

Preliminary specifications

NPN Silicon Darlington Power Transistor

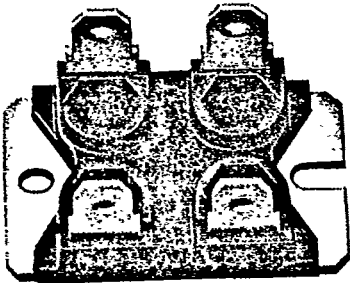
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- Applications:**
- Motor-control (380 V-mains)
 - UPS (Uninterruptible power supplies)
 - High power SMPS (≥ 1000 W)
 - Battery chargers
 - Welding equipments
 - Inductive heating equipment

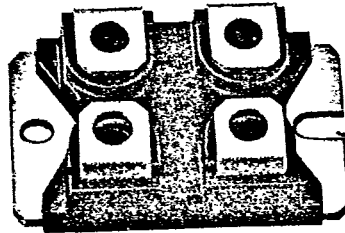
Features:

- High reverse voltage
- Short switching times
- Very fast C-E-free-wheel diode
- Base 1 and base 2 connectable
- Triple diffusion technique
- Glass passivation

Case variations

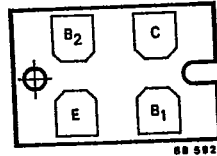
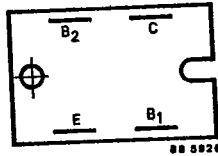
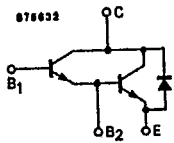


TFK 5070 D



TFK 5070 DA

Terminal connections

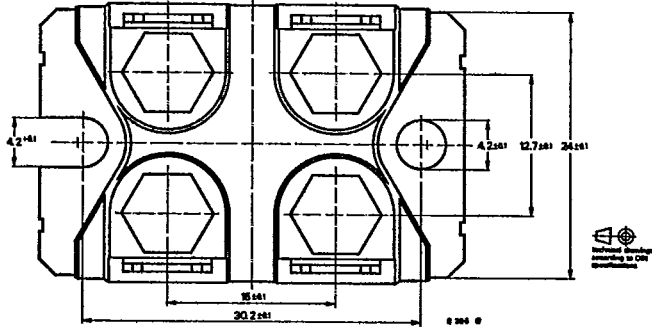
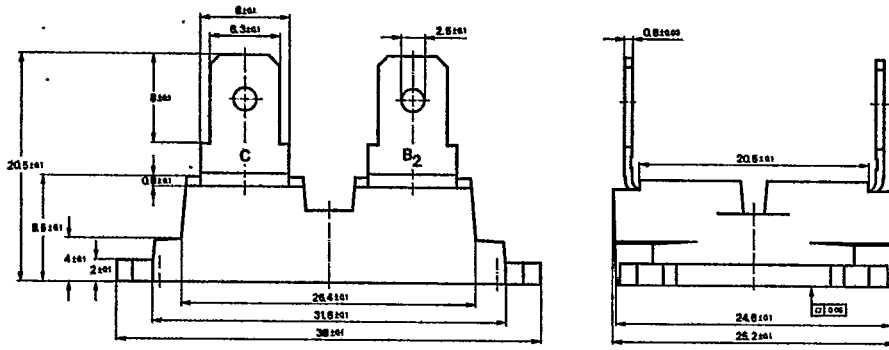


T1.2/1453.0888 E

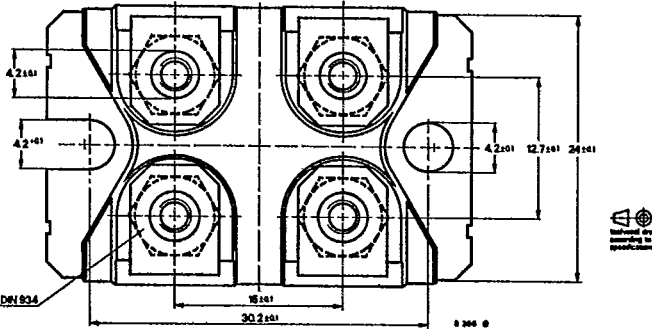
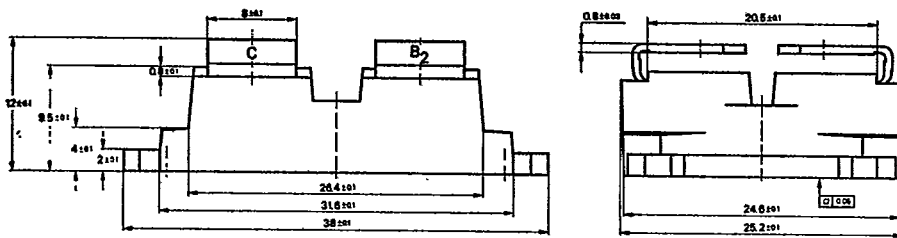
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Dimensions in mm



