

**SOT-23 Formed SMD Package**

**BCW89**

**SILICON PLANAR EPITAXIAL TRANSISTORS**

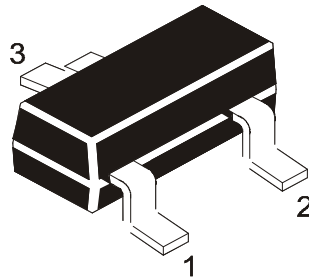
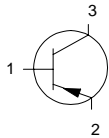
*P-N-P transistors*

**Marking**

BCW89 = H3

**Pin configuration**

- 1 = BASE
- 2 = EMITTER
- 3 = COLLECTOR



**ABSOLUTE MAXIMUM RATINGS**

Collector-base voltage (open emitter)  
 Collector-emitter voltage (open base)  
 Collector current (peak value)  
 Total power dissipation up to  $T_{amb} = 25\text{ }^{\circ}\text{C}$   
 Junction temperature  
 D.C. current gain at  $T_j = 25\text{ }^{\circ}\text{C}$   
 $-I_C = 2\text{ mA}$ ;  $-V_{CE} = 5\text{ V}$   
 Transition frequency at  $f = 35\text{ MHz}$   
 $-I_C = 10\text{ mA}$ ;  $-V_{CE} = 5\text{ V}$   
 Noise figure at  $R_S = 2\text{ k}\Omega$   
 $-I_C = 200\text{ }\mu\text{A}$ ;  $-V_{CE} = 5\text{ V}$ ;  
 $f = 1\text{ kHz}$ ;  $B = 200\text{ Hz}$

$-V_{CB0}$	max.	80 V
$-V_{CE0}$	max.	60 V
$-I_{CM}$	max.	200 mA
$P_{tot}$	max.	250 mW
$T_j$	max.	150 $^{\circ}\text{C}$
	>	120
$h_{FE}$	<	260
$f_T$	typ.	150 MHz
$F$	<	10 dB

## BCW89

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

#### Limiting values

Collector-base voltage (open emitter)	$-V_{CB0}$	max.	80 V
Collector-emitter voltage ( $V_{BE} = 0$ )	$-V_{CES}$	max.	60 V
Collector-emitter voltage (open base)			
$-I_C = 2 \text{ mA}$	$-V_{CE0}$	max.	60 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	KW
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### **CHARACTERISTICS**

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

#### Collector cut-off current

$I_E = 0; -V_{CB} = 20 \text{ V}$	$-I_{CB0}$	<	100 nA
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$I_E = 0; -V_{CB} = 20 \text{ V}; T_j = 100^\circ\text{C}$	$-I_{CB0}$	<	10 $\mu\text{A}$
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#### Base-emitter voltage

$-I_C = 2 \text{ mA}; -V_{CE} = 5 \text{ V}; T_j = 25^\circ\text{C}$	$-V_{BE}$	600 to 750	mV
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#### Saturation voltages

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

$-I_C = 10 \mu\text{A}; -V_{CE} = 5 \text{ V}$	$h_{FE}$	typ.	90
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$-I_C = 2 \text{ mA}; -V_{CE} = 5 \text{ V}$	$h_{FE}$	>	120
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		<	260
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#### Collector capacitance at $f = 1 \text{ MHz}$

$I_E = I_e = 0; -V_{CB} = 10 \text{ V}$	$C_C$	typ.	4,5 pF
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#### Transition frequency at $f = 35 \text{ MHz}$

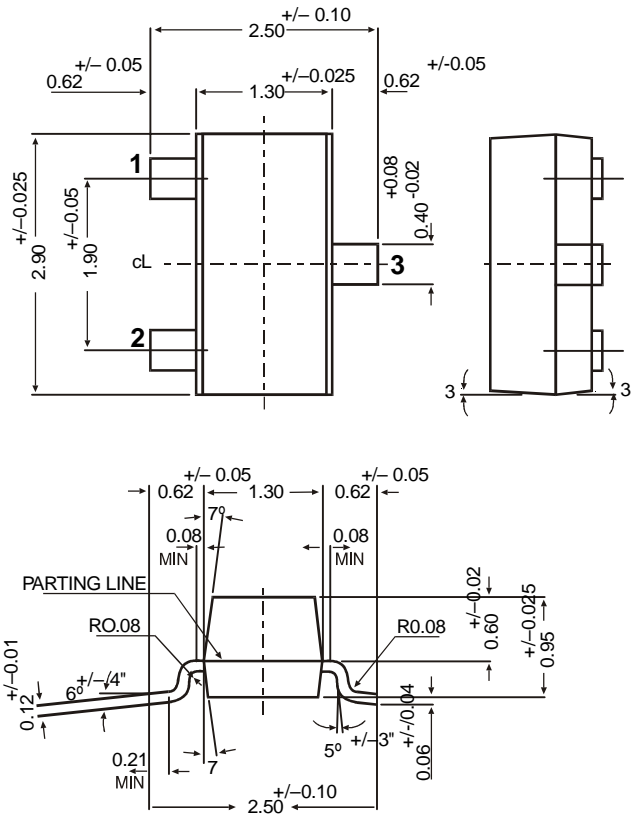
$-I_C = 10 \text{ mA}; -V_{CE} = 5 \text{ V}$	$f_T$	typ.	150 MHz
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#### Noise figure at $R_S = 2 \text{ k}\Omega$

