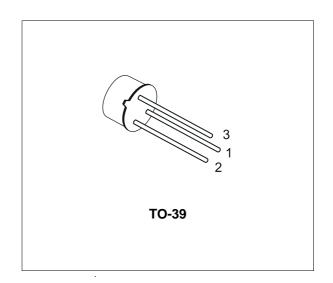
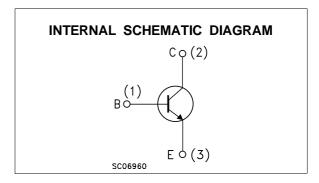


# HIGH CURRENT, HIGH FREQUENCY AMPLIFIERS

#### **DESCRIPTION**

The 2N3019 is a silicon planar epitaxial NPN transistors in Jedec TO-39 metal case, designed for high-current, high frequency amplifier application. It feature high gain and low saturation voltage.





#### **ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Value	Unit
V <sub>CBO</sub>	Collector-Base Voltage (I <sub>E</sub> = 0)	140	V
V <sub>CEO</sub>	Collector-Emitter Voltage (I <sub>B</sub> = 0)	80	V
$V_{EBO}$	Emitter-Base Voltage (I <sub>C</sub> = 0)	7	V
Ic	Collector Current	1	Α
$P_{tot}$	Total Dissipation at T <sub>amb</sub> ≤ 25 °C	0.8	W
	at T <sub>case</sub> ≤ 25 °C	5	W
T <sub>stg</sub>	Storage Temperature	-65 to 200	°C
Tj	Max. Operating Junction Temperature	200	°C

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### THERMAL DATA

R <sub>thj-case</sub>	Thermal Resistance Junction-Case	Max	35	°C/W	
$R_{thj-amb}$	Thermal Resistance Junction-Ambient	Max	219	°C/W	

## **ELECTRICAL CHARACTERISTICS** (T<sub>case</sub> = 25 °C unless otherwise specified)

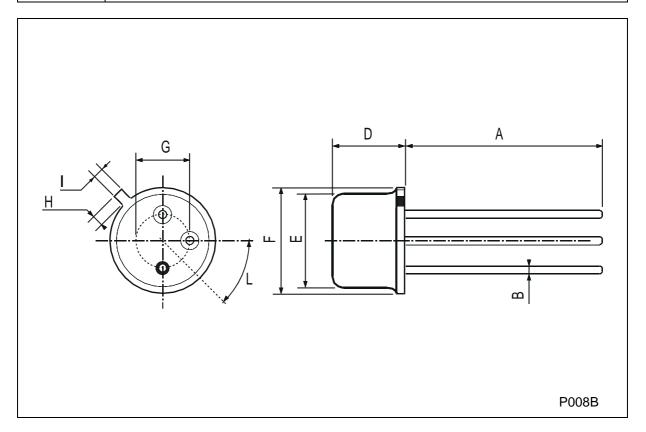
Symbol	Parameter	Test Conditions	Min.	Тур.	Max.	Unit
Ісво	Collector Cut-off Current (I <sub>E</sub> = 0)	V <sub>CB</sub> = 90 V V <sub>CB</sub> = 90 V T <sub>case</sub> = 150 °C			10 10	nΑ μΑ
I <sub>EBO</sub>	Emitter Cut-off Current (I <sub>C</sub> = 0)	V <sub>EB</sub> = 5 V			10	nA
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage (IE = 0)	I <sub>C</sub> = 100 μA	140			V
$V_{(BR)CEO^*}$	Collector-Emitter Breakdown Voltage (I <sub>B</sub> = 0)	I <sub>C</sub> = 10 mA	80			V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage (I <sub>C</sub> = 0)	I <sub>E</sub> = 100 μA	7			V
$V_{\text{CE(sat)}}^*$	Collector-Emitter Saturation Voltage	$I_C = 150 \text{ mA}$ $I_B = 15 \text{ mA}$ $I_C = 500 \text{ mA}$ $I_B = 50 \text{ mA}$			0.2 0.5	V V
V <sub>BE(sat)</sub> *	Base-Emitter Saturation Voltage	I <sub>C</sub> = 150 mA I <sub>B</sub> = 15 mA			1.1	V
h <sub>FE</sub> *	DC Current Gain	$ \begin{array}{llllllllllllllllllllllllllllllllllll$	50 90 100 50 15		300	
h <sub>fe</sub> *	Small Signal Current Gain	I <sub>C</sub> = 1 mA	80		400	
f⊤	Transition Frequency	$I_C = 50 \text{ mA}$ $V_{CE} = 10 \text{ V}$ $f = 20 \text{MHz}$	100			MHz
Ссво	Collector Base Capacitance	I <sub>E</sub> = 0 V <sub>CB</sub> = 10 V f = 1MHz			12	pF
СЕВО	Emitter Base Capacitance	$I_C = 0$ $V_{EB} = 0.5 \text{ V}$ $f = 1\text{MHz}$			60	pF
NF	Noise Figure	$\begin{aligned} I_C &= 0.1 \text{ mA} & V_{CE} &= 10 \text{ V} \\ f &= 1 \text{KHz} & R_g &= 1 \text{K}\Omega \end{aligned}$			4	dB
r <sub>bb'</sub> C <sub>b'c</sub>	Feedback Time Constant	I <sub>C</sub> = 10 mA V <sub>CE</sub> = 10 V f = 4MHz			400	ps

<sup>\*</sup> Pulsed: Pulse duration = 300  $\mu$ s, duty cycle  $\leq$  1 %



## **TO-39 MECHANICAL DATA**

DIM.	mm			inch			
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
А	12.7			0.500			
В			0.49			0.019	
D			6.6			0.260	
E			8.5			0.334	
F			9.4			0.370	
G	5.08			0.200			
Н			1.2			0.047	
I			0.9			0.035	
L	45° (typ.)						



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