

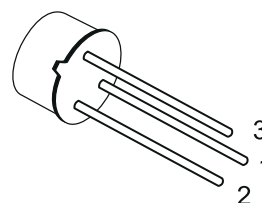
## SILICON NPN TRANSISTORS

- STMicroelectronics PREFERRED SALESTYPES
- NPN TRANSISTOR

### DESCRIPTION

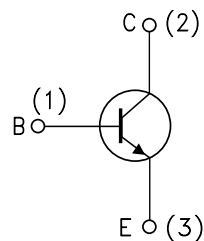
The 2N3439 and 2N3440 are silicon epitaxial planar NPN transistors in jedec TO-39 metal case designed for use in consumer and industrial line-operated applications.

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



**TO-39**

### INTERNAL SCHEMATIC DIAGRAM



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		2N3439	2N3440	
$V_{CBO}$	Collector-Base Voltage ( $I_E = 0$ )	450	300	V
$V_{CEO}$	Collector-Emitter Voltage ( $I_B = 0$ )	350	250	V
$V_{EBO}$	Emitter-Base Voltage ( $I_C = 0$ )	7		V
$I_C$	Collector Current	1		A
$I_B$	Base Current	0.5		A
$P_{tot}$	Total Dissipation at $T_c \leq 25\text{ }^\circ\text{C}$	10		W
$P_{tot}$	Total Dissipation at $T_{amb} \leq 50\text{ }^\circ\text{C}$	1		W
$T_{stg}$	Storage Temperature	-65 to 200		$^\circ\text{C}$
$T_j$	Max. Operating Junction Temperature	200		$^\circ\text{C}$

## 2N3439 / 2N3440

### THERMAL DATA

R <sub>thj-case</sub>	Thermal Resistance Junction-case	Max	17.5	°C/W
R <sub>thj-amb</sub>	Thermal Resistance Junction-ambient	Max	175	°C/W

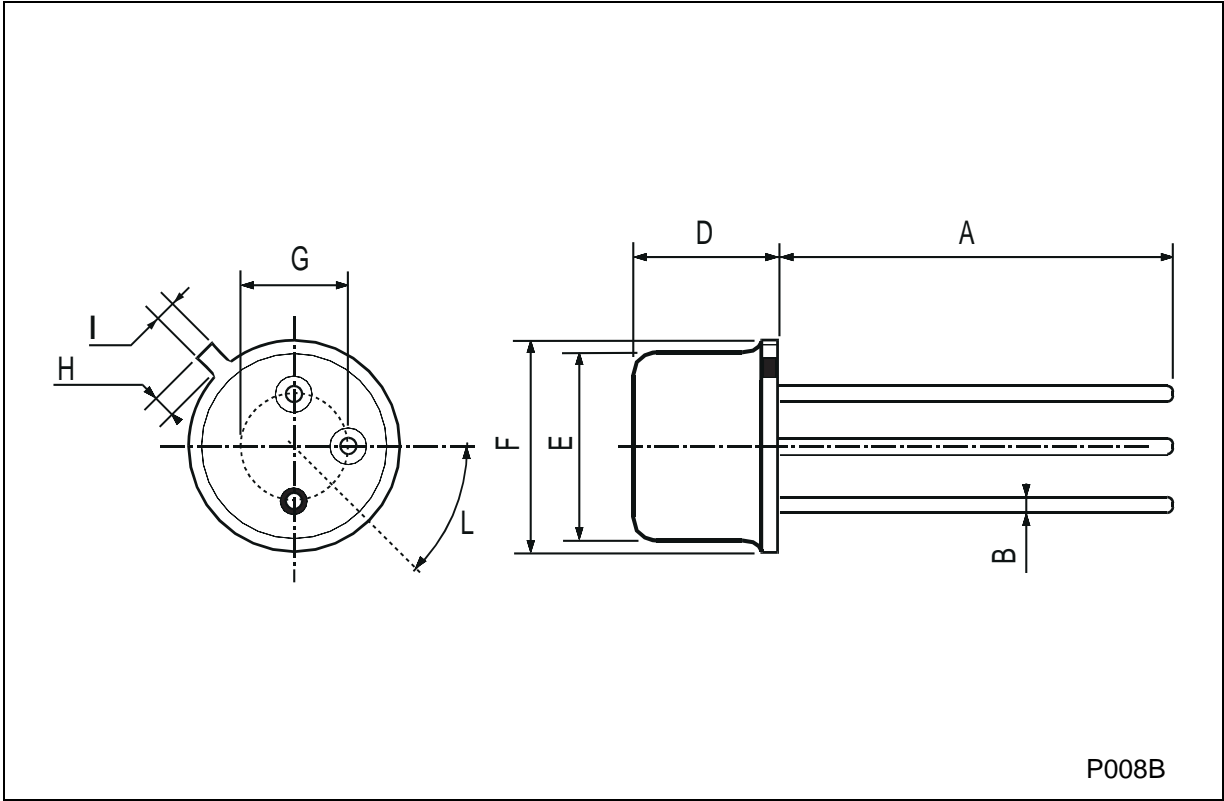
### ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I <sub>CBO</sub>	Collector Cut-off Current (I <sub>E</sub> = 0)	for <b>2N3439</b> V <sub>CB</sub> = 360 V for <b>2N3440</b> V <sub>CB</sub> = 250 V			20 20	μA μA
I <sub>CEO</sub>	Collector Cut-off Current (I <sub>B</sub> = 0)	for <b>2N3439</b> V <sub>CE</sub> = 300 V for <b>2N3440</b> V <sub>CE</sub> = 200 V			20 50	μA μA
I <sub>CEX</sub>	Collector Cut-off Current (V <sub>BE</sub> = -1.5V)	for <b>2N3439</b> V <sub>CE</sub> = 450 V for <b>2N3440</b> V <sub>CE</sub> = 300 V			500 500	μA μA
I <sub>EBO</sub>	Emitter Cut-off Current (I <sub>C</sub> = 0)	V <sub>EB</sub> = 6 V			20	μA
V <sub>CEO(sus)*</sub>	Collector-Emitter Sustaining Voltage	I <sub>C</sub> = 50 mA for <b>2N3439</b> for <b>2N3440</b>	350 250			V V
V <sub>CE(sat)*</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 50 mA I <sub>B</sub> = 4 mA			0.5	V
V <sub>BE(sat)*</sub>	Base-Emitter Saturation Voltage	I <sub>C</sub> = 50 mA I <sub>B</sub> = 4 mA			1.3	V
h <sub>FE*</sub>	DC Current Gain	I <sub>C</sub> = 20 mA V <sub>CE</sub> = 10 V I <sub>C</sub> = 2 mA V <sub>CE</sub> = 10 V for <b>2N3439</b>	40 30		160	
h <sub>FE</sub>	Small Signal Current Gain	I <sub>C</sub> = 5 mA V <sub>CE</sub> = 10 V f = 1KHz	25			
f <sub>T</sub>	Transition frequency	I <sub>C</sub> = 5 mA V <sub>CE</sub> = 10 V f = 5MHz	15			MHz

\* Pulsed: Pulse duration = 300 μs, duty cycle 1.5 %

TO-39 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	12.7			0.500		
B			0.49			0.019
D			6.6			0.260
E			8.5			0.334
F			9.4			0.370
G	5.08			0.200		
H			1.2			0.047
I			0.9			0.035
L	45° (typ.)					



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