTICS ($T_{case}$ = 25°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 | °C/W |
| $R_{\theta JC}$ | Thermal Resistance Junction to Case | | | 35 | °C/W |



**Semelab plc.** Telephone +44(0)1455 556565. Fax +44(0)1455 552612.
E-mail: sales@semelab.co.uk Website: http://www.semelab.co.uk

Document Number 3066
Issue: 1