

# NPN Silicon Planar Transistor

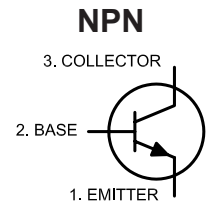
## 80V<sub>CEO</sub>, 500mA I<sub>c</sub>

**multicomp** PRO

**RoHS  
Compliant**



TO-39



### Absolute Maximum Ratings (T<sub>A</sub> = 25°C unless specified otherwise)

Description	Symbol	Value	Units
Collector Emitter Voltage	V <sub>CEO</sub>	80	V
Collector Emitter Voltage	V <sub>CER</sub>	100	
Collector Base Voltage	V <sub>CBO</sub>	120	
Emitter Base Voltage	V <sub>EBO</sub>	7	
Collector Current Continuous	I <sub>c</sub>	0.5	A
Total Device Dissipation @ T <sub>A</sub> =25°C Derate Above 25°C	P <sub>D</sub>	0.8 4.57	W mW/°C
Total Device Dissipation @ T <sub>c</sub> =25°C Derate Above 25°C	P <sub>D</sub>	3 17.2	W mW/°C
Operating And Storage Junction Temperature Range	T <sub>j</sub> , T <sub>stg</sub>	-65 to +200	°C
<b>Thermal Resistance</b>			
Junction to Ambient	R <sub>th(j-a)</sub>	219	°C/W
Junction to Case	R <sub>th(j-c)</sub>	58.3	°C/W

### Electrical Characteristics: (T<sub>A</sub> = +25°C Unless otherwise specified)

Description	Symbol	Test Conditions	Min	Max	unit
Collector Emitter Breakdown Voltage	BV <sub>CER(sus)</sub>	I <sub>c</sub> = 100mA, R <sub>BE</sub> = 10Ω	100		V
Collector Emitter Sustaining Voltage	BV <sub>CEO(sus)*</sub>	I <sub>c</sub> = 10mA, I <sub>B</sub> = 0	80		V
Collector Base Breakdown Voltage	BV <sub>CBO</sub>	I <sub>c</sub> = 100μA, I <sub>E</sub> = 0	120		V
Emitter Base Breakdown Voltage	BV <sub>EBO</sub>	I <sub>E</sub> = 100μA, I <sub>c</sub> = 0	7		V
Collector Cutoff Current	I <sub>CBO</sub>	V <sub>CB</sub> = 90V, I <sub>E</sub> = 0 V <sub>CB</sub> = 90V, I <sub>E</sub> = 0, T <sub>A</sub> = 150°C		10 15	nA μA
Emitter Cutoff Current	I <sub>EBO</sub>	V <sub>EB</sub> = 5V, I <sub>c</sub> = 0		10	nA
DC Current Gain	h <sub>FE*</sub>	I <sub>c</sub> = 1mA, V <sub>CE</sub> = 10V I <sub>c</sub> = 10mA, V <sub>CE</sub> = 10V I <sub>c</sub> = 10mA, V <sub>CE</sub> = 10V T <sub>c</sub> = -55°C I <sub>c</sub> = 150mA, V <sub>CE</sub> = 10V	20 35 20 40	120	
Collector Emitter (Sat) Voltage	V <sub>CE(Sat)</sub>	I <sub>c</sub> = 50mA, I <sub>B</sub> = 5mA I <sub>c</sub> = 150mA, I <sub>B</sub> = 15mA		1.2 5	V
Base Emitter (Sat) Voltage	V <sub>BE(Sat)</sub>	I <sub>c</sub> = 50mA, I <sub>B</sub> = 5mA I <sub>c</sub> = 150mA, I <sub>B</sub> = 15mA		0.9 1.3	V

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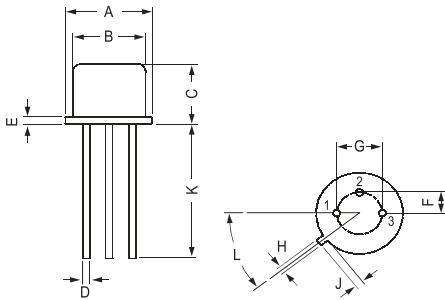
## 80V<sub>CEO</sub>, 500mA I<sub>C</sub>

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### Small Signal Characteristics

Description	Symbol	Test Conditions	Min	Max	unit
Current Gain Bandwidth Product	f <sub>T</sub>	I <sub>C</sub> = 50mA, V <sub>CE</sub> = 10V f = 20MHz	50		MHz
Output Capacitance	C <sub>ob</sub>	V <sub>CB</sub> = 10V, I <sub>E</sub> = 0, f = 1MHz		15	pF
Input Capacitance	C <sub>ib</sub>	V <sub>EB</sub> = 0.5V, I <sub>C</sub> = 0, f = 1MHz		85	pF
Input Impedance	h <sub>ib</sub>	I <sub>C</sub> = 1mA, V <sub>CB</sub> = 5V, f = 1kHz	20	30	Ω
		I <sub>C</sub> = 5mA, V <sub>CB</sub> = 10V, f = 1kHz	4	8	
Voltage Feedback Ratio	h <sub>rb</sub>	I <sub>C</sub> = 1mA, V <sub>CB</sub> = 5V, f = 1kHz		1.25	X10 <sup>-4</sup>
		I <sub>C</sub> = 5mA, V <sub>CB</sub> = 10V, f = 1kHz		1.5	
Small Signal Current Gain	h <sub>fe</sub>	I <sub>C</sub> = 1mA, V <sub>CB</sub> = 5V, f = 1kHz	30	100	
Output Admittance	h <sub>ob</sub>	I <sub>C</sub> = 1mA, V <sub>CB</sub> = 5V, f = 1kHz		0.5	μmho
		I <sub>C</sub> = 5mA, V <sub>CB</sub> = 10V, f = 1kHz		0.5	

### TO-39 Metal Can Package



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

Dim.	Min.	Max.
G	4.82	5.33
H	0.71	0.86
J	0.73	1.02
K	12.7	-
L	42 Deg.	48 Deg.

Dimensions : Millimetres

### Part Number Table

Description	Part Number
NPN Silicon Planar Transistor, 80V, 500mA, TO-39	2N1893

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