

N-P-N SMALL-SIGNAL DARLINGTON TRANSISTORS

N-P-N transistors

Marking

CMBTA13 = 1M

CMBTA14 = 1N

PACKAGE OUTLINE DETAILS

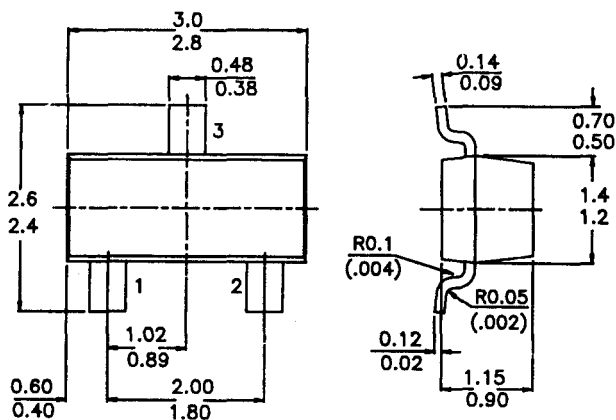
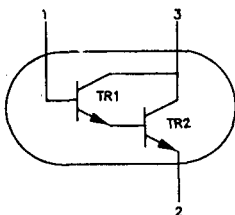
ALL DIMENSIONS IN mm

Pin configuration

1 = BASE

2 = EMITTER

3 = COLLECTOR



ABSOLUTE MAXIMUM RATINGS

Collector-emitter voltage (open base)

$V_{BE} = 0$

Collector current (d.c.)

Total power dissipation up to $T_{amb} = 25^{\circ}\text{C}$

Junction temperature

D.C. current gain

$I_C = 10 \text{ mA}; V_{CE} = 5 \text{ V}$

V_{CES}	max.	30 V
I_C	max.	300 mA
P_{tot}	max.	250 mW
T_j	max.	150 $^{\circ}\text{C}$

CMBTA13	h_{FE}	min.	5000
CMBTA14	h_{FE}	min.	10000

Transition frequency at $f = 100 \text{ MHz}$

$I_C = 10 \text{ mA}; V_{CE} = 5 \text{ V}$

f_T	min.	125 MHz
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RATINGS (at $T_A = 25^\circ\text{C}$ unless otherwise specified)

Limiting values

Collector-base voltage (open emitter)

$V_{BE} = 0$

$V_{CBO} \quad \text{max.} \quad 30 \text{ V}$

Collector-emitter voltage (open base)

$V_{BE} = 0$

$V_{CES} \quad \text{max.} \quad 30 \text{ V}$

Emitter-base voltage (open collector)

$V_{EBO} \quad \text{max.} \quad 10 \text{ V}$

Collector current (d.c.)

$I_C \quad \text{max.} \quad 300 \text{ mA}$

 Total power dissipation up to $T_{amb} = 25^\circ\text{C}$

$P_{tot} \quad \text{max.} \quad 250 \text{ mW}$

Storage temperature

$T_{stg} \quad -55 \text{ to } +150 \text{ }^\circ\text{C}$

Junction temperature

$T_j \quad \text{max.} \quad 150 \text{ }^\circ\text{C}$

THERMAL RESISTANCE

from junction to ambient

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

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

Collector-emitter breakdown voltage

$I_C = 100 \text{ } \mu\text{A}$

$V_{(BR)CES} \quad \text{min.} \quad 30 \text{ V}$

Emitter-base cut-off current

$V_{BE} = 10 \text{ V}$

$I_{EBO} \quad \text{max.} \quad 0.1 \text{ } \mu\text{A}$

Collector-base cut-off current

$V_{CB} = 30 \text{ V}$

$I_{CBO} \quad \text{max.} \quad 0.1 \text{ } \mu\text{A}$

D.C. current gain

$I_C = 10 \text{ mA}; V_{CE} = 5 \text{ V}$

CMBTA13 $h_{FE} \quad \text{min.} \quad 5000$

CMBTA14 $h_{FE} \quad \text{min.} \quad 10000$

$I_C = 100 \text{ mA}; V_{CE} = 5 \text{ V}$

CMBTA13 $h_{FE} \quad \text{min.} \quad 10000$

CMBTA14 $h_{FE} \quad \text{min.} \quad 20000$

Collector-emitter saturation voltage

$I_C = 100 \text{ mA}; I_B = 0.1 \text{ mA}$

$V_{CEsat} \quad \text{max.} \quad 1.5 \text{ V}$

Base-emitter On voltage

$I_C = 100 \text{ mA}; V_{CE} = 5 \text{ V};$

$V_{BE(on)} \quad \text{max.} \quad 2 \text{ V}$

 Transition frequency at $f = 100 \text{ MHz}$

$I_C = 10 \text{ mA}; V_{CE} = 5 \text{ V}$

$f_T \quad \text{min.} \quad 125 \text{ MHz}$