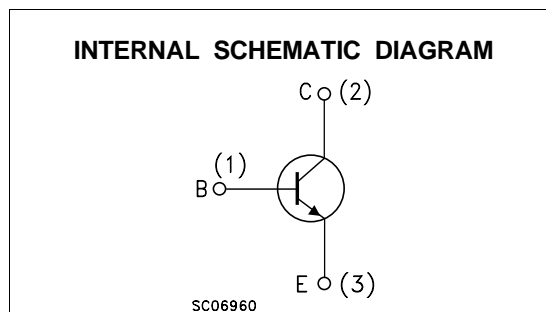
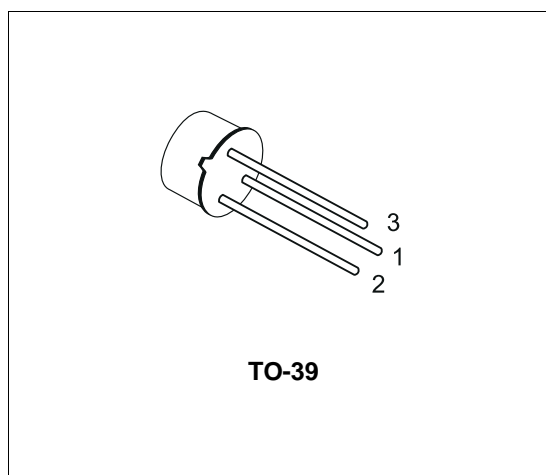


## EPITAXIAL PLANAR NPN

- 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
$V_{CB0}$	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 $T_{amb} \leq 25^\circ\text{C}$ at $T_C \leq 25^\circ\text{C}$	1	W
		5	W
$T_{stg}$	Storage Temperature	-65 to 175	$^\circ\text{C}$
$T_j$	Max. Operating Junction Temperature	175	$^\circ\text{C}$

## THERMAL DATA

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

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

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

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

