TELEFUNKEN electronic
Creative Technologies

BU 536

T-33-11

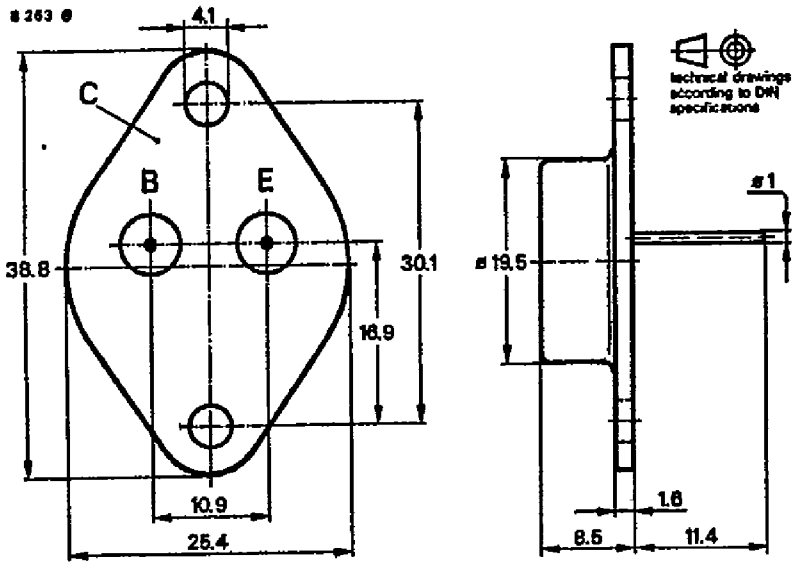
Silicon NPN Power Transistor

Applications: Switching mode power supply

Features:

- In triple diffusion technique
- Glass passivation
- High reverse voltage
- Short switching time
- Power dissipation 62 W

