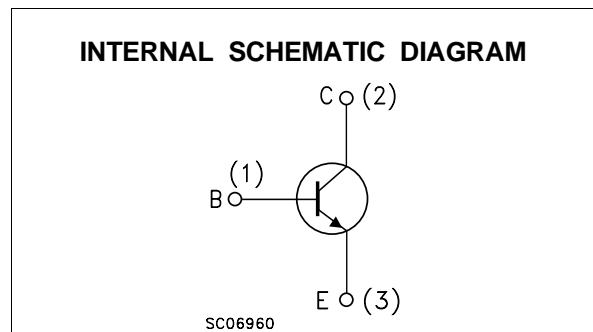
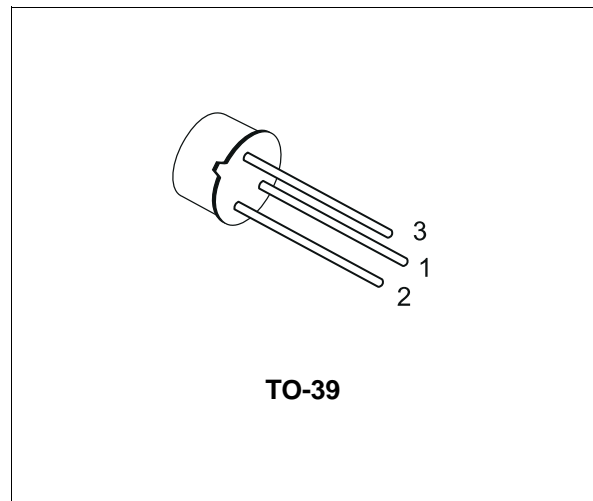


## EPITAXIAL PLANAR NPN

- 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 $T_{amb} \leq 25^\circ\text{C}$	1	W
	at $T_C \leq 25^\circ\text{C}$	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	$^{\circ}C/W$

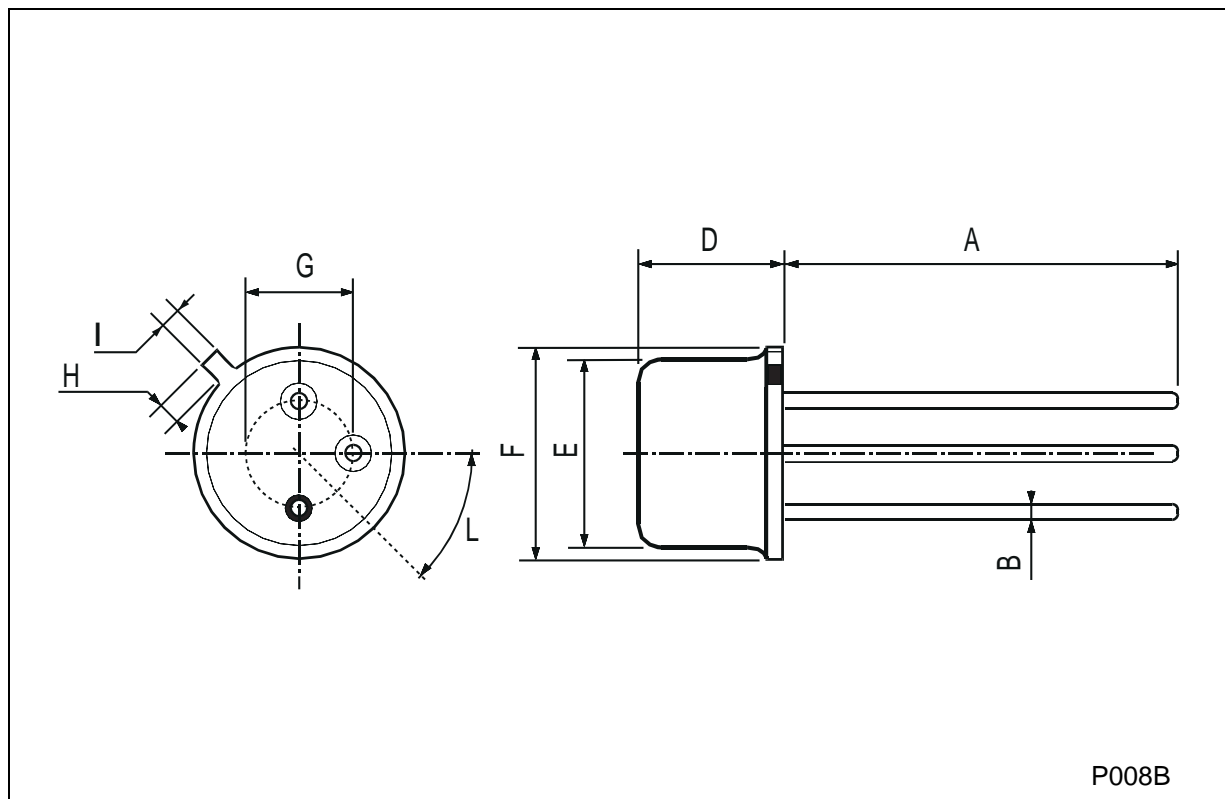
ELECTRICAL CHARACTERISTICS ( $T_{case} = 25^{\circ}C$  unless otherwise specified)

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.)					



Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specification mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a trademark of STMicroelectronics

© 2002 STMicroelectronics – Printed in Italy – All Rights Reserved

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - Canada - China - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States.

<http://www.st.com>