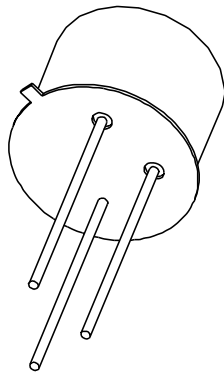


DATA SHEET



BSX62; BSX63 NPN switching transistors

Product specification
Supersedes data of September 1994
File under Discrete Semiconductors, SC04

1997 Jun 19

NPN switching transistors

BSX62; BSX63

FEATURES

- High current (max. 3 A)
- Low voltage (max. 60 V).

APPLICATIONS

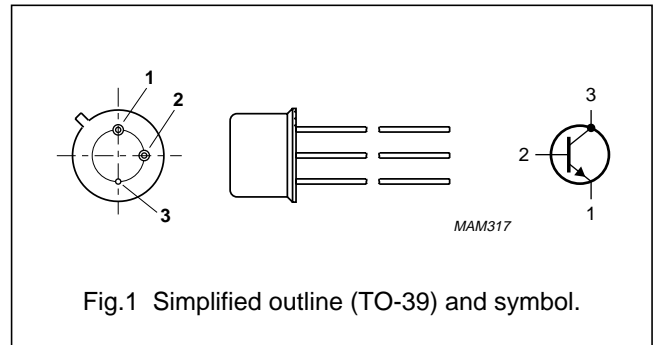
- Medium power switching.

DESCRIPTION

NPN switching transistor in a TO-39 metal package.

PINNING

| PIN | DESCRIPTION |
|-----|------------------------------|
| 1 | emitter |
| 2 | base |
| 3 | collector, connected to case |



QUICK REFERENCE DATA

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|------------------|---------------------------|--|------|------|------|------|
| V _{CBO} | collector-base voltage | open emitter | | | | |
| | BSX62 | | – | – | 60 | V |
| | BSX63 | | – | – | 80 | V |
| V _{CEO} | collector-emitter voltage | open base | | | | |
| | BSX62 | | – | – | 40 | V |
| | BSX63 | | – | – | 60 | V |
| I _C | collector current (DC) | | – | – | 3 | A |
| P _{tot} | total power dissipation | T _{case} ≤ 25 °C | – | – | 5 | W |
| h _{FE} | DC current gain | I _C = 1 A; V _{CE} = 1 V | | | | |
| | BSX62-10; BSX63-10 | | 63 | 100 | 160 | |
| | BSX62-16; BSX63-16 | | 100 | 160 | 250 | |
| f _T | transition frequency | I _C = 200 mA; V _{CE} = 10 V; f = 100 MHz | 30 | 70 | – | MHz |
| t _{off} | turn-off time | I _{Con} = 1 A; I _{Bon} = 50 mA; I _{Boff} = –50 mA | – | – | 1.5 | µs |

NPN switching transistors

BSX62; BSX63

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|------------------|-------------------------------|---------------------------|------|------|------|
| V _{CBO} | collector-base voltage | open emitter | – | 60 | V |
| | BSX62 | | | 80 | V |
| V _{CEO} | collector-emitter voltage | open base | – | 40 | V |
| | BSX63 | | | 60 | V |
| V _{EBO} | emitter-base voltage | open collector | – | 5 | V |
| I _C | collector current (DC) | | – | 3 | A |
| I _{CM} | peak collector current | | – | 3 | A |
| I _{BM} | peak base current | | – | 500 | mA |
| P _{tot} | total power dissipation | T _{case} ≤ 25 °C | – | 5 | W |
| T _{stg} | storage temperature | | –65 | +150 | °C |
| T _j | junction temperature | | – | 200 | °C |
| T _{amb} | operating ambient temperature | | –65 | +150 | °C |

THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|---------------------|---|-------------|-------|------|
| R _{th j-a} | thermal resistance from junction to ambient | in free air | 200 | K/W |
| R _{th j-c} | thermal resistance from junction to case | | 28 | K/W |

NPN switching transistors

BSX62; BSX63

CHARACTERISTICS

$T_{\text{case}} = 25\text{ °C}$ unless otherwise specified.

