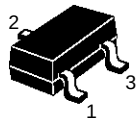
SGS-THOMSON MICROELECTRONICS

# BCV27
# BCV47

## SMALL SIGNAL NPN DARLINGTON TRANSISTORS

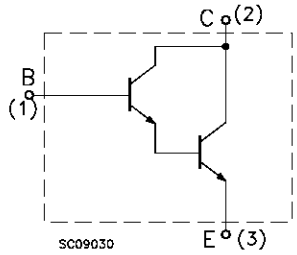
| Type | Marking |
|---|---|
| BCV27 | FF |
| BCV47 | FG |

- SILICON EPITAXIAL PLANAR NPN DARLINGTON TRANSISTORS
- MINIATURE PLASTIC PACKAGE FOR APPLICATION IN SURFACE MOUNTING CIRCUITS
- GENERAL PURPOSE DARLINGTON HIGH GAIN, HIGH INPUT IMPEDANCE
- PNP COMPLEMENTS ARE BCV26 AND BCV46




**SOT-23**

**INTERNAL SCHEMATIC DIAGRAM**




### ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | | Unit |
|---|---|---|---|---|
| | | BCV27 | BCV47 | |
| $V_{CBO}$ | Collector-Base Voltage ($I_E$ = 0) | 40 | 80 | V |
| $V_{CEO}$ | Collector-Emitter Voltage ($I_B$ = 0) | 30 | 60 | V |
| $V_{EBO}$ | Emitter-Base Voltage ($I_C$ = 0) | 10 | | V |
| $I_C$ | Collector Current | 0.5 | | A |
| $I_{CM}$ | Collector Peak Current | 0.8 | | A |
| $P_{tot}$ | Total Dissipation at $T_c$ = 25 °C | 350 | | mW |
| $T_{stg}$ | Storage Temperature | -65 to 150 | | °C |
| $T_j$ | Max. Operating Junction Temperature | 150 | | °C |

## THERMAL DATA

| | | | | |
|---|---|---|---|---|
| $R_{thj\text{-}amb}$ • | Thermal Resistance Junction-Ambient | Max | 358 | $^oC/W$ |
| $R_{thj\text{-}SR}$ • | Thermal Resistance Junction-Substrate | Max | 260 | $^oC/W$ |

• Mounted on a ceramic substrate area = 0.7 mm x 2.5 $cm^2$

## ELECTRICAL CHARACTERISTICS ($T_{case}$ = 25 $^oC$ unless otherwise specified)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $I_{CBO}$ | Collector Cut-off Current ($I_E$ = 0) | $V_{CB}$ = 30 V for **BCV27**<br>$V_{CB}$ = 60 V for **BCV47** | | | 100<br>100 | nA<br>nA |
| $V_{(BR)CBO}$* | Collector-Emitter Breakdown Voltage ($I_E$ = 0) | $I_C$ = 10 µA<br>for **BCV27**<br>for **BCV47** | <br>40<br>80 | | | <br>V<br>V |
| $V_{(BR)CEO}$* | Collector-Emitter Breakdown Voltage ($I_B$ = 0) | $I_C$ = 2 mA<br>for **BCV27**<br>for **BCV47** | <br>30<br>60 | | | <br>V<br>V |
| $V_{(BR)EBO}$ | Emitter-Base Breakdown Voltage ($I_C$ = 0) | $I_C$ = 100 nA | 10 | | | V |
| $V_{CE(sat)}$* | Collector-Emitter Saturation Voltage | $I_C$ = 100 mA $I_B$ = 0.1 mA | | | 1 | V |
| $h_{FE}$* | DC Current Gain | for **BCV27**<br>$I_C$ = 100 µA $V_{CE}$ = 5 V<br>$I_C$ = 10 mA $V_{CE}$ = 5 V<br>$I_C$ = 100 mA $V_{CE}$ = 5 V<br>$I_C$ = 500 mA $V_{CE}$ = 5 V<br>for **BCV47**<br>$I_C$ = 100 µA $V_{CE}$ = 5 V<br>$I_C$ = 10 mA $V_{CE}$ = 5 V<br>$I_C$ = 100 mA $V_{CE}$ = 5 V<br>$I_C$ = 500 mA $V_{CE}$ = 5 V | <br>4000<br>10000<br>20000<br>4000<br><br>2000<br>4000<br>10000<br>2000 | | | |
| $f_T$ | Transition Frequency | $I_C$ = 10 mA $V_{CE}$ = 5 V f = 100 MHz | | 200 | | MHz |
| $C_{CB}$ | Collector Base Capacitance | $I_E$ = 0 $V_{CE}$ = 10 V | | 3.5 | | pF |

* Pulsed: Pulse duration = 300 µs, duty cycle ≤ 2 %

## SOT-23 MECHANICAL DATA

| DIM. | mm | | | mils | | |
|---|---|---|---|---|---|---|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | 0.85 | | 1.1 | 33.4 | | 43.3 |
| B | 0.65 | | 0.95 | 25.6 | | 37.4 |
| C | 1.20 | | 1.4 | 47.2 | | 55.1 |
| D | 2.80 | | 3 | 110.2 | | 118 |
| E | 0.95 | | 1.05 | 37.4 | | 41.3 |
| F | 1.9 | | 2.05 | 74.8 | | 80.7 |
| G | 2.1 | | 2.5 | 82.6 | | 98.4 |
| H | 0.38 | | 0.48 | 14.9 | | 18.8 |
| L | 0.3 | | 0.6 | 11.8 | | 23.6 |
| M | 0 | | 0.1 | 0 | | 3.9 |
| N | 0.3 | | 0.65 | 11.8 | | 25.6 |
| O | 0.09 | | 0.17 | 3.5 | | 6.7 |