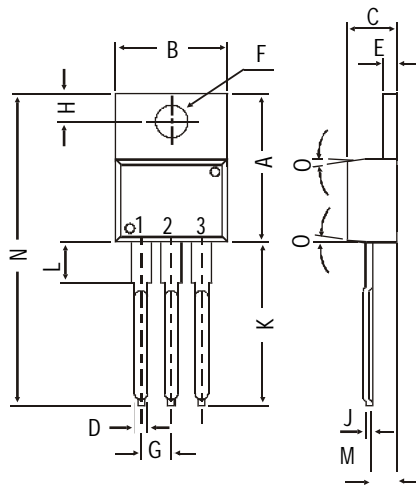
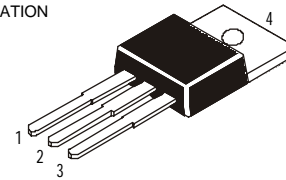


**Boca Semiconductor Corp. (BSC)**

*TIP31, 31A, 31B, 31C* NPN PLASTIC POWER TRANSISTORS  
*TIP32, 32A, 32B, 32C* PNP PLASTIC POWER TRANSISTORS  
 General Purpose Amplifier and Switching Applications

## PIN CONFIGURATION

1. BASE
2. COLLECTOR
3. EMITTER
4. COLLECTOR



DIM	MIN.	MAX.
A	14.42	16.51
B	9.63	10.67
C	3.56	4.83
D		0.90
E	1.15	1.40
F	3.75	3.88
G	2.29	2.79
H	2.54	3.43
J		0.56
K	12.70	14.73
L	2.80	4.07
M	2.03	2.92
N		31.24
O	DEG 7	

All dimensions in mm.

**ABSOLUTE MAXIMUM RATINGS**

		<b>31</b>	<b>31A</b>	<b>31B</b>	<b>31C</b>	
		<b>32</b>	<b>32A</b>	<b>32B</b>	<b>32C</b>	
Collector-base voltage (open emitter)	$V_{CBO}$	max. 40	60	80	100	V
Collector-emitter voltage (open base)	$V_{CEO}$	max. 40	60	80	100	V
Collector current	$I_C$	max.		3.0		A
Total power dissipation up to $T_C = 25^\circ\text{C}$	$P_{tot}$	max.		40		W
Junction temperature	$T_j$	max.		150		$^\circ\text{C}$
Collector-emitter saturation voltage						
$I_C = 3\text{ A}; I_B = 375\text{ mA}$	$V_{CEsat}$	max.		1.2		V
D.C. current gain						
$I_C = 3\text{ A}; V_{CE} = 4\text{ V}$	$h_{FE}$	min.		10		
		max.		50		

**RATINGS** (at  $T_A=25^\circ\text{C}$  unless otherwise specified)

		<b>31</b>	<b>31A</b>	<b>31B</b>	<b>31C</b>	
		<b>32</b>	<b>32A</b>	<b>32B</b>	<b>32C</b>	
Limiting values						
Collector-base voltage (open emitter)	$V_{CBO}$	max. 40	60	80	100	V
Collector-emitter voltage (open base)	$V_{CEO}$	max. 40	60	80	100	V
Emitter-base voltage (open collector)	$V_{EBO}$	max.		5.0		V

Collector current	$I_C$	max.	3.0	A
Collector current (Peak)	$I_{CM}$	max.	5.0	A
Base current	$I_B$	max.	1.0	A
Total power dissipation upto $T_C=25^\circ\text{C}$	$P_{tot}$	max.	40	W
Derate above $25^\circ\text{C}$		max	0.32	W $^\circ\text{C}$
Total power dissipation upto $T_A=25^\circ\text{C}$	$P_{tot}$	max.	2	W
Derate above $25^\circ\text{C}$		max	0.016	W $^\circ\text{C}$
Junction temperature	$T_j$	max.	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$		-65 to +150	$^\circ\text{C}$

#### THERMAL RESISTANCE

From junction to case	$R_{thj-c}$		3.125	$^\circ\text{C/W}$
From junction to ambient	$R_{thj-a}$		62.5	$^\circ\text{C/W}$

#### CHARACTERISTICS

$T_{amb} = 25^\circ\text{C}$  unless otherwise specified

			<b>31</b>	<b>31A</b>	<b>31B</b>	<b>31C</b>	
			<b>32</b>	<b>32A</b>	<b>32B</b>	<b>32C</b>	
Collector cutoff current							
$I_B = 0; V_{CE} = 30V$	$I_{CEO}$	max.	0.3	0.3	-	-	mA
$I_B = 0; V_{CE} = 60V$	$I_{CEO}$	max.	-	-	0.3	0.3	mA
$V_{BE} = 0; V_{CE} = V_{CEO(max)}$	$I_{CES}$	max.		0.2			mA
Emitter cut-off current							
$I_C = 0; V_{EB} = 5 V$	$I_{EBO}$	max.		1.0			mA
Breakdown voltages							
$I_C = 30 \text{ mA}; I_B = 0$	$V_{CEO(sus)}^*$	min.	40	60	80	100	V
$I_C = 1 \text{ mA}; I_E = 0$	$V_{CBO}$	min.	40	60	80	100	V
$I_E = 1 \text{ mA}; I_C = 0$	$V_{EBO}$	min.		5.0			V
Saturation voltage							
$I_C = 3 \text{ A}; I_B = 375 \text{ mA}$	$V_{CEsat}^*$	max.		1.2			V
Base emitter on voltage							
$I_C = 3 \text{ A}; V_{CE} = 4 \text{ V}$	$V_{BE(on)}^*$	max.		1.8			V
D.C. current gain							
$I_C = 1 \text{ A}; V_{CE} = 4 \text{ V}$	$h_{FE}^*$	min.		25			
$I_C = 3 \text{ A}; V_{CE} = 4 \text{ V}$	$h_{FE}^*$	min.		10			
		max.		50			
Small-signal current gain							
$I_C = 0.5 \text{ A}; V_{CE} = 10 \text{ V}; f = 1 \text{ KHz}$	$ h_{fe} $	min.		20			
Transition frequency							
$I_C = 0.5 \text{ A}; V_{CE} = 10 \text{ V}; f = 1 \text{ MHz}$	$f_T(1)$	min.		3			MHz

\* Pulse test: pulse width  $\leq 300 \mu\text{s}$ ; duty cycle  $\leq 2\%$ .

(1)  $f_T = |h_{fe}| \cdot f_{test}$

This datasheet has been download from:

[www.datasheetcatalog.com](http://www.datasheetcatalog.com)

Datasheets for electronics components.