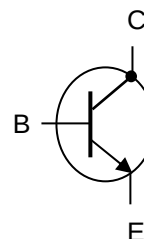


## BSX45-BSX46-BSX47

### NPN MEDIUM POWER TRANSISTORS

The BSX45-BSX46-BSX47 are NPN transistors mounted in TO-39 metal package. They are intended for use in general industrial applications. High current and low voltage. Compliance to RoHS.



#### ABSOLUTE MAXIMUM RATINGS

| Symbol           | Ratings                       |                        | Value       |       |       | Unit |
|------------------|-------------------------------|------------------------|-------------|-------|-------|------|
|                  |                               |                        | BSX45       | BSX46 | BSX47 |      |
| V <sub>CEO</sub> | Collector-Emitter Voltage     | I <sub>B</sub> =0      | 40          | 60    | 80    | V    |
| V <sub>CBO</sub> | Collector-Base Voltage        | I <sub>E</sub> =0      | 80          | 100   | 120   | V    |
| V <sub>EBO</sub> | Emitter-Base Voltage          | I <sub>C</sub> =0      | 7           |       |       | V    |
| I <sub>C</sub>   | Collector Current             |                        | 1           |       |       | A    |
| I <sub>CM</sub>  | Collector Peak Current        |                        | 1.5         |       |       | A    |
| I <sub>BM</sub>  | Base Peak Current             |                        | 200         |       |       | mA   |
| P <sub>D</sub>   | Total Power Dissipation       | T <sub>amb</sub> = 25° | 6.25        |       |       | W    |
| T <sub>J</sub>   | Junction Temperature          |                        | 200         |       |       | °C   |
| T <sub>amb</sub> | Operating ambient temperature |                        | -65 to +150 |       |       |      |
| T <sub>Stg</sub> | Storage Temperature range     |                        | -65 to +150 |       |       |      |

#### THERMAL CHARACTERISTICS

| Symbol      | Ratings                                 | Value | Unit |
|-------------|-----------------------------------------|-------|------|
| $R_{thJ-a}$ | Thermal Resistance, Junction to ambient | 200   | °C/W |
| $R_{thJ-c}$ | Thermal Resistance, Junction to case    | 28    | °C/W |

#### SWITCHING TIMES

| Symbol    | Ratings       |                                                         | Value | Unit |
|-----------|---------------|---------------------------------------------------------|-------|------|
| $t_{on}$  | Turn-on time  | $I_{Con} = 100mA; I_{Bon} = 5 mA$<br>$I_{Boff} = -5 mA$ | 200   | ns   |
| $t_{off}$ | Turn-off time |                                                         | 850   | ns   |

