Continental Device India Limited
An ISO/TS 16949, ISO 9001 and ISO 14001 Certified Company

SOT-23 Formed SMD Package

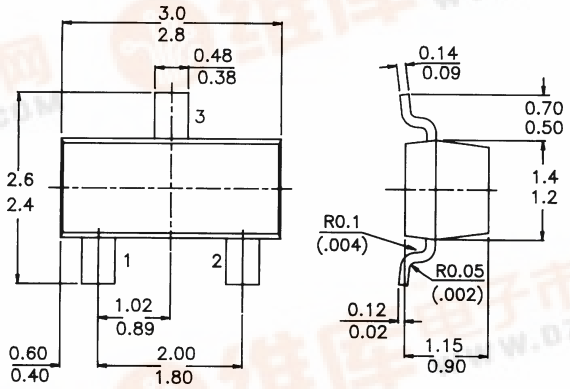
CMBT2907
CMBT2907A

SILICON PLANAR EPITAXIAL TRANSISTORS

P–N–P silicon transistors

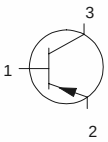
Marking
CMBT2907 = 2B
CMBT2907A = 2F

PACKAGE OUTLINE DETAILS
ALL DIMENSIONS IN mm



Pin configuration

1 = BASE
2 = EMITTER
3 = COLLECTOR



ABSOLUTE MAXIMUM RATINGS

			CMBT2907	CMBT2907A	
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 °C	P_{tot}	*max.*	*250*		*mW*
Junction temperature	T_j	*max.*	*150*		*° 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

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

Limiting values			CMBT2907	CMBT2907A	
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 °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 in free air	$R_{th\ j-a}$	=	*500*	K/W

CHARACTERISTICS

T_j = 25 °C unless otherwise specified

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

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

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; $-V_{CB}$ = 10V	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				
$-I_C$ = 150mA; $-I_B$ = 15 mA; V_{CC} = 30V				
delay time	t_d	<	*10*	*ns*
rise time	t_r	<	*40*	*ns*
turn on time (t_d + tr)	ton	<	*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*

Customer Notes

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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