

SOT-23 Formed SMD Package

BCW69
BCW70

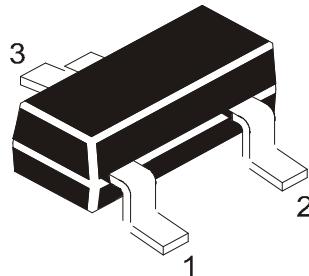
SILICON PLANAR EPITAXIAL TRANSISTORS

P-N-P transistors

Marking

BCW69 = H1

BCW70 = H2

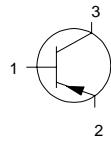


Pin configuration

1 = BASE

2 = Emitter

3 = COLLECTOR



ABSOLUTE MAXIMUM RATINGS

D.C. current gain at $T_j = 25^\circ\text{C}$
 $-I_C = 2 \text{ mA}; -V_{CE} = 5 \text{ V}$

| | BCW69 | BCW70 |
|----------|--------------------|----------------|
| h_{FE} | > 120 < 260 | 215 500 |

Collector-base voltage (open emitter)

$-V_{CB0} \text{ max.}$ 50 V

Collector-emitter voltage (open base)

$-V_{CE0} \text{ max.}$ 45 V

Collector current (peak value)

$-I_{CM} \text{ max.}$ 200 mA

Total power dissipation up to $T_{amb} = 25^\circ\text{C}$

$P_{tot} \text{ max.}$ 250 mW

Junction temperature

$T_j \text{ max.}$ 150 $^\circ\text{C}$

Transition frequency at $f = 35 \text{ MHz}$

$f_T \text{ typ.}$ 150 MHz

Noise figure at $R_S = 2 \text{ k}\Omega$

$f \text{ typ.}$ 10 dB

$-I_C = 10 \text{ mA}; -V_{CE} = 5 \text{ V}$

$-I_C = 200 \mu\text{A}; -V_{CE} = 5 \text{ V};$

$f = 1 \text{ kHz}; B = 200 \text{ Hz}$

$F \text{ typ.}$ 10 dB

BCW69
BCW70

RATINGS (at $T_A = 25^\circ\text{C}$ unless otherwise specified)

Limiting values

| | | | |
|--|------------|-------------|----------------------|
| Collector-base voltage (open emitter) | $-V_{CB0}$ | max. | 50 V |
| Collector-emitter voltage ($V_{BE} = 0$) | $-V_{CES}$ | max. | 50 V |
| Collector-emitter voltage (open base) $-I_C = 2 \text{ mA}$ | $-V_{CEO}$ | max. | 45 V |
| Emitter-base voltage (open collector) | $-V_{EB0}$ | max. | 5 V |
| Collector current (d.c.) | $-I_C$ | max. | 100 mA |
| Collector current (peak value) | $-I_{CM}$ | max. | 200 mA |
| Total power dissipation up to $T_{amb} = 25^\circ\text{C}$ | P_{tot} | max. | 250 mW |
| Storage temperature | T_{stg} | -55 to +150 | $^\circ\text{C}$ |
| Junction temperature | T_j | max. | 150 $^\circ\text{C}$ |

THERMAL RESISTANCE

From junction to ambient

$$R_{th \ j-a} = 500 \text{ K/W}$$

CHARACTERISTICS

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

Collector cut-off current

| | | | |
|--|------------|---|------------------|
| $I_E = 0; -V_{CB} = 20 \text{ V}$ | $-I_{CB0}$ | < | 100 nA |
| $I_E = 0; -V_{CB} = 20 \text{ V}; T_j = 100^\circ\text{C}$ | $-I_{CB0}$ | < | 10 μA |

Base-emitter voltage

| | | |
|--|-----------|---------------|
| $-I_C = 2 \text{ mA}; -V_{CE} = 5 \text{ V}$ | $-V_{BE}$ | 600 to 750 mV |
|--|-----------|---------------|

Saturation voltages

| | | | |
|---|--------------|------|--------|
| $-I_C = 10 \text{ mA}; -I_B = 0,5 \text{ mA}$ | $-V_{CEsat}$ | typ. | 80 mV |
| | | < | 300 mV |
| | $-V_{BEsat}$ | typ. | 720 mV |
| $-I_C = 50 \text{ mA}; -I_B = 2,5 \text{ mA}$ | $-V_{CEsat}$ | typ. | 150 mV |
| | $-V_{BEsat}$ | typ. | 810 mV |

D.C. current gain

| | | BCW69 | BCW70 |
|--|----------|--------------|--------------|
| $-I_C = 10 \mu\text{A}; -V_{CE} = 5 \text{ V}$ | h_{FE} | typ. 90 | 150 |
| $-I_C = 2 \text{ mA}; -V_{CE} = 5 \text{ V}$ | | > 120 | 215 |
| | h_{FE} | < 260 | 500 |

