

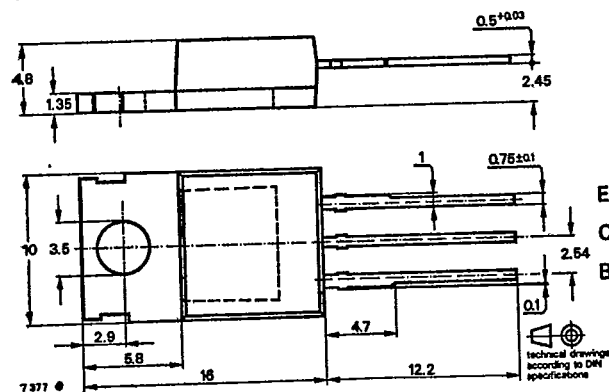
Silicon NPN Power Transistor

Application: Switching mode power supply, electronic ballast

Features:

- In multi diffusion technique
- Glass passivation
- High reverse voltage
- Short switching time
- Power dissipation 50 W

Dimensions in mm



Collector connected with metallic surface

Standard plastic case
14 A 3 DIN 41 869
JEDEC TO 220
Weight max. 2.5 g

Accessories

Isolating washer No. 564 542

Absolute maximum ratings

Collector emitter voltage	V_{CEO}	350	V
	V_{CES}	600	V
Emitter-base voltage	V_{EBO}	5	V
Collector peak current	I_{CM}	6	A
Collector current	I_C	4	A
Base current	I_B	2	A
	$-I_B$	2	A
Total power dissipation $T_{case} \leq 25^\circ C$	P_{tot}	50	W
Junction temperature	T_j	150	$^\circ C$
Storage temperature range	T_{stg}	-65 ... +150	$^\circ C$

Maximum thermal resistances

Junction case	R_{thJC}	2.5	K/W
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Characteristics

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

Min. Typ. Max.

Collector cut-off current

$V_{\text{CE}} = 600 \text{ V}$

I_{CES}

200

μA

$T_j = 125^\circ \text{C}$, $V_{\text{CE}} = 600 \text{ V}$

I_{CES}

1.5

mA

Collector-emitter breakdown voltage

$I_{\text{C}} = 100 \text{ mA}$, $L_{\text{C}} = 125 \text{ mH}$

$V_{(\text{BR})\text{CEO}}^{1)}$

350

V

Emitter-base breakdown voltage

$I_{\text{E}} = 1 \text{ mA}$

$V_{(\text{BR})\text{EBO}}$

5

V

Collector saturation voltage

$I_{\text{C}} = 300 \text{ mA}$, $I_{\text{B}} = 30 \text{ mA}$

V_{CEsat}

0.5

V

$I_{\text{C}} = 3 \text{ A}$, $I_{\text{B}} = 750 \text{ mA}$

$V_{\text{CEsat}}^{1)}$

1

V

Base saturation voltage

$I_{\text{C}} = 1 \text{ A}$, $I_{\text{B}} = 0.2 \text{ A}$

$V_{\text{BEsat}}^{1)}$

1.1

V

DC forward current transfer ratio

$V_{\text{CE}} = 2 \text{ V}$, $I_{\text{C}} = 1 \text{ A}$

h_{FE}

10

Gain bandwidth product

$V_{\text{CE}} = 10 \text{ V}$, $I_{\text{C}} = 500 \text{ mA}$, $f = 1 \text{ MHz}$

f_{T}

9

MHz

Switching characteristics

Resistive load

$I_{\text{C}} = 1 \text{ A}$, $I_{\text{B1}} = 200 \text{ mA}$,

$-I_{\text{B2}} = 400 \text{ mA}$, $T_{\text{case}} = 25^\circ \text{C}$

Storage time

t_{s}

1.5

2.0

μs

Fall time

t_{f}

0.15

0.25

μs

Inductive load Fig. 4, 5

$I_{\text{C}} = 2 \text{ A}$, $I_{\text{B1}} = 0.4 \text{ A}$,

$V_{\text{clamp}} = 300 \text{ V}$, $-V_{\text{BEoff}} = 5 \text{ V}$, $T_{\text{case}} = 100^\circ \text{C}$