## BSX45-BSX46-BSX47

### ELECTRICAL CHARACTERISTICS

T<sub>j</sub>=25°C unless otherwise specified

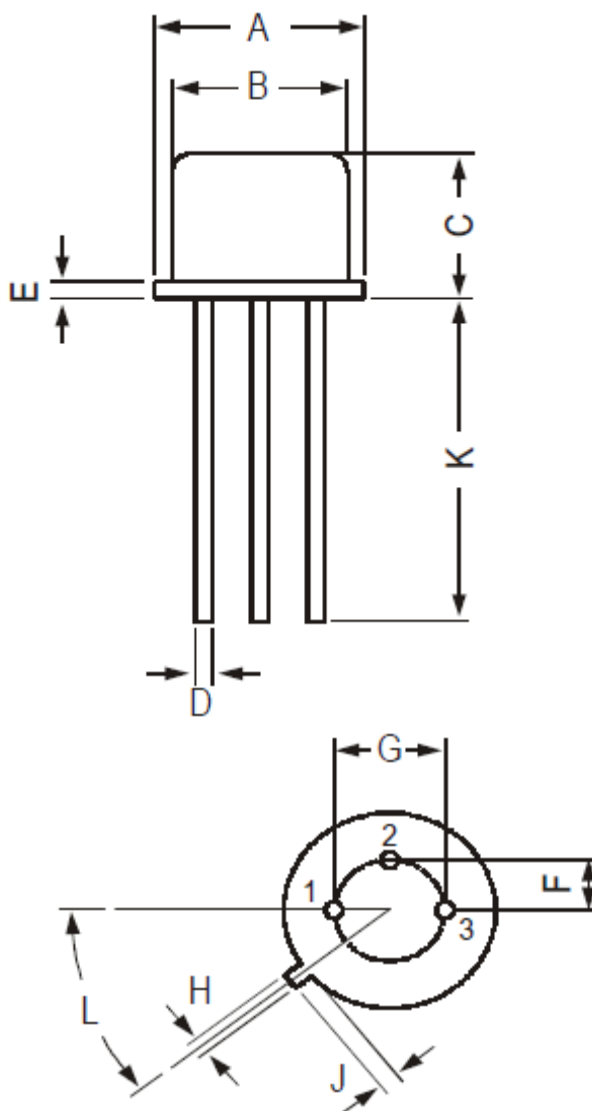
| Symbol                                                              | Ratings                              | Test Condition(s)                                                            |          | Min  | Typ | Max | Unit |
|---------------------------------------------------------------------|--------------------------------------|------------------------------------------------------------------------------|----------|------|-----|-----|------|
| I <sub>CBO</sub>                                                    | Collector Cutoff Current             | V <sub>CB</sub> = 60 V, I <sub>E</sub> = 0                                   | BSX45    | -    | -   | 30  | nA   |
|                                                                     |                                      | BSX46                                                                        |          |      |     |     |      |
|                                                                     |                                      | V <sub>CB</sub> = 80 V, I <sub>E</sub> = 0                                   | BSX47    | -    | -   | 10  | μA   |
|                                                                     |                                      | V <sub>CB</sub> = 60 V, I <sub>E</sub> = 0<br>T <sub>j</sub> = 150℃          | BSX45    |      |     |     |      |
|                                                                     |                                      | BSX46                                                                        |          |      |     |     |      |
| V <sub>CB</sub> = 80 V, I <sub>E</sub> = 0<br>T <sub>j</sub> = 150℃ | BSX47                                |                                                                              |          |      |     |     |      |
| I <sub>EBO</sub>                                                    | Emitter Cutoff Current               | V <sub>BE</sub> = 5.0 V, I <sub>C</sub> = 0                                  |          | -    | -   | 10  | nA   |
| V <sub>CE(SAT)</sub>                                                | Collector-Emitter saturation Voltage | I <sub>C</sub> = 1 A, I <sub>B</sub> = 100 mA                                | BSX45    | -    | -   | 1   | V    |
|                                                                     |                                      | BSX46                                                                        |          |      |     |     |      |
|                                                                     |                                      | I <sub>C</sub> = 500 mA<br>I <sub>B</sub> = 25 mA                            | BSX47    | -    | -   | 0.9 |      |
| V <sub>BE</sub>                                                     | Base-Emitter Voltage                 | I <sub>C</sub> = 100 mA, V <sub>CE</sub> = 1 V                               |          | -    | -   | 1   | V    |
|                                                                     |                                      | I <sub>C</sub> = 500 mA, V <sub>CE</sub> = 1 V                               |          | 0.75 | -   | 1.5 |      |
|                                                                     |                                      | I <sub>C</sub> = 1 A, V <sub>CE</sub> = 1 V                                  |          | -    | -   | 2   |      |
| h <sub>FE</sub>                                                     | DC Current Gain                      | I <sub>C</sub> = 100 μA<br>V <sub>CE</sub> = 1 V                             | BSX45/10 | 15   | 40  | -   | -    |
|                                                                     |                                      |                                                                              | BSX46/10 |      |     |     |      |
|                                                                     |                                      |                                                                              | BSX47/10 |      |     |     |      |
|                                                                     |                                      |                                                                              | BSX45/16 | 25   | 90  | -   |      |
|                                                                     |                                      |                                                                              | BSX46/16 |      |     |     |      |
|                                                                     |                                      | I <sub>C</sub> = 100 mA<br>V <sub>CE</sub> = 1 V                             | BSX45/10 | 63   | 100 | 160 |      |
|                                                                     |                                      |                                                                              | BSX46/10 |      |     |     |      |
|                                                                     |                                      |                                                                              | BSX47/10 |      |     |     |      |
|                                                                     |                                      |                                                                              | BSX45/16 | 100  | 160 | 250 |      |
|                                                                     |                                      |                                                                              | BSX46/16 |      |     |     |      |
|                                                                     |                                      |                                                                              | BSX47/16 |      |     |     |      |
|                                                                     |                                      | I <sub>C</sub> = 500 mA<br>V <sub>CE</sub> = 1 V                             | BSX45/10 | 25   | 40  | -   |      |
|                                                                     |                                      |                                                                              | BSX46/10 |      |     |     |      |
|                                                                     |                                      |                                                                              | BSX47/10 | 35   | 60  | -   |      |
|                                                                     |                                      |                                                                              | BSX45/16 |      |     |     |      |
|                                                                     |                                      |                                                                              | BSX46/16 |      |     |     |      |
|                                                                     |                                      | I <sub>C</sub> = 1 A, V <sub>CE</sub> = 1 V                                  | BSX45/10 | -    | 20  | -   |      |
|                                                                     |                                      |                                                                              | BSX46/10 |      |     |     |      |
|                                                                     |                                      |                                                                              | BSX47/10 | -    | 30  | -   |      |
|                                                                     |                                      |                                                                              | BSX45/16 |      |     |     |      |
|                                                                     |                                      |                                                                              | BSX46/16 |      |     |     |      |
| f <sub>T</sub>                                                      | Transition frequency                 | I <sub>C</sub> = 50 mA, V <sub>CE</sub> = 10 V<br>f = 100MHZ                 |          | 50   | -   | -   | MHz  |
| F                                                                   | Noise figure                         | I <sub>C</sub> = 100 μA, V <sub>CE</sub> = 5 V, RS=1kΩ<br>f = 1kHz, B =200Hz |          | -    | 3.5 | -   | db   |

## BSX45-BSX46-BSX47

### MECHANICAL DATA CASE TO-39

| DIMENSIONS (mm) |       |      |
|-----------------|-------|------|
|                 | min   | max  |
| A               | 8.50  | 9.39 |
| B               | 7.74  | 8.50 |
| C               | 6.09  | 6.60 |
| D               | 0.40  | 0.53 |
| E               | -     | 0.88 |
| F               | 2.41  | 2.66 |
| G               | 4.82  | 5.33 |
| H               | 0.71  | 0.86 |
| J               | 0.73  | 1.02 |
| K               | 12.70 | -    |
| L               | 42°   | 48°  |

|         |           |
|---------|-----------|
| Pin 1 : | Emitter   |
| Pin 2 : | Base      |
| Pin 3 : | Collector |
| Case :  | Collector |



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