

# Transistor PNP, TO-19

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## Pin Configuration

1. Emitter
2. Base
3. Collector

## Features:

- PNP Silicon Planar Switching Transistor
- Fast switching devices exhibiting short turn-off and low saturation voltage characteristics
- Switching And Linear Application DC to VHF Amplifier Applications

## Absolute Maximum Ratings:

Parameter	Symbol	Value	Unit
Collector-Emitter Voltage	$V_{CEO}$	60	V
Collector-Base Voltage	$V_{CBO}$		
Emitter-Base Voltage	$V_{EBO}$		
Collector Current Continuous	$I_C$	600	mA
Power Dissipation at $T_a = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	600	mW
Power Dissipation at $T_c = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$		3.43	$\text{mW}/^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_j, T_{stg}$	3	W
		17.2	$\text{mW}/^\circ\text{C}$
		-65 to +200	$^\circ\text{C}$

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## Electrical Characteristics: ( $T_a = +25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Condition	Value		Unit
			Min.	Max.	
Collector-Emitter Voltage	$V_{CEO}^*$	$I_C = 10\text{mA}, I_B = 0$	60	-	V
Collector-Base Voltage	$V_{CBO}$	$I_C = 10\mu\text{A}, I_E = 0$		-	
Emitter-Base Voltage	$V_{EBO}$	$I_E = 10\mu\text{A}, I_C = 0$	5	-	
Collector-Cut off Current	$I_{CBO}$ $I_{CEX}$	$V_{CB} = 50\text{V}, I_E = 0$ $T_A = 150^\circ\text{C}$ $V_{CB} = 50\text{V}, I_E = 0$ $V_{CE} = 30\text{V}, V_{BE} = 0.5\text{V}$	-	10 10 50	nA $\mu\text{A}$ nA
Base Current	$I_B$	$V_{CE} = 30\text{V}, V_{BE} = 0.5\text{V}$	-	50	nA
Collector Emitter Saturation Voltage	$V_{CE(sat)}^*$	$I_C = 150\text{mA}, I_B = 15\text{mA}$	-	0.4	V
Base Emitter Saturation Voltage	$V_{BE(sat)}^*$	$I_C = 150\text{mA}, I_B = 15\text{mA}$ $I_C = 500\text{mA}, I_B = 50\text{mA}$	-	1.3 2.6	
DC Current Gain	$h_{FE}$	$I_C = 0.1\text{mA}, V_{CE} = 10\text{V}$ $I_C = 1\text{mA}, V_{CE} = 10\text{V}$ $I_C = 10\text{mA}, V_{CE} = 10\text{V}$ $I_C = 150\text{mA}, V_{CE} = 10\text{V}^*$ $I_C = 500\text{mA}, V_{CE} = 10\text{V}^*$	>75 >100 >100 100 - 300 >50	-	-

## Dynamic Characteristics

Transition Frequency	$f_t^{**}$	$I_C = 50\text{mA}, V_{CE} = 20\text{V}, f = 100\text{MHz}$	200	-	MHz
Output Capacitance	$C_{ob}$	$V_{CB} = 10\text{V}, I_E = 0, f = 100\text{kHz}$	-	8	pF
Input Capacitance	$C_{ib}$	$V_{BE} = 2\text{V}, I_C = 0, f = 100\text{kHz}$	-	30	

## Switching Time

Delay Time	$t_d$	$I_C = 150\text{mA}, I_{B1} = 15\text{mA}$	-	10	ns
Rise Time	$t_r$	$V_{CC} = 30\text{V}$	-	40	
Turn-on Time	$t_{on}$	-	-	45	
Storage time	$t_s$	$I_C = 150\text{mA}, I_{B1} = I_{B2} = 15\text{mA}$	-	80	
Fall Time	$t_f$	$V_{CC} = 6\text{V}$	-	30	
Turn-off Time	$t_{off}$	-	-	100	

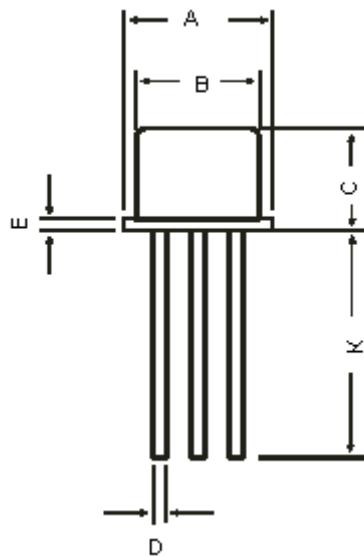
Pulse Test: Pulse Width = 300 $\mu\text{s}$ , Duty Cycle = 2%.

\*\*  $f_t$  is defined as the frequency at which  $h_{fe}$  extrapolates to unity.

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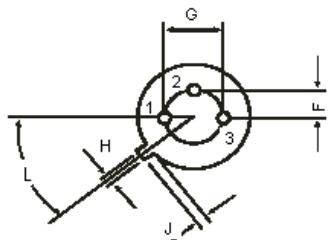
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## TO-39 Metal Can Package



Dimensions	Min.	Max.
A	8.5	9.39
B	7.74	8.5
C	6.09	6.6
D	0.4	0.53
E	-	0.88
F	2.41	2.66
G	4.82	5.33
H	0.71	0.86
J	0.73	1.02
K	12.7	-
L	42°	48°

Dimensions : Millimetres



### Pin Configuration

1. Emitter
2. Base
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### Part Number Table

Description	Part Number
Transistor, PNP, TO-39	2N2905A

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