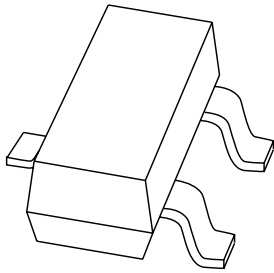


# DATA SHEET



## **BCV27; BCV47** NPN Darlington transistors

Product data sheet  
Supersedes data of 1999 Apr 08

2004 Jan 13

# NPN Darlington transistors

# BCV27; BCV47

### FEATURES

- Medium current (max. 500 mA)
- Low voltage (max. 60 V)
- High DC current gain (min. 20000).

### APPLICATIONS

- Preamplifier input applications.

### DESCRIPTION

NPN Darlington transistor in a SOT23 plastic package.  
PNP complements: BCV26 and BCV46.

### MARKING

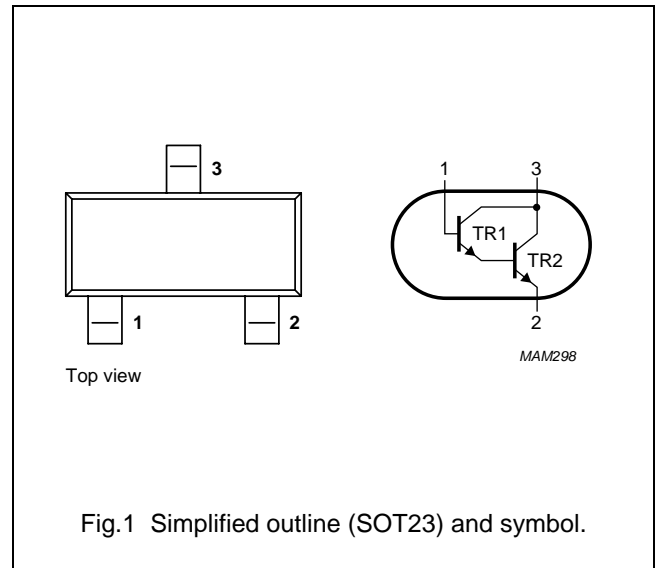
| TYPE NUMBER | MARKING CODE <sup>(1)</sup> |
|-------------|-----------------------------|
| BCV27       | FF*                         |
| BCV47       | FG*                         |

### Note

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

### PINNING

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



### ORDERING INFORMATION

| TYPE NUMBER | PACKAGE |  |         |
|-------------|---------|--|---------|
|             | NAME    | DESCRIPTION                              | VERSION |
| BCV27       | –       | plastic surface mounted package; 3 leads | SOT23   |
| BCV47       |         |  |         |

## NPN Darlington transistors

## BCV27; BCV47

**LIMITING VALUES**

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

| SYMBOL           | PARAMETER                     | CONDITIONS                       | MIN. | MAX. | UNIT |
|------------------|-------------------------------|----------------------------------|------|------|------|
| V <sub>CBO</sub> | collector-base voltage        | open emitter                     | –    | 40   | V    |
|                  | BCV27                         |                                  |      | 80   | V    |
| V <sub>CES</sub> | collector-emitter voltage     | open base                        | –    | 30   | V    |
|                  | BCV27                         |                                  |      | 60   | V    |
| V <sub>EBO</sub> | emitter-base voltage          | open collector                   | –    | 10   | V    |
| I <sub>C</sub>   | collector current (DC)        |                                  | –    | 500  | mA   |
| I <sub>CM</sub>  | peak collector current        |                                  | –    | 800  | mA   |
| I <sub>B</sub>   | base current                  |                                  | –    | 100  | 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.

**THERMAL CHARACTERISTICS**

| SYMBOL               | PARAMETER                                   | CONDITIONS | VALUE | UNIT |
|----------------------|---|------------|-------|------|
| R <sub>th(j-a)</sub> | thermal resistance from junction to ambient | note 1     | 500   | K/W  |