Dimensions in mm



Collector connected with case

Standard metal case
3 B 2 DIN 41 872
JEDEC TO 3
Weight max. 20 g

Accessories

Isolating washer No. 569524

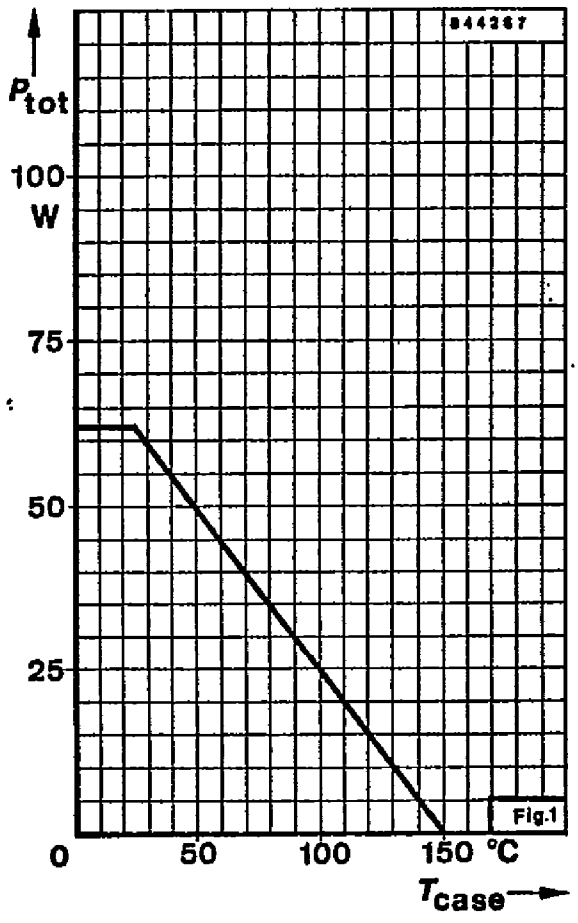
Absolute maximum ratings

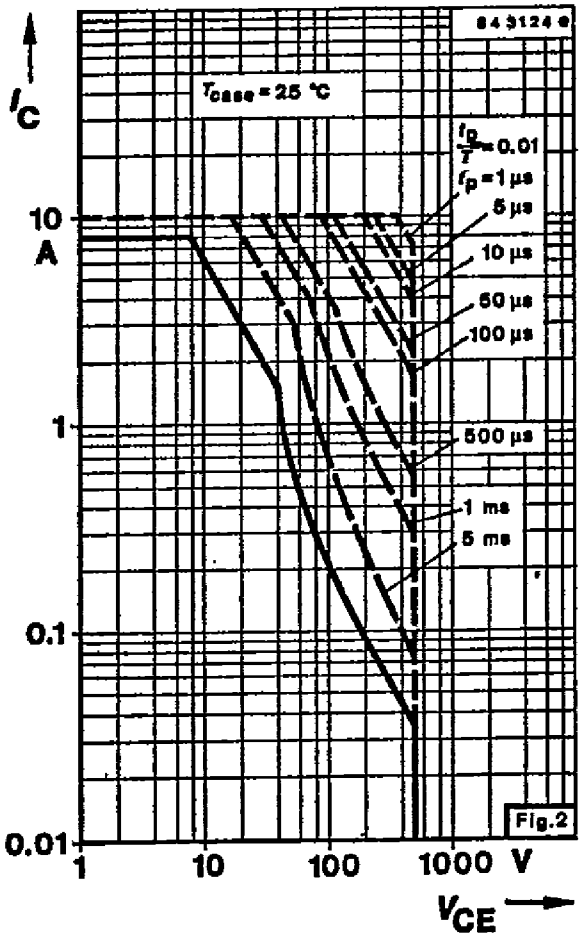
Collector emitter voltage	V_{CEO}	480	V
	V_{CES}	1100	V
$R_{BE} \approx 100\ \Omega$	V_{CER}	1100	V
Collector peak current	I_{CM}	10	A
Collector current	I_C	8	A
Base current	I_{BM}	4	A
	$-I_{BM}$	4	A
Total power dissipation $T_{case} \leq 25$ °C	P_{tot}	62	W
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	−65 ...+150	°C

