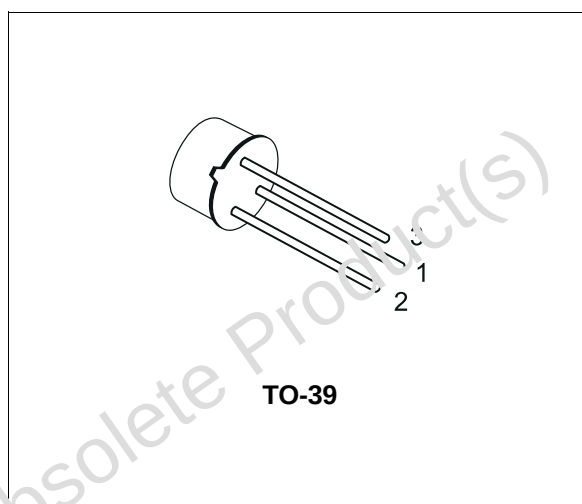


EPITAXIAL PLANAR NPN

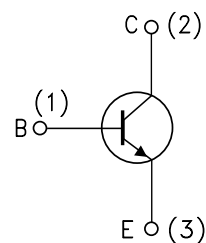
- GENERAL PURPOSE AMPLIFIER AND SWITCH

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	$^{\circ}C/W$

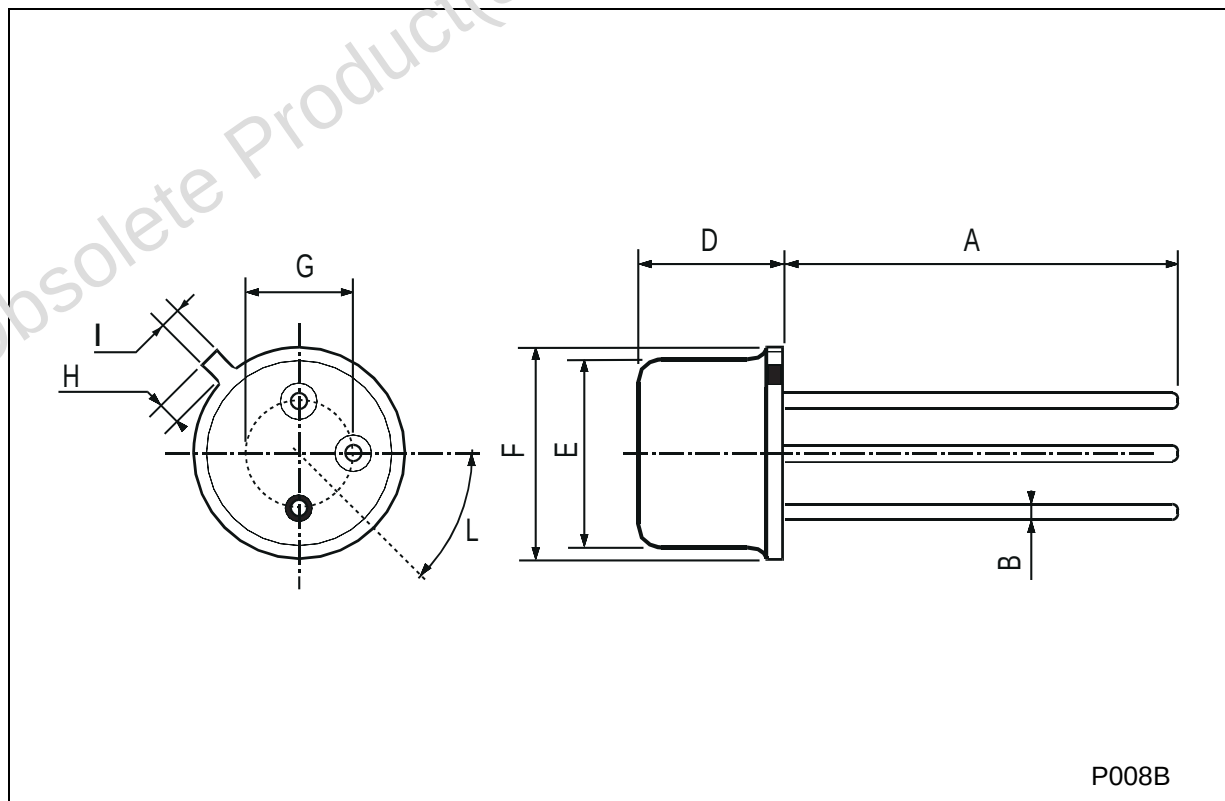
ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}C$ unless otherwise specified)

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 μA
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 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.)					



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