

**RoHS
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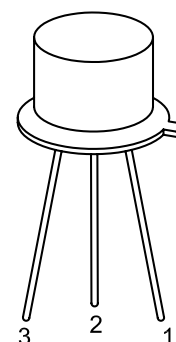
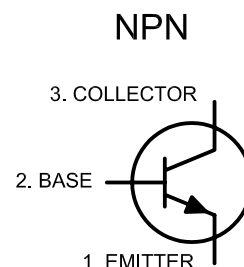


Description:

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.

Absolute Maximum Ratings:

Characteristic	Symbol	Rating
Collector-Base Voltage	V_{CB0}	120V
Collector-Emitter Voltage	V_{CEO}	65V
Emitter - Base Voltage	V_{EBO}	7V
Continuous Collector Current	I_C	1A
Total Device Dissipation ($T_c = +25^\circ\text{C}$) 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	5W 28.6mW/ $^\circ\text{C}$
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}	35°C/W
Thermal Resistance, Junction-to-Ambient	R_{thJA}	175°C/W
Lead Temperature (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.
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OFF Characteristics

Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 100\text{mA}, I_B = 0$	65	-	V
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 100\mu\text{A}, I_E = 0$	120	-	
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 100\mu\text{A}, I_C = 0$	7	-	
Collector-Cut-Off Current	I_{CBO}	$V_{CB} = 60\text{V}, I_E = 0$	-	0.002	μA
		$V_{CB} = 60\text{V}, I_E = 0, T_A = +150^\circ\text{C}$	-	2	
Emitter Cut-Off Current	I_{EBO}	$V_{BE} = 5\text{V}, I_C = 0$	-	0.002	

On Characteristics (Note 1)

DC Current Gain	h_{FE}	$V_{CE} = 10\text{V}, I_C = 0.1\text{mA}$	20	-	-
		$V_{CE} = 10\text{V}, I_C = 10\text{mA}$	35	-	-
		$V_{CE} = 10\text{V}, I_C = 150\text{mA}$	40	120	-

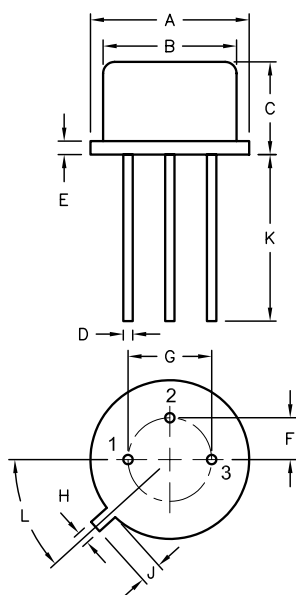
Newark.com/multicomp-pro
Farnell.com/multicomp-pro
Element14.com/multicomp-pro

Parameter	Symbol	Test Conditions	Min.	Max.	Unit.
DC Current Gain	h_{FE}	$V_{CE} = 10V, I_C = 10mA, T_A = -55^{\circ}C$	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	$V_{CE} = 10V, I_C = 100 \mu A, f = kHz, R_s = 1k\Omega$	-	6	dB

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



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	42°
Max.	9.39	8.50	6.6	0.53	0.88	2.66	5.33	0.86	1.02	-	48°

Dimensions : Millimetres

Part Number Table

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

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