



## SOT-23 Formed SMD Package

CMBT5087

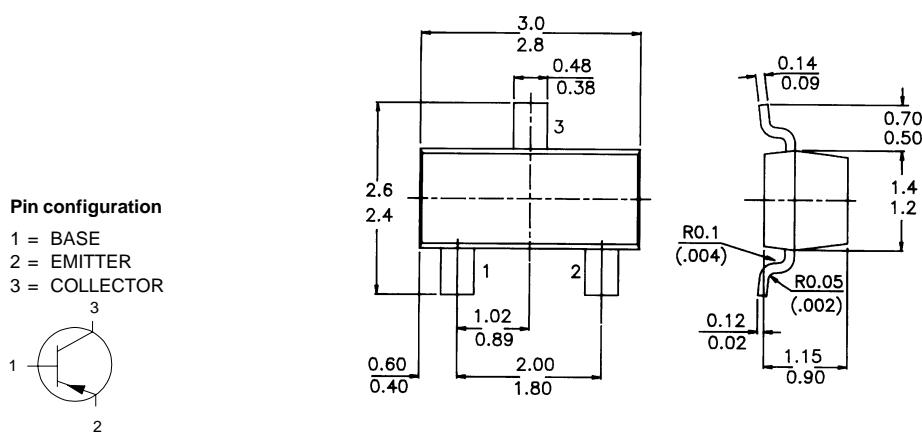
SILICON PLANAR EPITAXIAL TRANSISTORS

### *PNP transistor*

*PACKAGE OUTLINE DETAILS  
ALL DIMENSIONS IN mm*

## *Marketing*

**Marking**  
CMRT5087 = 2Ω



#### **ABSOLUTE MAXIMUM RATINGS**

<i>Collector-base voltage (open emitter)</i>	$V_{CBO}$	<i>max.</i>	50	<i>V</i>
<i>Collector-emitter voltage (open base)</i>	$V_{CEO}$	<i>max.</i>	50	<i>V</i>
<i>Emitter-base voltage (open collector)</i>	$V_{EBO}$	<i>max.</i>	3	<i>V</i>
<i>Collector current</i>	$I_C$	<i>max.</i>	50	<i>mA</i>
<i>Total power dissipation at <math>T_{amb} = 25^\circ C</math></i>	$P_{tot}^*$	<i>max.</i>	225	<i>mW</i>
<i>Junction temperature</i>	$T_j$	<i>max.</i>	150	$^\circ C$
<i>D.C. current gain</i>	$h_{FE}$	<i>min.</i>	250	
$-I_C = 100 \mu A; V_{CE} = 5 V$		<i>max.</i>	800	
<i>Transition frequency at <math>f = 20 MHz</math></i>	$f_T$	<i>min.</i>	40	<i>MHz</i>
$I_C = 500 \mu A; V_{CE} = 5 V$				

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

### RATINGS (at 11)

<i>Limiting values</i>				
<i>Collector-base voltage (open emitter)</i>	$V_{CBO}$	<i>max.</i>	50	<i>V</i>
<i>Collector-emitter voltage (open base)</i>	$V_{CEO}$	<i>max.</i>	50	<i>V</i>

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

## CMBT5087

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

### **THERMAL RESISTANCE**

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

#### *Collector cut-off current*

$I_E = 0; V_{CB} = 10 V$	$I_{CBO}$	<i>max.</i>	10 nA
$I_E = 0; V_{CB} = 35 V$		<i>max.</i>	50 nA

#### *Breakdown voltages*

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

#### *Saturation voltage*

$I_C = 10 mA; I_B = 1.0 mA$	$V_{CEsat}$	<i>max.</i>	300 mV
$I_C = 10 mA; I_B = 1.0 mA$	$V_{BEsat}$	<i>max.</i>	0.85 V

#### *D.C. current gain*

$I_C = 100 \mu A; V_{CE} = 5 V$	$h_{FE}$	<i>min.</i>	250
		<i>max.</i>	800

$I_C = 1 mA; V_{CE} = 5 V$		<i>min.</i>	250
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$I_C = 10 mA; V_{CE} = 5 V$		<i>min.</i>	250
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#### *Collector capacitance at $f = 100$ KHz*

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

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

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

#### *Noise figure*

$I_C = 20 \mu A; V_{CE} = 5 V; R_S = 10 k\Omega$	$N_F$	<i>max.</i>	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	$N_F$	<i>max.</i>	2.0 dB

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

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