**Note**

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

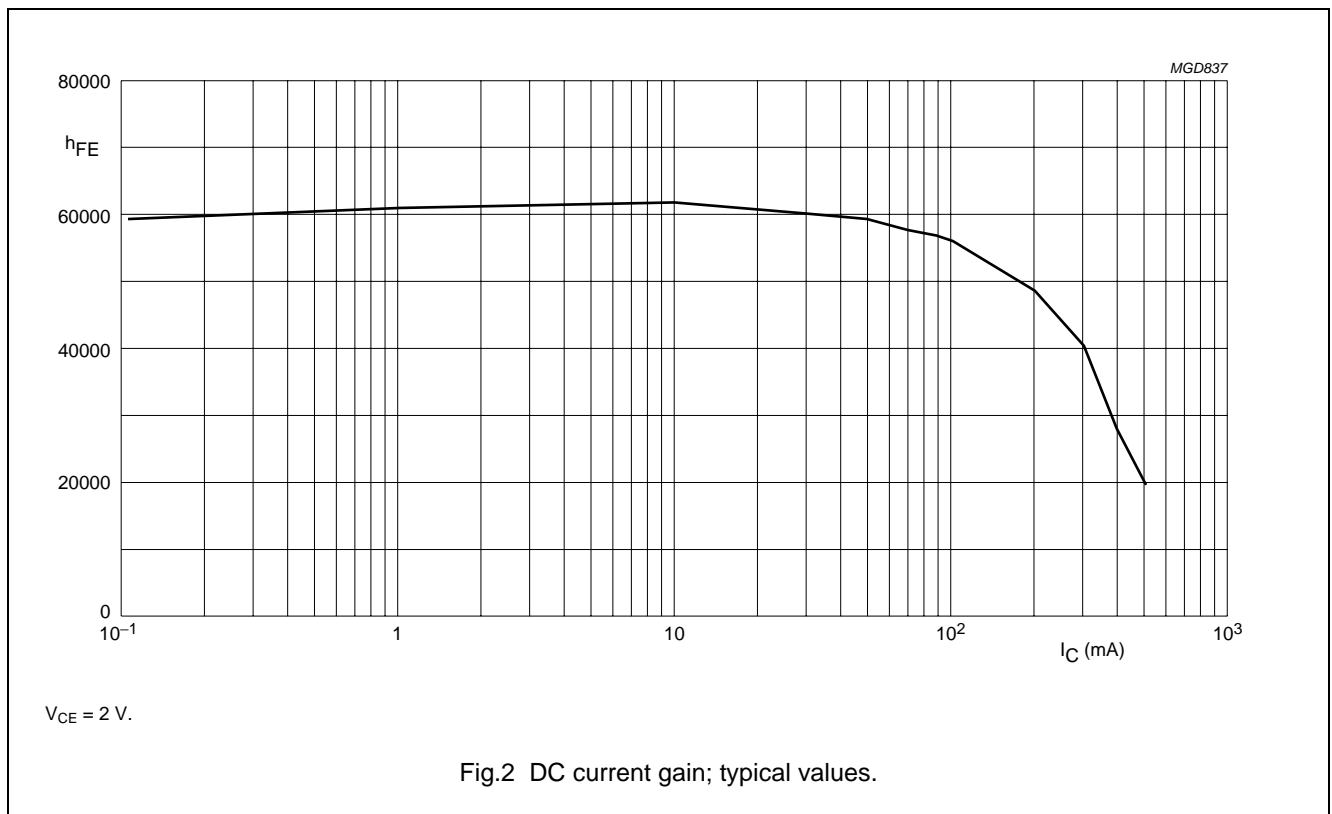
NPN Darlington transistors

BCV27; BCV47

**CHARACTERISTICS**

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

| SYMBOL                 | PARAMETER                            | CONDITIONS   | MIN.                   | TYP.                  | MAX.  | UNIT |   |  |
|------------------------|--------------------------------------|--|------------------------|-----------------------|-------|------|---|--|
| I <sub>CBO</sub>       | collector cut-off current            |  |                        |                       |       |      |   |  |
|                        | BCV27                                | I <sub>E</sub> = 0; V <sub>CB0</sub> = 30 V                | –                      | –                     | 100   | nA   |   |  |
|                        | BCV47                                | I <sub>E</sub> = 0; V <sub>CB0</sub> = 60 V                | –                      | –                     | 100   | nA   |   |  |
| I <sub>EBO</sub>       | emitter cut-off current              | I <sub>E</sub> = 0; V <sub>EB</sub> = 10 V                 | –                      | –                     | 100   | nA   |   |  |
| h <sub>FE</sub>        | DC current gain                      | V <sub>CE</sub> = 5 V; (see Fig.2)                         |                        |                       |       |      |   |  |
|                        |                                      |  | BCV27                  | I <sub>C</sub> = 1 mA | 4 000 | –    | – |  |
|                        |                                      |  | I <sub>C</sub> = 10 mA | 10 000                | –     | –    |   |  |
|                        |                                      | I <sub>C</sub> = 100 mA                                    | 20 000                 | –                     | –     |      |   |  |
