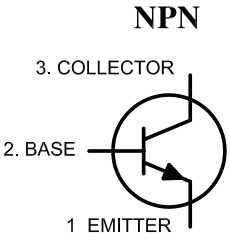
Transistor
NPN, TO-39

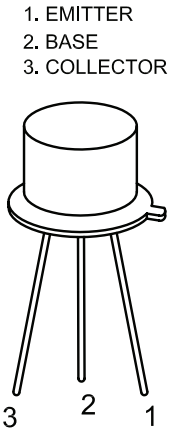
Description:

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°C), P_D	: 800mW
Derate above 25°C	: 4.6mW/°C
Total Device Dissipation (T_C = +25°C), P_D	: 3W
Derate above 25°C	: 17.15mW/°C
Operating Junction Temperature Range, T_J	: -65°C to +200°C
Storage Temperature Range, T_{stg}	: -65°C to +200°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°C unless otherwise specified)

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

Note 1. Pulse Test: Pulse Width ≦ 300µs, Duty Cycle ≦ 1%.

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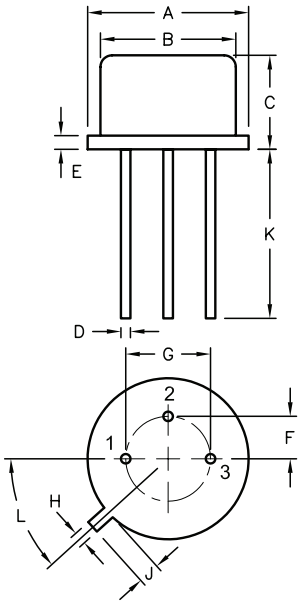
Parameter	Symbol	Test Conditions	Min.	Max.	Unit
ON Characteristics					
DC Current Gain	h_{FE}	V_{CE} = 10V, I_C = 0.1mA	35	-	-
		V_{CE} = 10V, I_C = 10mA	75	-	-
		V_{CE} = 10V, I_C = 150mA	100	300	-
		V_{CE} = 10V, I_C = 500mA	40	-	-
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 150mA, I_B = 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_{obo}	V_{CB} = 10V, I_E = 0, f = 1MHz	-	25	pF
Input Capacitance	C_{ibo}	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 = 300µA, 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