

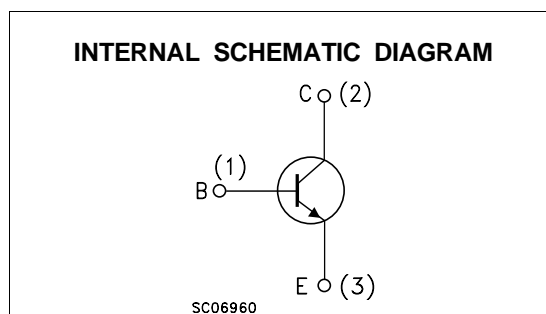
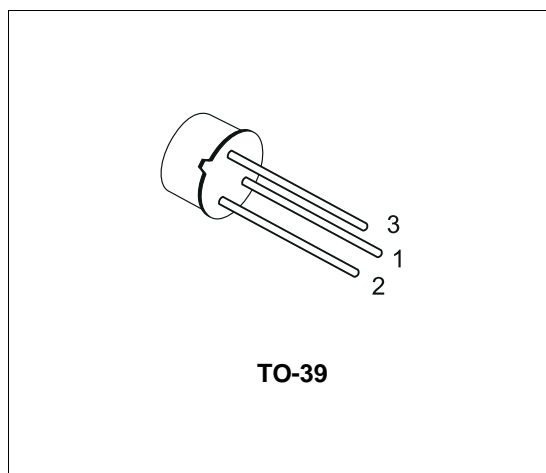
## SILICON NPN TRANSISTORS

- 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.



### 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

$R_{thj-case}$	Thermal Resistance Junction-case	Max	17.5	$^{\circ}C/W$
$R_{thj-amb}$	Thermal Resistance Junction-ambient	Max	175	$^{\circ}C/W$

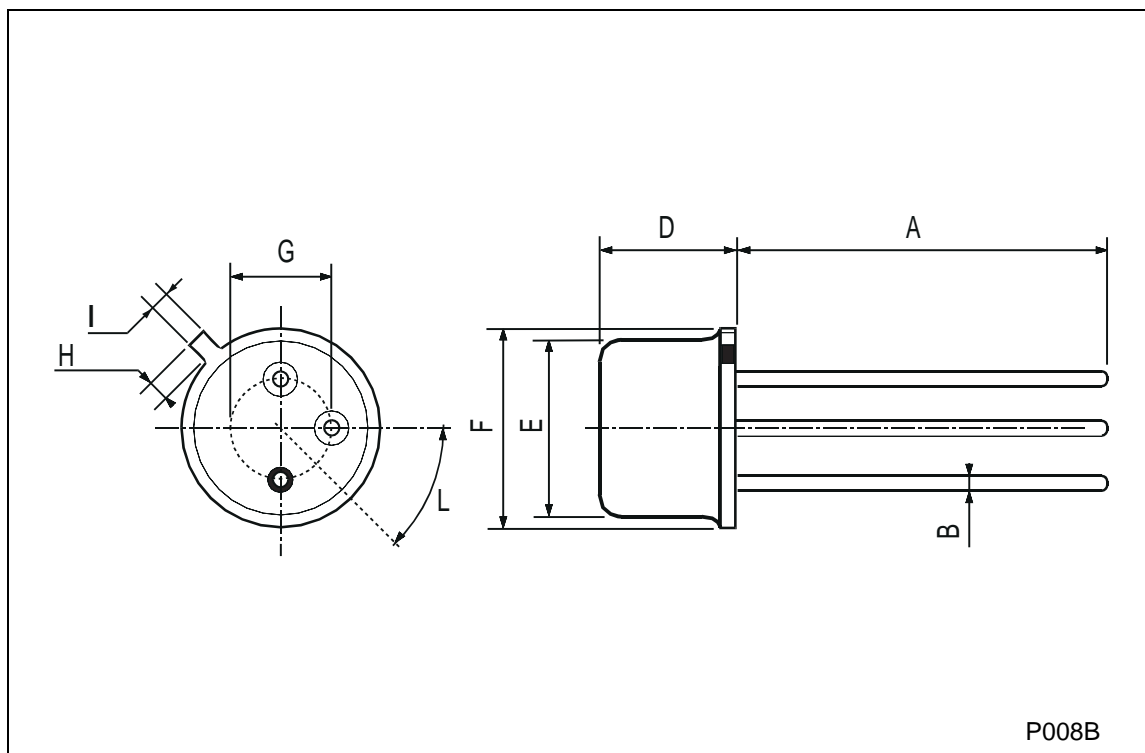
### ELECTRICAL CHARACTERISTICS ( $T_{case} = 25^{\circ}C$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CBO}$	Collector Cut-off Current ( $I_E = 0$ )	for <b>2N3439</b> $V_{CB} = 360 V$ for <b>2N3440</b> $V_{CB} = 250 V$			20 20	$\mu A$ $\mu A$
$I_{CEO}$	Collector Cut-off Current ( $I_B = 0$ )	for <b>2N3439</b> $V_{CE} = 300 V$ for <b>2N3440</b> $V_{CE} = 200 V$			20 50	$\mu A$ $\mu A$
$I_{CEX}$	Collector Cut-off Current ( $V_{BE} = -1.5V$ )	for <b>2N3439</b> $V_{CE} = 450 V$ for <b>2N3440</b> $V_{CE} = 300 V$			500 500	$\mu A$ $\mu A$
$I_{EBO}$	Emitter Cut-off Current ( $I_C = 0$ )	$V_{EB} = 6 V$			20	$\mu A$
$V_{CEO(sus)*}$	Collector-Emitter Sustaining Voltage	$I_C = 50 mA$ for <b>2N3439</b> for <b>2N3440</b>	350 250			V V
$V_{CE(sat)*}$	Collector-Emitter Saturation Voltage	$I_C = 50 mA$ $I_B = 4 mA$			0.5	V
$V_{BE(sat)*}$	Base-Emitter Saturation Voltage	$I_C = 50 mA$ $I_B = 4 mA$			1.3	V
$h_{FE*}$	DC Current Gain	$I_C = 20 mA$ $V_{CE} = 10 V$ $I_C = 2 mA$ $V_{CE} = 10 V$ for <b>2N3439</b>	40 30		160	
$h_{FE}$	Small Signal Current Gain	$I_C = 5 mA$ $V_{CE} = 10 V$ $f = 1KHz$	25			
$f_T$	Transition frequency	$I_C = 5 mA$ $V_{CE} = 10 V$ $f = 5MHz$	15			MHz

\* Pulsed: Pulse duration = 300  $\mu s$ , 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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