

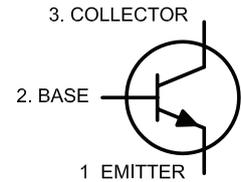


Description:

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.

**RoHS
Compliant**

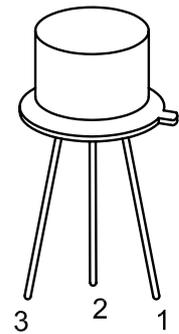
NPN



Absolute Maximum Ratings:

Characteristic	Symbol	Rating
Collector-Base Voltage	V_{CB0}	75V
Collector-Emitter Voltage	V_{CEO}	50V
Emitter - Base Voltage	V_{EBO}	7V
Continuous Collector Current	I_C	0.5A
Total Device Dissipation ($T_C = +25^\circ\text{C}$) Derate above 25°C	P_D	800mW 4.6mW/ $^\circ\text{C}$
Total Device Dissipation ($T_C = +25^\circ\text{C}$) Derate above 25°C	P_D	3W 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 Temperature (During Soldering, 1/16" from case, 60sec max.)	T_L	300°C

1. EMITTER
2. BASE
3. COLLECTOR



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

Parameter	Symbol	Test Conditions	Min.	Max.	Unit
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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 $\leq 1\%$.

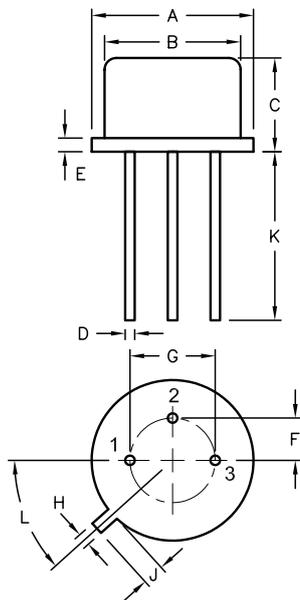
Parameter	Symbol	Test Conditions	Min.	Max.	Unit
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ON Characteristics

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	NF	$V_{CE} = 10V, I_C = 300\mu A, f = 1kHz$	-	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
Bipolar Transistor, NPN, 0.5A, 50V, TO-39	2N1711

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