Maximum thermal resistance

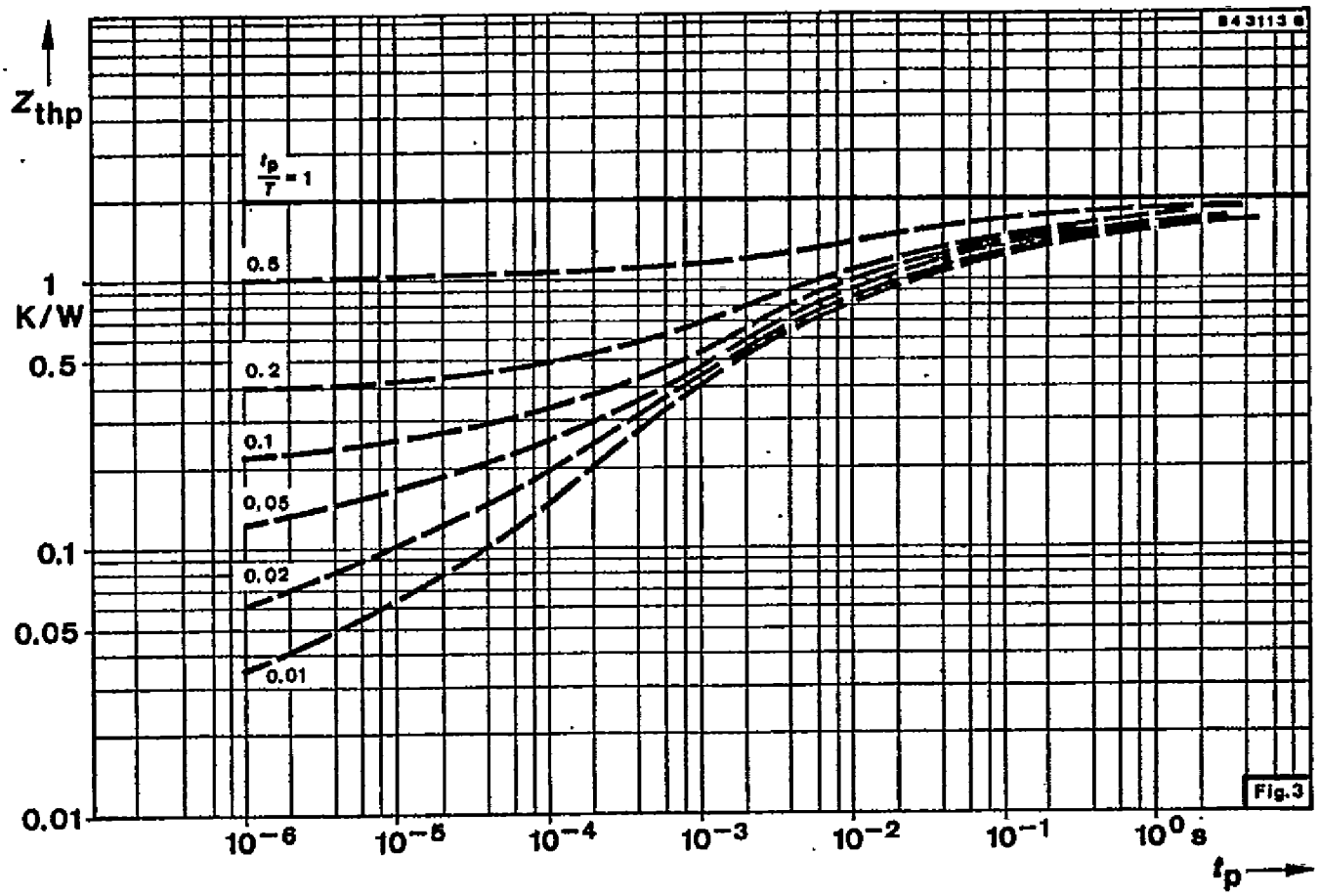
Junction case	R_{thJC}	2	K/W

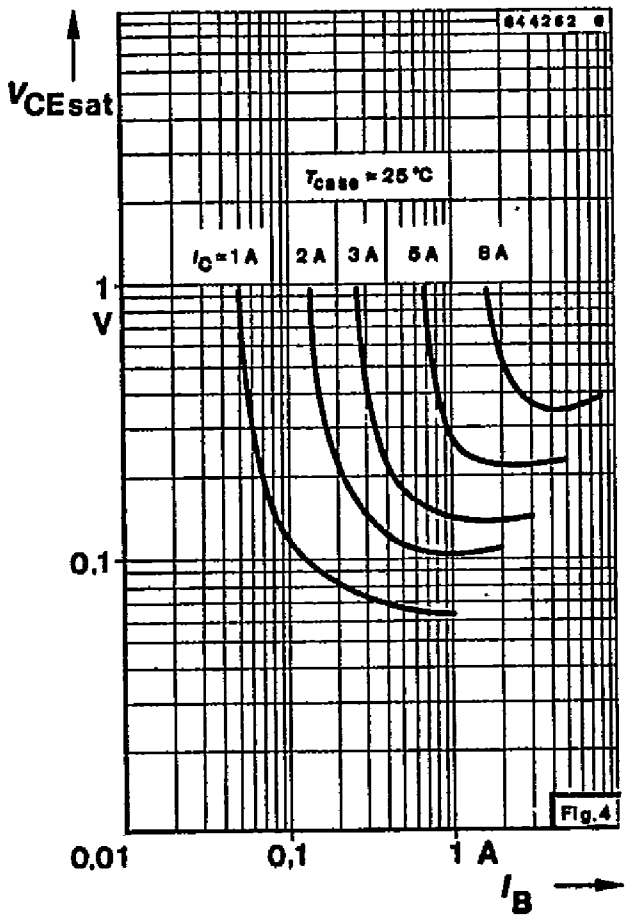
Characteristics		Min.	Typ.	Max.	
$T_{case} = 25\ ^{\circ}C$, unless otherwise specified					
Collector cut-off current					
$V_{CE} = 1100$ V	I_{CES}			1	mA
$T_j = 125\ ^{\circ}C$, $V_{CE} = 1100$ V	I_{CES}			2	mA
Collector-emitter breakdown voltage					
$I_C = 100$ mA, $L_C = 125$ mH	$V_{(BR)CEO}$ [1]	480			V
Emitter-base breakdown voltage					
$I_C = 4$ A, $I_B = 1$ A	$V_{(BR)EBO}$	6			V
Base saturation voltage					
$I_C = 4$ A, $I_B = 0.8$ A	V_{BEsat} [1]			2	V
DC forward current transfer ratio					
$V_{CE} = 5$ V, $I_C = 1$ A	h_{FE}	10			
$V_{CE} = 5$ V, $I_C = 4$ A	h_{FE}	5.5			
Gain bandwidth product					
$V_{CE} = 10$ V, $I_C = 500$ mA, $f = 1$ MHz	f_T		10		MHz
Switching characteristics $I_C = 4$ A, $I_{B1} = -I_{B2} = 1.25$ A, $t_p = 20$ µs					
Fall time	t_f [2]			1	µs
Turn-off time	t_{off}			4	µs

