

**SOT-23 Formed SMD Package**

**CMBT4124**

**GENERAL PURPOSE TRANSISTOR**

*N-P-N transistor*

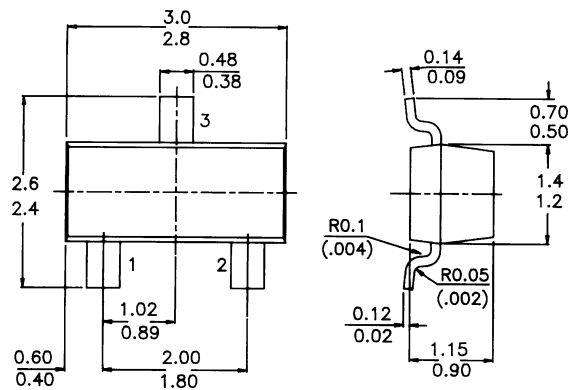
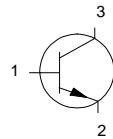
**Marking**

CMBT4124 = 5C

**PACKAGE OUTLINE DETAILS**  
ALL DIMENSIONS IN mm

**Pin configuration**

- 1 = BASE
- 2 = EMITTER
- 3 = COLLECTOR



**ABSOLUTE MAXIMUM RATINGS**

Collector-base voltage (open emitter)	$-V_{CBO}$	max.	30 V
Collector-emitter voltage (open base)	$-V_{CEO}$	max.	25 V
Emitter-base voltage (open collector)	$-V_{EBO}$	max.	5 V
Collector current (d.c.)	$-I_C$	max.	200 mA
Total power dissipation at $T_{amb} = 25^\circ C$	$P_{tot}$	max	225 mW
D.C. current gain	$h_{FE}$	min.	120
$-I_C = 2 \text{ mA}; -V_{CE} = 1 \text{ V}$		max.	360

**RATINGS (at  $T_A = 25^\circ C$  unless otherwise specified)**

*Limiting values*

Collector-base voltage (open emitter)	$-V_{CBO}$	max.	30 V
Collector-emitter voltage (open base)	$-V_{CEO}$	max.	25 V
Emitter-base voltage (open collector)	$-V_{EBO}$	max.	5 V
Collector current (d.c.)	$-I_C$	max.	200 mA
Total power dissipation at $T_{amb} = 25^\circ C$	$P_{tot}$	max	225 mW
Storage temperature	$T_{stg}$		-55 to +150 °C
Junction temperature	$T_j$	max.	150 °C

## CMBT4124

### **THERMAL CHARACTERISTICS**

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

Thermal resistance

from junction to ambient

$R_{th\ j-a}$  556 °C/mW

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

Collector-emitter breakdown voltage

$-I_C = 1\ \text{mA}; I_B = 0$   $-V_{(BR)CEO}$  min. 25 V

Collector-base breakdown voltage

$-I_C = 10\ \text{mA}; I_E = 0$   $-V_{(BR)CBO}$  min. 30 V

Emitter-base breakdown voltage

$-I_E = 10\ \text{mA}; I_C = 0$   $-V_{(BR)EBO}$  min. 5 V

Collector cut-off current

$-V_{CB} = 20\ \text{V}; I_E = 0\ \text{V}$   $-I_{CBO}$  max. 50 nA

Emitter cut-off current

$V_{BE} = 3\ \text{V}; I_C = 0$   $I_{EBO}$  max. 50 nA

Output capacitance at  $f = 100\ \text{kHz}$

$I_E = 0; -V_{CB} = 5\ \text{V}$   $C_c$  max. 4 pF

Input capacitance at  $f = 100\ \text{kHz}$

$I_C = 0; -V_{BE} = 0.5\ \text{V}$   $C_e$  max. 8 pF

Saturation voltages

$-I_C = 50\ \text{mA}; -I_B = 5\ \text{mA}$   $-V_{CEsat}$  max. 0.3 V

$-I_C = 50\ \text{mA}; -I_B = 5\ \text{mA}$   $-V_{BEsat}$  max. 0.95 V

D.C. current gain

$-I_C = 2\ \text{mA}; -V_{CE} = 1\ \text{V}$   $h_{FE}$  min. 120

max. 360

$-I_C = 50\ \text{mA}; -V_{CE} = 1\ \text{V}$   $h_{FE}$  min. 60

Noise figure at  $R_S = 1\ \text{k}\Omega$

$-I_C = 100\ \text{mA}; -V_{CE} = 5\ \text{V}$   
 $f = 10\ \text{Hz to } 15.7\ \text{kHz}$   $NF$  max. 6 dB

Small signal current gain

$V_{CE} = 1\ \text{V}; I_C = 2\ \text{mA}; f = 1\ \text{kHz}$   $h_{fe}$  min. 120

max. 480

Transition frequency

$V_{CE} = 20\ \text{V}; I_C = 10\ \text{mA}; f = 100\ \text{MHz}$   $f_T$  min. 300 MHz

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