



TELEFUNKEN electronic
Creative Technologies

BF 509

T-31-15

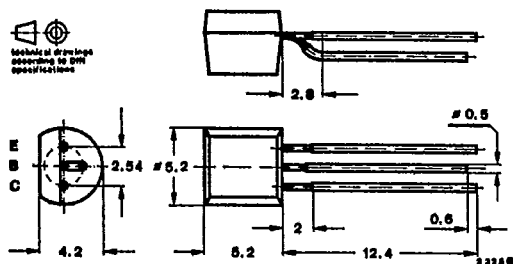
Silicon PNP RF Transistor

Applications: Gain controlled VHF input stages

Features:

- High power gain
- Low noise figure
- High reverse attenuation

Dimensions in mm



Case
10 A 3 DIN 41 868
JEDEC TO 92 Z
Weight max. 0.2 g

Absolute maximum ratings

Collector-base voltage	$-V_{CBO}$	40	V
Collector-emitter voltage	$-V_{CEO}$	35	V
Emitter-base voltage	$-V_{EBO}$	4	V
Collector current	$-I_C$	30	mA
Base current	$-I_B$	5	mA
Total power dissipation $T_{amb} = 25^\circ\text{C}$, see page A 24, Fig. 6.1	P_{tot}		mW
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature range	T_{stg}	-55 ... +150	$^\circ\text{C}$

Thermal resistance

	Min.	Typ.	Max.
Junction ambient see page A 24, Fig. 6.1			275 K/W

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DC characteristics

Min. Typ. Max.

 $T_{amb} = 25^\circ\text{C}$, unless otherwise specified

Collector cut-off current

 $-V_{CB} = 20\text{ V}$ $-I_{CBO}$

100 nA

Collector-base breakdown voltage

 $-I_C = 10\text{ }\mu\text{A}$ $-V_{(BR)CBO}$

40

V

Collector-emitter breakdown voltage

 $-I_C = 2\text{ mA}$ $-V_{(BR)CEO}^{1)}$

35

V

Emitter-base breakdown voltage

 $-I_E = 10\text{ }\mu\text{A}$ $-V_{(BR)EBO}$

4

V

DC forward current transfer ratio

 $-V_{CE} = 10\text{ V}, -I_C = 3\text{ mA}$ h_{FE}

25

70

AC characteristics

 $T_{amb} = 25^\circ\text{C}$

Gain bandwidth product

 $-V_{CB} = 10\text{ V}, -I_C = 2\text{ mA}, f = 100\text{ MHz}$ f_T

750

MHz

Feedback capacitance

 $-V_{CB} = 10\text{ V}, f = 100\text{ MHz}$ C_{orb}

0.12

pF

Collector-base capacitance

 $-V_{CB} = 10\text{ V}, f = 100\text{ MHz}$ C_{CBO}

0.55

pF

Noise figure

 $-V_{CB} = 10\text{ V}, -I_C = 2\text{ mA},$ $f = 200\text{ MHz}, R_C = 510\text{ }\Omega$ F_{bmin}

2.6

dB

Power gain

 $-V_{CB} = 10\text{ V}, -I_C = 3\text{ mA},$ $R_C = 510\text{ }\Omega, R_L = 1\text{ k}\Omega, f = 200\text{ MHz}$ $G_{pb}^{2)}$

15

17

dB

Collector current for: $G_{pb\text{ max}}$ $-I_C^{2)}$

4.5

mA

-20 dB $G_{pb\text{ max}}$ $-I_C^{2)}$

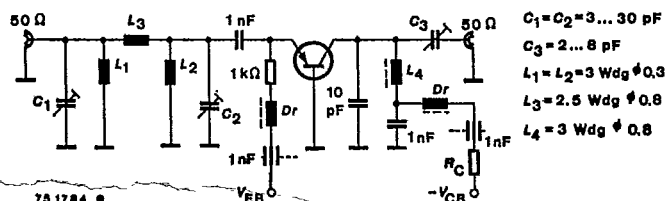
8.5

mA

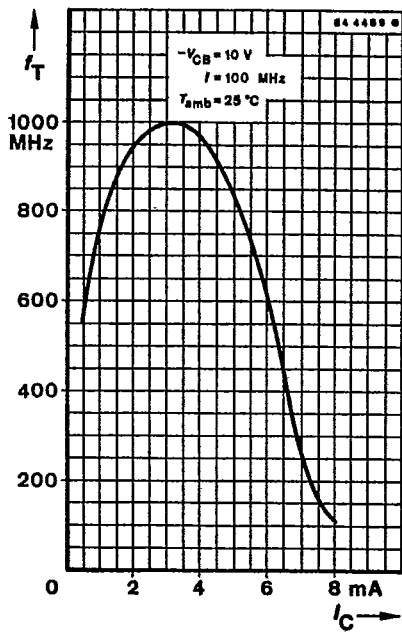
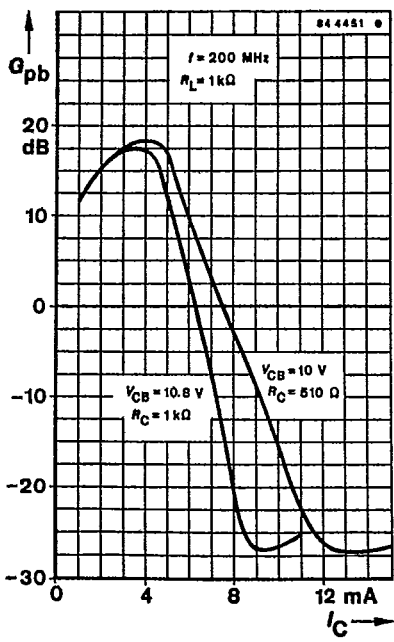
-30 dB $G_{pb\text{ max}}$ $-I_C^{2)}$