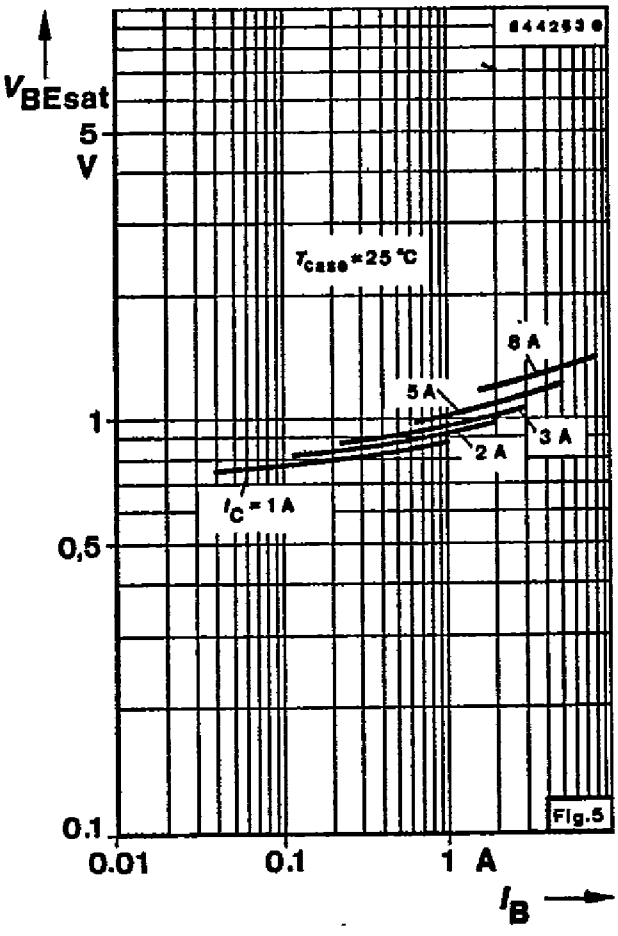


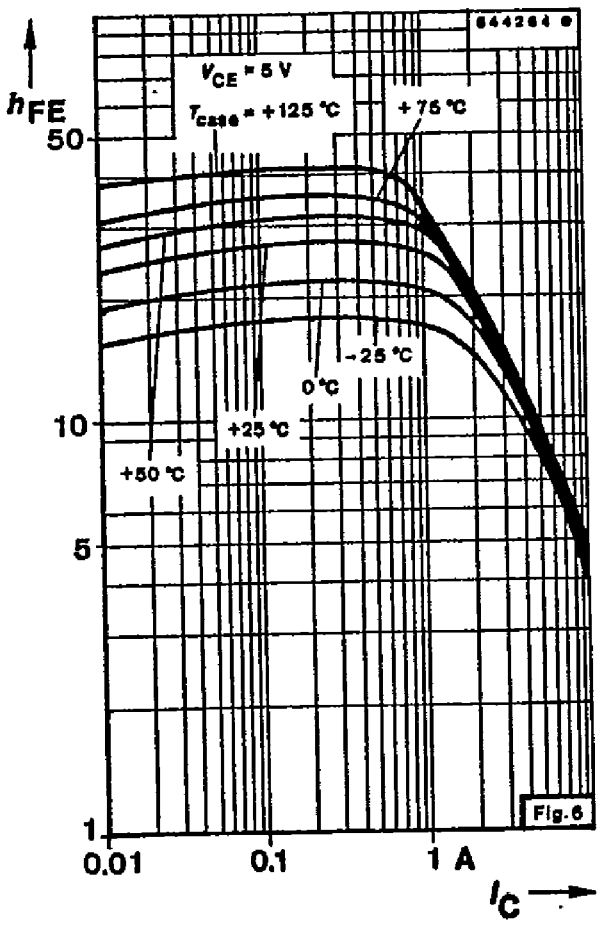


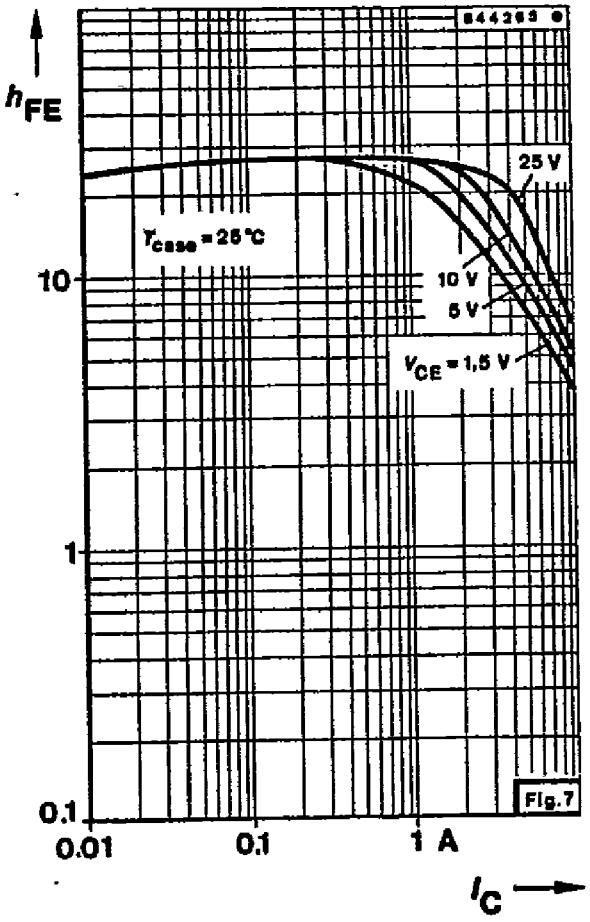
[1] $\frac{t_p}{T} \geq 0.01$, $t_p = 0.1$ ms; [2] By using retrace capacitor at switching-off inductive load