TFK 5070 D



TFK 5070 DA
Plastic case
Weight max. 30.0 g

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Absolute maximum ratings

Collector-emitter voltage	V_{CEO}	700	V
	V_{CES}	1000	V
Emitter-base voltage	V_{EBO}	7	V
Collector current	I_C	30	A
Collector peak current	I_{CM}	50	A
Base current	I_B	4	A
Base peak current	I_{BM}	8	A
Total power dissipation	P_{tot}	150	W
$T_{case} = 25^\circ C$			
Junction temperature	T_j	150	$^\circ C$
Storage temperature range	T_{stg}	-40...+150	$^\circ C$
Insulation voltage	V_{is}	2500	V

Maximum thermal resistances

Junction case			
Power transistor	R_{thJC}	0.83	K/W
Free-wheel diode	R_{thJC}	1.8	K/W

Characteristics

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

Collector cut-off current

$V_{CER} = 1000 V, R_1 = 270 \Omega, R_2 = 100 \Omega$

$V_{CER} = 1000 V, R_1 = 27 \Omega, R_2 = 10 \Omega$

$T_{case} = 100^\circ C$

$V_{CER} = 1000 V, R_1 = 270 \Omega, R_2 = 100 \Omega$

$V_{CER} = 1000 V, R_1 = 27 \Omega, R_2 = 10 \Omega$

Emitter cut-off current

$V_{EB} = 5 V$

T_1, T_2

Collector-emitter breakdown voltage

$I_C = 750 mA, L = 125 mH$

$I_C = 1 mA, R_1 = 270 \Omega, R_2 = 100 \Omega$

Emitter-base breakdown voltage

$I_E = 5 mA$

T_1, T_2

Collector saturation voltage

$I_C = 25 A, I_B = 1.5 A, T_{case} = 100^\circ C$

$I_C = 18 A, I_B = 0.5 A, T_{case} = 125^\circ C$

DC forward current transfer ratio

$V_{CE} = 2 V, I_C = 25 A$

	Min.	Typ.	Max.
I_{CER}			0.4 mA
I_{CER}			0.6 mA
I_{CER}			3.0 mA
I_{CER}			5.0 mA
I_{EBO}			1.0 mA
$V_{(BR)CEO}$	700		V
$V_{(BR)CER}$	1000		V
$V_{(BR)EBO}$	7		V
V_{CEsat}			2.5 V
V_{CEsat}			2.2 V
h_{FE}	17		

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Min. Typ. Max.

Collector-emitter working voltage
 $- I_{C\text{Woff}} = 30 \text{ A}, I_{B1} = 1.4 \text{ A}, L = 12 \mu\text{H}$
 $- V_{BB} = 7 \text{ V}, R_{BB} = 0.6 \Omega, V_S = 50 \text{ V}$

