

PNP Silicon Planar Switching Transistor, TO-39

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Pin Configuration

1. Emitter
2. Base
3. Collector

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Collector Emitter Voltage	V_{CEO}	600	V
Collector Base Voltage	V_{CBP}	40	
Emitter Base Voltage	V_{EBO}	60	
Collector Current Continuous	I_C	5	mA
Power Dissipation @ $T_A=25^{\circ}\text{C}$ Derate Above 25°C	P_D	600 3.43	mW mW/ $^{\circ}\text{C}$
Power Dissipation @ $T_c=25^{\circ}\text{C}$ Derate Above 25°C		3 17.2	W mW/ $^{\circ}\text{C}$
Operating And Storage Junction Temperature Range	T_J, T_{STG}	-65 to +200	$^{\circ}\text{C}$

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

Description	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector Emitter Voltage	$*V_{CEO}$	$I_C=10\text{mA}, I_B=0$	40	-	-	V
Collector Base Voltage	V_{CBO}	$I_C=10\mu\text{A}, I_E=0$	60	-	-	
Emitter Base Voltage	V_{EBO}	$I_E=10\text{mA}, I_C=0$	5	-	-	
Collector Cut Off Current	I_{CEX}	$V_{CE}=30\text{V}, V_{BE}=0.5\text{V}$	-	-	50	nA
Collector Cut Off Current	I_{CBO}	$V_{CB}=50\text{V}, I_E=0$	-	-	20	
		$V_{CB}=50\text{V}, I_E=0, T_A=150^{\circ}\text{C}$	-	-	20	μA
Base Current	I_B	$V_{CE}=30\text{V}, V_{BE}=0.5\text{V}$	-	-	50	nA

Description	Symbol	Test Condition	Values
DC Current Gain	h_{FE}	$I_C=0.1\text{mA}, V_{CE}=10\text{V}$	>35
		$I_C=1\text{mA}, V_{CE}=10\text{V}$	>50
		$I_C=10\text{mA}, V_{CE}=10\text{V}$	>75
		$*I_C=150\text{mA}, V_{CE}=10\text{V}$	100 - 300
		$*I_C=500\text{mA}, V_{CE}=10\text{V}$	>30

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

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Small Signal Characteristics

Description	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector Emitter Saturation Voltage	*V _{CE(SAT)}	I _C =150mA, I _B =15mA I _C =500mA, I _B =50mA	-	-	0.4 1.6	V V
Base Emitter Saturation Voltage	*V _{BE(SAT)}	I _C =150mA, I _B =15mA I _C =500mA, I _B =50mA	-	-	1.3 2.6	V V
Transition Frequency	**f _T	I _C =50mA, V _{CE} =20V, f=100MHz	200	-	-	MHz
Output Capacitance	C _{obo}	V _{CB} =10V, I _E =0, f=100kHz	-	-	8	pF
Input Capacitance	C _{ibo}	V _{BE} =2V, I _C =0, f=100kHz	-	-	30	pF

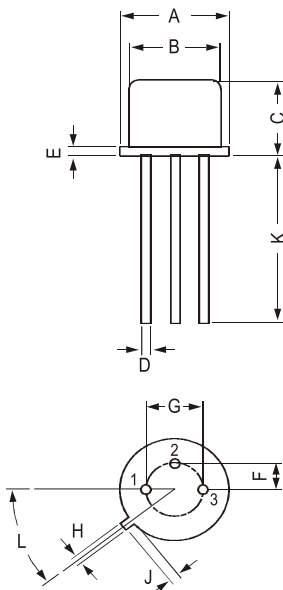
Switching Time

Description	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Delay Time	t _d	I _C =150mA, I _{B1} =15mA, V _{CC} =30V	-	-	10	ns
Rise Time	t _r		-	-	40	ns
Turn On Time	t _{on}		-	-	45	ns
Storage Time	t _s	I _C =150mA, I _{B1} = I _{B2} =15mA, V _{CC} =6V	-	-	80	ns
Fall Time	t _f		-	-	30	ns
Turn Off Time	t _{off}		-	-	100	ns

*Pulse Test: Pulse Width ≤ 300ms, Duty Cycle ≤ 2%

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

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

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Part Number Table

Description	Part Number
PNP Silicon Planar Switching Transistor, TO-39	2N2905

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