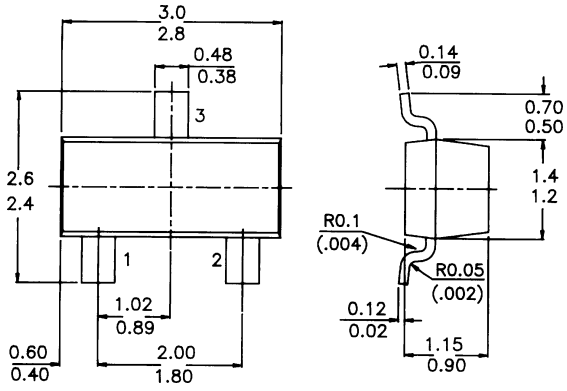
SOT-23 Formed SMD Package **CMBT4403**

SILICON PLANAR EPITAXIAL TRANSISTOR

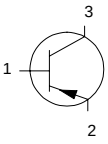
P–N–P transistor

Marking
CMBT4403 = 2T

PACKAGE OUTLINE DETAILS
ALL DIMENSIONS IN mm



Pin configuration
1 = BASE
2 = EMITTER
3 = COLLECTOR



ABSOLUTE MAXIMUM RATINGS

Collector–emitter voltage	$-V_{CEO}$	*max.*	*40*	*V*
Collector current (DC)	$-I_C$	*max.*	*600*	*mA*
DC current gain				
I_C = 150 mA; V_{CE} = 2 V	h_{FE}	*min.*	*100*	
		max.	*300*	
Total power dissipation up to T_{amb} = 25 °C	P_{tot}	*max*	*250*	mW

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

Limiting values				
Collector–emitter voltage	$-V_{CEO}$	*max.*	*40*	*V*
Collector–base voltage	$-V_{CBO}$	*max.*	*40*	*V*
Emitter–base voltage	$-V_{EBO}$	*max.*	*5*	*V*
Collector current (DC)	$-I_C$	*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_{amb} = 25 °C unless otherwise specified				
Collector–emitter breakdown voltage				
$-I_C$ = 1.0 mA; I_B = 0	$-V_{(BR)CEO}$	>	40	V
Collector–base breakdown voltage				
$-I_C$ = 100 µA; I_E = 0	$-V_{(BR)CBO}$	>	40	V
Emitter–base breakdown voltage				
$-I_E$ = 100 µA; I_C = 0	$-V_{(BR)EBO}$	>	5	V
Base cut–off current				
$-V_{CE}$ = 35 V; $-V_{EB}$ = 0.4 V	$-I_{BEX}$	<	0.1	µA
Collector cut–off current				
$-V_{CE}$ = 35 V; $-V_{EB}$ = 0.4 V	$-I_{CEX}$	<	0.1	µA
D.C. current gain				
$-I_C$ = 0.1 mA; $-V_{CE}$ = 1 V	h_{FE}	>	30	
$-I_C$ = 1.0 mA; $-V_{CE}$ = 1 V	h_{FE}	>	60	
$-I_C$ = 10 mA; $-V_{CE}$ = 1 V	h_{FE}	>	100	
$-I_C$ = 150 mA; $-V_{CE}$ = 2 V	h_{FE}		100 to 300	
$-I_C$ = 500 mA; $-V_{CE}$ = 2 V	h_{FE}	>	20	
Saturation voltage				
$-I_C$ = 150 mA; $-I_B$ = 15 mA	$-V_{CEsat}$	<	0.4	V
	$-V_{BEsat}$		0.75 to 0.95	V
$-I_C$ = 500 mA; $-I_B$ = 50 mA	$-V_{CEsat}$	<	0.75	V
	$-V_{BEsat}$	<	1.3	V
Transition frequency				
f = 100 MHz; $-I_C$ = 20 mA; $-V_{CE}$ = 10 V	f_T	>	200	MHz
Collector–base capacitance				
I_E = 0; $-V_{CB}$ = 10 V; f = 100 kHz	C_{cb}	<	8.5	pF
Emitter–base capacitance				
I_C = 0; $-V_{BE}$ = 0.5 V; f = 100 kHz	C_{eb}	<	35	pF
Input impedance at f = 1 kHz;				
$-I_C$ = 1 mA; $-V_{CE}$ = 10 V	h_{ie}	min.	1.5	kΩ
		max.	15	kΩ
Voltage feed–back ratio at f = 1 kHz;				
$-I_C$ = 1 mA; $-V_{CE}$ = 10 V	h_{re}	min.	0.1×10^{-4}	
		max.	8×10^{-4}	
Small–signal curent gain at f = 1 kHz				
$-I_C$ = 1 mA; $-V_{CE}$ = 10 V	h_{fe}	min.	60	
		max.	500	

Output admittance at f = 1 kHz;			
$-I_C$ = 1 mA; $-V_{CE}$ = 10 V	h_{oe}	*min.*	*1 μS*
		max.	*100 μS*
Switching times (resistive load)			
Turn–on time			
$-I_C$ = 150 mA; $-I_{B1}$ = 15 mA;			
$-V_{CC}$ = 30 V; $-V_{EB}$ = 2 V			
delay time	t_d	*max.*	*15 ns*
rise time	t_r	*max.*	*20 ns*
Turn–off time			
$-I_C$ = 150 mA; $-V_{CC}$ = 30 V;			
$-I_{B1}$ = $+I_{B2}$ = 15 mA			
storage time	t_s	*max.*	*225 ns*
fall time	t_f	*max.*	*30 ns*

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