

# DATA SHEET

## **BFQ222** NPN video transistor

Product specification  
Supersedes data of 1996 July 18  
File under Discrete Semiconductors, SC05

1996 Sep 04

# NPN video transistor

# BFQ222

### APPLICATIONS

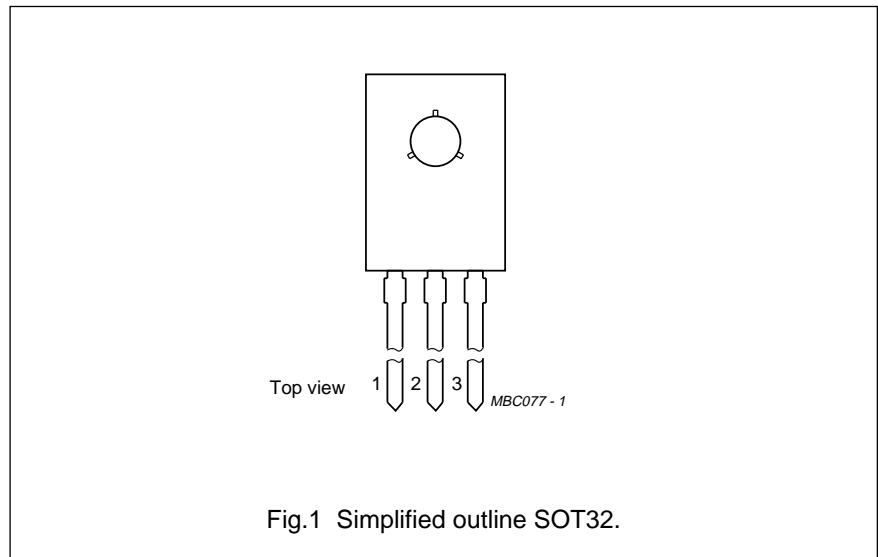
- Primarily intended for cascode output and buffer stages in high resolution colour monitors.

### DESCRIPTION

NPN silicon transistor encapsulated in a 3-lead plastic SOT32 package.

### PINNING

| PIN | DESCRIPTION |
|-----|-------------|
| 1   | emitter     |
| 2   | collector   |
| 3   | base        |



### QUICK REFERENCE DATA

| SYMBOL    | PARAMETER               | CONDITIONS                                 | TYP. | MAX. | UNIT |
|-----------|-------------------------|--|------|------|------|
| $V_{CBO}$ | collector-base voltage  | open emitter                               | –    | 100  | V    |
| $I_C$     | collector current (DC)  |  | –    | 100  | mA   |
| $P_{tot}$ | total power dissipation | $T_{mb} = 25\text{ °C}$                    | –    | 5    | W    |
| $f_T$     | transition frequency    | $I_C = 25\text{ mA}; V_{CE} = 10\text{ V}$ | 1    | –    | GHz  |
| $C_{re}$  | feedback capacitance    | $I_C = 0; V_{CB} = 10\text{ V}$            | 1.7  | –    | pF   |
| $T_j$     | junction temperature    |  | –    | 175  | °C   |