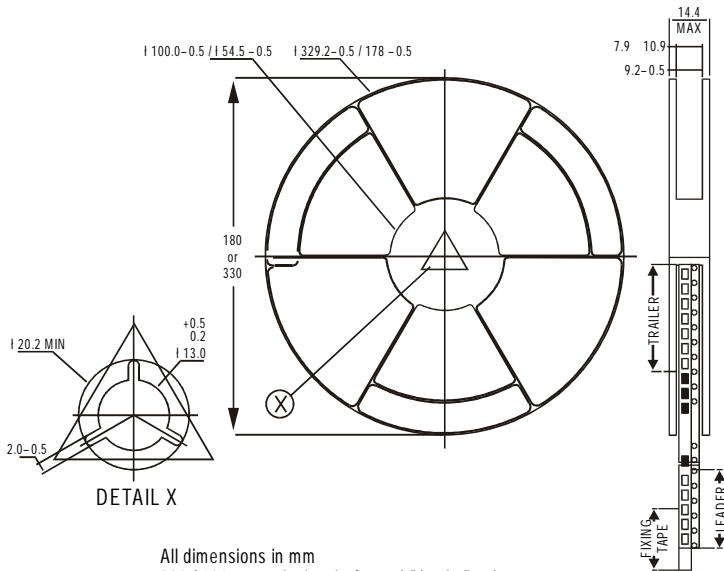
$-I_C = 200 \mu\text{A}; -V_{CE} = 5 \text{ V}$	$F$	<	10 dB
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$f = 1 \text{ kHz}; B = 200 \text{ Hz}$			
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**SOT-23 Formed SMD Package**



**SOT-23 Package Reel Information**  
**Reel specifications for Packing (13"/7" reels)**



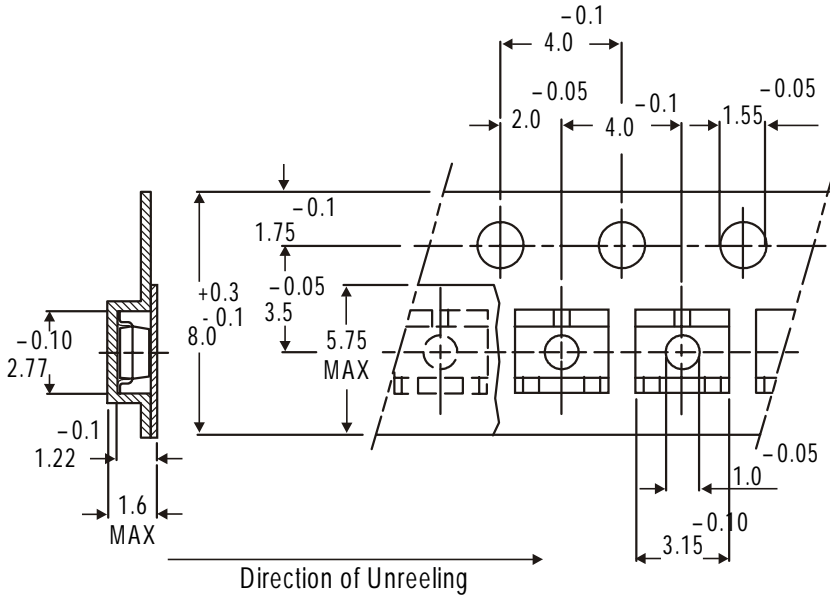
All dimensions in mm  
 330 / 180 mm Antistatic Coated Plastic Reel

NOTES:

No. of Devices	8mm Tape Size of Reel	8mm Tape Size of Reel
	330 mm (13")	180 mm (7")
	10,000 Pcs	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"	12.0K	17" x 15" x 13.5"	192.0K	12 kgs
			9" x 9" x 9"	51.0K	19" x 19" x 19"	408.0K	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).

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