Collector capacitance at $f: 1 \text{ MHz}$

| | | | | |
|---|-------|------|-----|----|
| $I_E = I_e = 0; -V_{CB} = 10 \text{ V}$ | C_c | typ. | 4,5 | pF |
|---|-------|------|-----|----|

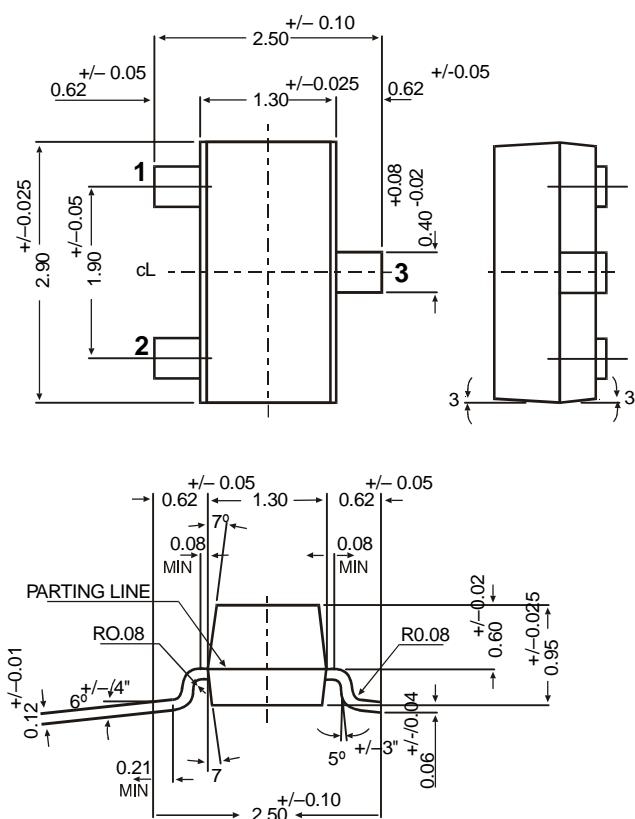
Transition frequency at $f = 35 \text{ MHz}$

| | | | | |
|--|-------|------|-----|-----|
| $-I_C: 10 \text{ mA}; -V_{CE} = 5 \text{ V}$ | f_T | typ. | 150 | MHz |
|--|-------|------|-----|-----|

Noise figure at $R_S = 2 \text{ k}\Omega$

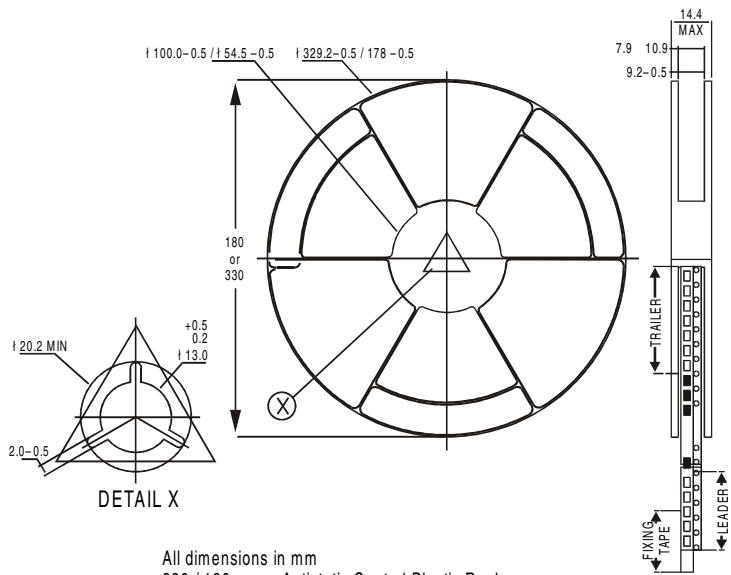
| | | | | |
|---|-----|---|----|----|
| $-I_C = 200 \mu\text{A}; -V_{CE} = 5 \text{ V}$ | F | < | 10 | dB |
| $f = 1 \text{ kHz}; B = 200 \text{ Hz}$ | | | | |

SOT-23 Formed SMD Package



SOT-23 Package Reel Information

Reel specifications for Packing (13"/7" reels)



