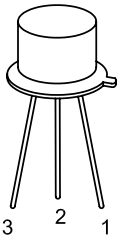
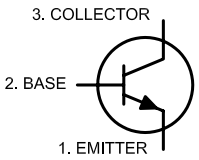
Bipolar Transistor

RoHS Compliant

NPN





Description:

This is a silicon NPN transistor in a T0-39 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.

Pin Configuration:

1. Emitter
2. Base
3. Collector

Absolute Maximum Ratings:

Collector-Base Voltage, V_{CBO}	: 120V
Collector-Emitter Voltage, V_{CEO}	: 80V
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	: 17.2mW/°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}	: 16.5°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

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

Parameter	Symbol	Test Conditions	Min	Max	unit
OFF Characteristics					
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 30mA, I_B = 0	80	-	V
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 100µA, I_E = 0	120	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 100µA, I_C = 0	7	-	V
Collector Cut-Off Current	I_{CBO}	V_{CB} = 90V, I_E = 0	-	0.01	µA
		V_{CB} = 90V, I_E = 0, T_A = +150°C	-	15	µA
Emitter Cut-Off Current	I_{EBO}	V_{BE} = 5V, I_C = 0	-	0.01	µA
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	-
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 50mA, I_B = 5mA	-	1.2	V
		I_C = 150mA, I_B = 15mA	-	5	V
		I_C = 150mA, I_B = 15mA	-	1.3	V
Small-Signal Characteristics					
Current gain-Bandwidth product	f_T	V_{CE} = 10V, I_C = 50mA, f = 20MHz	50	-	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	-	85	pF
Small-Signal Current gain	h_{fe}	V_{CE} = 5V, I_C = 1mA, f = 1kHz	30	-	-

Note:

1. Pulse Test: Pulse Width <+300µs, Duty Cycle <= 1%

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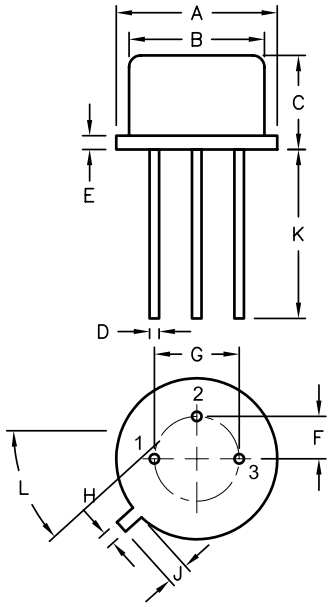

Pin Configuration:

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Dimensions	A	B	C	D	E	F	G	H	J	K	L
Min.	8.50	7.74	6.09	0.40	-	2.41	4.82	0.71	0.73	12.70	42°
Max.	9.39	8.50	6.60	0.53	0.88	2.66	5.33	0.86	1.02	-	48°

Dimensions : Millimetres

Part Number Table

Description	Part Number
Bipolar Transistor	2N1893