



**THE DATASHEET OF  
BF840,215**



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Kind regards,

Team Nexperia

# DATA SHEET



**BF840**

**NPN medium frequency transistor**

Product data sheet  
Supersedes data of 1999 Apr 12

2004 Jan 13

# NPN medium frequency transistor

**BF840**

## FEATURES

- Low current (max. 25 mA)
- Low voltage (max. 40 V).

## APPLICATIONS

- AM mixers
- IF amplifiers in AM/FM receivers.

## DESCRIPTION

NPN medium frequency transistor in a SOT23 plastic package.

## MARKING

| TYPE NUMBER | MARKING CODE <sup>(1)</sup> |
|-------------|-----------------------------|
| BF840       | NC*                         |

### Note

- \* = p : Made in Hong Kong.  
 \* = t : Made in Malaysia.  
 \* = W : Made in China.

## PINNING

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

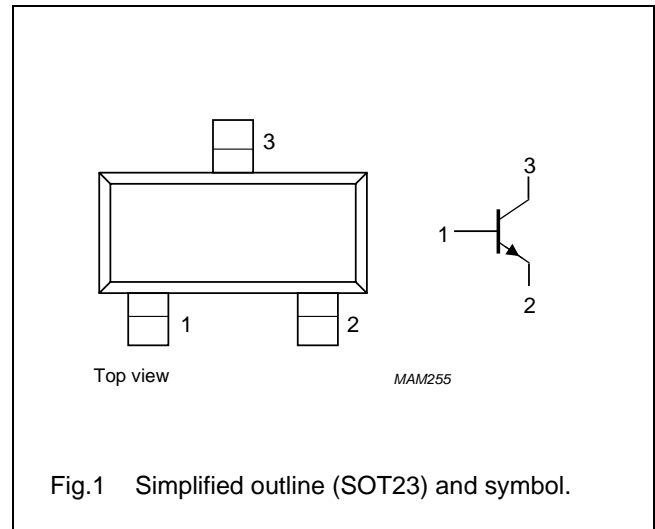


Fig.1 Simplified outline (SOT23) and symbol.

## ORDERING INFORMATION

| TYPE NUMBER | PACKAGE |  |         |
|-------------|---------|--|---------|
|             | NAME    | DESCRIPTION                              | VERSION |
| BF840       | –       | plastic surface mounted package; 3 leads | SOT23   |

## LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

| SYMBOL           | PARAMETER                     | CONDITIONS                       | MIN. | MAX. | UNIT |
|------------------|-------------------------------|----------------------------------|------|------|------|
| V <sub>CB0</sub> | collector-base voltage        | open emitter                     | –    | 40   | V    |
| V <sub>CE0</sub> | collector-emitter voltage     | open base                        | –    | 40   | V    |
| V <sub>EB0</sub> | emitter-base voltage          | open collector                   | –    | 4    | V    |
| I <sub>C</sub>   | collector current (DC)        |                                  | –    | 25   | mA   |
| I <sub>CM</sub>  | peak collector current        |                                  | –    | 25   | mA   |
| P <sub>tot</sub> | total power dissipation       | T <sub>amb</sub> ≤ 25 °C; note 1 | –    | 250  | mW   |
| T <sub>stg</sub> | storage temperature           |                                  | –65  | +150 | °C   |
| T <sub>j</sub>   | junction temperature          |                                  | –    | 150  | °C   |
| T <sub>amb</sub> | operating ambient temperature |                                  | –65  | +150 | °C   |

### Note

1. Transistor mounted on an FR4 printed-circuit board.

## NPN medium frequency transistor

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**THERMAL CHARACTERISTICS**

| SYMBOL        | PARAMETER                                   | CONDITIONS | VALUE | UNIT |
|---------------|---|------------|-------|------|
| $R_{th(j-a)}$ | thermal resistance from junction to ambient | note 1     | 500   | K/W  |

**Note**

1. Transistor mounted on an FR4 printed-circuit board.

**CHARACTERISTICS**

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

| SYMBOL    | PARAMETER                 | CONDITIONS  | MIN. | TYP. | MAX. | UNIT |
|-----------|---------------------------|---|------|------|------|------|
| $I_{CBO}$ | collector cut-off current | $I_E = 0$ ; $V_{CB} = 20\text{ V}$                                  | –    | –    | 100  | nA   |
| $I_{EBO}$ | emitter cut-off current   | $I_C = 0$ ; $V_{EB} = 4\text{ V}$                                   | –    | –    | 100  | nA   |
| $h_{FE}$  | DC current gain           | $I_C = 1\text{ mA}$ ; $V_{CE} = 10\text{ V}$                        | 67   | –    | 222  |      |
| $V_{BE}$  | base-emitter voltage      | $I_C = 1\text{ mA}$ ; $V_{CE} = 10\text{ V}$                        | 675  | 725  | 775  | mV   |
| $C_{re}$  | feedback capacitance      | $I_C = 0$ ; $V_{CB} = 10\text{ V}$ ; $f = 1\text{ MHz}$             | –    | 0.3  | –    | pF   |
| $f_T$     | transition frequency      | $I_C = 1\text{ mA}$ ; $V_{CE} = 10\text{ V}$ ; $f = 100\text{ MHz}$ | –    | 380  | –    | MHz  |

