

# Boca Semiconductor Corp.

## BSC

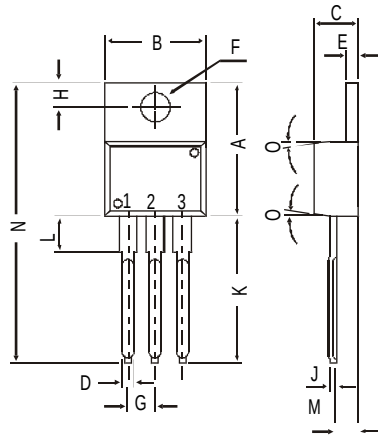
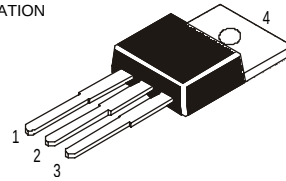
2N6121, 6122, 6123 NPN PLASTIC POWER TRANSISTORS

2N6124, 6125, 6126 PNP PLASTIC POWER TRANSISTORS

Medium Power Linear and Switching Applications

### PIN CONFIGURATION

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



All dimensions in mm.

| 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 |       |

### ABSOLUTE MAXIMUM RATINGS

|                                                        |             | 6121 | 6122 | 6123 |                  |
|--------------------------------------------------------|-------------|------|------|------|------------------|
|                                                        |             | 6124 | 6125 | 6126 |                  |
| Collector-base voltage (open emitter)                  | $V_{CBO}$   | max. | 45   | 60   | 80 V             |
| Collector-emitter voltage (open base)                  | $V_{CEO}$   | max. | 45   | 60   | 80 V             |
| Collector current                                      | $I_C$       | max. |      | 4.0  | 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                   | $V_{CEsat}$ | max. |      | 0.6  | V                |
| $I_C = 1.5 \text{ A}; I_B = 0.15 \text{ A}$            |             |      |      |      |                  |
| D.C. current gain                                      | $h_{FE}$    | min. | 25   | 25   | 20               |
| $I_C = 1.5 \text{ A}; V_{CE} = 2 \text{ V}$            |             | max. | 100  | 100  | 80               |

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

#### Limiting values

|                                       |           | 6121 | 6122 | 6123 |      |
|---------------------------------------|-----------|------|------|------|------|
|                                       |           | 6124 | 6125 | 6126 |      |
| Collector-base voltage (open emitter) | $V_{CBO}$ | max. | 45   | 60   | 80 V |
| Collector-emitter voltage (open base) | $V_{CEO}$ | max. | 45   | 60   | 80 V |
| Emitter-base voltage (open collector) | $V_{EBO}$ | max. |      | 5.0  | V    |

**2N6121, 2N6122, 2N6123**  
**2N6124, 2N6125, 2N6126**

|                                                        |           |      |             |       |
|--------------------------------------------------------|-----------|------|-------------|-------|
| Collector current                                      | $I_C$     | max. | 4.0         | A     |
| Collector current (Peak)                               | $I_{CM}$  | max. | 7.0         | A     |
| Base current                                           | $I_B$     | max. | 1.0         | A     |
| Total power dissipation up to $T_C = 25^\circ\text{C}$ | $P_{tot}$ | max. | 40          | W     |
| Derate above $25^\circ\text{C}$                        |           | max. | 320         | mW/°C |
| Junction temperature                                   | $T_j$     | max. | 150         | °C    |
| Storage temperature                                    | $T_{stg}$ |      | -65 to +150 | °C    |

**THERMAL RESISTANCE**

|                       |               |  |      |      |
|-----------------------|---------------|--|------|------|
| From junction to case | $R_{th\ j-c}$ |  | 3.12 | °C/W |
|-----------------------|---------------|--|------|------|

