2N3439
2N3440

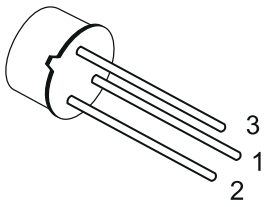
SILICON NPN TRANSISTORS

- STMicroelectronics PREFERRED SALESTYPES
- NPN TRANSISTOR

DESCRIPTION

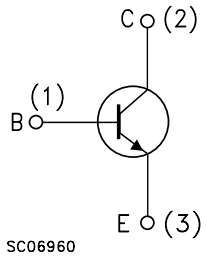
The 2N3439 and 2N3440 are silicon epitaxial planar NPN transistors in jedec TO-39 metal case designed for use in consumer and industrial line-operated applications.

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 $T_c \leq 25\ ^oC$	10		W
P_{tot}	Total Dissipation at $T_{amb} \leq 50\ ^oC$	1		W
T_{stg}	Storage Temperature	-65 to 200		^oC
T_j	Max. Operating Junction Temperature	200		^oC

THERMAL DATA

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

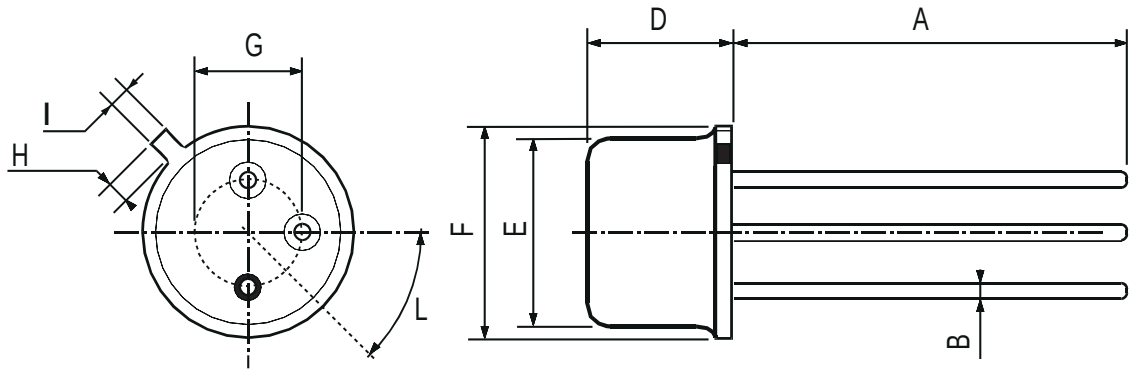
ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cut-off Current (I_E = 0)	for **2N3439** V_{CB} = 360 V for **2N3440** V_{CB} = 250 V			20 20	µA µA
I_{CEO}	Collector Cut-off Current (I_B = 0)	for **2N3439** V_{CE} = 300 V for **2N3440** V_{CE} = 200 V			20 50	µA µA
I_{CEX}	Collector Cut-off Current (V_{BE} = -1.5V)	for **2N3439** V_{CE} = 450 V for **2N3440** V_{CE} = 300 V			500 500	µA µA
I_{EBO}	Emitter Cut-off Current (I_C = 0)	V_{EB} = 6 V			20	µA
$V_{CEO(sus)}$*	Collector-Emitter Sustaining Voltage	I_C = 50 mA for **2N3439** for **2N3440**	 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 **2N3439**	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 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^{o} (typ.)					



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