

SILICON EPITAXIAL TRANSISTORS

N-P-N transistors

Marking

CMBTA42 = 1D

CMBTA43 = 1E

PACKAGE OUTLINE DETAILS

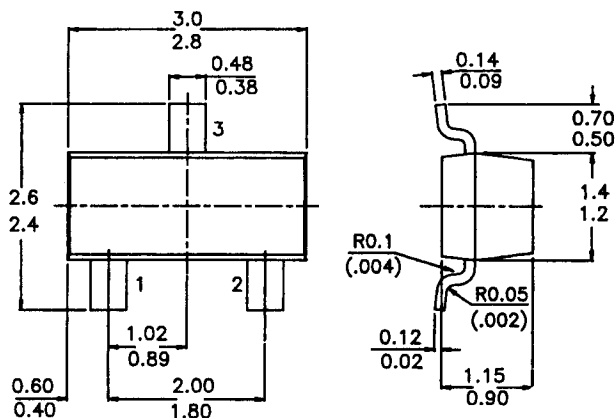
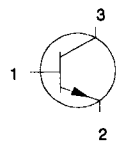
ALL DIMENSIONS IN mm

Pin configuration

1 = BASE

2 = EMITTER

3 = COLLECTOR



ABSOLUTE MAXIMUM RATINGS

Collector-base voltage (open emitter)

	CMBTA42	A43
V_{CBO}	max. 300	200 V

Collector-emitter voltage (open base)

V_{CEO}	max. 300	200 V
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Emitter-base voltage (open collector)

V_{EBO}	max. 6	V
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Collector current (d.c.)

I_C	max. 500	mA
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Total power dissipation up to $T_{amb} = 25^\circ\text{C}$

P_{tot}	max. 250	mW
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Junction temperature

T_j	max. 150	$^\circ\text{C}$
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D.C. current gain

$I_C = 10\text{ mA}$; $V_{CE} = 10\text{ V}$

h_{FE}	min. 40	
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Transition frequency at $f = 35\text{ MHz}$

$I_C = 10\text{ mA}$; $V_{CE} = 20\text{ V}$

f_T	min. 50	MHz
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Feedback capacitance at $f = 1\text{ MHz}$

$I_C = 0$; $V_{CE} = 20\text{ V}$

C_{re}	max. 3	4 pF
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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

$$R_{th\ j-a} = 500 \text{ K/W}$$

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

Collector-emitter breakdown voltage

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

		CMBTA42	A43
$V_{(BR)CEO}$	min.	300	200 V

Collector-base breakdown voltage

$$I_C = 100 \mu\text{A}; I_E = 0$$

$V_{(BR)CBO}$	min.	300	200 V
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Emitter-base breakdown voltage

$$I_E = 100 \mu\text{A}; I_C = 0$$

$V_{(BR)EBO}$	min.	6	V
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Collector cut-off current

$$I_E = 0; V_{CB} = 200 \text{ V}$$

I_{CBO}	max.	0.1	- μA
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$$I_E = 0; V_{CB} = 160 \text{ V}$$

I_{CBO}	max.	-	0.1 μA
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Emitter cut-off current

$$I_C = 0; V_{BE} = 6 \text{ V}$$

I_{EBO}	max.	0.1	- μA
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$$I_C = 0; V_{BE} = 4 \text{ V}$$

I_{EBO}	max.	-	0.1 μA
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Feedback capacitance at $f = 1 \text{ MHz}$

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

C_{re}	max.	3	4 pF
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Saturation voltages

$$I_C = 20 \text{ mA}; I_B = 2 \text{ mA}$$

V_{CEsat}	max.	0.5	V
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$$I_C = 20 \text{ mA}; I_B = 2 \text{ mA}$$

V_{BEsat}	max.	0.9	V
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D.C. current gain

$$I_C = 1 \text{ mA}; V_{CE} = 10 \text{ V}$$

h_{FE}	min.	25	
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$$I_C = 10 \text{ mA}; V_{CE} = 10 \text{ V}$$

h_{FE}	min.	40	
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$$I_C = 30 \text{ mA}; V_{CE} = 10 \text{ V}$$

h_{FE}	min.	40	
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Transition frequency at $f = 35 \text{ MHz}$

$$I_C = 10 \text{ mA}; V_{CE} = 20 \text{ V}$$

f_T	min.	50	MHz
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