

**SOT-23 Formed SMD Package**

**CMBT5087**

**SILICON PLANAR EPITAXIAL TRANSISTORS**

PNP transistor

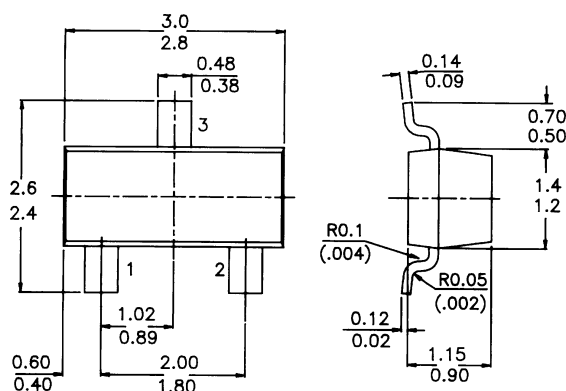
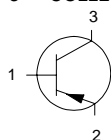
**PACKAGE OUTLINE DETAILS**  
ALL DIMENSIONS IN mm

**Marking**

CMBT5087= 2Q

**Pin configuration**

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



**ABSOLUTE MAXIMUM RATINGS**

Collector-base voltage (open emitter)	$V_{CBO}$	max.	50 V
Collector-emitter voltage (open base)	$V_{CEO}$	max.	50 V
Emitter-base voltage (open collector)	$V_{EBO}$	max.	3 V
Collector current	$I_C$	max.	50 mA
Total power dissipation at $T_{amb} = 25^\circ\text{C}$	$P_{tot}^*$	max.	225 mW
Junction temperature	$T_j$	max.	150 °C
D.C. current gain	$h_{FE}$	min.	250
		max.	800
Transition frequency at $f = 20\text{ MHz}$	$f_T$	min.	40 MHz

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

**Limiting values**

Collector-base voltage (open emitter)	$V_{CBO}$	max.	50 V
Collector-emitter voltage (open base)	$V_{CEO}$	max.	50 V

\*FR-5 Board =  $1.0 \times 0.75 \times 0.062\text{ in.}$

## CMBT5087

Emitter-base voltage (open collector)	$V_{EBO}$	max.	3 V
Collector current (d.c.)	$I_C$	max.	50 mA
Total power dissipation at $T_{amb} = 25^\circ C$	$P_{tot}^*$	max.	225 mW
Storage temperature	$T_{stg}$	-55 to +150	$^\circ C$
Junction temperature	$T_j$	max.	150 $^\circ C$

### THERMAL RESISTANCE

From junction to ambient	$R_{th\ j-a}$	417	$^\circ/W$
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### CHARACTERISTICS (at $T_A = 25^\circ C$ unless otherwise specified)

#### Collector cut-off current

$I_E = 0; V_{CB} = 10\ V$	$I_{CBO}$	max.	10 nA
$I_E = 0; V_{CB} = 35\ V$		max.	50 nA

#### Breakdown voltages

$I_C = 1\ mA; I_B = 0$	$V_{CEO}$	min.	50 V
$I_C = 100\ \mu A; I_E = 0$	$V_{CBO}$	min.	50 V

#### Saturation voltage

$I_C = 10\ mA; I_B = 1.0\ mA$	$V_{CEsat}$	max.	300 mV
$I_C = 10\ mA; I_B = 1.0\ mA$	$V_{BEsat}$	max.	0.85 V

#### D.C. current gain

$I_C = 100\ \mu A; V_{CE} = 5\ V$	$h_{FE}$	min.	250
		max.	800
$I_C = 1\ mA; V_{CE} = 5\ V$		min.	250
$I_C = 10\ mA; V_{CE} = 5\ V$		min.	250

#### Collector capacitance at $f = 100\ KHz$

$I_E = 0; V_{CB} = 5\ V$	$C_{ob}$	max.	4.0 pF
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#### Transition frequency at $f = 20\ MHz$

$I_C = 500\ \mu A; V_{CE} = 5\ V$	$f_T$	min.	40 MHz
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#### Small signal current

$I_C = 1\ mA; V_{CE} = 5\ V; f = 1\ KHz$	$h_{fe}$	min.	250
		max.	900

#### Noise figure

$I_C = 20\ \mu A; V_{CE} = 5\ V; R_S = 10\ k\Omega$	$N_F$	max.	2.0 dB
$f = 10\ Hz\ to\ 15.7\ KHz$			
$I_C = 100\ \mu A; V_{CE} = 5\ V; R_S = 3.0\ k\Omega\ f = 1.0\ KHz$	$N_F$	max.	2.0 dB

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\*FR-5 Board =  $1.0 \times 0.75 \times 0.62\ in.$

### Disclaimer

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