

T-33-13

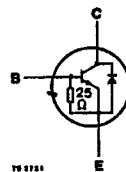
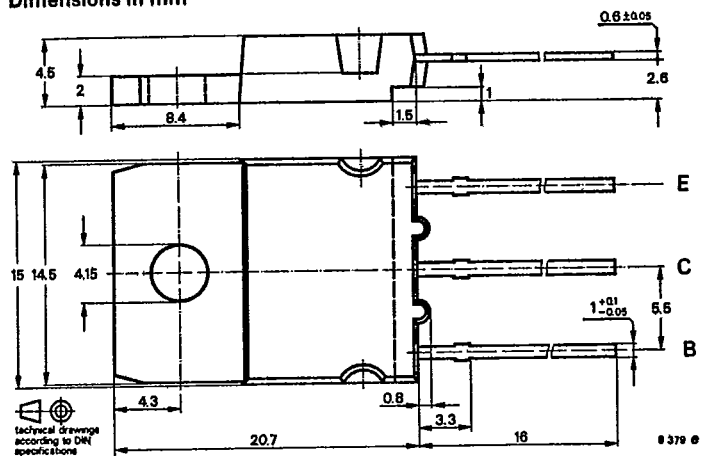
**Silicon NPN Power Transistor**

Applications: Horizontal deflection circuits in colour TV-receivers

Features:

- In tripple diffusion technique
- Glass passivation
- High reverse voltage
- Monolithic integrated inverse diode
- Short switching times
- High peak power
- Power dissipation 125 W

Dimensions in mm



Collector connected with metallic surface

Accessories

- Isolating washer No. 191 131
- Mounting Clip No. 191940

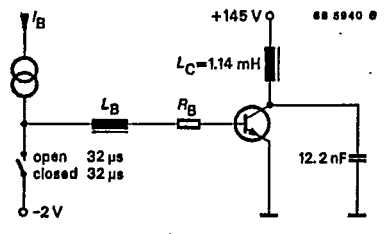
Standard plastic case  
 15 A 3 DIN 41 869  
 TOP 3  
 Weight max. 5.5 g

Absolute maximum ratings

|                            |           |      |   |
|----------------------------|-----------|------|---|
| Collector emitter voltage  | $V_{CEO}$ | 700  | V |
|                            | $V_{CES}$ | 1500 | V |
| Collector current          | $I_{CAV}$ | 8    | A |
| Collector peak current     | $I_{CM}$  | 15   | A |
| Base current               | $I_{BAV}$ | 4    | A |
| Base peak current          | $I_{BM}$  | 6    | A |
| Negative base peak current | $-I_{BM}$ | 2.5  | A |