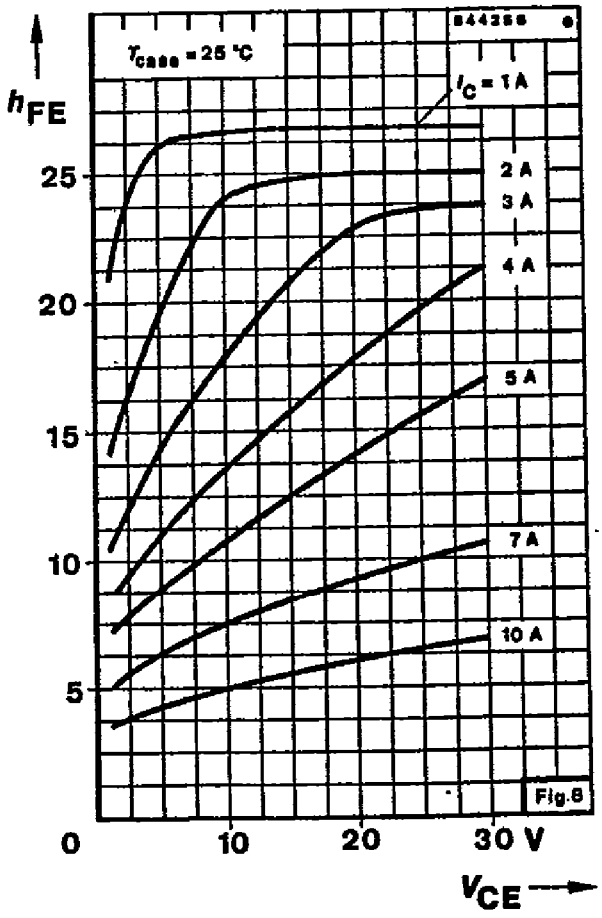

Z_{thp}
1
K/W
0.5
0.1
0.05
0.01
$\frac{t_p}{T}$ = 1
0.5
0.2
0.1
0.05
0.02
0.01
10^{-6}
10^{-5}
10^{-4}
10^{-3}
10^{-2}
10^{-1}
10^{0} s
t_p
Fig.3


V_{CEsat}
T_{case} = 25 °C
I_C = 1 A
2 A
3 A
5 A
8 A
1
V
0.1
0.01
0,1
1 A
I_B
Fig.4


