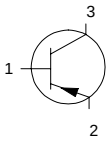
SOT-23 Formed SMD Package **CMBT3905**

SILICON EPITAXIAL TRANSISTOR

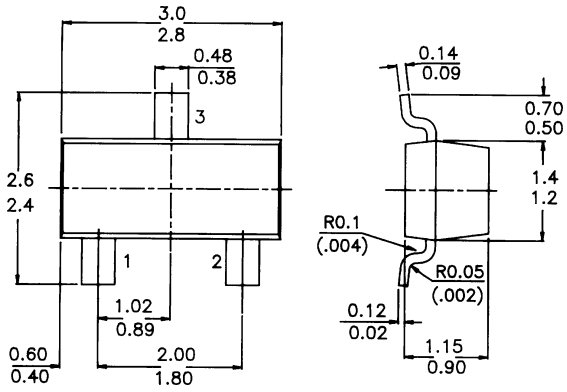
P–N–P transistor

Marking
CMBT3905 = 2Y

Pin configuration
1 = BASE
2 = EMITTER
3 = COLLECTOR



PACKAGE OUTLINE DETAILS
ALL DIMENSIONS IN mm



ABSOLUTE MAXIMUM RATINGS

Collector–base voltage (open emitter)	$-V_{CBO}$	*max.*	*40 V*
Collector–emitter voltage (open base)	$-V_{CEO}$	*max.*	*40 V*
Emitter–base voltage (open collector)	$-V_{EBO}$	*max.*	*5 V*
Collector current (d.c.)	$-I_C$	*max.*	*200 mA*
Total power dissipation up to T_{amb} = 60 °C	P_{tot}	*max.*	*250 mW*
D.C. current gain			
$-I_C$ = 10 mA; $-V_{CE}$ = 1 V	h_{FE}	*50 to 150*	
Transition frequency at f = 100 MHz			
$-I_C$ = 10 mA; $-V_{CE}$ = 20 V	f_T	*min.*	*200 MHz*

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

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	$R_{th\ j-a}$	=	*200 °C/W*

CHARACTERISTICS *(at T_A = 25°C unless otherwise specified)*

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	$-V_{BEsat}$	*min.*	*0,65 V*
		max.	*0,85 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.*	*30*
$-I_C$ = 1 mA; $-V_{CE}$ = 1 V	h_{FE}	*min.*	*40*
$-I_C$ = 10 mA; $-V_{CE}$ = 1 V	h_{FE}	*min.*	*50*
		max.	*150*

$-I_C = 50\ mA; -V_{CE} = 1\ V$	h_{FE}	*min.*	30
$-I_C = 100\ mA; -V_{CE} = 1\ V$	h_{FE}	*min.*	15
Transition frequency at f = 100 MHz			
$-I_C = 10mA; -V_{CE} = 20V$	f_T	*min.*	200 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.*	50
		max.	200

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