All dimensions in mm
330 / 180 mm Antistatic Coated Plastic Reel

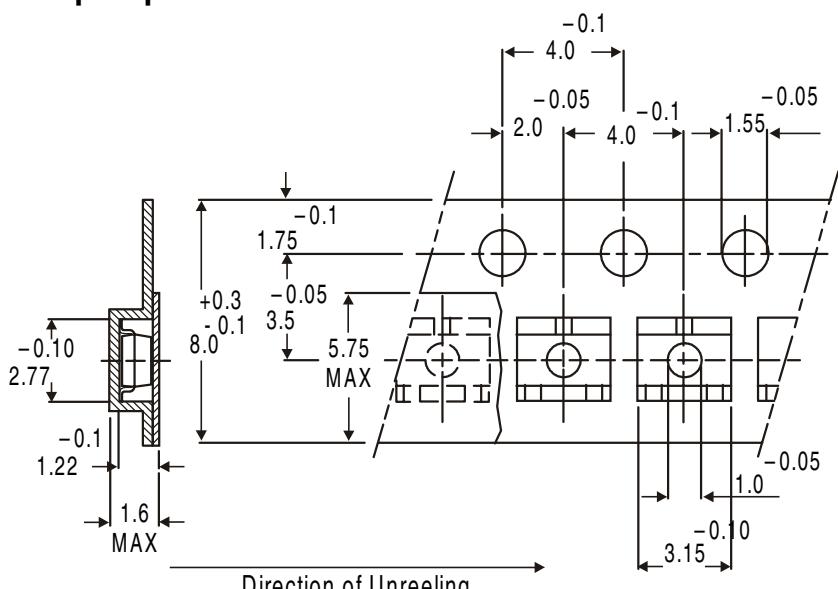
NOTES:

| | |
|--------------|--------------|
| 8mm Tape | 8mm Tape |
| Size of Reel | Size of Reel |
| 330 mm (13") | 180 mm (7") |
| 10,000 Pcs | 3,000 Pcs |

8mm Tape
Size of Reel
180 mm (7")
3,000 Pcs

1. The bandolier of 330 mm reel contains at least 10,000 devices.
2. The bandolier of 180 mm reel contains at least 3,000 devices.
3. No more than 0.5% missing devices / reel. 50 empty compartments for 330 mm reel.
15 empty compartments for 180 mm reel.
4. Three consecutive empty places might be found provided this gap is followed by 6 consecutive devices.
5. The carrier tape (leader) starts with at least 75 empty positions (equivalent to 330 mm). In order to fix the carrier tape a self adhesive tape of 20 to 50 mm is applied. At the end of the bandolier at least 40 empty positions (equivalent to 160 mm) are there.

Tape Specification for SOT-23 Surface Mount Device



All dimensions in mm

Packing Detail

| PACKAGE | STANDARD PACK | | INNER CARTON BOX | | OUTER CARTON BOX | | |
|------------|---------------|----------------|----------------------------------|----------------|--------------------------------------|------------------|------------------|
| | Details | Net Weight/Qty | Size | Qty | Size | Qty | Gr Wt |
| SOT-23 T&R | 3K/reel | 136 gm/3K pcs | 3" x 7.5" x 7.5" 9" x 9" x 9" | 12.0K 51.0K | 17" x 15" x 13.5" 19" x 19" x 19" | 192.0K 408.0K | 12 kgs 28 kgs |
| | 10K/reel | 415 gm/10K pcs | 13" x 13" x 0.5" | 10.0K | 17" x 15" x 13.5" | 300.0K | 16 kgs |

Customer Notes

Component Disposal Instructions

1. CDIL Semiconductor Devices are RoHS compliant, customers are requested to please dispose as per prevailing Environmental Legislation of their Country.
2. In Europe, please dispose as per EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).

Disclaimer

The product information and the selection guides facilitate selection of the CDIL's Discrete Semiconductor Device(s) best suited for application in your product(s) as per your requirement. It is recommended that you completely review our Data Sheet(s) so as to confirm that the Device(s) meet functionality parameters for your application. The information furnished on the CDIL Web Site/CD are believed to be accurate and reliable. CDIL however, does not assume responsibility for inaccuracies or incomplete information. Furthermore, CDIL does not assume liability whatsoever, arising out of the application or use of any CDIL product; neither does it convey any license under its patent rights nor rights of others. These products are not designed for use in life saving/support appliances or systems. CDIL customers selling these products (either as individual Discrete Semiconductor Devices or incorporated in their end products), in any life saving/support appliances or systems or applications do so at their own risk and CDIL will not be responsible for any damages resulting from such sale(s).

CDIL strives for continuous improvement and reserves the right to change the specifications of its products without prior notice.



CDIL is a registered Trademark of
Continental Device India Limited

C-120 Naraina Industrial Area, New Delhi 110 028, India.

Telephone + 91-11-2579 6150, 4141 1112 Fax + 91-11-2579 5290, 4141 1119
email@cdil.com www.cdilsemi.com