Storage time

t_{sv}

1.2

2.0

μs

Cross over time

t_{c}

0.4

0.7

μs

¹⁾ $\frac{t_{\text{p}}}{T} \geq 0.01$, $t_{\text{p}} = 0.1 \text{ ms}$

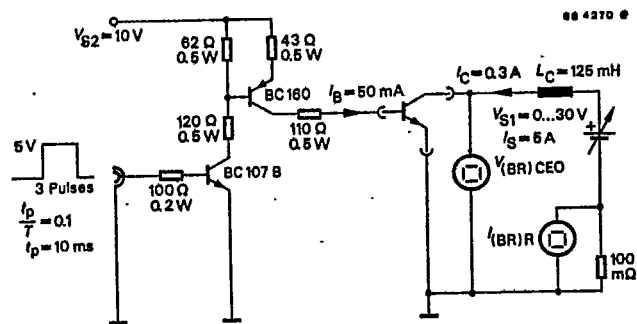
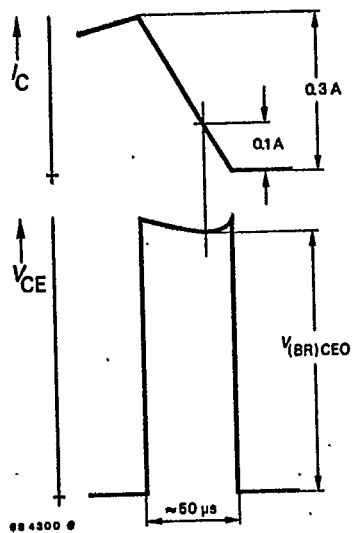
Fig. 1 Test circuit for: $V_{(BR)CEO}$ 

