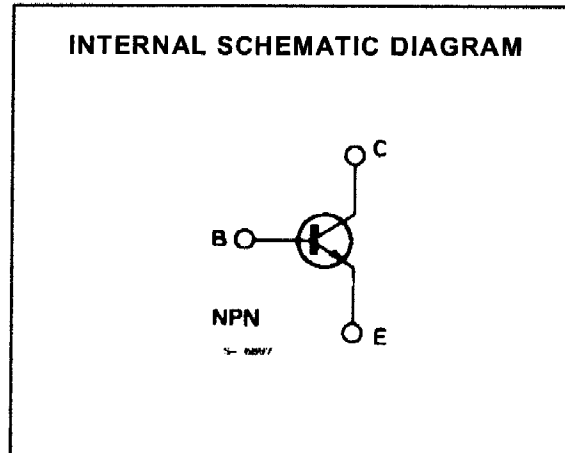
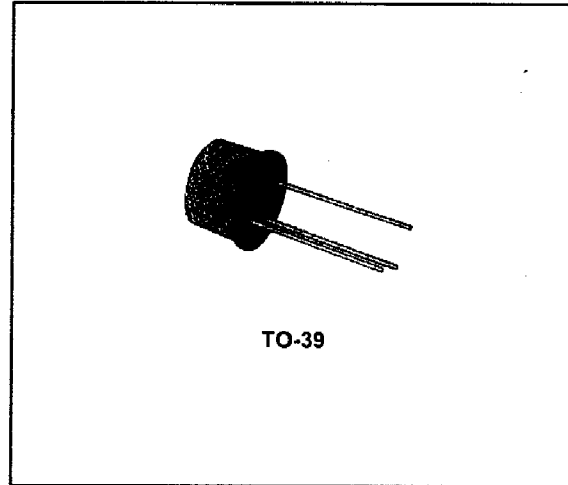


## 2N2102

### 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 Power Dissipation at $T_{amb} \leq 25^\circ C$	1	W
	at $T_{case} \leq 25^\circ C$	5	W
$T_{stg}, T_j$	Storage and Junction Temperature	- 65 to 200	$^\circ C$



## THERMAL DATA

$R_{th\ j-case}$	Thermal Resistance Junction-case	Max	35	°C/W
$R_{th\ j-amb}$	Thermal Resistance Junction-ambient	Max	175	°C/W

## ELECTRICAL CHARACTERISTICS ( $T_{amb} = 25\text{ °C}$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CBO}$	Collector Cutoff Current ( $I_E = 0$ )	$V_{CB} = 60\text{ V}$ $V_{CB} = 60\text{ V}$ $T_{amb} = 150\text{ °C}$			2 2	nA $\mu\text{A}$
$I_{EBO}$	Emitter Cutoff 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	$I_C = 10\ \mu\text{A}$ $V_{CE} = 10\text{ V}$ $I_C = 100\ \mu\text{A}$ $V_{CE} = 10\text{ V}$ $I_C = 10\text{ mA}$ $V_{CE} = 10\text{ V}$ $I_C = 150\text{ mA}$ $V_{CE} = 10\text{ V}$ $I_C = 500\text{ mA}$ $V_{CE} = 10\text{ V}$ $I_C = 1\text{ A}$ $V_{CE} = 10\text{ V}$	10 20 35 40 25 10		120	
$h_{fe}$	High Frequency Current Gain	$I_C = 50\text{ mA}$ $V_{CE} = 10\text{ V}$ $f = 20\text{ MHz}$		6		
NF	Noise Figure	$I_C = 300\ \mu\text{A}$ $V_{CE} = 10\text{ V}$ $BW = 1\text{ Hz}$ $f = 1\text{ KHz}$ $R_G = 510\ \Omega$			8	dB
$C_{CBO}$	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  $\mu\text{s}$ , duty cycle = 1 %.

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.)					

