



SOT-23 Formed SMD Package

CMBT4403

SILICON PLANAR EPITAXIAL TRANSISTOR

P-N-P transistor

Marking

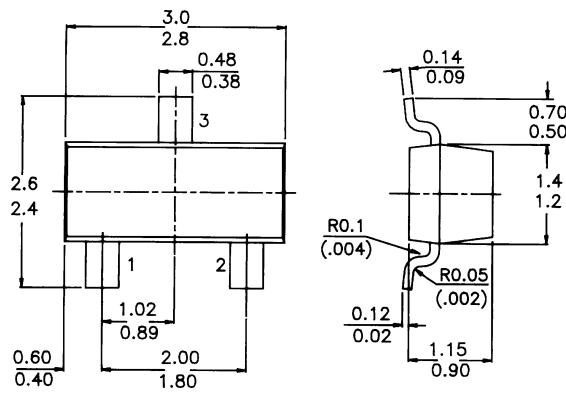
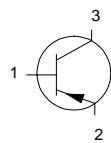
CMBT4403 = 2T

PACKAGE OUTLINE DETAILS

ALL DIMENSIONS IN mm

Pin configuration

1 = BASE
2 = Emitter
3 = Collector



ABSOLUTE MAXIMUM RATINGS

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

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

Limiting values

<i>Collector-emitter voltage</i>	$-V_{CEO}$	<i>max.</i>	40	V
<i>Collector-base voltage</i>	$-V_{CBO}$	<i>max.</i>	40	V
<i>Emitter-base voltage</i>	$-V_{EBO}$	<i>max.</i>	5	V
<i>Collector current (DC)</i>	$-I_C$	<i>max.</i>	600	mA
<i>Total power dissipation up to $T_{amb} = 25^\circ C$</i>	P_{tot}	<i>max</i>	250	mw
<i>Storage temperature range</i>	T_{stg}	-55 to $+150$	$^\circ C$	
<i>Junction temperature</i>	T_j	<i>max.</i>	150	$^\circ C$

THERMAL RESISTANCE

From junction to ambient

$$R_{th\ j-a} = 500 \text{ K/W}$$

CHARACTERISTICS

$T_{amb} = 25^\circ C$ unless otherwise specified

Collector-emitter breakdown voltage

$$-I_C = 1.0 \text{ mA}; I_B = 0 \quad -V_{(BR)CEO} > 40 \text{ V}$$

Collector-base breakdown voltage

$$-I_C = 100 \mu\text{A}; I_E = 0 \quad -V_{(BR)CBO} > 40 \text{ V}$$

Emitter-base breakdown voltage

$$-I_E = 100 \mu\text{A}; I_C = 0 \quad -V_{(BR)EBO} > 5 \text{ V}$$

Base cut-off current

$$-V_{CE} = 35 \text{ V}; -V_{EB} = 0.4 \text{ V} \quad -I_{BEX} < 0.1 \mu\text{A}$$

Collector cut-off current

$$-V_{CE} = 35 \text{ V}; -V_{EB} = 0.4 \text{ V} \quad -I_{CEX} < 0.1 \mu\text{A}$$

D.C. current gain

$$-I_C = 0.1 \text{ mA}; -V_{CE} = 1 \text{ V} \quad h_{FE} > 30$$

$$-I_C = 1.0 \text{ mA}; -V_{CE} = 1 \text{ V} \quad h_{FE} > 60$$

$$-I_C = 10 \text{ mA}; -V_{CE} = 1 \text{ V} \quad h_{FE} > 100$$

$$-I_C = 150 \text{ mA}; -V_{CE} = 2 \text{ V} \quad h_{FE} > 100 \text{ to } 300$$

$$-I_C = 500 \text{ mA}; -V_{CE} = 2 \text{ V} \quad h_{FE} > 20$$

Saturation voltage

$$-I_C = 150 \text{ mA}; -I_B = 15 \text{ mA} \quad -V_{CEsat} < 0.4 \text{ V}$$

$$-V_{BEsat} < 0.75 \text{ to } 0.95 \text{ V}$$

$$-I_C = 500 \text{ mA}; -I_B = 50 \text{ mA} \quad -V_{CEsat} < 0.75 \text{ V}$$

$$-V_{BEsat} < 1.3 \text{ V}$$

Transition frequency

$$f = 100 \text{ MHz}; -I_C = 20 \text{ mA}; -V_{CE} = 10 \text{ V} \quad f_T > 200 \text{ MHz}$$

Collector-base capacitance

$$I_E = 0; -V_{CB} = 10 \text{ V}; f = 100 \text{ kHz} \quad C_{cb} < 8.5 \text{ pF}$$

Emitter-base capacitance

$$I_C = 0; -V_{BE} = 0.5 \text{ V}; f = 100 \text{ kHz} \quad C_{eb} < 35 \text{ pF}$$

Input impedance at $f = 1 \text{ kHz}$;

$$-I_C = 1 \text{ mA}; -V_{CE} = 10 \text{ V} \quad h_{ie} \text{ min. } 1.5 \text{ k}\Omega$$

$$\text{max. } 15 \text{ k}\Omega$$

Voltage feed-back ratio at $f = 1 \text{ kHz}$;

$$-I_C = 1 \text{ mA}; -V_{CE} = 10 \text{ V} \quad h_{re} \text{ min. } 0.1 \times 10^{-4}$$

$$\text{max. } 8 \times 10^{-4}$$

Small-signal current gain at $f = 1 \text{ kHz}$

$$-I_C = 1 \text{ mA}; -V_{CE} = 10 \text{ V} \quad h_{fe} \text{ min. } 60$$

$$\text{max. } 500$$

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Output admittance at f = 1 kHz;

$-I_C = 1 \text{ mA}$; $-V_{CE} = 10 \text{ V}$

h_{oe}	<i>min.</i>	$1 \text{ } \mu\text{s}$
	<i>max.</i>	$100 \text{ } \mu\text{s}$

Switching times (resistive load)

Turn-on time

$-I_C = 150 \text{ mA}$; $-I_{B1} = 15 \text{ mA}$;
 $-V_{CC} = 30 \text{ V}$; $-V_{EB} = 2 \text{ V}$

delay time

t_d *max.* 15 ns

rise time

t_r *max.* 20 ns

Turn-off time

$-I_C = 150 \text{ mA}$; $-V_{CC} = 30 \text{ V}$;
 $-I_{B1} = +I_{B2} = 15 \text{ mA}$

storage time

t_s *max.* 225 ns

fall time

t_f *max.* 30 ns

Disclaimer

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