

NPN Silicon Planar Switching Transistor

40V_{CEO}, 800mA I_C

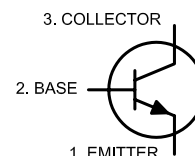
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TO-39

**RoHS
Compliant**

NPN



Absolute Maximum Ratings

Description	Symbol	Value	Unit
Collector Emitter Voltage	V _{CEO}	40	V
Collector Base Voltage	V _{CBO}	75	V
Emitter Base Voltage	V _{EBO}	6	V
Collector Current Continuous	I _C	800	mA
Power Dissipation at T _A = 25°C Derate above 25°C	P _D	800 4.57	mW mW/°C
Power Dissipation at T _C = 25°C Derate Above 25°C	P _D	3 17.15	W mW/°C
Operating and Storage Junction Temperature Range	T _J , T _{stg}	- 65 to +200	°C

Electrical Characteristics: (T_A = +25°C Unless otherwise specified)

Description	Symbol	Test Conditions	Min	Max	Unit
Collector -Emitter Voltage	V _{CEO}	I _C = 10mA, I _B = 0	40	-	V
Collector Base Voltage	V _{CBO}	I _C = 100μA, I _E = 0	75	-	V
Emitter Base Voltage	V _{EBO}	I _E = 100μA, I _C = 0	6	-	V
Collector Cutoff Current	I _{CBO}	V _{CB} = 60V, I _E = 0	-	10	nA
	I _{CEX}	V _{CB} = 60V, I _E = 0, T _A = 150°C	-	10	μA
	I _{CEX}	V _{CE} = 60V, V _{EB} = 3V	-	10	nA
Emitter-Cut off Current	I _{EBO}	V _{EB} = 3V, I _C = 0	-	10	nA
Base-Cut off Current	I _{BL}	V _{CE} = 60V, V _{EB} = 3V	-	20	nA
Collector Emitter Saturation Voltage	V _{CE(Sat)*}	I _C = 150mA, I _B = 15mA I _C = 500mA, I _B = 50mA	-	0.3 1	V
Base Emitter Saturation Voltage	V _{BE(Sat)*}	I _C = 150mA, I _B = 15mA I _C = 500mA, I _B = 50mA	-	0.6-1.2 2	V

Description	Symbol	Test Conditions	Values	Unit
DC Current Gain	h _{FE}	I _C = 0.1mA, V _{CE} = 10V	>35	
		I _C = 1mA, V _{CE} = 10V	>50	
		I _C = 10mA, V _{CE} = 10V	>75	
		T _A = 55°C		
		I _C = 10mA, V _{CE} = 10V	>35	
		I _C = 150mA, V _{CE} = 10V	100-300	
		I _C = 150mA, V _{CE} = 1V	>50	
		I _C = 500mA, V _{CE} = 10V	>40	

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Description	Symbol	Test Conditions	Values	Unit
Dynamic Characteristics				
Small Signal Current Gain	hfe	ALL f = 1kHz I _C = 1mA, V _{CE} = 10V I _C = 10mA, V _{CE} = 10V	50 - 300 75-375	
Input Impedance	hie	I _C = 1mA, V _{CE} = 10V I _C = 10mA, V _{CE} = 10V	2 - 8 0.25-1.25	kΩ
Voltage Feedback Ratio	hre	I _C = 1mA, V _{CE} = 10V I _C = 10mA, V _{CE} = 10V	<8 <4	x10 ⁻⁴
Out put Admittance	hoe	I _C = 1mA, V _{CE} = 10V I _C = 10mA, V _{CE} = 10V	5 - 35 25 - 200	umhos
Collector Base Time Constant	rb'Cc	I _E = 20mA, V _{CB} = 20V f = 31.8MHz	<150	ps
Real Part Common-Emitter High Frequency Input Impedance	Re(hie)	I _C = 20mA, V _{CE} = 20V f=300MHz	<60	Ω
Noise Figure	NF	I _C = 100μA, V _{CE} = 10V Rs = 1kohms, f = 1kHz	<4	dB
Dynamic Characteristics				
Transistors Frequency	ft	I _C = 20mA, V _{CE} = 20V f = 100MHz	>300	MHz
Out-Put Capacitance	Cob	V _{CB} = 10V, I _E = 0 f = 100kHz	<8	pF
Input Capacitance	Cib	V _{EB} = 0.5V, I _C = 0 f = 100kHz	<25	pF
Switching Time				
Delay time	td	I _C = 150mA, I _{B1} = 15mA	<10	ns
Rise time	tr	V _{CC} = 30V, V _{BE} = 0.5V	<25	ns
Storage time	ts	I _C = 150mA	<225	ns
Fall time	tf	I _{B2} = 15mA, V _{CC} = 30V	<60	ns

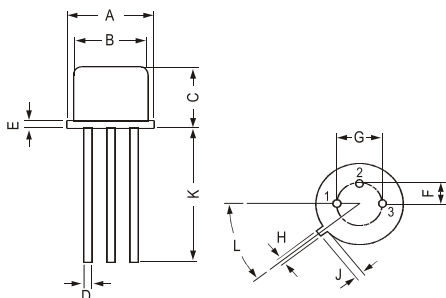
*Pulse Condition: Pulse Width=300μs, Duty Cycle=2%

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TO-39 Metal Can Package



Dim.	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

Dim.	Min.	Max.
G	4.82	5.33
H	0.71	0.86
J	0.73	1.02
K	12.7	-
L	42 Deg.	48 Deg.

Dimensions : Millimetres

Part Number Table

Description	Part Number
NPN Silicon Planar Switching Transistor, 40V, 800mA, TO-39	2N2219A

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