T1.2/1196.0888 E

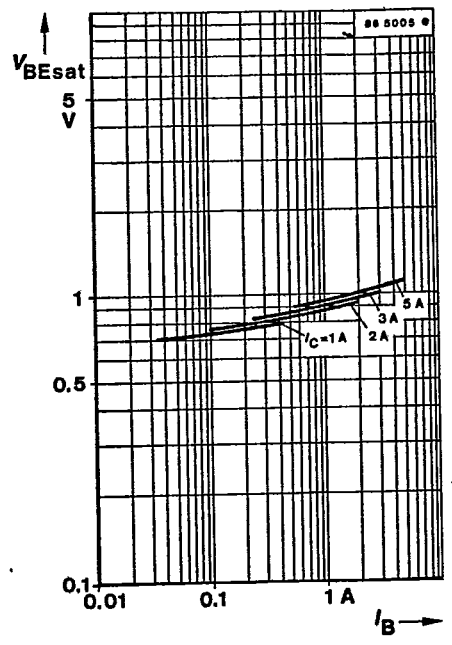
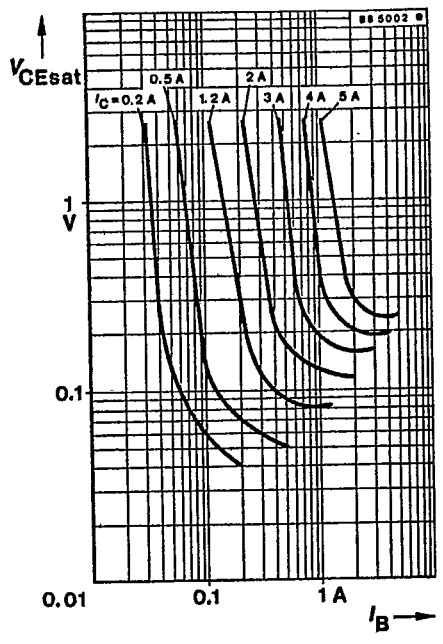
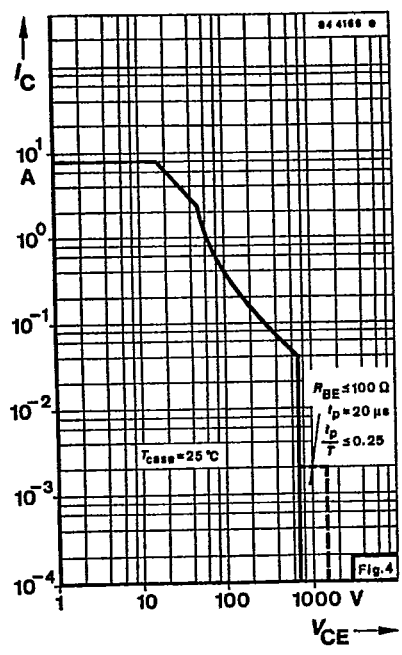
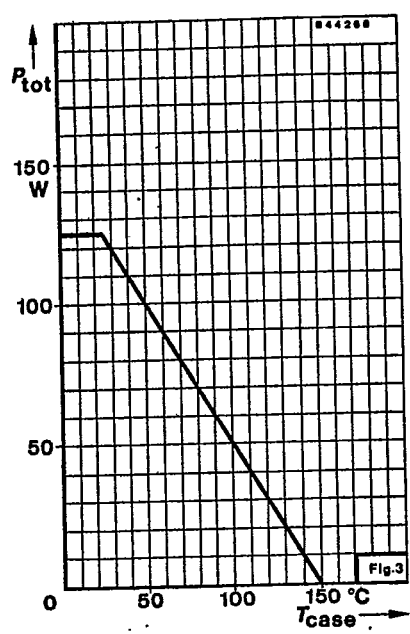
|  |  |                    |              |            |
|--|--|--------------------|--------------|------------|
| Total power dissipation<br>$T_{case} \leq 25^\circ C$                                    |  | $P_{tot}$          | 125          | W          |
| Junction temperature   |  | $T_j$              | 150          | $^\circ C$ |
| Storage temperature range  |  | $T_{stg}$          | -65 ... +150 | $^\circ C$ |
| Maximum thermal resistance   |  |                    |              |            |
| Junction case  |  | $R_{thJC}$         | 1.0          | K/W        |
| <b>Characteristics</b>   |  |                    |              |            |
| $T_{case} = 25^\circ C$  |  | Min.               | Typ.         | Max.       |
| Collector cut-off current<br>$V_{CES} = 1500 V$<br>$T_j = 125^\circ C, V_{CES} = 1500 V$ |  |                    |              | 0.5 mA     |
|  |  |                    |              | 2 mA       |
| Collector-emitter breakdown voltage<br>$I_C = 100 mA, L_C = 125 mH$                      |  | $V_{(BR)CEO}^{1)}$ | 700          | V          |
| Emitter-base breakdown voltage<br>$I_E = 100 mA$   |  | $V_{(BR)EBO}$      | 5            | V          |
| Base-emitter saturation voltage<br>$I_C = 4.5 A, I_B = 2 A$                              |  | $V_{BEsat}^{1)}$   |              | 1.5 V      |
| DC forward current transfer ratio<br>$V_{CE} = 5 V, I_C = 2.5 A$<br>$I_C = 4.5 A$        |  | $h_{FE}$           | 4.5          |            |
|  |  | $h_{FE}$           | 3.2          |            |
| Forward voltage of the integrated protection diode<br>$I_F = 4 A$                        |  | $V_F$              |              | 1.5 V      |
| Gain bandwidth product<br>$V_{CE} = 5 V, I_C = 100 mA, f = 5 MHz$                        |  | $f_T$              | 7            | MHz        |
| Collector base capacitance<br>$V_{CB} = 10 V, I_C = 0, f = 1 MHz$                        |  | $C_{CBO}$          | 125          | pF         |
| <b>Switching characteristics</b>   |  |                    |              |            |
| $I_C = 3.3 A, I_B = 0.9 A, L_B = 7.5 \mu H, R_B = 0.62 \Omega, T_{case} = 90^\circ C$    |  |                    |              |            |
| Storage time   |  | $t_s$              | 9            | $\mu s$    |
| Fall time  |  | $t_f$              | 0.7          | $\mu s$    |

