

**SOT-23 Formed SMD Package**

**CMBT2907  
CMBT2907A**

*SILICON PLANAR EPITAXIAL TRANSISTORS*

*P-N-P silicon transistors*

**Marking**

CMBT2907 = 2B

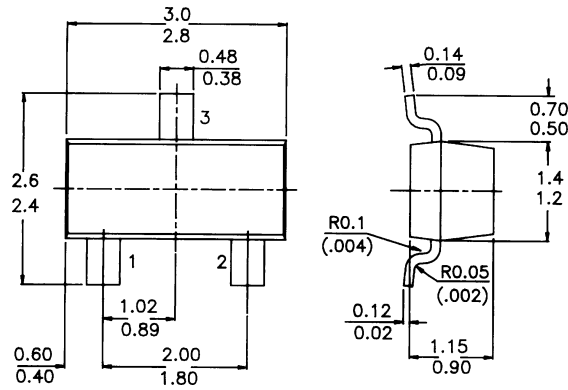
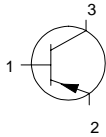
CMBT2907A = 2F

**PACKAGE OUTLINE DETAILS**

ALL DIMENSIONS IN mm

**Pin configuration**

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



**ABSOLUTE MAXIMUM RATINGS**

		<b>CMBT2907 CMBT2907A</b>		
Collector-base voltage (open emitter)	$-V_{CB0}$	max. 60	60	V
Collector-emitter voltage (open base)	$-V_{CE0}$	max. 40	60	V
Emitter-base voltage (open collector)	$-V_{EB0}$	max. 5.0		V
Collector current (d.c.)	$-I_C$	max. 600		mA
Total power dissipation up to $T_{amb} = 25^\circ C$	$CP_{tot}$	max. 250		mW
Junction temperature	$T_j$	max. 150		$^\circ C$
D.C. current gain				
$-I_C = 500mA; -V_{CE} = 10V$	$h_{FE}$	> 30	50	
Turn-off switching time				
$-I_{Con} = 150 mA; -I_{Bon} = I_{Boff} = 15 mA$	$t_{off}$	<	100	ns
Transition frequency at $f = 100 MHz$				
$-I_C = 50 mA; -V_{CE} = 20 V$	$f_T$	>	200	MHz

**CMBT2907**  
**CMBT2907A**

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

Limiting values		<b>CMBT2907</b>	<b>CMBT2907A</b>	
Collector-base voltage (open emitter)	$-V_{CB0}$	max. 60	60	V
Collector-emitter voltage (open base)	$-V_{CE0}$	max. 40	60	V
Emitter-base voltage (open collector)	$-V_{EB0}$	max. 5,0		V
Collector current (d.c.)	$-I_C$	max. 600		mA
Power dissipation up to $T_{amb} = 25^\circ\text{C}$	$P_{tot}$	max. 250		mW
Storage temperature range	$T_{stg}$		-55 to +150	$^\circ\text{C}$
Junction temperature	$T_j$	max. 150		$^\circ\text{C}$

**THERMAL RESISTANCE**

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

**CHARACTERISTICS**

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

Collector cut-off current		<b>CMBT2907</b>	<b>CMBT2907A</b>	
$I_E = 0; -V_{CB} = 50\text{V}$	$-I_{CB0}$	< 20	10	nA
$I_E = 0; -V_{CB} = 50\text{V}; T_j = 125^\circ\text{C}$	$-I_{CB0}$	< 20	10	$\mu\text{A}$
$-V_{EB} = 0,5\text{ V}; -V_{CE} = 30\text{ V}$	$-I_{CEX}$	< 50		nA
<b>Base current</b>				
with reverse biased emitter junction				
$-V_{EB} = 3\text{V}; -V_{CE} = 30\text{V}$	$-I_{BEX}$	< 50		nA
<b>Saturation voltages</b>				
$-I_C = 150\text{ mA}; -I_B = 15\text{ mA}$	$-V_{CEsat}$	< 0,4		V
	$-V_{BEsat}$	< 1,3		V
$-I_C = 500\text{ mA}; -I_B = 50\text{ mA}$	$-V_{CEsat}$	< 1,6		V
	$-V_{BEsat}$	< 2,6		V
<b>Collector-base breakdown voltage</b>				
Open emitter; $-I_C = 10\ \mu\text{A}; I_E = 0$	$-V_{(BR)CBO}$	> 60		V
<b>Collector-emitter breakdown voltage</b>				
Open base; $-I_C = 10\text{ mA}; I_B = 0$	$-V_{(BR)CEO}$	> 40	60	V
<b>Emitter-base breakdown voltage</b>				
Open collector; $-I_E = 10\ \mu\text{A}; I_C = 0$	$-V_{(BR)EBO}$	> 5,0		V

D.C. current gain		<b>CMBT2907</b>	<b>CMBT2907A</b>	
$-I_C = 0,1\text{ mA}; -V_{CE} = 10\text{ V}$	$h_{FE}$	> 35	75	
$-I_C = 1\text{ mA}; -V_{CE} = 10\text{ V}$	$h_{FE}$	> 50	100	
$-I_C = 10\text{ mA}; -V_{CE} = 10\text{ V}$	$h_{FE}$	> 75	100	
$-I_C = 150\text{mA}; -V_{CE} = 10\text{V}$	$h_{FE}$		100 to 300	
$-I_C = 500\text{mA}; -V_{CE} = 10\text{V}$	$h_{FE}$	> 30	50	

**CMBT2907**  
**CMBT2907A**

Transition frequency at  $f = 100$  MHz

$-I_C = 50$  mA;  $-V_{CE} = 20$  V;

$T_{amb} = 25$  °C

$f_T > 200$  MHz

Output capacitance at  $f = 1$  MHz

$I_E = I_e = 0$ ;  $-V_{CB} = 10$  V

$C_o < 8,0$  pF

Input capacitance at  $f = 1$  MHz

$I_C = I_c = 0$ ;  $-V_{EB} = 2$  V

$C_i < 30$  pF

**Switching times** (between 10% and 90% levels)

Turn-on time when switched to

$-I_C = 150$  mA;  $-I_B = 15$  mA;  $V_{CC} = 30$  V

delay time

$t_d < 10$  ns

rise time

$t_r < 40$  ns

turn on time ( $t_d + t_r$ )

$t_{on} < 45$  ns

Turn-off time when switched from

$-I_C = 150$  mA;  $-I_B = 15$  mA;  $V_{CC} = 6$  V

to cut-off with  $+I_{BM} = 15$  mA

storage time

$t_s < 80$  ns

fall time

$t_f < 30$  ns

turn-off time ( $t_s + t_f$ )

$t_{off} < 100$  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