

SOT-23 Formed SMD Package

**CMBT2222
CMBT2222A**

SILICON PLANAR EPITAXIAL TRANSISTORS

N-P-N silicon transistors

Marking

CMBT2222 = 1B

CMBT2222A = 1P

PACKAGE OUTLINE DETAILS

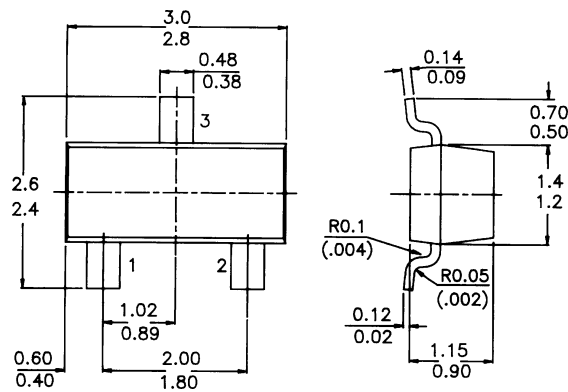
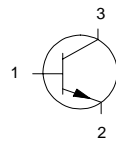
ALL DIMENSIONS IN mm

Pin configuration

1 = BASE

2 = EMITTER

3 = COLLECTOR



ABSOLUTE MAXIMUM RATINGS

		CMBT2222	CMBT2222A	
Collector-base voltage (open emitter)	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 $T_{amb} = 25\text{ }^\circ\text{C}$	P_{tot} max.	250		mW
D.C. current gain				
$I_C = 150\text{mA}; V_{CE} = 10\text{V}$	h_{FE}	100 to 300		
$I_C = 500\text{mA}; V_{CE} = 10\text{V}$	$h_{FE} >$	30	40	
Transition frequency at $f = 100\text{ MHz}$				
$I_C = 20\text{ mA}; V_{CE} = 20\text{ V}$	$f_T >$	250	300	MHz

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

Limiting values

		CMBT2222	CMBT2222A	
Collector-base voltage (open emitter)	V_{CB0} max.	60	75	V
Collector-emitter voltage (open base)	V_{CEO} max.	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 $T_{amb} = 25^\circ\text{C}$	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	$R_{th\ j-a}$	500	K/W
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CHARACTERISTICS

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

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

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		<u>CMBT2222</u>	<u>CMBT2222A</u>	
<i>D.C. current gain</i>				
$I_C = 0,1 \text{ mA}; V_{CE} = 10\text{V}$	h_{FE}	>	35	
$I_C = 1 \text{ mA}; V_{CE} = 10\text{V}$	h_{FE}	>	50	
$I_C = 10 \text{ mA}; V_{CE} = 10 \text{ V}$	h_{FE}	>	75	
$I_C = 10 \text{ mA}; V_{CE} = 10 \text{ V}; T_{amb} = -55 \text{ }^\circ\text{C}$	h_{FE}	>	35	
$I_C = 150\text{mA}; V_{CE} = 10\text{V}$	h_{FE}		100 to 300	
$I_C = 150 \text{ mA}; V_{CE} = 1 \text{ V}$	h_{FE}	>	50	
$I_C = 500 \text{ mA}; V_{CE} = 10 \text{ V}$	h_{FE}	>	30	40
<i>Transition frequency at $f = 100 \text{ MHz}$</i>				
$I_C = 20 \text{ mA}; V_{CE} = 20 \text{ V}$	f_T	>	250	300 MHz
<i>Output capacitance at $f = 1 \text{ MHz}$</i>				
$I_E = 0; V_{CB} = 10\text{V}$	C_o	<	8,0	pF
<i>Input capacitance at $f = 1 \text{ MHz}$</i>				
$I_C = 0; V_{EB} = 0,5\text{V}$	C_i	<	30	25 pF
<i>Noise figure at $R_S = 1 \text{ k}\Omega$</i>				
$I_C = 100\mu\text{A}; V_{CE} = 10\text{V}; f = 1 \text{ kHz}$	F	<	4,0	dB
<i>Switching times (between 10% and 90% levels)</i>				
<i>Turn-on time switched to $I_C = 150 \text{ mA}$</i>				
delay time	t_d	<	10	ns
rise time	t_r	<	25	ns
<i>Turn-off time switched from $I_C = 150 \text{ mA}$</i>				
storage time	t_s	<	225	ns
fall time	t_f	<	60	ns
<i>Small Signal Current Gain</i>				
$V_{CE} = 10\text{V}; I_C = 1 \text{ mA}; f = 1 \text{ KHz}$	h_{fe}	>	50	
		<	300	
$V_{CE} = 10\text{V}; I_C = 10\text{mA}; f = 1 \text{ KHz}$	h_{fe}	>	75	
		<	375	

Disclaimer

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