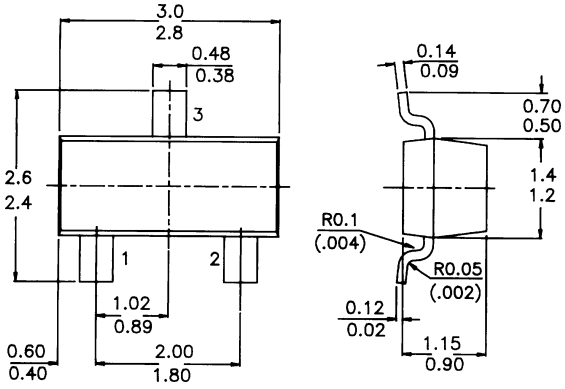
SOT-23 Formed SMD Package **CMBT4401**

SILICON PLANAR EPITAXIAL TRANSISTOR

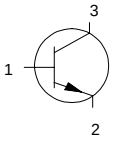
N–P–N transistor

Marking
CMBT4401 = 2X

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				
I_C = 150 mA; V_{CE} = 1 V	h_{FE}	*min.* *max.*	*100* *300*	
Total power dissipation up to T_{amb} = 25 °C	P_{tot}	*max*	*250*	mW

RATINGS *(at* T_A = 25°C *unless otherwise specified)*

Limiting values				
Collector–emitter voltage	V_{CEO}	*max.*	*40*	*V*
Collector–base voltage	V_{CBO}	*max.*	*60*	*V*
Emitter–base voltage	V_{EBO}	*max.*	*6*	*V*
Collector current (DC)	I_C	*max.*	*600*	*mA*
Total power dissipation up to T_{amb} = 25°C	P_{tot}	*max*	*250*	mW
Storage temperature range	T_{stg}		*–55 to +150*	*° C*
Junction temperature	T_j	*max.*	*150*	*° C*

THERMAL RESISTANCE

From junction to ambient	$R_{th\ j-a}$	=	500	K/W

CHARACTERISTICS

T_{amb} = 25 °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 µA; I_E = 0	$V_{(BR)CBO}$	>	60	V
Emitter–base breakdown voltage				
I_E = 100 µA; I_C = 0	$V_{(BR)EBO}$	>	6	V
Base cut–off current				
V_{CE} = 35 V; V_{EB} = 0.4 V	I_{BEX}	<	0.1	µA
Collector cut–off current				
V_{CE} = 35 V; V_{EB} = 0.4 V	I_{CEX}	<	0.1	µA
D.C. current gain				
I_C = 0.1 mA; V_{CE} = 1 V	h_{FE}	>	20	
I_C = 1.0 mA; V_{CE} = 1 V	h_{FE}	>	40	
I_C = 10 mA; V_{CE} = 1 V	h_{FE}	>	80	
I_C = 150 mA; V_{CE} = 1 V	h_{FE}		100 to 300	
I_C = 500 mA; V_{CE} = 2 V	h_{FE}	>	40	
Saturation voltage				
I_C = 150 mA; I_B = 15 mA	V_{CEsat}	<	0.4	V
	V_{BEsat}		0.75 to 0.95	V
I_C = 500 mA; I_B = 50 mA	V_{CEsat}	<	0.75	V
	V_{BEsat}	<	1.2	V
Transition frequency				
f = 100 MHz; I_C = 20 mA; V_{CE} = 10 V	f_T	>	250	MHz
Collector–base capacitance				
I_E = 0; V_{CB} = 5 V; f = 100 kHz	C_{cb}	<	8	pF
Emitter–base capacitance				
I_C = 0; V_{BE} = 0.5 V; f = 100 kHz	C_{eb}	<	30	pF
Input impedance; f = 1 kHz;				
I_C = 1 mA; V_{CE} = 10 V	h_{ie}	min.	1	kΩ
		max.	8	kΩ
Voltage feed–back ratio				
I_C = 1 mA; V_{CE} = 10 V; f = 1 kHz	h_{re}	min.	0.1×10^{-4}	
		max.	30×10^{-4}	
Small–signal curent gain; f = 1 kHz;				
I_C = 1 mA; V_{CE} = 10 V	h_{fe}	min.	40	
		max.	500	

Output admittance; f = 1 kHz;			
I_C = 1 mA; V_{CE} = 10 V	h_{oe}	min.	1 µS
		max.	30 µS
Switching times (resistive load)			
Turn–on time			
I_C = 150 mA; I_{B1} = 15 mA;			
V_{CC} = 30 V; V_{EB} = 2 V			
delay time	t_d	max.	15 ns
rise time	t_r	max.	20 ns
Turn–off time			
I_C = 150 mA; V_{CC} = 30 V;			
I_{B1} = I_{B2} = 15 mA			
storage time	t_s	max.	225 ns
fall time	t_f	max.	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