**CHARACTERISTICS**

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

**6121 6122 6123**  
**6124 6125 6126**

Collector cutoff current

|                                                                             |                 |          |     |     |    |
|-----------------------------------------------------------------------------|-----------------|----------|-----|-----|----|
| $I_B = 0; V_{CE} = 45\text{ V}$                                             | $I_{CEO}$       | max. 1.0 | —   | —   | mA |
| $I_B = 0; V_{CE} = 60\text{ V}$                                             | $I_{CEO}$       | max. —   | 1.0 | —   | mA |
| $I_B = 0; V_{CE} = 80\text{ V}$                                             | $I_{CEO}$       | max. —   | —   | 1.0 | mA |
| $V_{EB(off)} = 1.5\text{ V}; V_{CE} = 45\text{ V}$                          | $I_{CEX}$       | max. 0.1 | —   | —   | mA |
| $V_{EB(off)} = 1.5\text{ V}; V_{CE} = 60\text{ V}$                          | $I_{CEX}$       | max. —   | 0.1 | —   | mA |
| $V_{EB(off)} = 1.5\text{ V}; V_{CE} = 85\text{ V}$                          | $I_{CEX}$       | max. —   | —   | 0.1 | mA |
| $V_{EB(off)} = 1.5\text{ V}; V_{CE} = 45\text{ V}; T_C = 125^\circ\text{C}$ | $I_{CEX\ max.}$ | 2.0      | —   | —   | mA |
| $V_{EB(off)} = 1.5\text{ V}; V_{CE} = 60\text{ V}; T_C = 125^\circ\text{C}$ | $I_{CEX\ max.}$ | —        | 2.0 | —   | mA |
| $V_{EB(off)} = 1.5\text{ V}; V_{CE} = 80\text{ V}; T_C = 125^\circ\text{C}$ | $I_{CEX\ max.}$ | —        | —   | 2.0 | mA |

mA

|                                 |           |          |     |     |    |
|---------------------------------|-----------|----------|-----|-----|----|
| $I_E = 0; V_{CB} = 45\text{ V}$ | $I_{CBO}$ | max. 0.1 | —   | —   | mA |
| $I_E = 0; V_{CB} = 60\text{ V}$ | $I_{CBO}$ | max. —   | 0.1 | —   | mA |
| $I_E = 0; V_{CB} = 80\text{ V}$ | $I_{CBO}$ | max. —   | —   | 0.1 | mA |

Emitter cut-off current

|                                |           |      |     |    |
|--------------------------------|-----------|------|-----|----|
| $I_C = 0; V_{EB} = 5\text{ V}$ | $I_{EBO}$ | max. | 1.0 | mA |
|--------------------------------|-----------|------|-----|----|

Breakdown voltages

|                                |                  |         |     |    |   |
|--------------------------------|------------------|---------|-----|----|---|
| $I_C = 100\text{ mA}; I_B = 0$ | $V_{CEO(sus)}^*$ | min. 45 | 60  | 80 | V |
| $I_C = 1\text{ mA}; I_E = 0$   | $V_{CBO}$        | min. 45 | 60  | 80 | V |
| $I_E = 1\text{ mA}; I_C = 0$   | $V_{EBO}$        | min.    | 5.0 | V  |   |

Saturation voltages

|                                           |               |      |     |   |
|-------------------------------------------|---------------|------|-----|---|
| $I_C = 1.5\text{ A}; I_B = 0.15\text{ A}$ | $V_{CEsat}^*$ | max. | 0.6 | V |
| $I_C = 4\text{ A}; I_B = 1.0\text{ A}$    | $V_{CEsat}^*$ | max. | 1.4 | V |

Base-emitter on voltage

|                                           |                |      |     |   |
|-------------------------------------------|----------------|------|-----|---|
| $I_C = 1.5\text{ A}; V_{CE} = 2\text{ V}$ | $V_{BE(on)}^*$ | max. | 1.2 | V |
|-------------------------------------------|----------------|------|-----|---|

D.C. current gain

|                                           |            |          |     |     |
|-------------------------------------------|------------|----------|-----|-----|
| $I_C = 1.5\text{ A}; V_{CE} = 2\text{ V}$ | $h_{FE}^*$ | min. 25  | 25  | 20  |
|                                           |            | max. 100 | 100 | 80  |
| $I_C = 4\text{ A}; V_{CE} = 2\text{ V}$   | $h_{FE}^*$ | min. 10  | 10  | 7.0 |

Small signal current

|                                                               |          |      |    |  |
|---------------------------------------------------------------|----------|------|----|--|
| $I_C = 0.1\text{ A}; V_{CE} = 2\text{ V}; f = 1.0\text{ KHz}$ | $h_{fe}$ | min. | 25 |  |
|---------------------------------------------------------------|----------|------|----|--|

Transition frequency at  $f = 1\text{ MHz}$

|                                         |       |      |     |     |
|-----------------------------------------|-------|------|-----|-----|
| $I_C = 1\text{ A}; V_{CE} = 4\text{ V}$ | $f_T$ | min. | 2.5 | MHz |
|-----------------------------------------|-------|------|-----|-----|

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

This datasheet has been download from:

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

Datasheets for electronics components.