

SOT-23 Formed SMD Package

CMBT4123

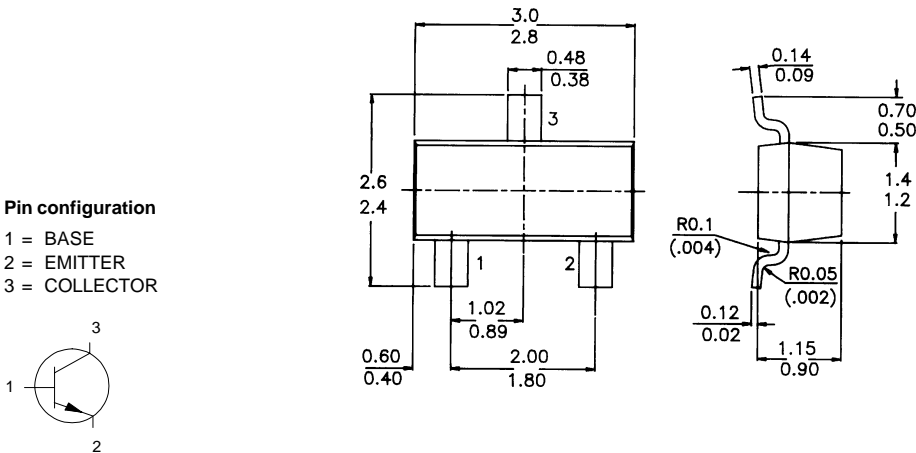
GENERAL PURPOSE TRANSISTOR

N-P-N transistor

Marking

CMBT4123 = 5B

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.	30	V
Emitter-base voltage (open collector)	$-V_{EBO}$	max.	5	V
Collector current (d.c.)	$-I_C$	max.	200	mA
Total power dissipation at $T_{amb} = 25^\circ\text{C}$	P_{tot}	max	225	mW
D.C. current gain	h_{FE}	min.	50	
$-I_C = 2 \text{ mA}; -V_{CE} = 1 \text{ V}$		max.	150	

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

Limiting values

Collector-base voltage (open emitter)	$-V_{CBO}$	max.	40	V
Collector-emitter voltage (open base)	$-V_{CEO}$	max.	30	V
Emitter-base voltage (open collector)	$-V_{EBO}$	max.	5	V
Collector current (d.c.)	$-I_C$	max.	200	mA
Total power dissipation at $T_{amb} = 25^\circ\text{C}$	P_{tot}	max	225	mW

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Storage temperature	T_{stg}	-55 to +150 °C
Junction temperature	T_j	max. 150 °C

THERMAL CHARACTERISTICS

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

Thermal resistance

from junction to ambient

$$R_{th\ j-a} \quad 556 \text{ °C/mW}$$

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

Collector-emitter breakdown voltage

$$-I_C = 1 \text{ mA}; I_B = 0$$

$$-V_{(BR)CEO} \text{ min.} \quad 30 \text{ V}$$

Collector-base breakdown voltage

$$-I_C = 10 \text{ mA}; I_E = 0$$

$$-V_{(BR)CBO} \text{ min.} \quad 40 \text{ V}$$

Emitter-base breakdown voltage

$$-I_E = 10 \text{ mA}; I_C = 0$$

$$-V_{(BR)EBO} \text{ min.} \quad 5 \text{ V}$$

Collector cut-off current

$$-V_{CB} = 20 \text{ V}; I_E = 0 \text{ V}$$

$$-I_{CBO} \text{ max.} \quad 50 \text{ nA}$$

Emitter cut-off current

$$V_{BE} = 3 \text{ V}; I_C = 0$$

$$-I_{EBO} \text{ max.} \quad 50 \text{ nA}$$

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

$$I_E = 0; -V_{CB} = 5 \text{ V}$$

$$C_c \text{ max.} \quad 4 \text{ pF}$$

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

$$I_C = 0; -V_{BE} = 0.5 \text{ V}$$

$$C_e \text{ max.} \quad 8 \text{ pF}$$

Saturation voltages

$$-I_C = 50 \text{ mA}; -I_B = 5 \text{ mA}$$

$$-V_{CEsat} \text{ max.} \quad 0.3 \text{ V}$$

$$-I_C = 50 \text{ mA}; -I_B = 5 \text{ mA}$$

$$-V_{BEsat} \text{ max.} \quad 0.95 \text{ V}$$

D.C. current gain

$$-I_C = 2 \text{ mA}; -V_{CE} = 1 \text{ V}$$

$$h_{FE} \text{ min.} \quad 50$$

$$\text{max.} \quad 150$$

$$-I_C = 50 \text{ mA}; -V_{CE} = 1 \text{ V}$$

$$h_{FE} \text{ min.} \quad 25$$

Noise figure at $R_S = 1 \text{ kW}$

$$-I_C = 100 \text{ mA}; -V_{CE} = 5 \text{ V}$$

$$f = 10 \text{ Hz to } 15.7 \text{ kHz}$$

$$NF \text{ max.} \quad 6 \text{ dB}$$

Transition frequency

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

$$f_T \text{ min.} \quad 250 \text{ MHz}$$

Small signal current gain

$$-V_{CE} = 1 \text{ V}; -I_C = 2 \text{ mA}; f = 1 \text{ KHz}$$

$$h_{fe} \text{ min.} \quad 50$$

$$\text{max.} \quad 200$$

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