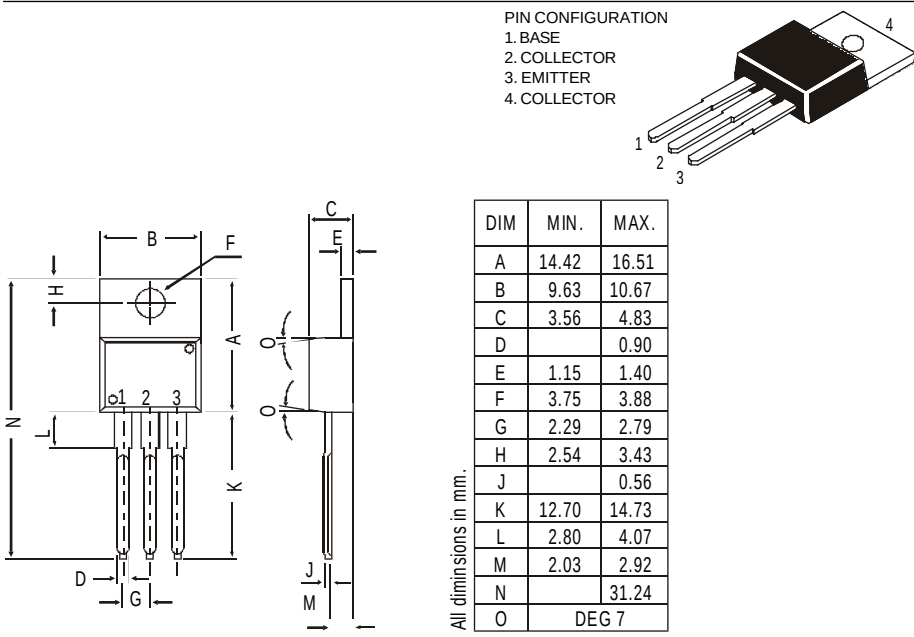


Boca Semiconductor Corp.  
BSC

2N6121, 6122, 6123     NPN PLASTIC POWER TRANSISTORS  
2N6124, 6125, 6126     PNP PLASTIC POWER TRANSISTORS  
Medium Power Linear and Switching Applications



ABSOLUTE MAXIMUM RATINGS

|                                                          |             |      |             |             |             |                    |
|----------------------------------------------------------|-------------|------|-------------|-------------|-------------|--------------------|
|                                                          |             |      | <b>6121</b> | <b>6122</b> | <b>6123</b> |                    |
|                                                          |             |      | <b>6124</b> | <b>6125</b> | <b>6126</b> |                    |
| 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                     |             |      |             |             |             |                    |
| $I_C = 1.5\text{ A}; I_B = 0.15\text{ A}$                | $V_{CEsat}$ | max. |             | 0.6         |             | 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          |                    |

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

|                                       |           |      |             |             |             |   |
|---------------------------------------|-----------|------|-------------|-------------|-------------|---|
|                                       |           |      | <b>6121</b> | <b>6122</b> | <b>6123</b> |   |
|                                       |           |      | <b>6124</b> | <b>6125</b> | <b>6126</b> |   |
| 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  $\leq 2\%$ .