V_{BEsat}
5
V
T_{case} = 25 °C
8 A
5 A
3 A
2 A
I_C = 1 A
1
0,5
0.1
0.01
0.1
1 A
I_B
Fig.5


844264
V_{CE} = 5 V
T_{case} = +125 °C
+75 °C
+50 °C
+25 °C
0 °C
-25 °C
h_{FE}
50
10
5
1
0.01
0.1
1 A
I_C
Fig.6


844263
h_{FE}
25 V
T_{case} = 25 °C
10 V
5 V
V_{CE} = 1,5 V
10
1
0.1
0.01
0.1
1 A
I_C
Fig.7


844266
T_{case} = 25 °C
h_{FE}
I_C = 1 A
2 A
3 A
4 A
5 A
7 A
10 A
25
20
15
10
5
0
10
20
30 V
V_{CE}
Fig.8

● Family of curves

Besides the static (d. c.) and dynamic (a. c.) characteristics, family of curves are given for specified operating conditions. They show the typical interdepedence of individual characteristics. Partly are given the scattering limits. They signify that at least 95% of the delivery lies inside these tolerances.

6.6. Additional informations

Preliminary specifications

This heading indicates that some information on the device concerned may be subject to slight changes.

Not for new developments

This heading indicates that the device concerned should not be used in equipment under development, it is, however, available for present production.

7. Taping and reeling

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:

BC 238 C DU 06 Z

- Order-No. of Type
- Code for TO-92 Transistors
- Orientation of transistor on tape [1]
- Additional marking for specials [2]

[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 inspecial box. Marking for orientation of transistor not necessary, because box can be opened on top or botton.

Example for order No.: BC 237 C DU Z

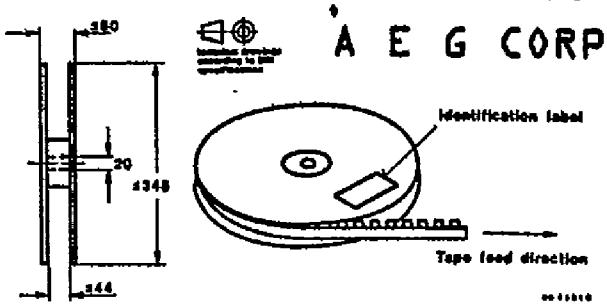


Fig. 7.1. Dimensions of reel in mm

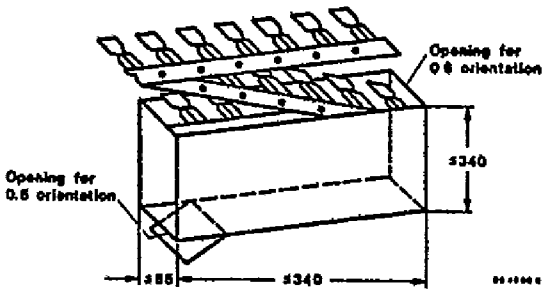


Fig. 7.2. Dimension of box for Zigzag folding in mm

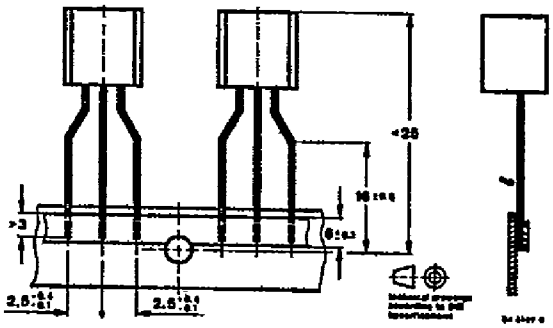


Fig. 7.3. Dimensions of tape in mm

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

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-GS08.
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.

