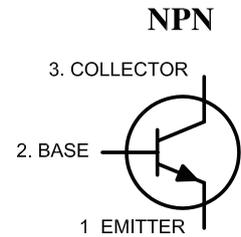


Transistor NPN, TO-39



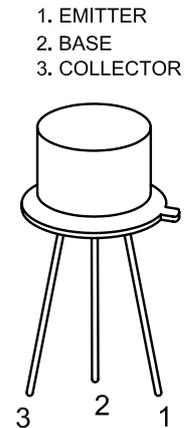
Description:

A silicon NPN transistor in a TO-39 type case designed primarily for amplifier and switching applications. This device features high breakdown voltage, low leakage current, low capacity, and beta useful over an extremely wide current range.



Absolute Maximum Ratings:

Collector-Base Voltage, V_{CBO}	: 75V
Collector-Emitter Voltage, V_{CEO}	: 50V
Emitter-Base Voltage, V_{EBO}	: 7V
Continuous Collector Current, I_C	: 0.5A
Total Device Dissipation ($T_A = +25^\circ\text{C}$), P_D	: 800mW
Derate above 25°C	: 4.6mW/ $^\circ\text{C}$
Total Device Dissipation ($T_C = +25^\circ\text{C}$), P_D	: 3W
Derate above 25°C	: 17.15mW/ $^\circ\text{C}$
Operating Junction Temperature Range, T_J	: -65°C to $+200^\circ\text{C}$
Storage Temperature Range, T_{stg}	: -65°C to $+200^\circ\text{C}$
Thermal Resistance, Junction-to-Case, R_{thJC}	: 58°C/W
Thermal Resistance, Junction-to-Ambient, R_{thJA}	: 219°C/W
Lead Temp. (During Soldering, 1/16" from case, 60sec max.), T_L	: 300°C



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

Parameter	Symbol	Test Conditions	Min.	Max.	Unit
OFF Characteristics					
Collector-Emitter Breakdown Voltage	$V_{CER(SUS)}$	$I_C = 100\text{mA}$, RBE 10Ω , Note 1	50	-	V
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 100\mu\text{A}$, $I_E = 0$	75	-	
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 100\mu\text{A}$, $I_C = 0$	7	-	
Collector Cut-off Current	I_{CBO}	$V_{CB} = 60\text{V}$, $I_E = 0$	-	0.01	μA
		$V_{CB} = 60\text{V}$, $I_E = 0$, $T_A = +150^\circ\text{C}$	-	10	
Emitter Cut-Off Current	I_{EBO}	$V_{EB} = 5\text{V}$, $I_C = 0$	-	0.005	

Note 1. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 1\%$.

Transistor NPN, TO-39



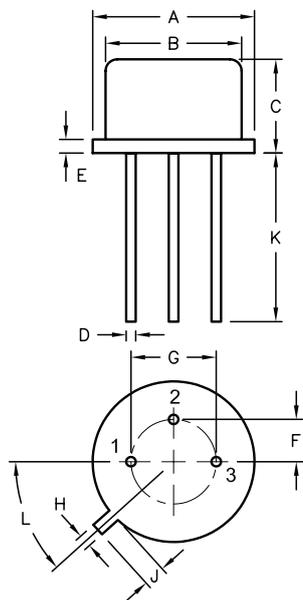
Parameter	Symbol	Test Conditions	Min.	Max.	Unit
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ON Characteristics

DC Current Gain	h_{FE}	$V_{CE} = 10V, I_C = 0.1mA$	35	-	-
		$V_{CE} = 10V, I_C = 10mA$	75	-	-
		$V_{CE} = 10V, I_C = 150mA$	100	300	-
		$V_{CE} = 10V, I_C = 500mA$	40	-	-
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 150mA, I_B = 15mA$	-	1.5	V
	$V_{BE(sat)}$		-	1.3	V

Small-Signal Characteristics

Current Gain-Bandwidth Product	f_T	$V_{CE} = 10V, I_C = 50mA, f = 20MHz$	70	-	MHz
Output Capacitance	C_{ob0}	$V_{CB} = 10V, I_E = 0, f = 1MHz$	-	25	pF
Input Capacitance	C_{ib0}	$V_{BE} = 500mV, I_C = 0, f = 1MHz$	-	80	pF
Small-Signal Current Gain	h_{fe}	$V_{CE} = 5V, I_C = 1mA, f = 1kHz$	50	200	-
Noise Figure	N_F	$V_{CE} = 10V, I_C = 300\mu A, f = 1kHz$	-	8	dB



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
G	4.82	5.33
H	0.71	0.86
J	0.73	1.02
K	12.7	-
L	42°	48°

Dimensions : Millimetres

Part Number Table

Description	Part Number
Transistor, Bipolar, Amplifier & Switching, NPN, TO-39	2N1711

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