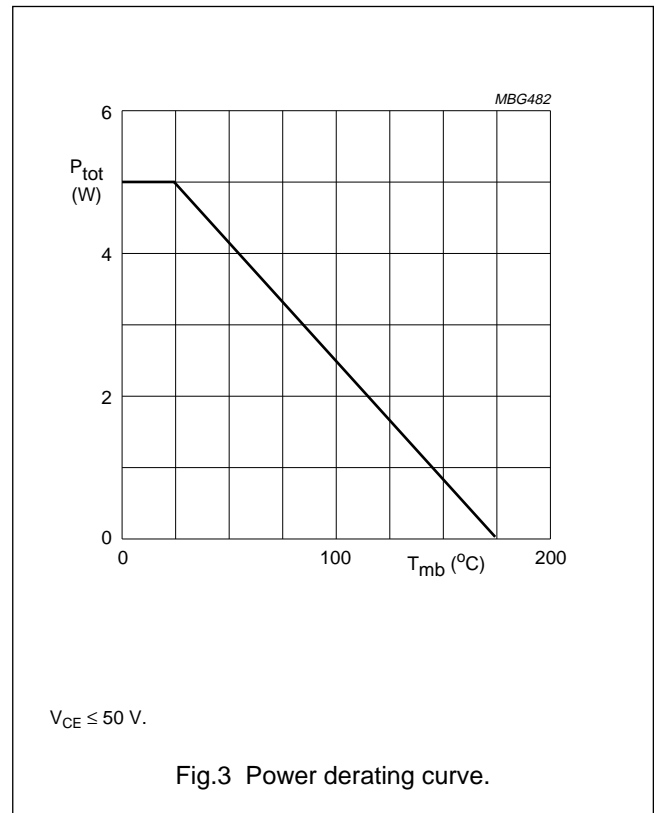
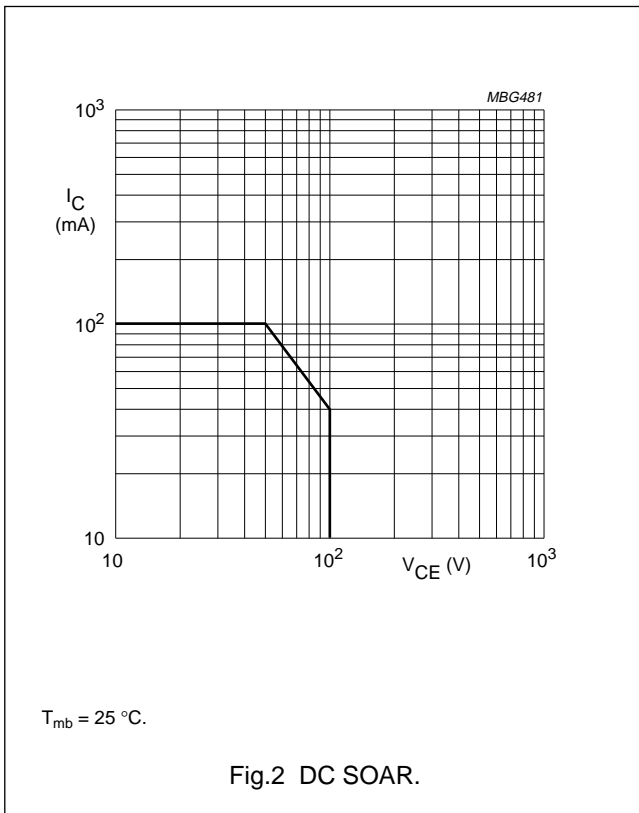
### LIMITING VALUES

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

| SYMBOL      | PARAMETER                 | CONDITIONS                         | MIN. | MAX. | UNIT |
|-------------|---------------------------|------------------------------------|------|------|------|
| $V_{CBO}$   | collector-base voltage    | open emitter                       | –    | 100  | V    |
| $V_{CER}$   | collector-emitter voltage | $R_{BE} = 100\ \Omega$             | –    | 95   | V    |
| $V_{EBO}$   | emitter-base voltage      | open collector                     | –    | 3    | V    |
| $I_C$       | collector current (DC)    | see Fig.2                          | –    | 100  | mA   |
| $I_{C(AV)}$ | average collector current | see Fig.2                          | –    | 100  | mA   |
| $P_{tot}$   | total power dissipation   | $T_{mb} = 25\text{ °C};$ see Fig.3 | –    | 5    | W    |
| $T_{stg}$   | storage temperature       |                                    | –65  | +175 | °C   |
| $T_j$       | junction temperature      |                                    | –    | 175  | °C   |

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**THERMAL CHARACTERISTICS**

| SYMBOL         | PARAMETER   | CONDITIONS  | VALUE | UNIT |
|----------------|---|---|-------|------|
| $R_{th\ j-mb}$ | thermal resistance from junction to mounting base | $P_{tot} = 5\text{ W}; T_{mb} = 25\text{ }^{\circ}\text{C}$ | 30    | K/W  |

