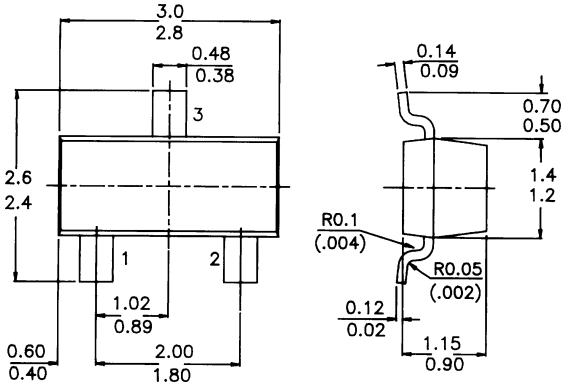
SOT-23 Formed SMD Package **CMBT3906**

SILICON EPITAXIAL TRANSISTOR

P–N–P transistor

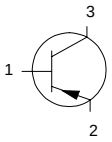
Marking
CMBT3906 = 2A

PACKAGE OUTLINE DETAILS
ALL DIMENSIONS IN mm



Pin configuration

1 = BASE
2 = EMITTER
3 = COLLECTOR



ABSOLUTE MAXIMUM RATINGS

Collector–base voltage (open emitter)	$-V_{CB0}$	*max.*	*40 V*
Collector–emitter voltage (open base)	$-V_{CE0}$	*max.*	*40 V*
Emitter–base voltage (open collector)	$-V_{EB0}$	*max.*	*5 V*
Collector current (d.c.)	$-I_C$	*max.*	*200 mA*
Total power dissipation up to T_{amb} = 25 °C	P_{tot}	*max.*	*250 mW*
D.C. current gain			
$-I_C$ = 10 mA; $-V_{CE}$ = 1 V	h_{FE}	*100 to 300*	
Transition frequency at f = 100 MHz			
$-I_C$ = 10 mA; $-V_{CE}$ = 20 V	f_T	*min.*	*250 MHz*

RATINGS

Limiting values			
Collector–base voltage (open emitter)	$-V_{CB0}$	*max.*	*40 V*
Collector–emitter voltage (open base)	$-V_{CE0}$	*max.*	*40 V*
Emitter–base voltage (open collector)	$-V_{EB0}$	*max.*	*5 V*
Collector current (d.c.)	$-I_C$	*max.*	*200 mA*
Total power dissipation			
up to T_{amb} = 25 °C	P_{tot}	*max.*	*250 mW*
Storage temperature	T_{stg}	*–55 to +150 °C*	

THERMAL CHARACTERISTICS

$T_j = P(R_{th\ j-t} + R_{th\ t-s} + R_{th\ s-a}) + T_{amb}$

Thermal resistance			
from junction to ambient	$R_{th\ j-a}$	=	*500* K/W

CHARACTERISTICS

T_{amb} = 25 °C unless otherwise specified

Collector–emitter breakdown voltage			
$-I_C$ = 1 mA; I_B = 0	$-V_{(BR)CE0}$	*min.*	*40 V*
Collector–base breakdown voltage			
$-I_C$ = 10μA; I_E = 0	$-V_{(BR)CB0}$	*min.*	*40 V*
Emitter–base breakdown voltage			
—I_E = 10 μA; I_C = 0	$-V_{(BR)EB0}$	*min.*	*5 V*
Collector cut–off current			
$-V_{CE}$ = 30 V; $-V_{EB}$ = 3 V	$-I_{CEX}$	*max.*	*50 nA*
Base current			
with reverse biased emitter junction	$-I_{BEX}$	*max,*	*50 nA*
Output capacitance at f = 100 kHz			
I_E = 0; $-V_{CB}$ = 5 V	C_c	*max,*	*4,5 pF*
Input capacitance at f = 100 kHz			
I_C = 0; $-V_{BE}$ = 0,5 V	C_e	*max.*	*10 pF*
Saturation voltages			
$-I_C$ = 10 mA; $-I_B$ = 1 mA	$-V_{CEsat}$	*max.*	*0,25 V*
$-I_C$ = 50 mA; $-I_B$ = 5 mA	$-V_{CEsat}$	*max.*	*0,4 V*
$-I_C$ = 10 mA; $-I_B$ = 1 mA	$-V_{BEsat}$	*max.*	*0,85 V*
		min.	*0,65 V*
$-I_C$ = 50 mA; $-I_B$ = 5 mA	$-V_{BEsat}$	*max.*	*0,95 V*
D.C. current gain			
$-I_C$ = 0,1 mA; $-V_{CE}$ = 1 V	h_{FE}	*min.*	*60*
$-I_C$ = 1 mA; $-V_{CE}$ = 1 V	h_{FE}	*min.*	*80*
$-I_C$ = 10 mA; $-V_{CE}$ = 1 V	h_{FE}	*min.*	*100*
		max.	*300*

$-I_C = 50\ mA; -V_{CE} = 1\ V$	h_{FE}	*min.*	60
$-I_C = 100\ mA; -V_{CE} = 1\ V$	h_{FE}	*min.*	30
Transition frequency at f = 100 MHz			
$-I_C = 10mA; -V_{CE} = 20V$	f_T	*min.*	250 MHz
Noise figure at $R_S = 1\ k\Omega$			
$-I_C = 100\mu A; -V_{CE} = 5\ V$			
f = 10 Hz to 15,7 kHz	*F*	*max.*	4 dB
Small Signal Current Gain			
$V_{CE} = 10V; I_C = 1\ mA; f = 1\ KHz$	h_{fe}	*min.*	100
		max.	400

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