Bipolar Transistor

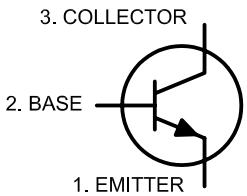
multicomp PRO

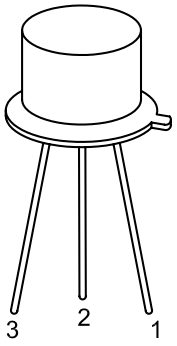
RoHS Compliant

Description:

This is 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.

NPN





Absolute Maximum Ratings:

Characteristic	Symbol	Rating
Collector-Base Voltage	V_{CBO}	120V
Collector-Emitter Voltage	V_{CEO}	65V
Emitter - Base Voltage	V_{EBO}	7V
Continuous Collector Current	I_C	1A
Total Device Dissipation (T_C = +25°C) Derate above 25°C	P_D	800mW 4.6mW/°C
Total Device Dissipation (T_C = +25°C) Derate above 25°C	P_D	5W 28.6mW/°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}	35°C/W
Thermal Resistance, Junction-to-Ambient	R_{thJC}	175°C/W
Lead Temperature (During Soldering, 1/16" from case, 60sec max.)	T_L	300°C

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

Parameter	Symbol	Test Conditions	Min.	Max.	Unit.
OFF Characteristics					
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 100mA, I_B = 0	65	-	V
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 100µA, I_E = 0	120	-	
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	-	0.002	µA
		V_{CB} = 60V, I_E = 0, T_A = +150ºC	-	2	
Emitter Cut-Off Current	I_{EBO}	V_{BE} = 5V, I_C = 0	-	0.002	
On Characteristics (Note 1)					
DC Current Gain	h_{FE}	V_{CE} = 10V, I_C = 0.1mA	20	-	-
		V_{CE} = 10V, I_C = 10mA	35	-	-
		V_{CE} = 10V, I_C = 150mA	40	120	-

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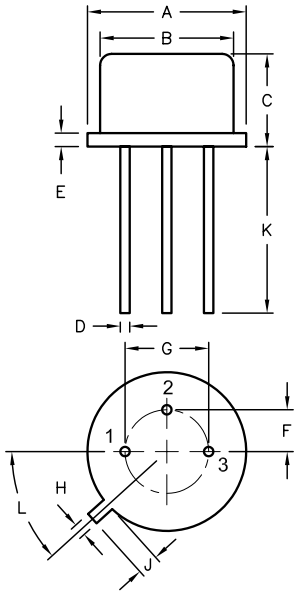
Parameter	Symbol	Test Conditions	Min.	Max.	Unit.
DC Current Gain	h_{FE}	V_{CE} = 10V, I_C = 10mA, T_A = -55ºC	20	-	-
		V_{CE} = 10V, I_C = 500mA	25	-	-
		V_{CE} = 10V, I_C = 1A	10	-	-
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 150mA, I_B = 15mA	-	0.5	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C = 150mA, I_B = 15mA	-	1.1	V
Small-Signal Characteristics					
Current Gain-Bandwidth Product	f_T	V_{CE} = 10V, I_C = 50mA, f = 20MHz	60	-	MHz
Output Capacitance	C_{obo}	V_{CB} = 10V, I_E = 0, f = 1MHz	-	15	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	30	100	-
Noise Figure	NF	V_{CE} = 10V, I_C = 100 µA, f = kHz, Rs = 1kΩ	-	6	dB

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



1. EMITTER
2. BASE
3. COLLECTOR

Dimensions	A	B	C	D	E	F	G	H	J	K	L
Min.	8.5	7.74	6.09	0.4	-	2.41	4.82	0.71	0.73	12.7	42º
Max.	9.39	8.50	6.6	0.53	0.88	2.66	5.33	0.86	1.02	-	48º

Dimensions : Millimetres

Part Number Table

Description	Part Number
Bipolar Transistor, NPN, 1A, 65V, TO-39	2N2102