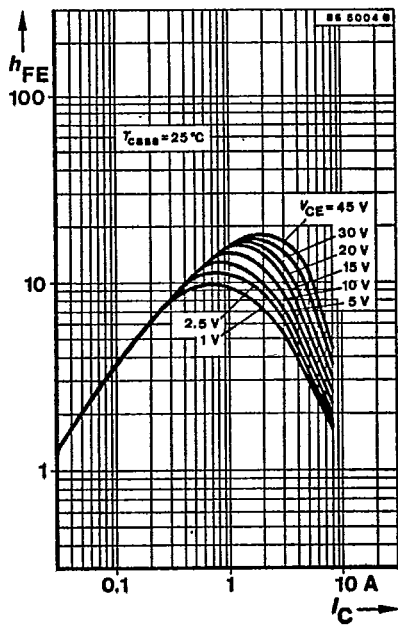
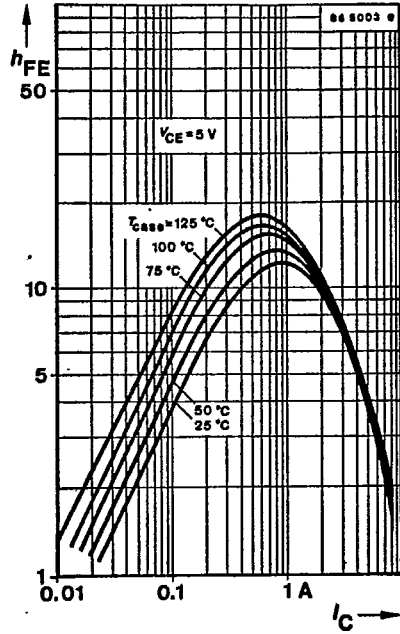
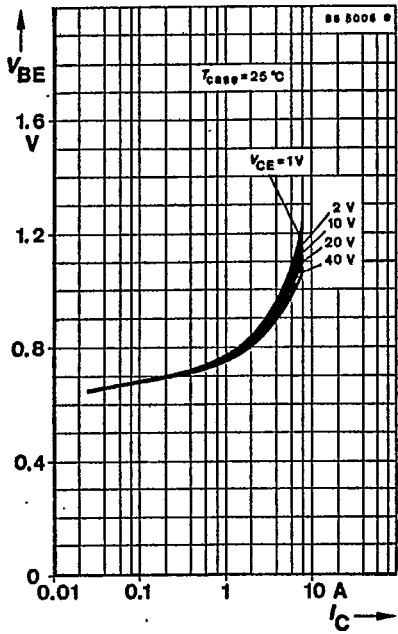


Test circuit for:  $t_s, t_f$

1)  $t_p \geq 0.01, t_p = 0.1 ms$

BU 508 DR  
T-33-13





T-91-20

### ● 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 interdependence 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

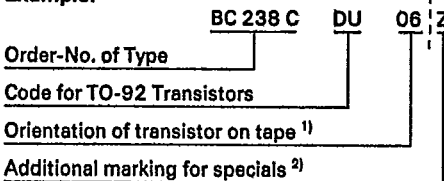
### 7.1. Taping of TO-92 transistors

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:



<sup>1)</sup> 06 = View on flat side of transistor, view on gummed tape

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

<sup>2)</sup> Additional marking "O":

