

# High Speed Switching Transistor



## Features:

- PNP silicon planar switching transistors
- Fast switching devices exhibiting short turn-off and low saturation voltage characteristics
- Switching and linear application DC and VHF amplifier applications



## Pin Configuration

1. Emitter
2. Base
3. Collector

## Absolute Maximum Ratings

Description	Symbol	Value	Unit
Collector Emitter Voltage	$V_{CEO}$	60	V
Collector Base Voltage	$V_{CBO}$		
Emitter Base Voltage	$V_{EBO}$	5	
Collector Current Continuous	$I_C$	600	mA
Power Dissipation @ $T_a = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	400 2.28	mW mW/ $^\circ\text{C}$
Power Dissipation @ $T_c = 25^\circ\text{C}$ Derate Above $25^\circ\text{C}$	$P_D$	1.8 10.3	W mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_j, T_{stg}$	-55 to +175	$^\circ\text{C}$

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

Description	Symbol	Test Condition	Min.	Max,	Unit
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	$I_{CBO}$ $I_{CEX}$	$V_{CB} = 50\text{V}, I_E = 0$ $T_A = 150^\circ\text{C}$	-	10	nA
		$V_{CB} = 50\text{V}, I_E = 0$	-	10	$\mu\text{A}$
		$V_{CE}=30\text{V}, V_{BE}=0.5\text{V}$	-	50	nA
Base Current	$I_B$	$V_{CE}=30\text{V}, V_{BE}=0.5\text{V}$	-	50	nA
Collector Emitter Saturation Voltage	$V_{CE(SAT)}^*$	$I_C = 150\text{mA}, I_B = 15\text{mA}$	-	1.3	V
		$I_C = 500\text{mA}, I_B = 50\text{mA}$		2.6	
Base Emitter Saturation Voltage	$V_{BE(SAT)}^*$	$I_C = 150\text{mA}, I_B = 15\text{mA}$	-	1.3	V
		$I_C = 500\text{mA}, I_B = 50\text{mA}$		2.6	

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Description	Symbol	Test Condition	Min.	Max.	Unit
			2N2906	2N2907	
DC Current Gain	$h_{FE}$	$I_C = 0.1\text{mA}, V_{CE} = 10\text{V}$	>20	>35	-
		$I_C = 1\text{mA}, V_{CE} = 10\text{V}$	>25	>50	
		$I_C = 10\text{mA}, V_{CE} = 10\text{V}$	>35	>75	
		$I_C = 150\text{mA}, V_{CE} = 10\text{V}^*$	40 - 120	100 - 300	
		$I_C = 500\text{mA}, V_{CE} = 10\text{V}^*$	>20	>30	

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

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

Parameter	Symbol	Test Condition	Value		Unit
			Min.	Max.	
Dynamic Characteristics					
Transition Frequency	f <sub>T</sub> **	I <sub>C</sub> = 50mA, V <sub>CE</sub> = 20V, f = 100MHz	200	-	MHz
Output Capacitance	C <sub>ob</sub>	V <sub>CB</sub> = 10V, I <sub>E</sub> = 0, f = 100kHz	-	8	pF
Input Capacitance	C <sub>ib</sub>	V <sub>BE</sub> = 2V, I <sub>C</sub> = 0, f = 100kHz	-	30	
Switching Time					
Delay Time	t <sub>d</sub>	I <sub>C</sub> = 150mA, I <sub>B1</sub> = 15 mA	-	10	ns
Rise Time	t <sub>r</sub>	V <sub>CC</sub> = 30V	-	40	
Turn on Time	t <sub>on</sub>	-	-	45	
Storage time	t <sub>s</sub>	I <sub>C</sub> = 150mA, I <sub>B1</sub> = I <sub>B2</sub> = 15mA	-	80	
Fall Time	t <sub>f</sub>	V <sub>CC</sub> = 6V	-	30	
Turn Off Time	t <sub>off</sub>	-	-	100	

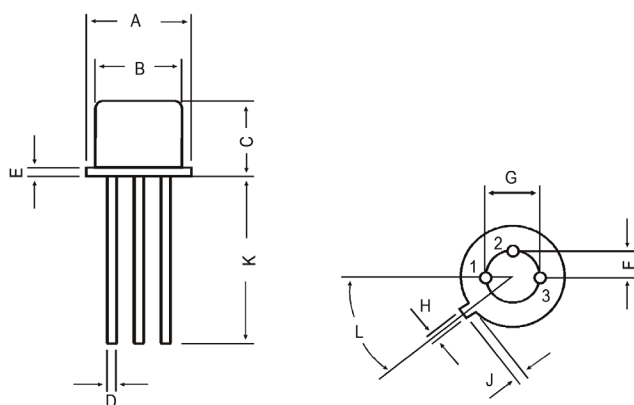
\*\*  $f_T$  is defined as the frequency at which  $|h_{fe}|$  extrapolates to unity

## Specification Table

$V_{CEO}$ Maximum (V)	$I_C$ Maximum (A)	$V_{CE(sat)}$ Maximum (V) at $I_C = 150\text{mA}$	$t_{off}$ Maximum (ns)	$h_{FE}$ Minimum at $I_C = 150\text{mA}$	$P_D$ at $T_A = 25^\circ\text{C}$ (mW)	Package and Pin Out	Part Number
60	0.6	0.4	100	40	400	TO-18	2N2906A
							2N2907A

# High Speed Switching Transistor

## TO-18 Metal Can Package



Dimensions	Min.	Max.
A	5.24	5.84
B	4.52	4.97
C	4.31	5.33
D	0.4	0.53
E	-	0.76
F	-	1.27
G	-	2.97
H	0.91	1.17
J	0.71	1.21
K	12.7	-
L	45°	

Dimensions : Millimetres

## Part Number Table

Description	Part Number
High Speed Switching Transistors	2N2906A
	2N2907A

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