Fig. 2 Pulse diagram

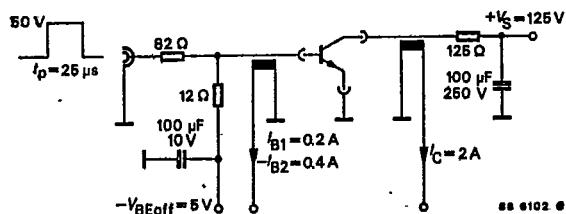


Fig. 3 Test circuit for: Switching characteristics with resistive load

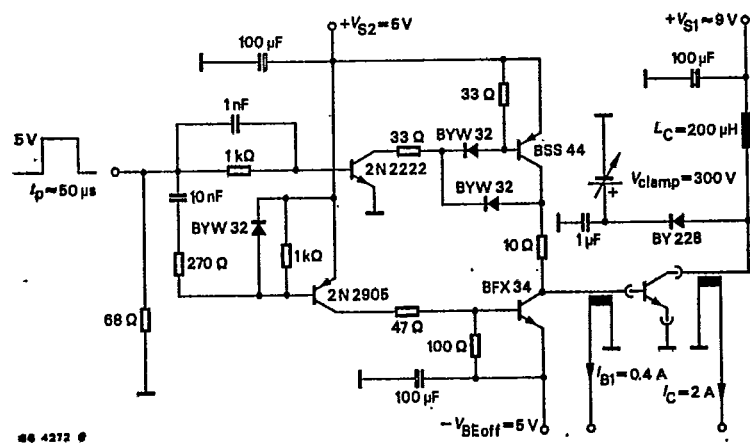


Fig. 4 Test circuit for: Switching characteristics with inductive load

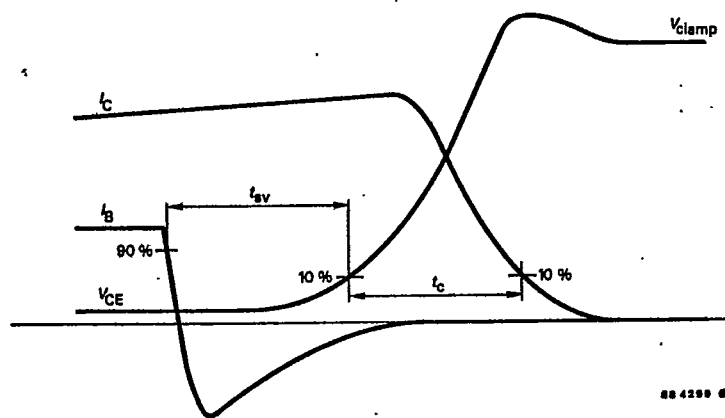
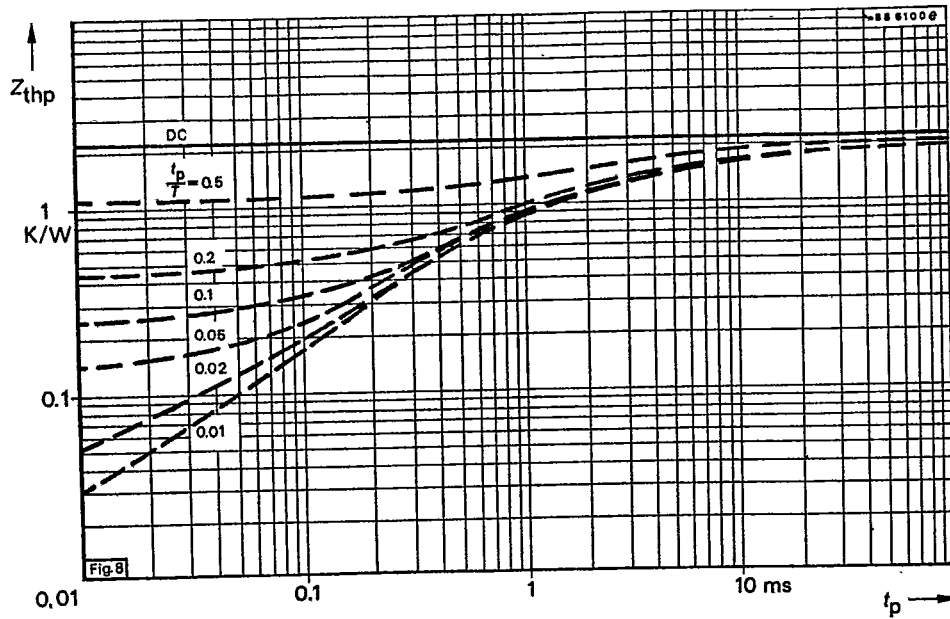
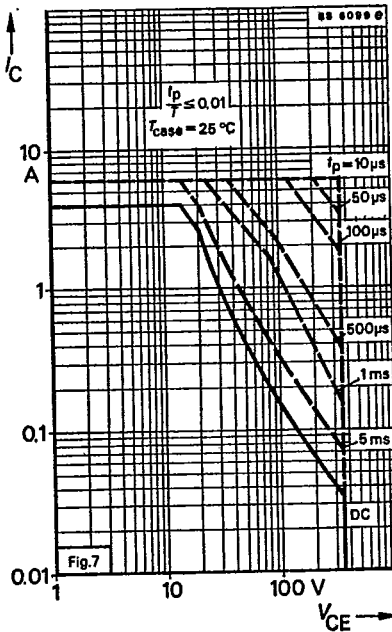
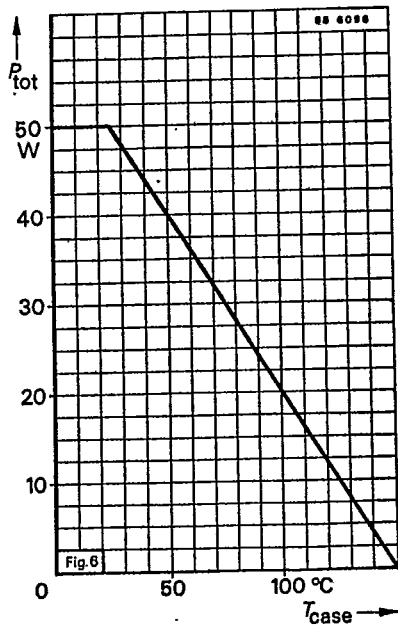
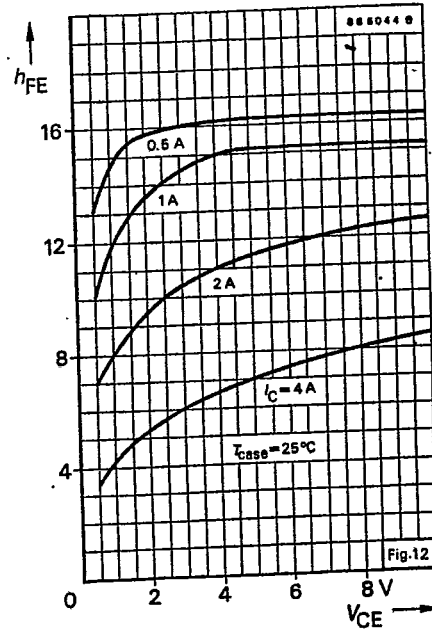
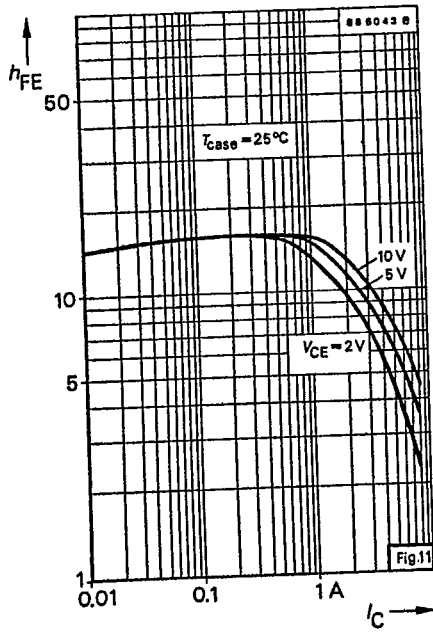
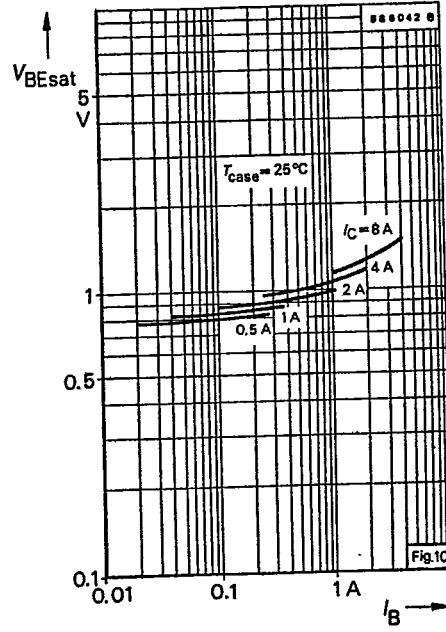
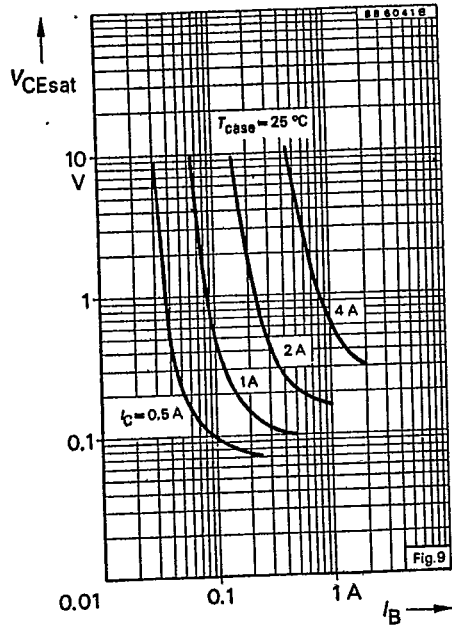