10

mA

Test circuit for: G_{pb} $t_p = 0.01, t_p = 0.3\text{ ms}, ^2) \text{ see test circuit}$

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7. Taping and Reeling

T-91-20

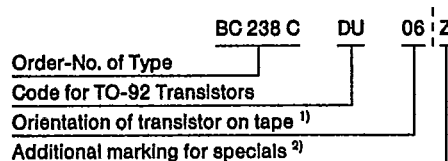
7.1. Taping of TO-92 Transistors

Standard reeling: Taped on reel, reeled together with a paper film.

7.1.1. Order Numbers

Add the taping-code to the order number.

Example:



¹⁾ 06 = View on flat side of transistor, view on gummed tape

05 = View on round side of transistor, view on gummed tape

²⁾ Additional marking "0": taping without paper film

Additional marking "Z": Zigzag folded tape in special box. Marking for orientation of transistor not necessary, because box can be opened on top or bottom

Example for order No.: BC 237 C DU Z

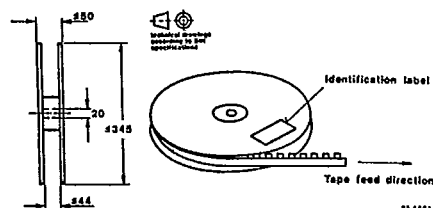


Fig. 7.1. Dimensions of reel in mm

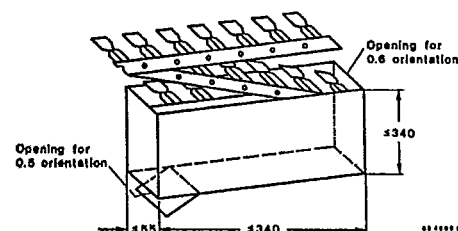


Fig. 7.2. Dimension of box for Zigzag folding in mm

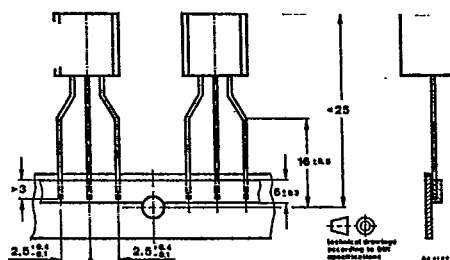


Fig. 7.3 Dimensions of tape in mm

7.1.2 Quantity of devices

1 000 devices per reel

2 000 devices per folded tape in special box.

7.2. Taped transistors in SOT 23 and SOT 143 case

7.2.1. Designation

a) Standard taping

Designation is attached with code GS 08 in case of standard taping. Example for normal version transistors as standard taped: BF 569-GS 08.

Example for R-version transistors as standard taped: BF 569 R-GS 08.

In case of standard taping, the transistor orientation on the tape is shown in Fig. 7.4 and Fig. 7.5.

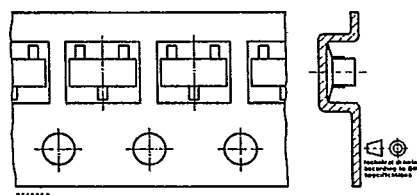


Fig. 7.4 Standard taped SOT 23

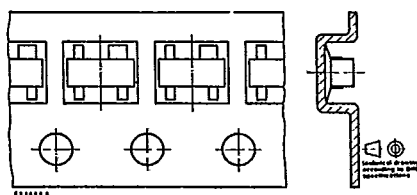


Fig. 7.5. Standard taped SOT 143

b) Reverse taping

Designation is attached with code GS 07 in case of reverse taping. Example for normal version transistors as reverse taped: BF 569-GS 07.

Example for R-version transistors as reverse taping: BF 569 R-GS 07.

In case of reverse taping, the transistor orientation on the tape is shown in Fig. 7.6.

Regarding MOS-FET and MES-FET devices, reverse taping is at present not available.

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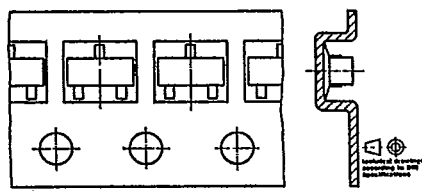


Fig. 7.6 Reverse taped SOT 23

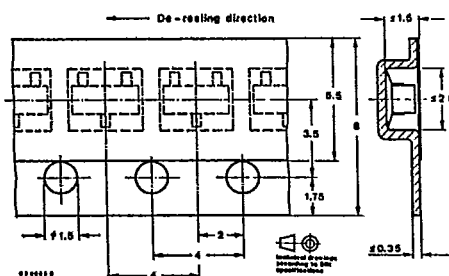


Fig. 7.7 Dimensions of tape in mm

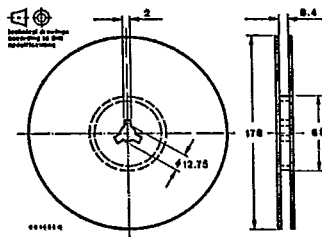


Fig. 7.8 Dimensions of reel in mm

7.2.2 Quantity of devices

3000 devices per reel