

SOT-23 Formed SMD Package

**CMBTA92
CMBTA93**

SILICON EPITAXIAL TRANSISTORS

P-N-P transistor

Marking

CMBTA92 = 2D

CMBTA93 = 2E

PACKAGE OUTLINE DETAILS

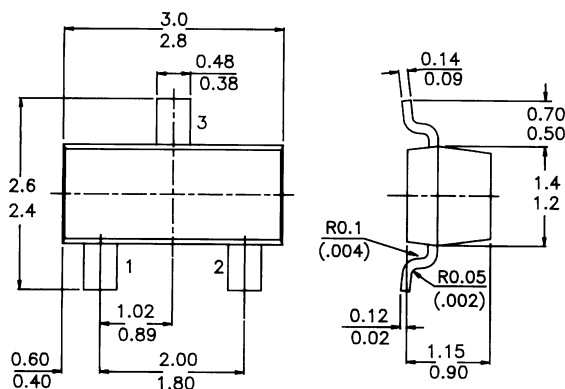
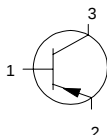
ALL DIMENSIONS IN mm

Pin configuration

1 = BASE

2 = EMITTER

3 = COLLECTOR



ABSOLUTE MAXIMUM RATINGS

	CMBTA92	A93
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. 5	V
Collector current (d.c.)	$-I_C$ max. 500	mA
Total power dissipation up to $T_{amb} = 25^\circ\text{C}$	P_{tot} 250	mW
D.C. current gain		
$-I_C = 10\text{ mA}; -V_{CE} = 10\text{ V}$	h_{FE} min. 40	
Transition frequency at $f = 100\text{ MHz}$		
$-I_C = 10\text{ mA}; -V_{CE} = 20\text{ V}$	f_T min. 50	MHz
Collector-base capacitance at $f = 1\text{ MHz}$		
$I_E = 0; -V_{CB} = 20\text{ V}$	C_{cb} max. 6	8 pF

CMBTA92
CMBTA93

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

Limiting values

		CMBTA92	A93
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. 5	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
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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.	300	200 V
Collector–base breakdown voltage			
$-I_C = 100\text{ }\mu\text{A}; I_E = 0$	$-V_{(BR)CBO}$ min.	300	200 V
Collector cut-off current			
$-V_{CB} = 200\text{ V}; I_E = 0$	$-I_{CBO}$ max.	0.25	– μA
$-V_{CB} = 160\text{ V}; I_E = 0$	$-I_{CBO}$ max.	–	0.25 μA
Emitter–base breakdown voltage			
$-I_E = 100\text{ }\mu\text{A}; I_C = 0$	$-V_{(BR)EBO}$ min.	5	V
Emitter cut-off current			
$I_C = 0; -V_{BE} = 3\text{ V}$	$-I_{EBO}$ max.	0.1	0.1 mA
Collector–base capacitance at $f = 1\text{ MHz}$			
$I_E = 0; -V_{CB} = 20\text{ V}$	C_{cb} max.	6	8 pF
Saturation voltages			
$-I_C = 20\text{ mA}; -I_B = 2\text{ mA}$	$-V_{CEsat}$ max.	0.5	0.5 V
$-I_C = 20\text{ mA}; -I_B = 2\text{ mA}$	$-V_{BEsat}$ max.	0.9	0.9 V
D.C. current gain			
$-I_C = 1\text{ mA}; -V_{CE} = 10\text{ V}$	h_{FE} min.	25	
$-I_C = 10\text{ mA}; -V_{CE} = 10\text{ V}$	h_{FE} min.	40	
$-I_C = 30\text{ mA}; -V_{CE} = 10\text{ V}$	h_{FE} min.	25	

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