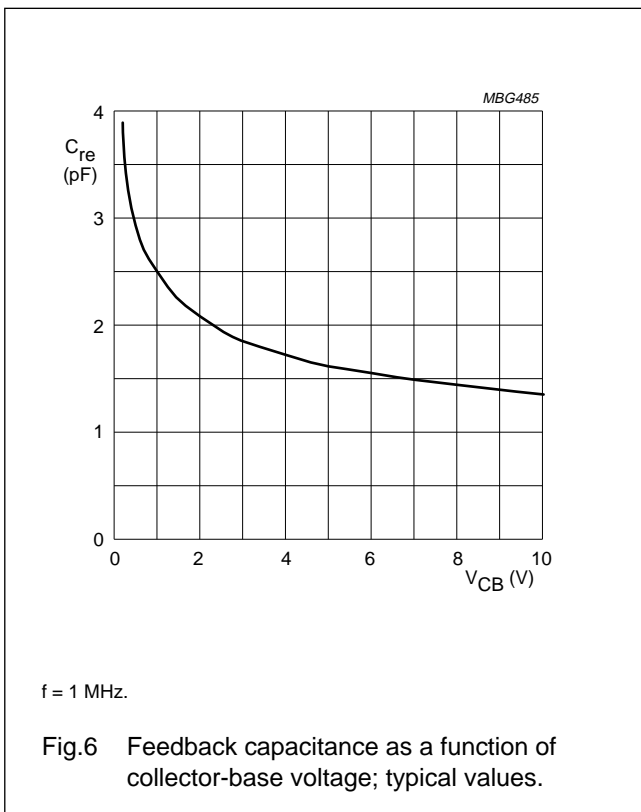
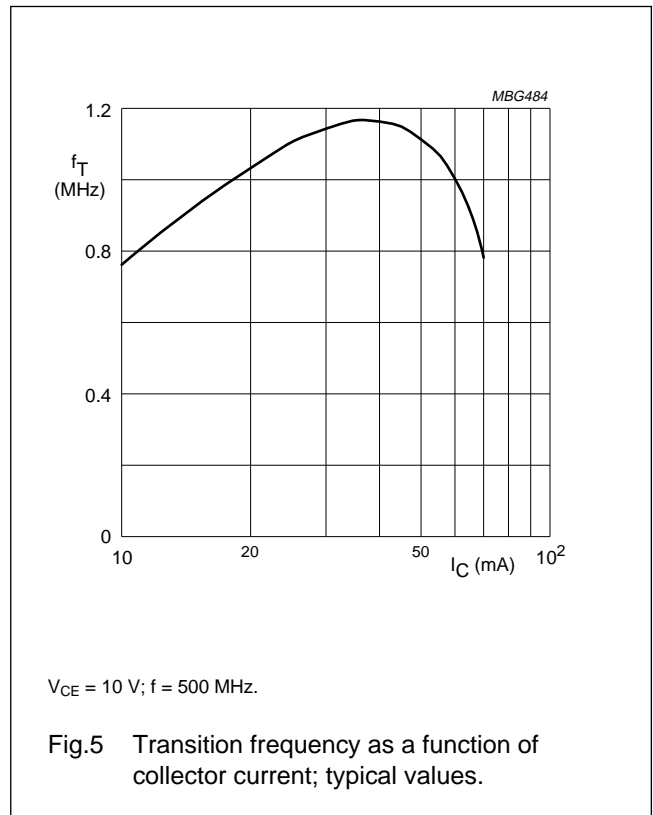
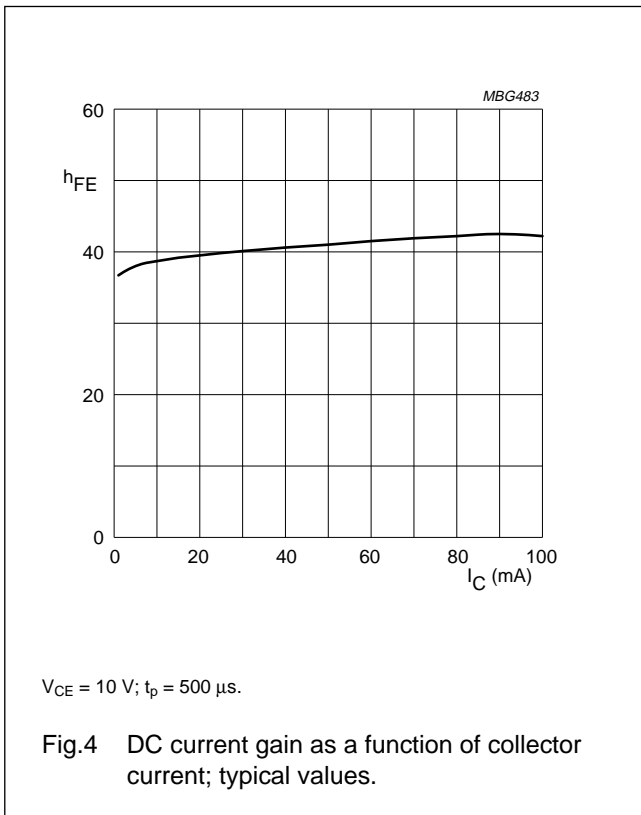
**CHARACTERISTICS**

