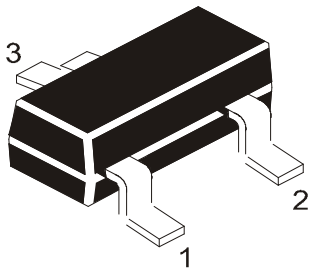
SOT-23 Formed SMD Package

CMBT2907
CMBT2907A

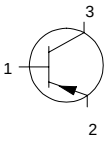
SILICON PLANAR EPITAXIAL TRANSISTORS

P–N–P silicon transistors

Marking
CMBT2907 = 2B
CMBT2907A = 2F



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

			CMBT2907	CMBT2907A	
Collector cut–off current					
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*

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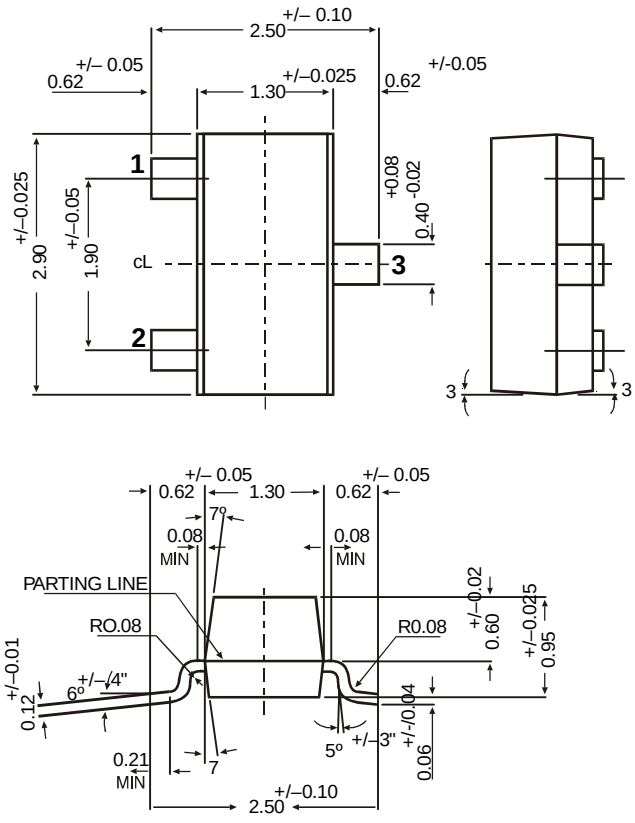
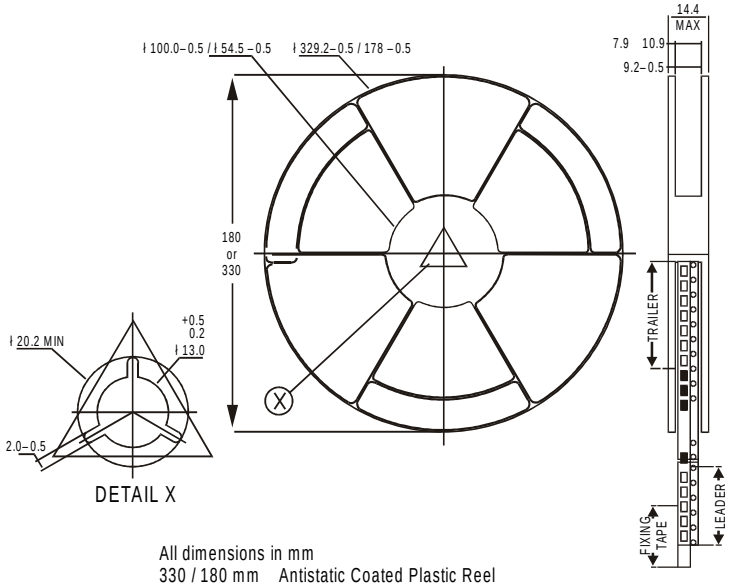


SOT-23 Package Reel Information
Reel specifications for Packing (13"/7" reels)

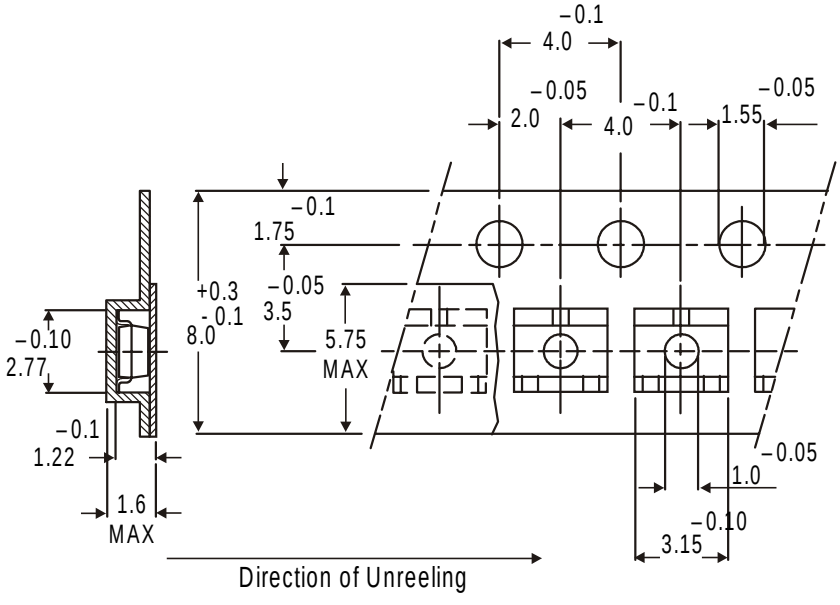


All dimensions in mm
330 / 180 mm Antistatic Coated Plastic Reel

NOTES:	8mm Tape Size of Reel 330 mm (13")	8mm Tape Size of Reel 180 mm (7")
No. of Devices	10,000 Pcs	3,000 Pcs

1. The bandolier of 330 mm reel contains at least 10,000 devices.
2. The bandolier of 180 mm reel contains at least 3,000 devices.
3. No more than 0.5% missing devices / reel. 50 empty compartments for 330 mm reel. 15 empty compartments for 180 mm reel.
4. Three consecutive empty places might be found provided this gap is followed by 6 consecutive devices.
5. The carrier tape (leader) starts with at least 75 empty positions (equivalent to 330 mm). In order to fix the carrier tape a self adhesive tape of 20 to 50 mm is applied. At the end of the bandolier at least 40 empty positions (equivalent to 160 mm) are there.

Tape Specification for SOT-23 Surface Mount Device



All dimensions in mm

Packing Detail

PACKAGE	STANDARD PACK		INNER CARTON BOX		OUTER CARTON BOX		
	Details	Net Weight/Qty	Size	Qty	Size	Qty	Gr Wt
SOT-23 T&R	3K/reel	136 gm/3K pcs	3" x 7.5" x 7.5"	12.0K	17" x 15" x 13.5"	192.0K	12 kgs
			9" x 9" x 9"	51.0K	19" x 19" x 19"	408.0K	28 kgs
	10K/reel	415 gm/10K pcs	13" x 13" x 0.5"	10.0K	17" x 15" x 13.5"	300.0K	16 kgs

Customer Notes

Component Disposal Instructions

1. CDIL Semiconductor Devices are RoHS compliant, customers are requested to please dispose as per prevailing Environmental Legislation of their Country.
2. In Europe, please dispose as per EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).

Disclaimer

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