|                        | DC current gain                      | V <sub>CE</sub> = 5 V; (see Fig.2)                         |                        |                       |       |      |   |  |
|                        |                                      |  | BCV47                  | I <sub>C</sub> = 1 mA | 2 000 | –    | – |  |
| I <sub>C</sub> = 10 mA |                                      |  | 4 000                  | –                     | –     |      |   |  |
|                        | I <sub>C</sub> = 100 mA              | 10 000   | –                      | –                     |       |      |   |  |
| V <sub>CEsat</sub>     | collector-emitter saturation voltage | I <sub>C</sub> = 100 mA; I <sub>B</sub> = 0.1 mA           | –                      | –                     | 1     | V    |   |  |
| V <sub>BEsat</sub>     | base-emitter saturation voltage      | I <sub>C</sub> = 100 mA; I <sub>B</sub> = 0.1 mA           | –                      | –                     | 1.5   | V    |   |  |
| V <sub>BEon</sub>      | base-emitter on-state voltage        | I <sub>C</sub> = 10 mA; V <sub>CE</sub> = 5 V              | –                      | –                     | 1.4   | V    |   |  |
| f <sub>T</sub>         | transition frequency                 | I <sub>C</sub> = 30 mA; V <sub>CE</sub> = 5 V; f = 100 MHz | –                      | 220                   | –     | MHz  |   |  |



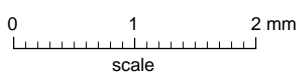
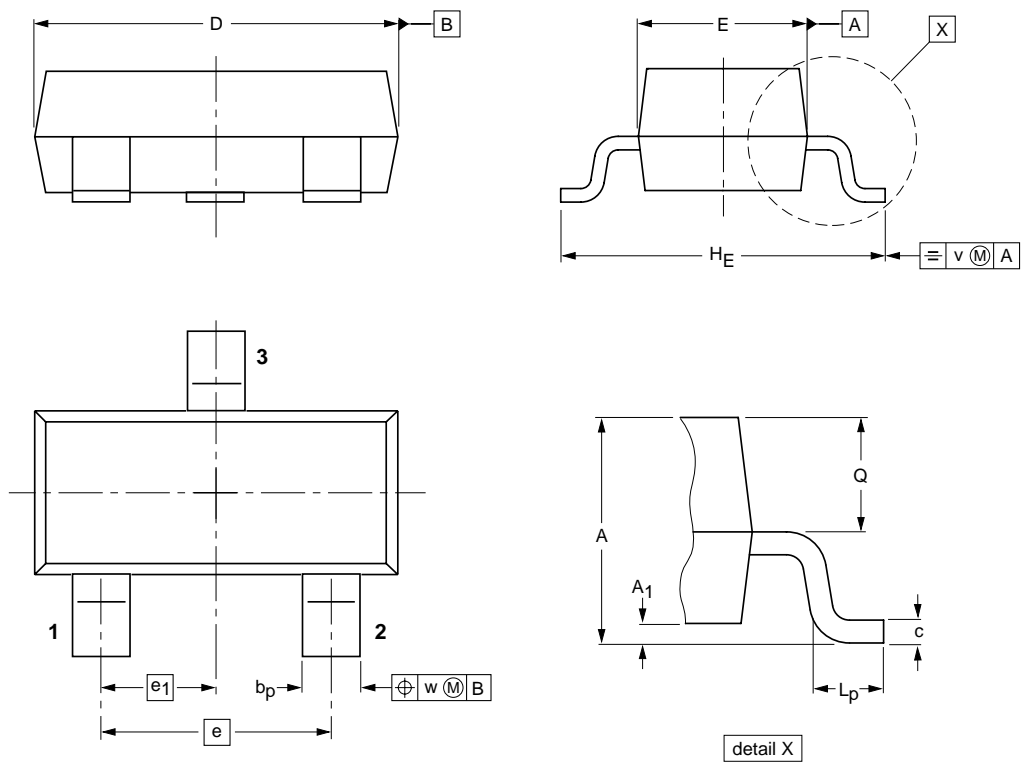
NPN Darlington transistors

BCV27; BCV47

PACKAGE OUTLINE

Plastic surface-mounted package; 3 leads

SOT23



DIMENSIONS (mm are the original dimensions)

| UNIT | A          | A <sub>1</sub> 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 Darlington transistors

BCV27; BCV47

## 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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