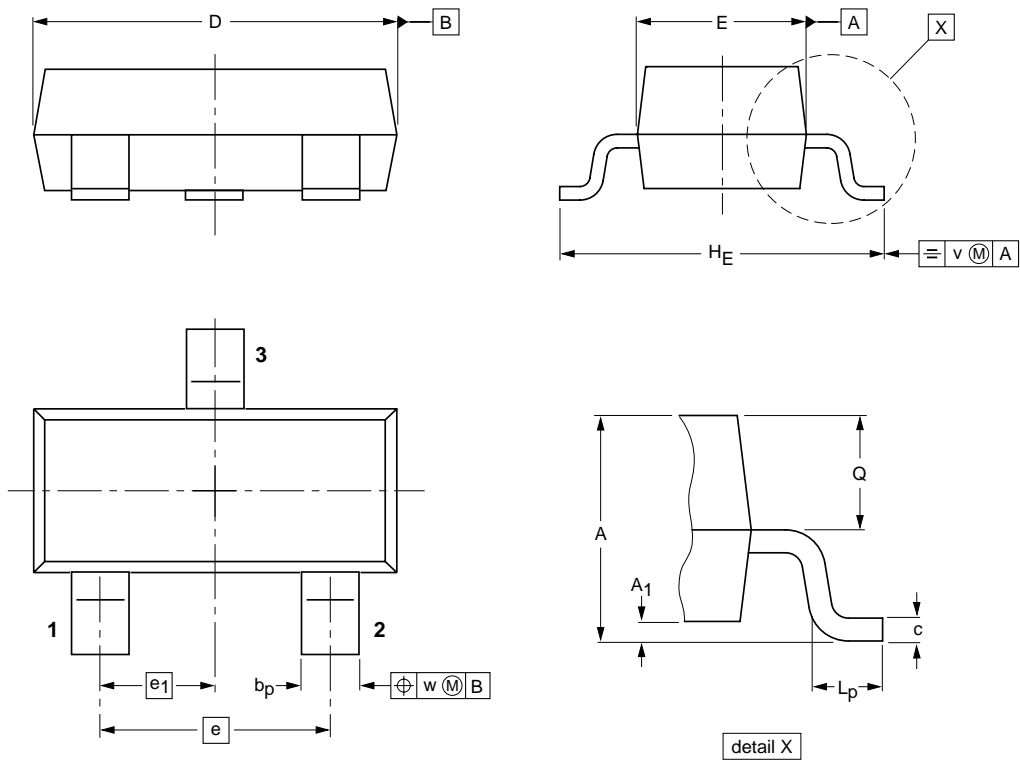
NPN medium frequency transistor

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PACKAGE OUTLINE

Plastic surface-mounted package; 3 leads

SOT23



DIMENSIONS (mm are the original dimensions)

| UNIT | A          | A <sub>1</sub><br>max. | b <sub>p</sub> | c            | D          | E          | e   | e <sub>1</sub> | H <sub>E</sub> | L <sub>p</sub> | Q            | v   | w   |
|------|------------|------------------------|----------------|--------------|------------|------------|-----|----------------|----------------|----------------|--------------|-----|-----|
| mm   | 1.1<br>0.9 | 0.1                    | 0.48<br>0.38   | 0.15<br>0.09 | 3.0<br>2.8 | 1.4<br>1.2 | 1.9 | 0.95           | 2.5<br>2.1     | 0.45<br>0.15   | 0.55<br>0.45 | 0.2 | 0.1 |

| OUTLINE VERSION | REFERENCES |          |       |  | EUROPEAN PROJECTION | ISSUE DATE           |
|-----------------|------------|----------|-------|--|---------------------|----------------------|
|                 | IEC        | JEDEC    | JEITA |  |                     |                      |
| SOT23           |            | TO-236AB |       |  |                     | 04-11-04<br>06-03-16 |

NPN medium frequency transistor

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DATA SHEET STATUS

| DOCUMENT STATUS <sup>(1)</sup> | PRODUCT STATUS <sup>(2)</sup> | DEFINITION  |
|--------------------------------|-------------------------------|---|
| Objective data sheet           | Development                   | This document contains data from the objective specification for product development. |
| Preliminary data sheet         | Qualification                 | This document contains data from the preliminary specification.                       |
| Product data sheet             | Production                    | This document contains the product specification.                                     |

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## **Customer notification**

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## **Contact information**

For additional information please visit: <http://www.nxp.com>

For sales offices addresses send e-mail to: [salesaddresses@nxp.com](mailto:salesaddresses@nxp.com)

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Printed in The Netherlands

R75/05/pp6

Date of release: 2004 Jan 13

Document order number: 9397 750 12416



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