

**SOT-23 Formed SMD Package**

**CMBTA42  
CMBTA43**

*SILICON EPITAXIAL TRANSISTORS*

*N-P-N transistors*

**Marking**

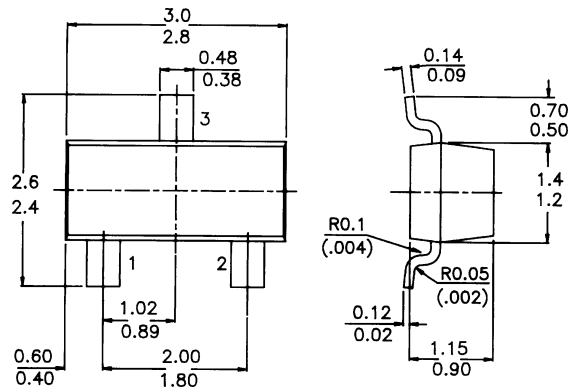
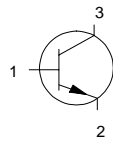
CMBTA42 = 1D

CMBTA43 = 1E

**PACKAGE OUTLINE DETAILS**  
ALL DIMENSIONS IN mm

**Pin configuration**

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



**ABSOLUTE MAXIMUM RATINGS**

	<b>CMBTA42</b>	<b>A43</b>
Collector-base voltage (open emitter)	$V_{CBO}$ max. 300	200 V
Collector-emitter voltage (open base)	$V_{CEO}$ max. 300	200 V
Emitter-base voltage (open collector)	$V_{EBO}$ max.	6 V
Collector current (d.c.)	$I_C$ max.	500 mA
Total power dissipation up to $T_{amb} = 25^\circ C$	$P_{tot}$ max.	250 mW
Junction temperature	$T_j$ max.	150 $^\circ C$
D.C. current gain	$h_{FE}$ min.	40
Transition frequency at $f = 35$ MHz	$f_T$ min.	50 MHz
Feedback capacitance at $f = 1$ MHz	$C_{re}$ max.	3   4 pF

**CMBTA42**  
**CMBTA43**

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

Limiting values

Collector-base voltage (open emitter)	$V_{CBO}$	max. 300	200	V
Collector-emitter voltage (open base)	$V_{CEO}$	max. 300	200	V
Emitter-base voltage (open collector)	$V_{EBO}$	max.	6	V
Collector current (d.c.)	$I_C$	max.	500	mA
Total power dissipation up to $T_{amb} = 25^\circ\text{C}$	$P_{tot}$	max.	250	mW
Storage temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$
Junction temperature	$T_j$	max.	150	$^\circ\text{C}$

**THERMAL CHARACTERISTICS**

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

Thermal resistance

from junction to ambient  $R_{th\ j-a} = 500$  K/W

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

		<b>CMBTA42</b>	<b>A43</b>	
Collector-emitter breakdown voltage		min. 300	200	V
$I_C = 1$ mA; $I_B = 0$	$V_{(BR)CEO}$	min. 300	200	V
Collector-base breakdown voltage		min. 300	200	V
$I_C = 100$ $\mu\text{A}$ ; $I_E = 0$	$V_{(BR)CBO}$	min. 300	200	V
Emitter-base breakdown voltage		min.	6	V
$I_E = 100$ $\mu\text{A}$ ; $I_C = 0$	$V_{(BR)EBO}$	min.	6	V
Collector cut-off current		$I_{CBO}$ max. 0.1	-	$\mu\text{A}$
$I_E = 0$ ; $V_{CB} = 200$ V	$I_{CBO}$	max. -	0.1	$\mu\text{A}$
$I_E = 0$ ; $V_{CB} = 160$ V	$I_{CBO}$	max. -	0.1	$\mu\text{A}$
Emitter cut-off current		$I_{EBO}$ max. 0.1	-	$\mu\text{A}$
$I_C = 0$ ; $V_{BE} = 6$ V	$I_{EBO}$	max. -	0.1	$\mu\text{A}$
$I_C = 0$ ; $V_{BE} = 4$ V	$I_{EBO}$	max. -	0.1	$\mu\text{A}$
Feedback capacitance at $f = 1$ MHz		$C_{re}$ max. 3	4	pF
$I_E = 0$ ; $V_{CB} = 20$ V	$C_{re}$	max. 3	4	pF
Saturation voltages		$V_{CEsat}$ max. 0.5	V	V
$I_C = 20$ mA; $I_B = 2$ mA	$V_{CEsat}$	max. 0.5	0.9	V
$I_C = 20$ mA; $I_B = 2$ mA	$V_{BEsat}$	max. 0.9	V	V
D.C. current gain		$h_{FE}$ min. 25	40	
$I_C = 1$ mA; $V_{CE} = 10$ V	$h_{FE}$	min. 25	40	
$I_C = 10$ mA; $V_{CE} = 10$ V	$h_{FE}$	min. 40	40	
$I_C = 30$ mA; $V_{CE} = 10$ V	$h_{FE}$	min. 40	MHz	
Transition frequency at $f = 35$ MHz		$f_T$ min. 50	MHz	
$I_C = 10$ mA; $V_{CE} = 20$ V	$f_T$	min. 50	MHz	

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