

**SOT-23 Formed SMD Package**

**CMBT4403**

**SILICON PLANAR EPITAXIAL TRANSISTOR**

*P-N-P transistor*

**Marking**

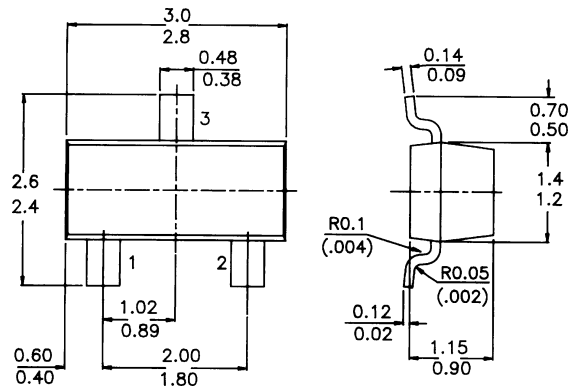
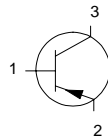
CMBT4403 = 2T

**PACKAGE OUTLINE DETAILS**

ALL DIMENSIONS IN mm

**Pin configuration**

1 = BASE  
2 = EMITTER  
3 = COLLECTOR



**ABSOLUTE MAXIMUM RATINGS**

Collector-emitter voltage	$-V_{CEO}$	max.	40 V
Collector current (DC)	$-I_C$	max.	600 mA
DC current gain	$h_{FE}$	min.	100
		max.	300
$I_C = 150 \text{ mA}; V_{CE} = 2 \text{ V}$	$P_{tot}$	max	250 mW
Total power dissipation up to $T_{amb} = 25^\circ \text{C}$			

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

**Limiting values**

Collector-emitter voltage	$-V_{CEO}$	max.	40 V
Collector-base voltage	$-V_{CBO}$	max.	40 V
Emitter-base voltage	$-V_{EBO}$	max.	5 V
Collector current (DC)	$-I_C$	max.	600 mA
Total power dissipation up to $T_{amb} = 25^\circ \text{C}$	$P_{tot}$	max	250 mW
Storage temperature range	$T_{stg}$		-55 to +150 °C
Junction temperature	$T_j$	max.	150 °C

## CMBT4403

### THERMAL RESISTANCE

From junction to ambient

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

### CHARACTERISTICS

$T_{amb} = 25\ ^\circ C$  unless otherwise specified

Collector-emitter breakdown voltage

$$-I_C = 1.0\ mA; I_B = 0$$

$$-V_{(BR)CEO} > 40\ V$$

Collector-base breakdown voltage

$$-I_C = 100\ \mu A; I_E = 0$$

$$-V_{(BR)CBO} > 40\ V$$

Emitter-base breakdown voltage

$$-I_E = 100\ \mu A; I_C = 0$$

$$-V_{(BR)EBO} > 5\ V$$

Base cut-off current

$$-V_{CE} = 35\ V; -V_{EB} = 0.4\ V$$

$$-I_{BEX} < 0.1\ \mu A$$

Collector cut-off current

$$-V_{CE} = 35\ V; -V_{EB} = 0.4\ V$$

$$-I_{CEX} < 0.1\ \mu A$$

D.C. current gain

$$-I_C = 0.1\ mA; -V_{CE} = 1\ V$$

$$h_{FE} > 30$$

$$-I_C = 1.0\ mA; -V_{CE} = 1\ V$$

$$h_{FE} > 60$$

$$-I_C = 10\ mA; -V_{CE} = 1\ V$$

$$h_{FE} > 100$$

$$-I_C = 150\ mA; -V_{CE} = 2\ V$$

$$h_{FE} \quad 100\ to\ 300$$

$$-I_C = 500\ mA; -V_{CE} = 2\ V$$

$$h_{FE} > 20$$

Saturation voltage

$$-I_C = 150\ mA; -I_B = 15\ mA$$

$$-V_{CEsat} < 0.4\ V$$

$$-V_{BEsat} \quad 0.75\ to\ 0.95\ V$$

$$-I_C = 500\ mA; -I_B = 50\ mA$$

$$-V_{CEsat} < 0.75\ V$$

$$-V_{BEsat} < 1.3\ V$$

Transition frequency

$$f = 100\ MHz; -I_C = 20\ mA; -V_{CE} = 10\ V$$

$$f_T > 200\ MHz$$

Collector-base capacitance

$$I_E = 0; -V_{CB} = 10\ V; f = 100\ kHz$$

$$C_{cb} < 8.5\ pF$$

Emitter-base capacitance

$$I_C = 0; -V_{BE} = 0.5\ V; f = 100\ kHz$$

$$C_{eb} < 35\ pF$$

Input impedance at  $f = 1\ kHz$ ;

$$-I_C = 1\ mA; -V_{CE} = 10\ V$$

$$h_{ie} \quad \begin{matrix} min. & 1.5\ k\Omega \\ max. & 15\ k\Omega \end{matrix}$$

Voltage feed-back ratio at  $f = 1\ kHz$ ;

$$-I_C = 1\ mA; -V_{CE} = 10\ V$$

$$h_{re} \quad \begin{matrix} min. & 0.1 \times 10^{-4} \\ max. & 8 \times 10^{-4} \end{matrix}$$

Small-signal current gain at  $f = 1\ kHz$

$$-I_C = 1\ mA; -V_{CE} = 10\ V$$

$$h_{fe} \quad \begin{matrix} min. & 60 \\ max. & 500 \end{matrix}$$

## CMBT4403

Output admittance at  $f = 1 \text{ kHz}$ ;

$$-I_C = 1 \text{ mA}; -V_{CE} = 10 \text{ V}$$

$h_{oe}$	<i>min.</i>	1 $\mu\text{S}$
	<i>max.</i>	100 $\mu\text{S}$

Switching times (resistive load)

Turn-on time

$$-I_C = 150 \text{ mA}; -I_{B1} = 15 \text{ mA};$$

$$-V_{CC} = 30 \text{ V}; -V_{EB} = 2 \text{ V}$$

delay time

$t_d$	<i>max.</i>	15 ns
-------	-------------	-------

rise time

$t_r$	<i>max.</i>	20 ns
-------	-------------	-------

Turn-off time

$$-I_C = 150 \text{ mA}; -V_{CC} = 30 \text{ V};$$

$$-I_{B1} = +I_{B2} = 15 \text{ mA}$$

storage time

$t_s$	<i>max.</i>	225 ns
-------	-------------	--------

fall time

$t_f$	<i>max.</i>	30 ns
-------	-------------	-------

## 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, 5141 1112 Fax + 91-11-2579 5290, 5141 1119  
email@cdil.com www.cdilsemi.com