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

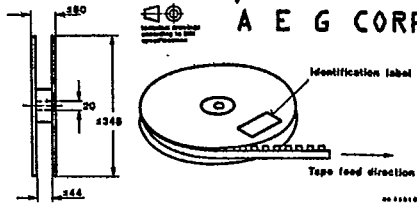


Fig. 7.1. Dimensions of reel in mm

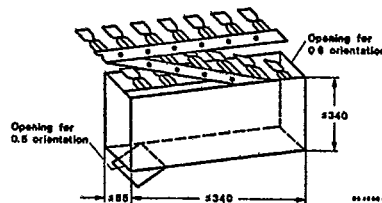


Fig. 7.2. Dimension of box for Zigzag folding in mm

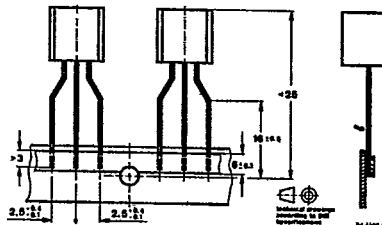


Fig. 7.3. Dimensions of tape in mm

#### 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

#### 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.

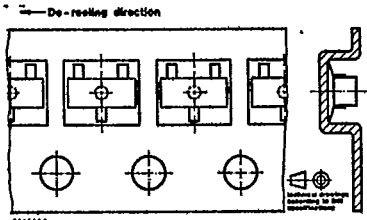


Fig. 7.4 Standard taped SOT 23

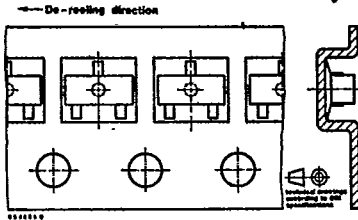


Fig. 7.6 Reverse taped SOT 23

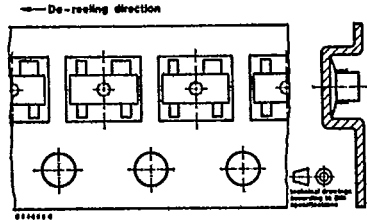


Fig. 7.5 Standard taped SOT 143

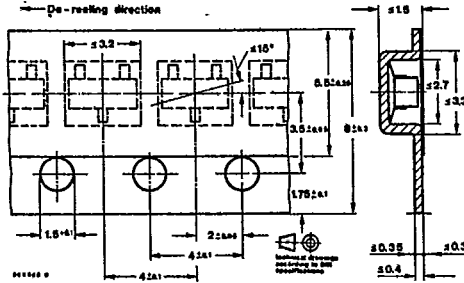


Fig. 7.7 Dimensions of tape in mm

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 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.

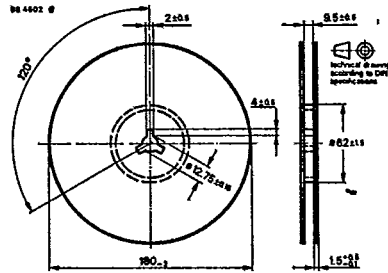


Fig. 7.8 Dimensions of reel in mm

8. Accessories

| Number  | Fig. | Designation   |
|---------|------|---|
| 119 880 | 8.1. | Isolating washer thickness 60 $\mu$ m               |
| 564 542 | 8.2. | Isolating washer thickness 50 $\mu$ m               |
| 912 884 | 8.3  | Isolating washer thickness 50 $\mu$ m               |
| 191 131 | 8.4  | Isolating washer thickness 50 $\mu$ m               |
| 191 140 | 8.5  | Mounting clip                                       |
| 569 524 | 8.6  | Isolating washer thickness 100 $\mu$ m + 50 $\mu$ m |

7.2.2 Quantity of devices  
3000 devices per reel

- For case
- 12A 3 DIN 41 869 JEDEC TO 126 (SOT 32)
  - 14A 3 DIN 41 869 JEDEC TO 220 (SOT 78)
  - 15A 3 DIN 41 869 (TOP3) for clip mounting
  - 15A 3 DIN 41 869 (TOP3) for screw mounting
  - 15A 3 DIN 41 869 (TOP3)
  - 3B 2 DIN 41 872 JEDEC TO 3
- Devices with high reverse voltage