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|---|---|---|------|------|------|---------------|
| I_{CBO} | collector cut-off current BSX62 | $V_{\text{CB}} = 40\text{ V}$ | – | – | 100 | nA |
| | | $V_{\text{CB}} = 40\text{ V}; T_{\text{case}} = 150\text{ °C}$ | – | – | 100 | μA |
| I_{CBO} | collector cut-off current BSX63 | $V_{\text{CB}} = 60\text{ V}$ | – | – | 100 | nA |
| | | $V_{\text{CB}} = 60\text{ V}; T_{\text{case}} = 150\text{ °C}$ | – | – | 100 | μA |
| I_{EBO} | emitter cut-off current | $I_{\text{C}} = 0; V_{\text{EB}} = 5\text{ V}$ | – | – | 100 | nA |
| h_{FE} | DC current gain BSX62-10; BSX63-10 BSX62-16; BSX63-16 | $I_{\text{C}} = 100\text{ mA}; V_{\text{CE}} = 1\text{ V}$ | – | 110 | – | |
| | | | – | 180 | – | |
| h_{FE} | DC current gain BSX62-10; BSX63-10 BSX62-16; BSX63-16 | $I_{\text{C}} = 1\text{ A}; V_{\text{CE}} = 1\text{ V}$ | 63 | 100 | 160 | |
| | | | 100 | 160 | 250 | |
| h_{FE} | DC current gain BSX62-10; BSX63-10 BSX62-16; BSX63-16 | $I_{\text{C}} = 2\text{ A}; V_{\text{CE}} = 5\text{ V}$ | – | 70 | – | |
| | | | – | 120 | – | |
| V_{CEsat} | collector-emitter saturation voltage | $I_{\text{C}} = 1\text{ A}; I_{\text{B}} = 100\text{ mA}$ | – | – | 700 | mV |
| | | $I_{\text{C}} = 2\text{ A}; I_{\text{B}} = 200\text{ mA}$ | – | – | 800 | mV |
| V_{BEsat} | base-emitter saturation voltage | $I_{\text{C}} = 1\text{ A}; I_{\text{B}} = 100\text{ mA}$ | – | – | 1.2 | V |
| | | $I_{\text{C}} = 2\text{ A}; I_{\text{B}} = 200\text{ mA}$ | – | – | 1.3 | V |
| V_{BE} | base-emitter voltage | $I_{\text{C}} = 100\text{ mA}; V_{\text{CE}} = 1\text{ V}$ | – | – | 1 | V |
| | | $I_{\text{C}} = 1\text{ A}; V_{\text{CE}} = 1\text{ V}$ | – | – | 1.2 | V |
| | | $I_{\text{C}} = 2\text{ A}; V_{\text{CE}} = 5\text{ V}$ | – | – | 1.3 | V |
| C_{c} | collector capacitance | $I_{\text{E}} = i_{\text{e}} = 0; V_{\text{CB}} = 10\text{ V}; f = 1\text{ MHz}$ | – | – | 70 | pF |
| f_{T} | transition frequency | $I_{\text{C}} = 200\text{ mA}; V_{\text{CE}} = 10\text{ V}; f = 100\text{ MHz}$ | 30 | 70 | – | MHz |
| Switching times (between 10% and 90% levels) | | | | | | |
| t_{on} | turn-on time | $I_{\text{Con}} = 1\text{ A}; I_{\text{Bon}} = 50\text{ mA}; I_{\text{Boff}} = -50\text{ mA}$ | – | – | 300 | ns |
| t_{off} | turn-off time | | – | – | 1.5 | μs |

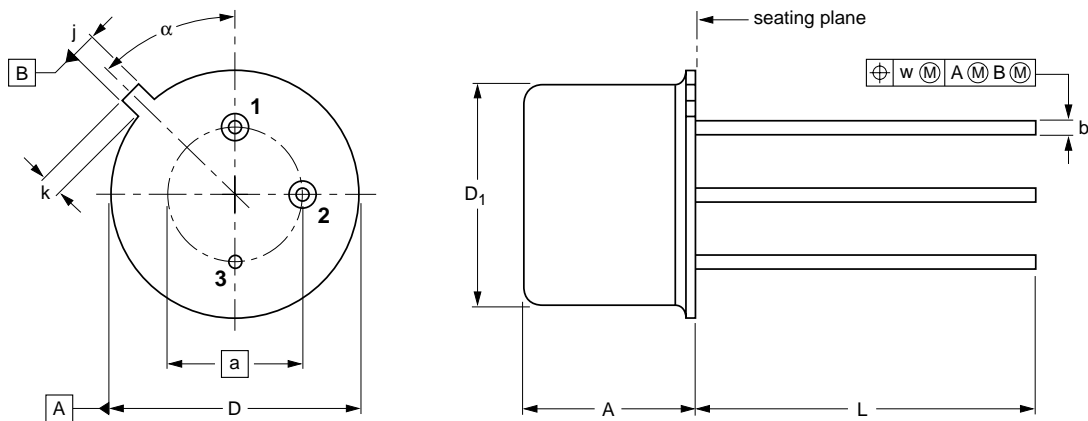
NPN switching transistors

BSX62; BSX63

PACKAGE OUTLINE

Metal-can cylindrical single-ended package; 3 leads

SOT5/11



DIMENSIONS (mm are the original dimensions)

| UNIT | A | a | b | D | D ₁ | j | k | L | w | α |
|------|--------------|------|--------------|--------------|----------------|--------------|--------------|--------------|-----|-----|
| mm | 6.60 6.35 | 5.08 | 0.48 0.41 | 9.39 9.08 | 8.33 8.18 | 0.85 0.75 | 0.95 0.75 | 14.2 12.7 | 0.2 | 45° |

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|-----------------|------------|-------|------|--|---------------------|------------|
| | IEC | JEDEC | EIAJ | | | |
| SOT5/11 | | TO-39 | | | | 97-04-11 |

NPN switching transistors

BSX62; BSX63

DEFINITIONS

| | |
|---|---|
| Data sheet status | |
| Objective specification | This data sheet contains target or goal specifications for product development. |
| Preliminary specification | This data sheet contains preliminary data; supplementary data may be published later. |
| Product specification | This data sheet contains final product specifications. |
| Limiting values | |
| Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability. | |
| Application information | |
| Where application information is given, it is advisory and does not form part of the specification. | |

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NPN switching transistors

BSX62; BSX63

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