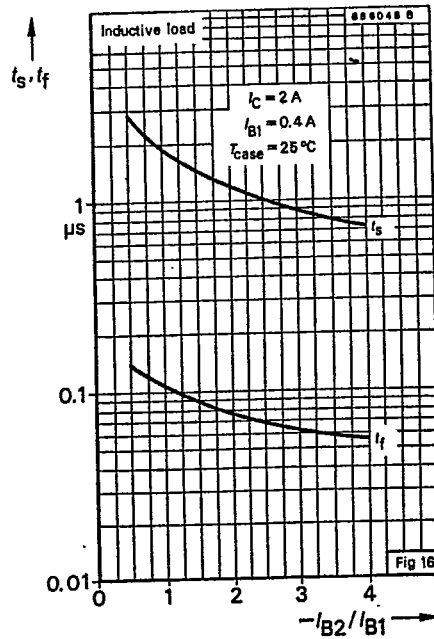
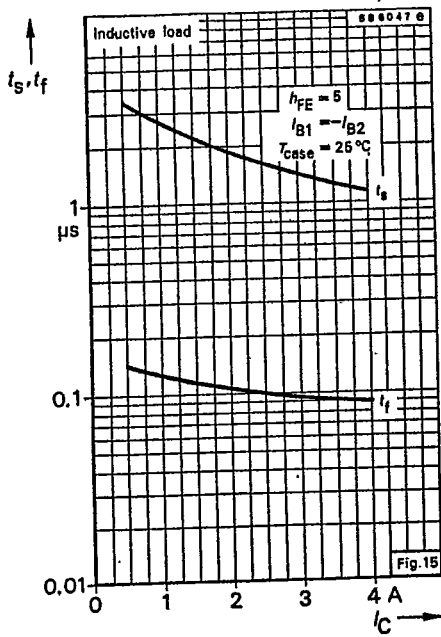
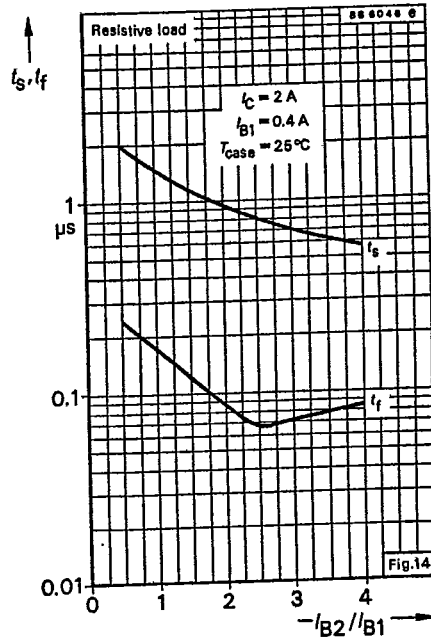
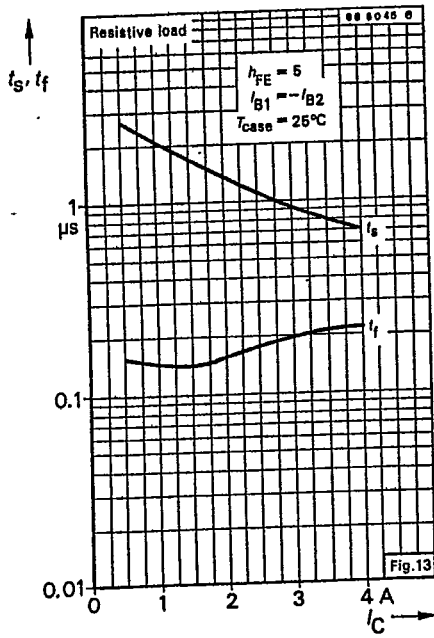
Fig. 5 Pulse diagram

