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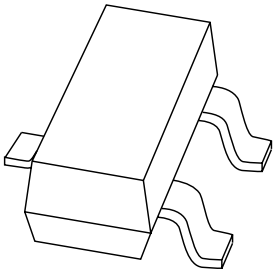
Kind regards,

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(1) |
|---|---|
| BF840 | NC* |

**Note**

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

## PINNING

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

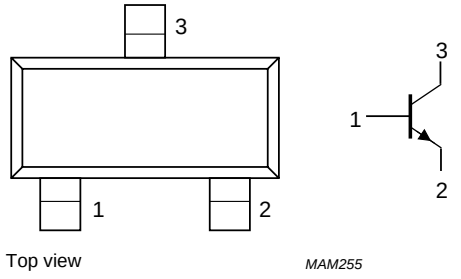



Fig.1 Simplified outline (SOT23) and symbol.

## 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 |
|---|---|---|---|---|---|
| $V_{CBO}$ | collector-base voltage | open emitter | – | 40 | V |
| $V_{CEO}$ | collector-emitter voltage | open base | – | 40 | V |
| $V_{EBO}$ | emitter-base voltage | open collector | – | 4 | V |
| $I_C$ | collector current (DC) | | – | 25 | mA |
| $I_{CM}$ | peak collector current | | – | 25 | mA |
| $P_{tot}$ | total power dissipation | $T_{amb} \leq 25$ °C; note 1 | – | 250 | mW |
| $T_{stg}$ | storage temperature | | −65 | +150 | °C |
| $T_j$ | junction temperature | | – | 150 | °C |
| $T_{amb}$ | operating ambient temperature | | −65 | +150 | °C |

**Note**

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

## 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.

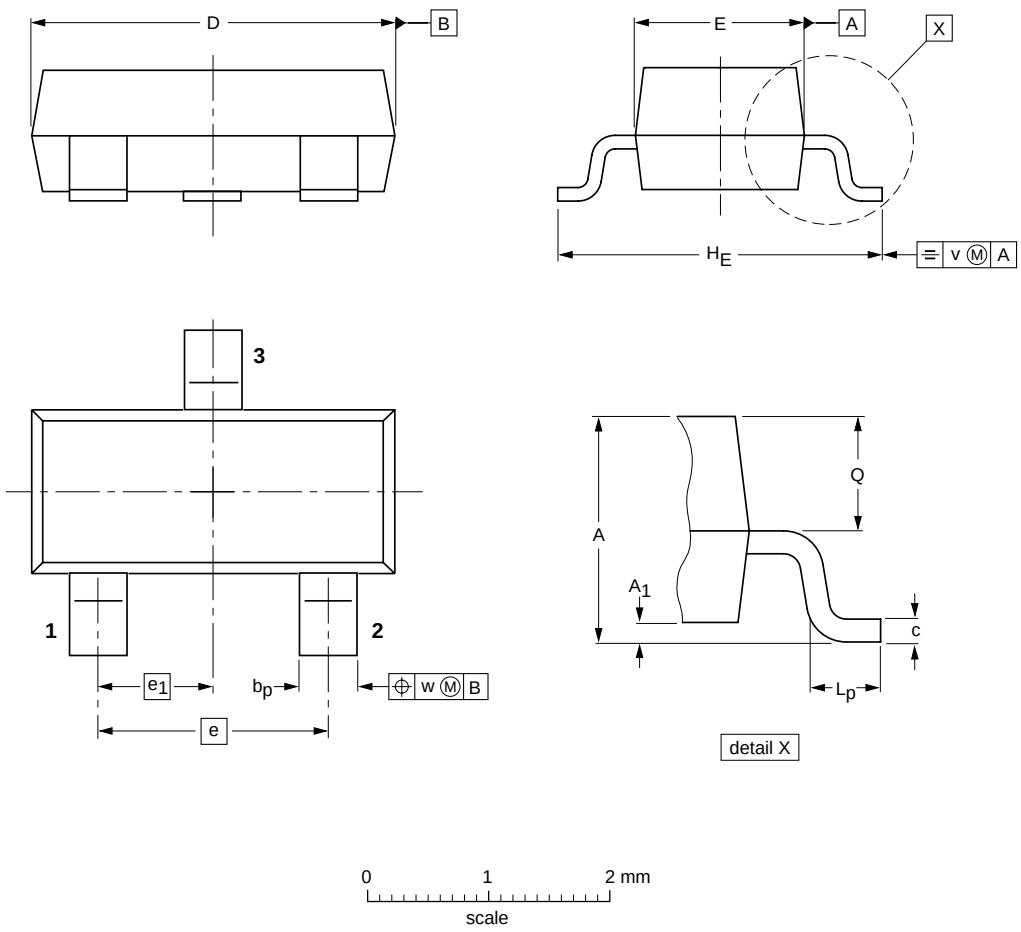
## CHARACTERISTICS

$T_j$ = 25 °C unless otherwise specified.

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

## PACKAGE OUTLINE

**Plastic surface-mounted package; 3 leads** **SOT23**




**DIMENSIONS (mm are the original dimensions)**

| UNIT | A | $A_1$ max. | $b_p$ | c | D | E | e | $e_1$ | $H_E$ | $L_p$ | 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 |

**DATA SHEET STATUS**

| DOCUMENT STATUS[1] | PRODUCT STATUS[2] | 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. |

**Notes**

1. Please consult the most recently issued document before initiating or completing a design.
2. The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL http://www.nxp.com.

# *NXP Semiconductors*

**Customer notification**

This data sheet was changed to reflect the new company name NXP Semiconductors, including new legal definitions and disclaimers. No changes were made to the technical content, except for package outline drawings which were updated to the latest version.

**Contact information**

For additional information please visit: **http://www.nxp.com**
For sales offices addresses send e-mail to: **salesaddresses@nxp.com**



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