V_{CEW} 700 V

Forward voltage of the diode
 $I_F = 25 \text{ A}$

V_F 1.9 V

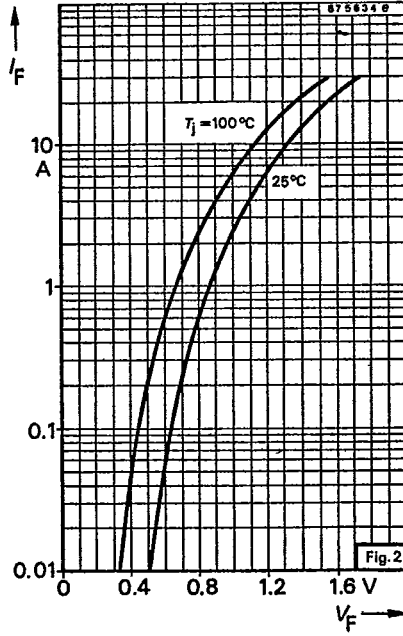
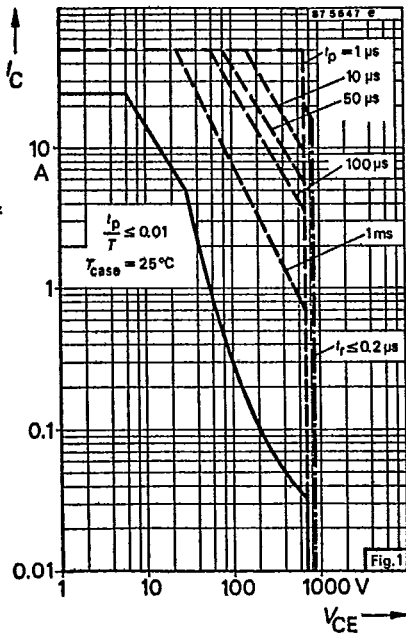
Switching characteristics

Inductive load, $T_{case} = 100^\circ\text{C}$

$I_C = 25 \text{ A}, I_{B1} = 1.5 \text{ A}, L = 0.6 \text{ mH}, V_{\text{clamp}} = 700 \text{ V}$
 $- V_{BB} = 7 \text{ V}, R_{BB} = 0.6 \Omega, V_S = 300 \text{ V}$

Storage time t_s 7.0 μs

Fall time t_f 0.6 μs



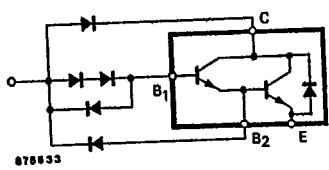
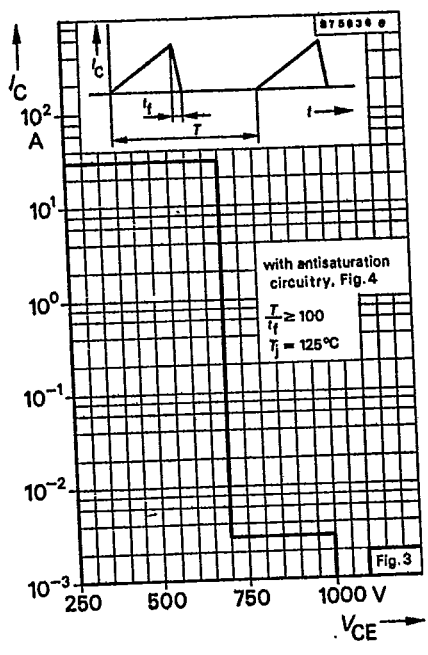
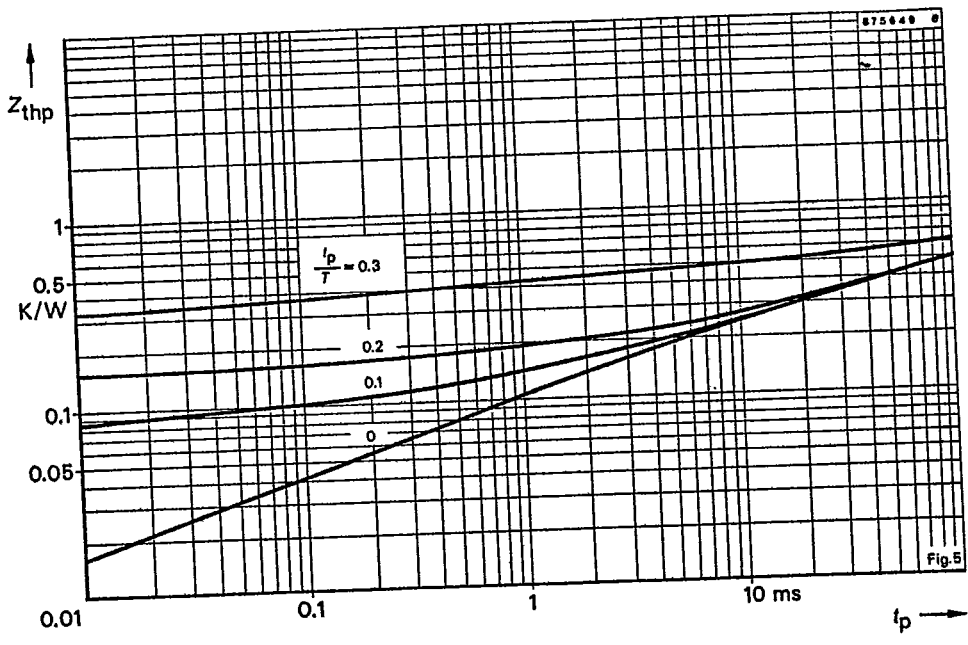