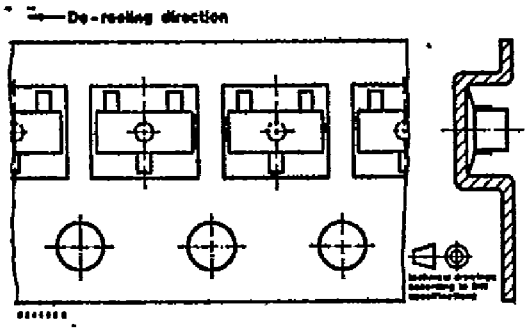


Fig. 7.4 Standard taped SOT 23

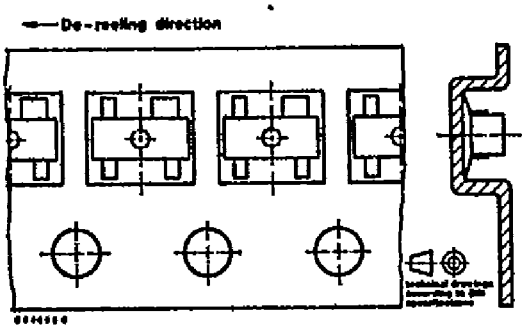


Fig. 7.5 Standard taped SOT 143

b) Reverse taping
Desigantion is attached with code GS 07 in case of reverse taping. Example for normal version transistors as reverse taped: BF 569 R-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. 6.
Regarding MOF-FET and MES-FET devices, reverse taping is at present not available.

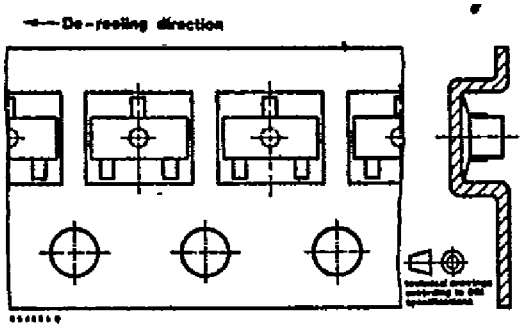


Fig. 7.6 Reverse taped SOT 23

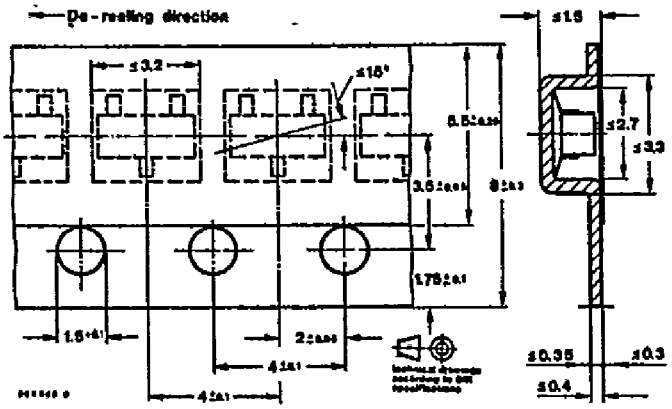


Fig. 7.7 Dimensions of tape in mm

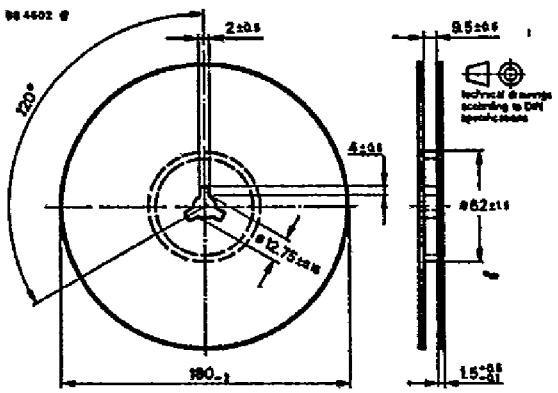


Fig. 7.8 Dimensions of reel in mm

7.2.2 Quantity of devices
3000 devices per reel

8. Assessories

Number	Fig.	Designation	For case
119880	8.1.	Isolating washer thickness 60 µm	12A 3 DIN 41 869 JEDEC TO 126 (SOT 32)
564542	8.2.	Isolating washer thickness 50 µm	14A 3 DIN 41 869 JEDEC TO 220 (SOT 78)
912884	8.3	Isolating washer thickness 50 µm	15A 3 DIN 41 869 (TOP3) for clip mounting
191131	8.4	Isolating washer thickness 50 µm	15A 3 DIN 41 869 (TOP3) for screw mounting
191140	8.5	Mounting clip	15A 3 DIN 41 869 (TOP3)
569524	8.6	Isolating washer thickness 100 µm + 50 µm	3B 2 DIN 41 872 JEDEC TO 3 Devices with high reverse voltage