

SOT-23 Formed SMD Package

**CMBT2907
CMBT2907A**

SILICON PLANAR EPITAXIAL TRANSISTORS

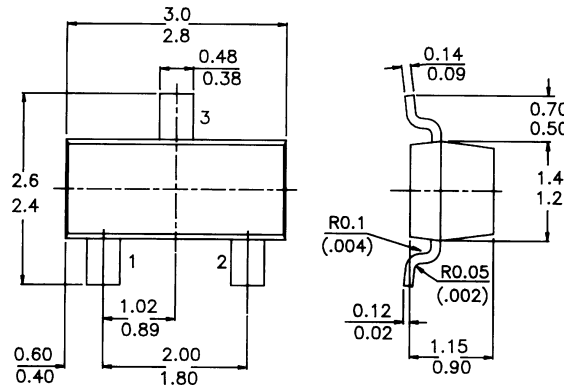
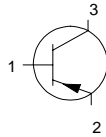
P-N-P silicon transistors

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 $T_{amb} = 25^\circ\text{C}$	P_{tot}	max. 250		mW
Junction temperature	T_j	max. 150		$^\circ\text{C}$
D.C. current gain				
$-I_C = 500\text{mA}; -V_{CE} = 10\text{V}$	h_{FE}	> 30	50	
Turn-off switching time				
$-I_{Con} = 150\text{mA}; -I_{Bon} = I_{Boff} = 15\text{mA}$	t_{off}	<	100	ns
Transition frequency at $f = 100\text{MHz}$				
$-I_C = 50\text{mA}; -V_{CE} = 20\text{V}$	f_T	>	200	MHz

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RATINGS (at $T_A = 25^\circ\text{C}$ 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 $T_{amb} = 25^\circ\text{C}$	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
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CHARACTERISTICS

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

Collector cut-off current

		CMBT2907	CMBT2907A	
$I_E = 0; -V_{CB} = 50\text{V}$	$-I_{CB0}$	< 20	10	nA
$I_E = 0; -V_{CB} = 50\text{V}; T_j = 125^\circ\text{C}$	$-I_{CB0}$	< 20	10	μA
$-V_{EB} = 0,5\text{V}; -V_{CE} = 30\text{V}$	$-I_{CEX}$	< 50		nA

Base current

with reverse biased emitter junction $-V_{EB} = 3\text{V}; -V_{CE} = 30\text{V}$	$-I_{BEX}$	< 50		nA
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Saturation voltages

$-I_C = 150\text{mA}; -I_B = 15\text{mA}$	$-V_{CEsat}$	< 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

Collector-base breakdown voltage

Open emitter; $-I_C = 10\ \mu\text{A}; I_E = 0$	$-V_{(BR)CBO}$	> 60		V
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Collector-emitter breakdown voltage

Open base; $-I_C = 10\text{mA}; I_B: 0$	$-V_{(BR)CEO}$	> 40	60	V
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Emitter-base breakdown voltage

Open collector; $-I_E = 10\ \mu\text{A}; I_C = 0$	$-V_{(BR)EBO}$	> 5,0		V
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D.C. current gain

		CMBT2907	CMBT2907A	
$-I_C = 0,1\text{mA}; -V_{CE} = 10\text{V}$	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	

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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

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