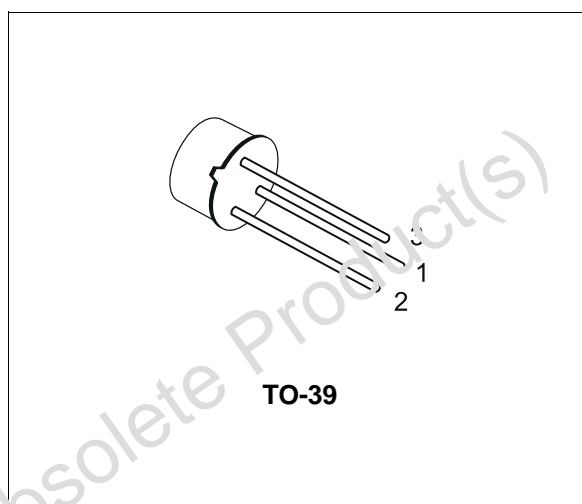


## EPITAXIAL PLANAR NPN

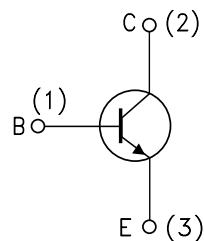
- GENERAL PURPOSE AMPLIFIER AND SWITCH

### 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.



### INTERNAL SCHEMATIC DIAGRAM



### 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 $T_{amb} \leq 25^\circ\text{C}$ at $T_C \leq 25^\circ\text{C}$	1 5	W 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	$^{\circ}C/W$

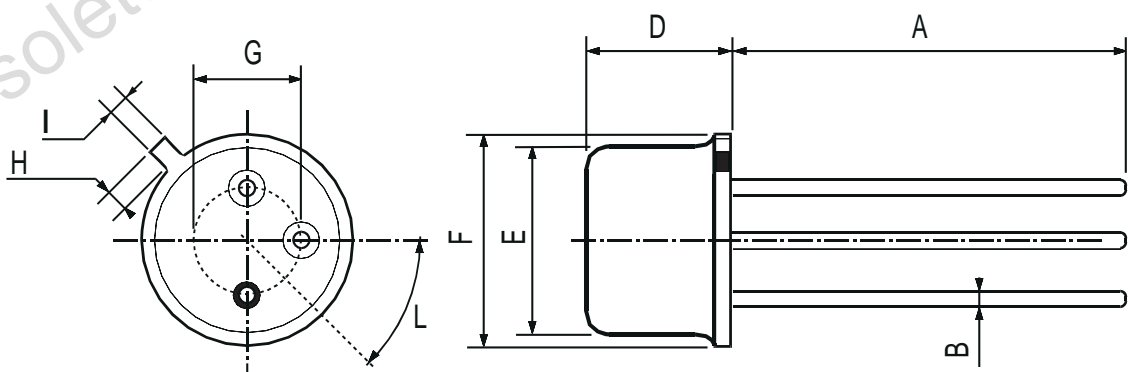
ELECTRICAL CHARACTERISTICS ( $T_{case} = 25^{\circ}C$  unless otherwise specified)

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



P008B

Obsolete Product(s) - Obsolete Product(s)

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>