Fig. 4 Antisaturation voltage



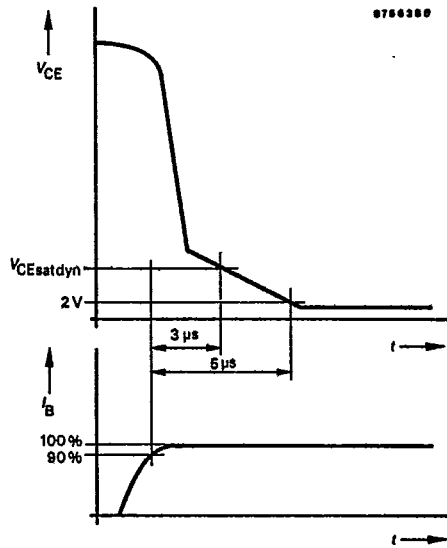
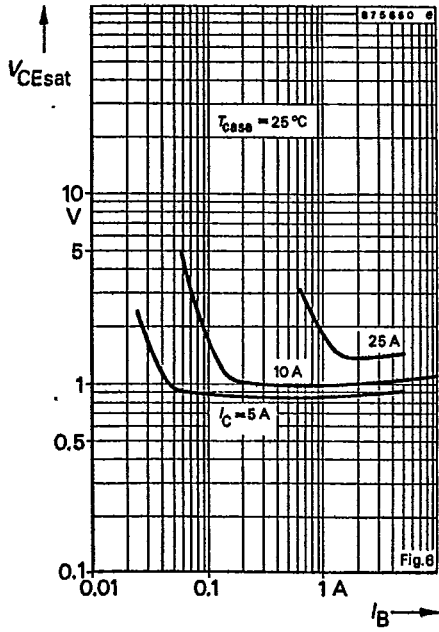
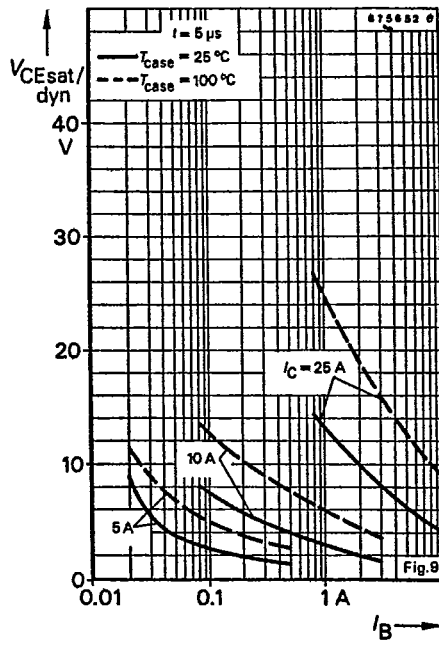
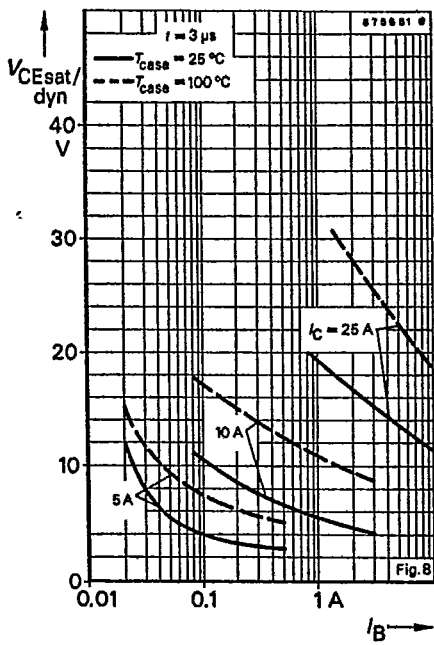