BUT 93

T-33-11







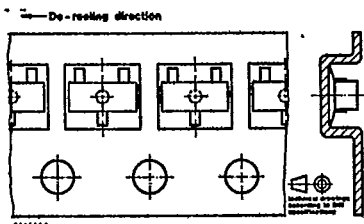


Fig. 7.4 Standard taped SOT 23

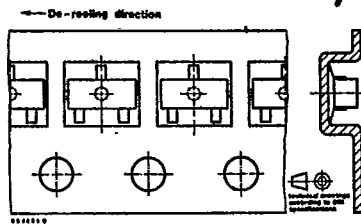


Fig. 7.6 Reverse taped SOT 23

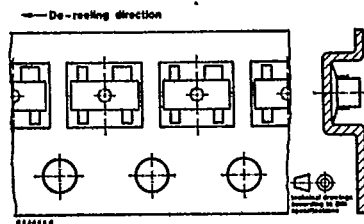


Fig. 7.5 Standard taped SOT 143

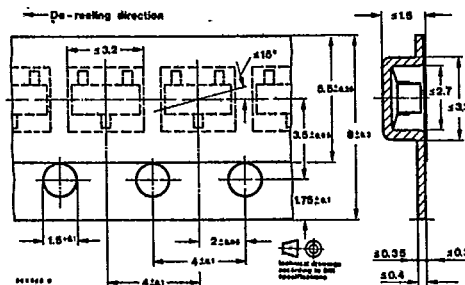


Fig. 7.7 Dimensions of tape in mm

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

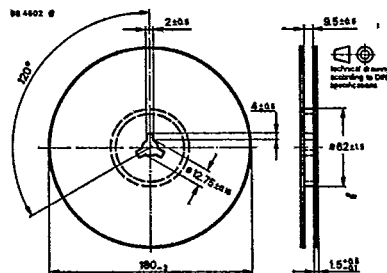


Fig. 7.8 Dimensions of reel in mm

8. Accessories

Number	Fig.	Designation
119880	8.1.	Isolating washer thickness 60 µm
564542	8.2.	Isolating washer thickness 50 µm
912884	8.3	Isolating washer thickness 50 µm
191131	8.4	Isolating washer thickness 50 µm
191140	8.5	Mounting clip
569524	8.6	Isolating washer thickness 100 µm + 50 µm

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