SOT-23 Formed SMD Package

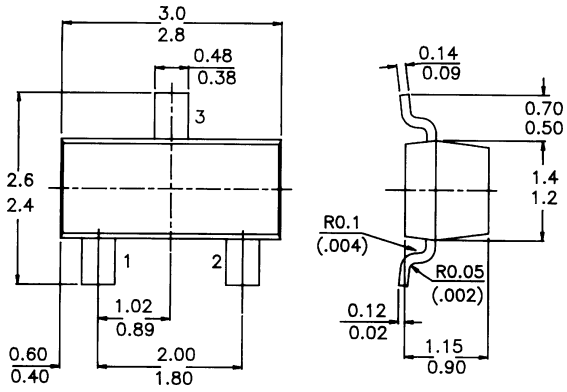
CMBT2222
CMBT2222A

SILICON PLANAR EPITAXIAL TRANSISTORS

N–P–N silicon transistors

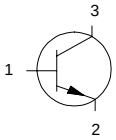
Marking
CMBT2222 = lB
CMBT2222A = lP

PACKAGE OUTLINE DETAILS
ALL DIMENSIONS IN mm



Pin configuration

1 = BASE
2 = EMITTER
3 = COLLECTOR



ABSOLUTE MAXIMUM RATINGS

			CMBT2222	CMBT2222A	
Collector–base voltage (open ernitter)	V_{CB0}	*max.*	*60*	*75*	*V*
Collector–emitter voltage (open base)	V_{CE0}	*max.*	*30*	*40*	*V*
Emitter base voltage (open collector)	V_{EB0}	*max.*	*5,0*	*6,0*	*V*
Collector current (d.c.)	I_C	*max.*	*600*		*mA*
Total power dissipation up to T_{amb} = 25 °C	P_{tot}	*max.*	*250*		*mW*
D.C. current gain					
I_C = 150mA; V_{CE} = 10V	h_{FE}		*100 to 300*		
lC = 500mA; V_{CE} = 10V	h_{FE}	>	*30*	*40*	
Transition frequency at f = 100 MHz					
I_C = 20 mA; V_{CE} = 20 V	f_T	>	*250*	*300*	MHz

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

			CMBT2222	CMBT2222A	
Collector–base voltage (open emitter)	V_{CBO}	*max.*	*60*	*75*	*V*
Collector–emitter voltage (open base)	V_{CEO}	*rnax.*	*30*	*40*	*V*
Emitter–base voltage (open collector)	V_{EBO}	*max.*	*5,0*	*6,0*	*V*
Collector current (d.c,)	I_C	*max.*	*600*		*mA*
Total power dissipation up to T_{amb} = 25 °C	P_{tot}	*max.*	*250*		*mW*
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_j = 25 °C unless otherwise specified

			CMBT2222	CMBT2222A	
Collector cut–off current					
I_E = 0; V_{CB} = 50 V	I_{CBO}	<	*0,01*		µA
I_E = 0; V_{CB} = 60 V	I_{CBO}	<	*–*	*0,01*	*µA*
I_E = 0; V_{CB} = 50 V; T_i – 125 °C	I_{CBO}	<	*10*	*–*	*µA*
I_E = 0; V_{CB} = 60 V; T_j = 125 °C	I_{CBO}	<	*–*	*10*	µA
V_{EB} = 3 V; V_{CE} = 60 V	I_{CEX}	< –	*–*	*10*	*nA*
Base current					
with reverse biased emitter junction					
V_{FB} = 3V; V_{CE} = 60V	I_{BEX}	<	*–*	*20*	*nA*
Emitter cut–off current					
I_C = 0; V_{EB} = 3V	I_{EBO}	<	*–*	*10*	*nA*
Saturation voltages					
I_C = 150 mA; l_B = 15 mA	V_{CEsat}	<	*400*	*300*	*mV*
	V_{BEsat}	<	*1.3*	*–*	*V*
	V_{BEsat}		*–*	*0,6 to 1,2*	*V*
I_C = 500 mA; l_B = 50 mA	V_{CEsat}	<	*1.6*	*1.0*	*V*
	V_{BEsat}	<	*2.6*	*2.0*	*V*
Breakdown voltages					
I_C = 1,0µ A; I_B = 0	$V_{(BR)CEO}$	>	*30*	*40*	*V*
I_C = 100µA; I_E = 0	$V_{(BR)CBO}$	>	*60*	*75*	*V*
I_C = 0; I_E = 10µA	$V_{(BR)EBO}$	>	*5,0*	*6,0*	*V*

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D.C. current gain					
I_C = 0,1 mA; V_{CE} = 10V	h_{FE}	>	35		
I_C = 1 mA; V_{CE} = 10V	h_{FE}	>	50		
I_C = 10 mA; V_{CE} = 10 V	h_{FE}	>	75		
I_C = 10 mA; V_{CE} = 10 V; T_{amb} = –55 °C	h_{FE}	>	35		
I_C = 150mA; V_{CE} = 10V	h_{FE}		100 to 300		
I_C = 150 mA; V_{CE} = 1 V	h_{FE}	>	50		
I_C = 500 mA; V_{CE} = 10 V	h_{FE}	>	30	40	
Transition frequency at f = 100 MHz					
I_C = 20 mA; V_{CE} = 20 V	f_T	>	250	300	MHz
Output capacitance at f = 1 MHz					
I_E = 0; V_{CB} = 10V	Co	<	8,0		pF
Input capacitance at f = 1 MHz					
I_C = 0; V_{EB} = 0,5V	Ci	<	30	25	pF
Noise figure at R_S = 1 kΩ					
I_C = 100μA; V_{CE} = 10V; f = 1 kHz	F	<	4,0		dB
Switching times (between 10% and 90% levels)					
Turn–on time switched to I_c = 150 mA					
delay time	t_d	<	10		ns
rise time	t_r	<	25		ns
Turn–off time switched from I_c = 150 mA					
storage time	t_s	<	225		ns
fall time	t_f	<	60		ns
Small Signal Current Gain					
V_{CE} = 10V; I_C = 1 mA; f = 1 KHz	h_{fe}	>	50		
		<	300		
V_{CE} = 10V; I_C = 10mA; f = 1 KHz	h_{fe}	>	75		
		<	375		

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Customer Notes

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