$T_j = 25\text{ }^{\circ}\text{C}$  unless otherwise specified.

| SYMBOL        | PARAMETER                           | CONDITIONS   | MIN. | TYP. | MAX. | UNIT          |
|---------------|-------------------------------------|--|------|------|------|---------------|
| $V_{(BR)CBO}$ | collector-base breakdown voltage    | $I_C = 0.1\text{ mA}; I_E = 0$   | 100  | –    | –    | V             |
| $V_{(BR)CER}$ | collector-emitter breakdown voltage | $I_C = 1\text{ mA}; R_{BE} = 100\ \Omega$                                      | 95   | –    | –    | V             |
| $V_{(BR)EBO}$ | emitter-base breakdown voltage      | $I_C = 0; I_E = 0.1\text{ mA}$   | 3    | –    | –    | V             |
| $I_{CES}$     | collector-emitter leakage current   | $V_{CE} = 50\text{ V}; V_{BE} = 0$   | –    | –    | 100  | $\mu\text{A}$ |
| $h_{FE}$      | DC current gain                     | $I_C = 25\text{ mA}; V_{CE} = 10\text{ V};$<br>see Fig.4                       | 20   | –    | –    |               |
| $f_T$         | transition frequency                | $I_C = 25\text{ mA}; V_{CE} = 10\text{ V};$<br>$f = 500\text{ MHz};$ see Fig.5 | –    | 1    | –    | GHz           |
| $C_{re}$      | feedback capacitance                | $I_C = 0; V_{CB} = 10\text{ V}; f = 1\text{ MHz};$<br>see Fig.6                | –    | 1.7  | –    | pF            |

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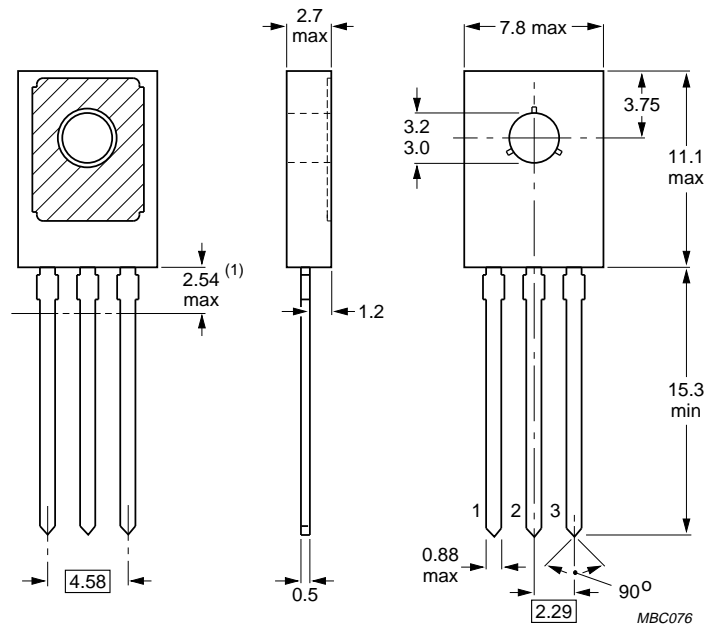
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PACKAGE OUTLINE



Dimensions in mm.

Fig.7 SOT32.

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**DEFINITIONS**

| <b>Data Sheet Status</b>  |   |
|---|---|
| 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.                                |
| <b>Limiting values</b>  |   |
| 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. |   |
| <b>Application information</b>  |   |
| Where application information is given, it is advisory and does not form part of the specification.   |   |

**LIFE SUPPORT APPLICATIONS**

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