Fig. 7 $V_{CEsatdyn}$ -definition



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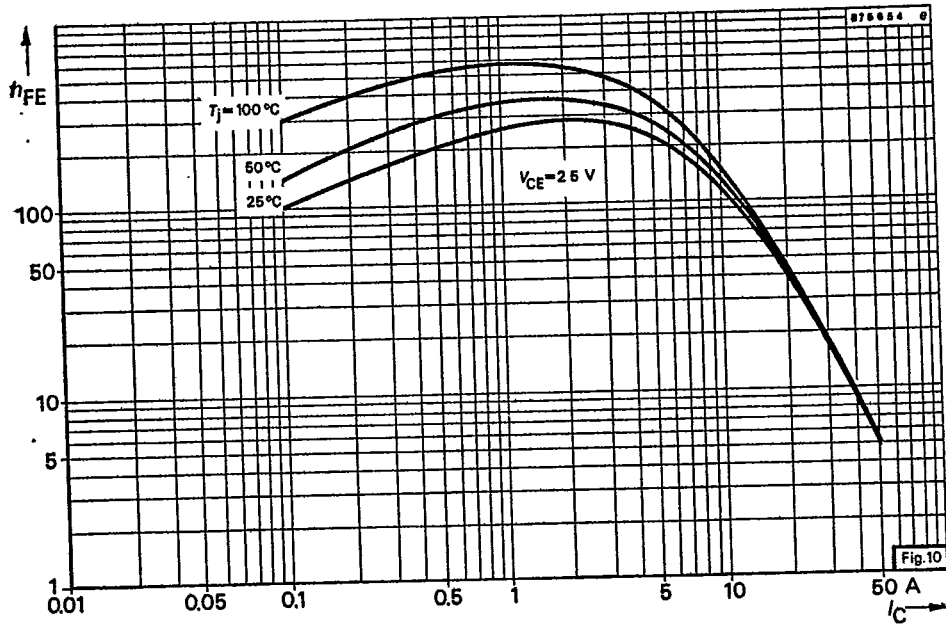


