# Continental Device India Limited

An ISO/TS 16949, ISO 9001 and ISO 14001 Certified Company



# **SOT-23 Formed SMD Package**

**BCW89** 

# SILICON PLANAR EPITAXIAL TRANSISTORS

P-N-P transistors

### Marking

BCW89 = H3

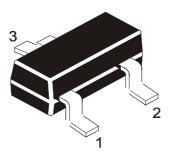
### Pin configuration

1 = BASE

2 = EMITTER

3 = COLLECTOR



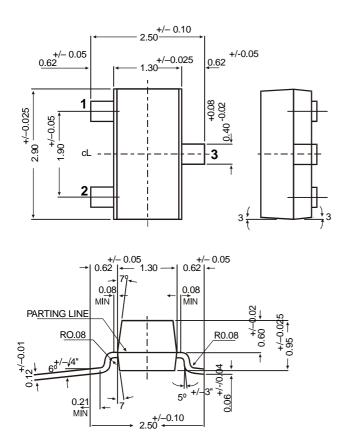


### ABSOLUTE MAXIMUM RATINGS

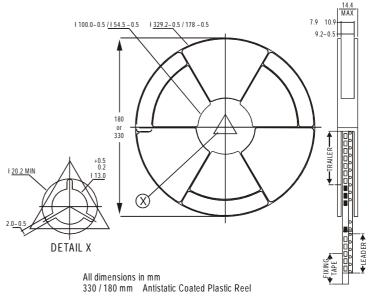
Collector-base voltage (open emitter)	$-V_{CB0}$	max.	80 V
Collector-emitter voltage (open base)	-V <sub>CE0</sub>	max.	60 V
Collector current (peak value)	$-I_{CM}$	max.	200 mA
Total power dissipation up to $T_{amb} = 25  ^{\circ}C$	$P_{tot}$	max.	<i>250</i> mW
Junction temperature	$T_{j}$	max.	150 ° C
D.C. current gain at $T_j = 25$ °C	J	>	120
$-I_C = 2 \text{ mA}; -V_{CE} = 5 \text{ V}$	$h_{FE}$	<	260
Transition frequency at f: 35 MHz			
$-I_C = 10 \text{ mA; } -V_{CE} = 5 \text{ V}$	$f_T$	typ.	<i>150</i> MHz
Noise figure at $R_S = 2 k\Omega$			
$-I_C = 200 \ \mu A; \ -V_{CE} = 5 \ V;$			
f = 1  kHz; $B = 200  Hz$	$\boldsymbol{\mathit{F}}$	<	10 dB

<b>RATINGS</b> (at $T_A = 25^{\circ}C$ 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 $T_{amb} = 25  ^{\circ}C$	$P_{tot}$	max.	<i>250</i> mW
Storage temperature	$T_{Stg}$	-55 to	+150 °C
Junction temperature	$T_j$	max.	150 ° C
THERMAL RESISTANCE			
From junction to ambient	$R_{th\ j-a}=$	<i>500</i>	KW
CHARACTERISTICS			
$T_i = 25$ °C unless otherwise specified			
Collector cut-off current			
$I_E = 0; -V_{CB} = 20 V$	$-I_{CB0}$	<	100 nA
$I_E = 0$ ; $-V_{CB} = 20 \text{ V}$ ; $T_i = 100 ^{\circ}\text{C}$	$-I_{CB0}$	<	10 μA
Base-emitter voltage			
$-I_C = 2 \text{ mA}; -V_{CE} = 5 \text{ V}; T_j = 25 \text{ °C}$	$-V_{BE}$	600 to	750 mV
Saturation voltages			
$-I_C = 10 \text{ mA}; -I_B = 0.5 \text{ mA}$	-V <sub>CEsat</sub>	typ.	80 mV
		<	300~mV
	-V <sub>BEsat</sub>	typ.	720 mV
$-I_C = 50 \text{ mA}; -l_B = 2.5 \text{ mA}$	-V <sub>CEsat</sub>	typ.	150 mV
	-V <sub>BEsat</sub>	typ.	810 mV
D.C. current gain			
$-I_C = 10 \ \mu A; \ -V_{CE} = 5 \ V$	$h_{FE}$	typ.	90
$-I_C = 2 \text{ mA}; -V_{CE} = 5 \text{ V}$	$h_{FE}$	>	120
		<	260
Collector capacitance at $f = 1$ MHz			
$I_E = I_e = 0; -V_{CB} = 10 V$	$C_{C}$	typ.	4,5 pF
Transition frequency at $f = 35$ MHz			
$-I_C = 10 \text{ mA; } -V_{CE} = 5 \text{ V}$	$f_T$	typ.	150 MHz
Noise figure at $R_S = 2 k\Omega$			
$-I_C = 200 \mu A; -V_{CE} = 5 V$			
f = 1  kHz; B = 200  Hz	F	<	10 dB

# **SOT-23 Formed SMD Package**



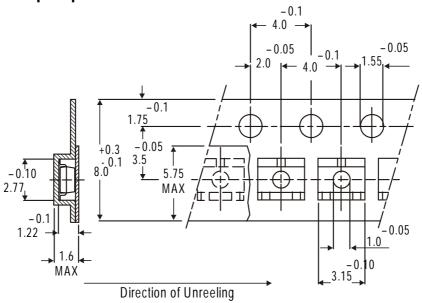
# SOT-23 Package Reel Information Reel specifications for Packing (13"/7" reels)



 NOTES:
 8mm Tape
 8mm Tape
 Size of Reel
 Size of Reel
 Size of Reel
 180 mm (7")
 180 mm (7")
 180 mm (7")
 3,000 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.
- No more than 0.5% missing devices / reel. 50 empty compartments for 330 mm reel.
   15 empty compartments for 180 mm reel.
- Three consecutive empty places might be found provided this gap is followed by 6 consecutive devices.
- 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**



# **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