

SOT-23 Formed SMD Package

CMBT4123

GENERAL PURPOSE TRANSISTOR

N-P-N transistor

Marking

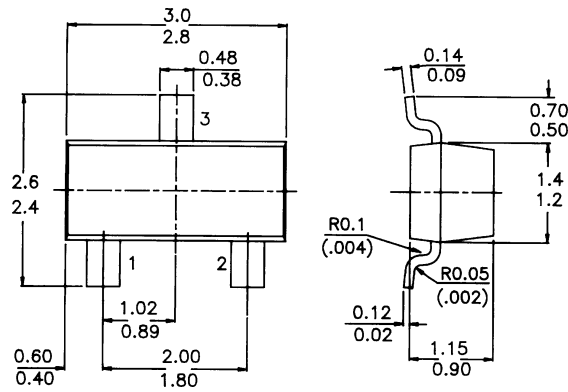
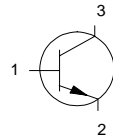
CMBT4123 = 5B

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.	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

THEMAL 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
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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.	30 V
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Collector-base breakdown voltage

- $I_C = 10\text{ mA}$; $I_E = 0$	$-V_{(BR)CBO}$ min.	40 V
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Emitter-base breakdown voltage

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

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

- $V_{BE} = 3\text{ V}$; $I_C = 0$	$-I_{EBO}$ max.	50 nA
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Output capacitance at $f = 100\text{ kHz}$

- $I_E = 0$; - $V_{CB} = 5\text{ V}$	C_c max.	4 pF
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Input capacitance at $f = 100\text{ kHz}$

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

- $I_C = 50\text{ mA}$; - $I_B = 5\text{ mA}$	$-V_{CEsat}$ max.	0.3 V
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- $I_C = 50\text{ mA}$; - $I_B = 5\text{ mA}$	$-V_{BEsat}$ max.	0.95 V
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D.C. current gain

- $I_C = 2\text{ mA}$; - $V_{CE} = 1\text{ V}$	h_{FE} min.	50
	h_{FE} max.	150

- $I_C = 50\text{ mA}$; - $V_{CE} = 1\text{ V}$	h_{FE} min.	25
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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 max.	6 dB
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Transition frequency

- $I_C = 10\text{ mA}$; - $V_{CE} = 20\text{ V}$; $f = 100\text{ MHz}$	f_T min.	250 MHz
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Small signal current gain

- $V_{CE} = 1\text{ V}$; - $I_C = 2\text{ mA}$; $f = 1\text{ KHz}$	h_{fe} min.	50
	h_{fe} max.	200

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Continental Device India Limited

C-120 Naraina Industrial Area, New Delhi 110 028, India.
Telephone + 91-11-2579 6150, 5141 1112 Fax + 91-11-2579 5290, 5141 1119
email@cdil.com www.cdilsemi.com