Fig.10

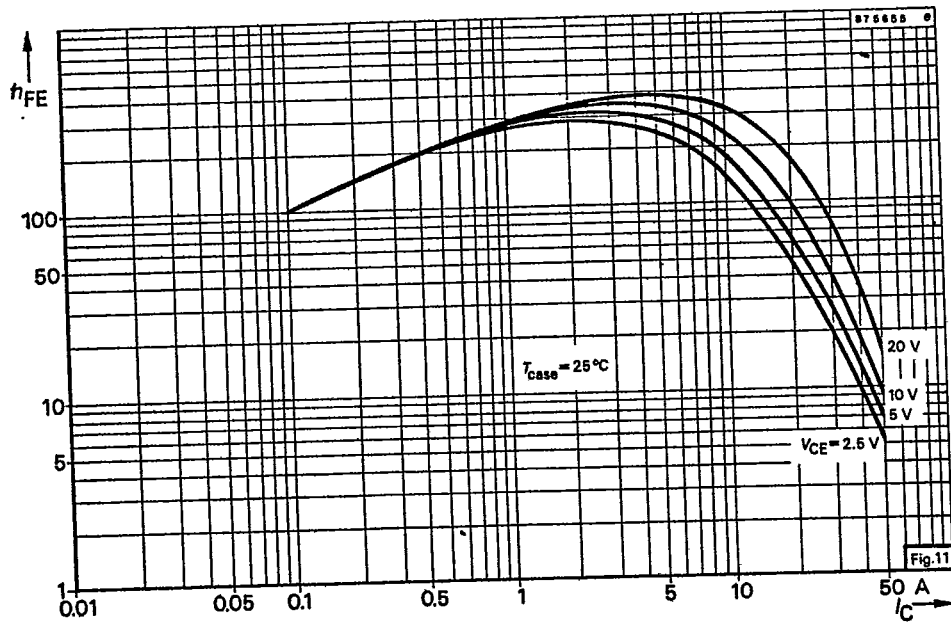
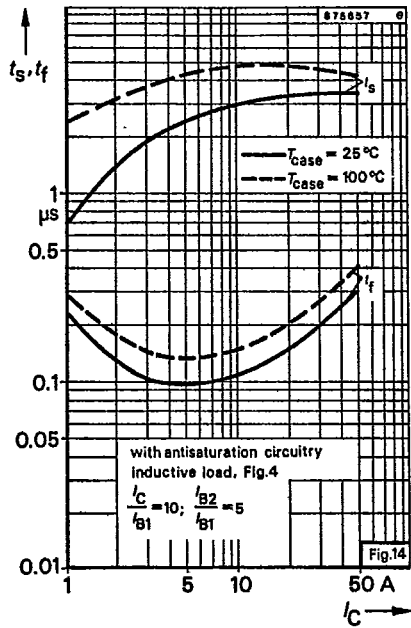
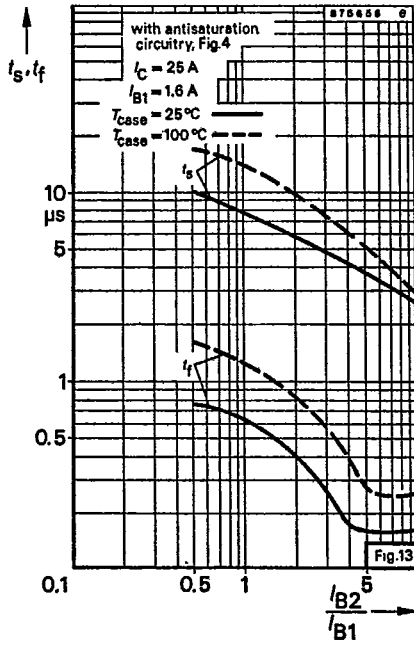
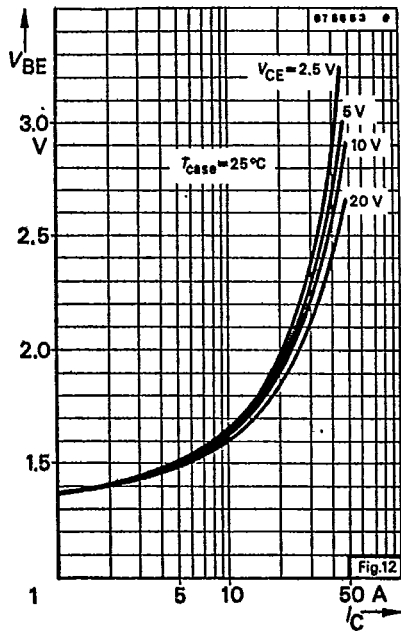


Fig.11



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A E G CORP

● 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

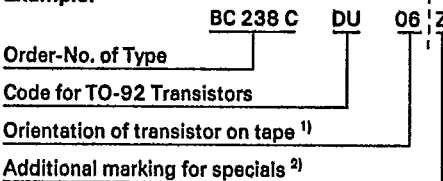
7.1. Taping of TO-92 transistors

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:



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 "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

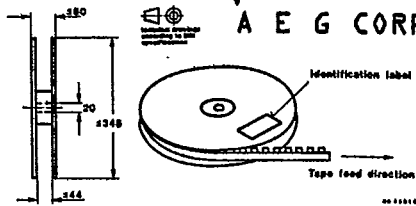


Fig. 7.1. Dimensions of reel in mm

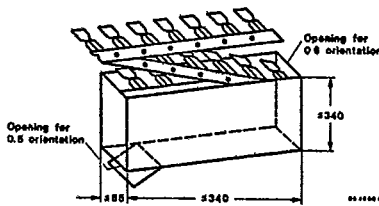


Fig. 7.2. Dimension of box for Zigzag folding in mm

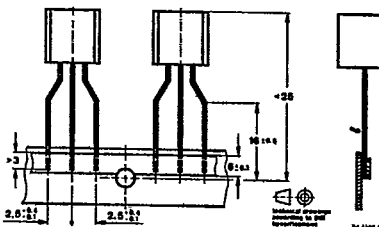


Fig. 7.3. Dimensions of tape in mm

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.

