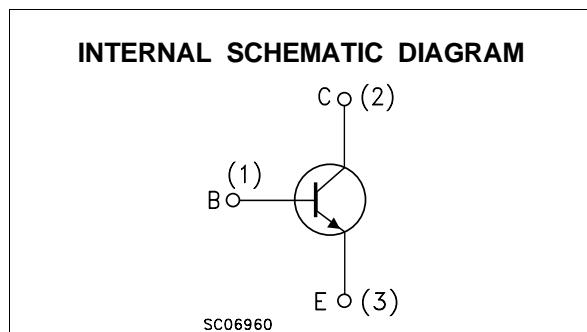
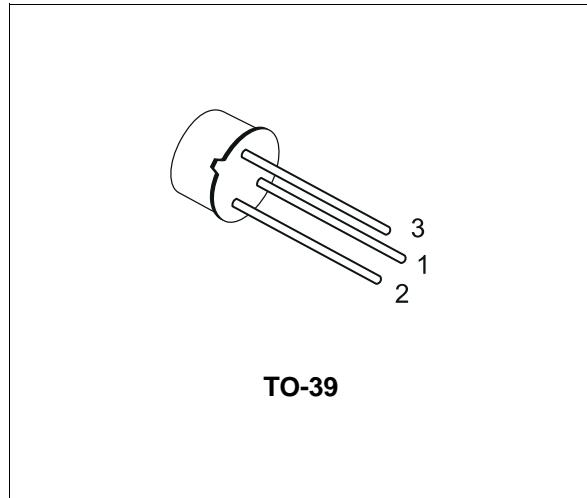


EPITAXIAL PLANAR NPN

- GENERAL PURPOSE AMPLIFIER AND SWITCH

DESCRIPTION

The 2N2102 is a silicon Planar Epitaxial NPN transistor in Jedec TO-39 metal case. It is intended for a wide variety of small-signal and medium power applications in military and industrial equipments.



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage ($I_E = 0$)	120	V
V_{CEO}	Collector-Emitter Voltage ($I_B = 0$)	65	V
V_{CER}	Collector-Emitter Voltage ($R_{BE} \leq 10\Omega$)	80	V
V_{EBO}	Emitter-Base Voltage ($I_C = 0$)	7	V
I_C	Collector Current	1	A
P_{tot}	Total Dissipation at $T_{amb} \leq 25^\circ C$ at $T_C \leq 25^\circ C$	1 5	W W
T_{stg}	Storage Temperature	-65 to 175	°C
T_j	Max. Operating Junction Temperature	175	°C

2N2102

THERMAL DATA

$R_{thj-case}$	Thermal Resistance Junction-Case	Max	30	$^{\circ}\text{C}/\text{W}$
$R_{thj-amb}$	Thermal Resistance Junction-Ambient	Max	150	$^{\circ}\text{C}/\text{W}$

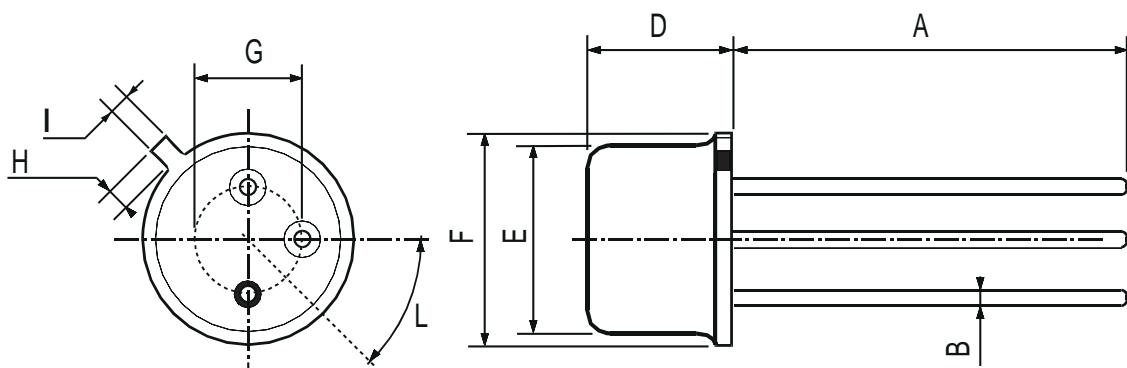
ELECTRICAL CHARACTERISTICS ($T_{case} = 25 \ ^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cut-off Current ($I_E = 0$)	$V_{CB} = 60 \text{ V}$			2	nA	
		$V_{CB} = 60 \text{ V}$	$T_C = 150 \ ^{\circ}\text{C}$		2	μA	
I_{EBO}	Emitter Cut-off Current ($I_C = 0$)	$V_{EB} = 5 \text{ V}$			5	nA	
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage ($I_E = 0$)	$I_C = 100 \mu\text{A}$		120			V
$V_{CEO(sus)*}$	Collector-Emitter Sustaining Voltage ($I_B = 0$)	$I_C = 30 \text{ mA}$		65			V
$V_{CE(sat)*}$	Collector-Emitter Saturation Voltage	$I_C = 150 \text{ mA}$	$I_B = 15 \text{ mA}$			0.5	V
$V_{BE(sat)*}$	Base-Emitter Saturation Voltage	$I_C = 150 \text{ mA}$	$I_B = 15 \text{ mA}$			1.1	V
$h_{FE}*$	DC Current Gain	$I_C = 10 \mu\text{A}$	$V_{CE} = 10 \text{ V}$	10			
		$I_C = 100 \mu\text{A}$	$V_{CE} = 10 \text{ V}$	20			
		$I_C = 10 \text{ mA}$	$V_{CE} = 10 \text{ V}$	35			
		$I_C = 150 \text{ mA}$	$V_{CE} = 10 \text{ V}$	40			
		$I_C = 500 \text{ mA}$	$V_{CE} = 10 \text{ V}$	25			
		$I_C = 1 \text{ A}$	$V_{CE} = 10 \text{ V}$	10			
$h_{fe}*$	High Frequency Current Gain	$I_C = 50 \text{ mA}$	$V_{CE} = 10 \text{ V}$		6		
		$f = 20 \text{ MHz}$					
NF	Noise Figure	$I_C = 300 \mu\text{A}$	$V_{CE} = 10 \text{ V}$	$f = 1 \text{ KHz}$		8	dB
		$BW = 1 \text{ Hz}$		$R_g = 510 \Omega$			
C_{CBO}	Collector-Base Capacitance	$I_E = 0$	$V_{CB} = 10 \text{ V}$	$f = 1 \text{ MHz}$		15	pF
C_{EBO}	Emitter-Base Capacitance	$I_C = 0$	$V_{EB} = 0.5 \text{ V}$	$f = 1 \text{ MHz}$		80	pF

* Pulsed: Pulse duration = 300 μs , duty cycle $\leq 1 \%$

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.)					



P008B

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