TE 13002 · TE 13003

TELEFUNKEN electronic
Creative Technologies

T-33-11

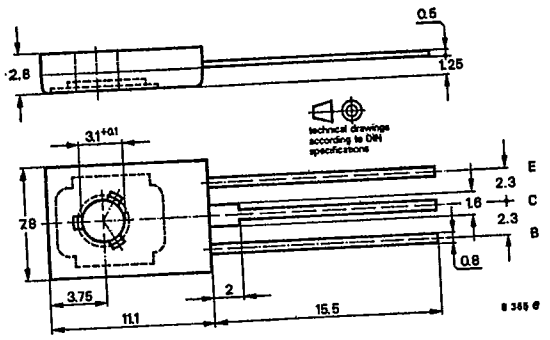
Silicon NPN Power Transistors

Applications: Switching mode power supply, electronic ballast

Features:

- In multi diffusion technique
- Glass passivation
- High reverse voltage
- Short switching times
- Power dissipation 38 W

Dimensions in mm



Collector connected with metallic surface

Standard plastic case
14 A 3 DIN 41 869
JEDEC TO 126 (SOT 32)
Weight max. 0.8 g

Accessories:

Isolating washer No. 119 880
Washer 3.2 DIN 125A

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Absolute maximum ratings				
Collector-emitter voltage	V_{CEO}	300	400	V
	V_{CES}	600	700	V
Emitter-base voltage	V_{EBO}	9		V
Collector current	I_C	1.5		A
Collector peak current	I_{CM}	3		A
Base current	I_B	0.75		A
	$-I_B$	0.75		A
Total power disspation $T_{case} \leq 25$ °C	P_{tot}	38		W
Junction temperature	T_j	150		°C
Storage temperature range	T_{stg}	−65 ...+150		°C
Maximum thermal resistance				
Junction case	R_{thJC}	3.3		K/W

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Characteristics			Min.	Typ.	Max.	
T_{case} = 25 °C, unless otherwise specified						
Collector cut-off current						
V_{CE} = 600 V	TE 13002	I_{CES}			0.5	mA
V_{CE} = 700 V	TE 13003	I_{CES}			0.5	mA
T_{case} = 150 °C, V_{CE} = 600 V	TE 13002	I_{CES}			2.0	mA
V_{CE} = 700 V	TE 13003	I_{CES}			2.0	mA
Collector-emitter breakdown voltage						
I_C = 100 mA, L_C = 125 mH	TE 13002	$V_{(BR)CEO}$	300			V
Fig. 1,2	TE 13003	$V_{(BR)CEO}$	400			V
Emitter-base breakdown voltage						
I_E = 1 mA		$V_{(BR)EBO}$	9			V
Collector-emitter saturation voltage						
I_C = 100 mA, I_B = 10 mA		V_{CEsat} [1]			1.5	V
I_C = 1 A, I_B = 0.25 A		V_{CEsat} [1]			1.0	V
Base-emitter saturation voltage						
I_C = 1 A, I_B = 0.25 A		V_{BEsat} [1]			1.6	V
DC forward current transfer ratio						
V_{CE} = 2 V, I_C = 0.5 A		h_{FE}	8		40	
V_{CE} = 2 V, I_C = 1 A		h_{FE} [1]	5		25	
Gain bandwidth product						
V_{CE} = 10 V, I_C = 100 A, f = 1 MHz		f_T	4	10		MHz
Switching characteristics						
T_{amb} = 25 °C, unless otherwise specified						
Resistive load Fig. 3						
V_S = 125 V, I_C = 1 A,						
$I_{B1} = -I_{B2}$ = 0.2 A,						
t_p = 25 µs, $\frac{t_p}{T} \leq 0.01$						
Turn on time		t_{on}		0.2	0.4	µs
Storage time		t_s		1.7	2.5	µs
Fall time		t_f		0.2	0.3	µs
Inductive load Fig. 4, 5						
I_C = 1 A, I_{B1} = 0.2 A,						
V_{clamp} = 300 V, $-V_{BEoff}$ = 5 V, T_{case} = 100 °C						
Storage time		t_{sv}		1.2	2.0	µs
Cross over time		t_c		0.4	0.7	µs

[1] $\frac{t_p}{T}$ = 0.02, t_p = 0.3 ms

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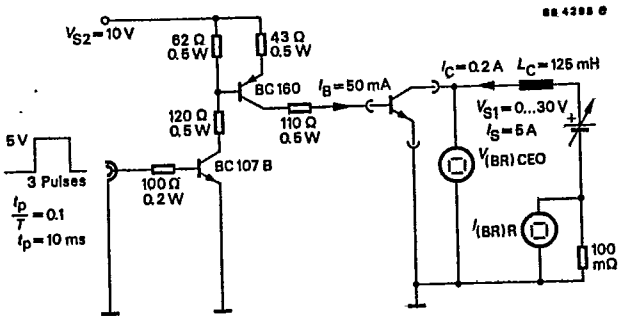

Fig. 1 Test circuit for: $V_{(BR)CEO}$

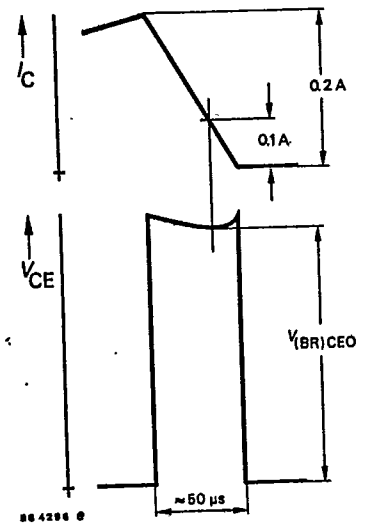

Fig. 2 Pulse diagram

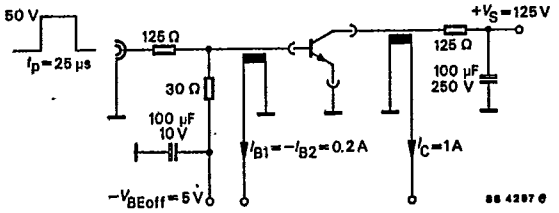

Fig. 3 Test circuit for: Switching characteristics with resistive load

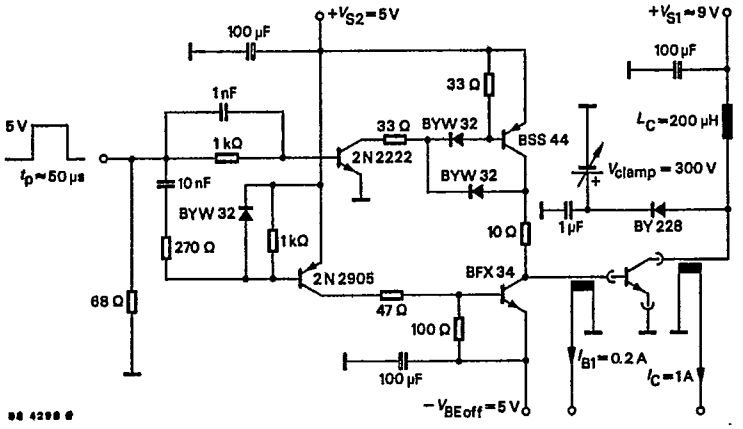

Fig. 4 Test circuit for: Switching characteristics with inductive load

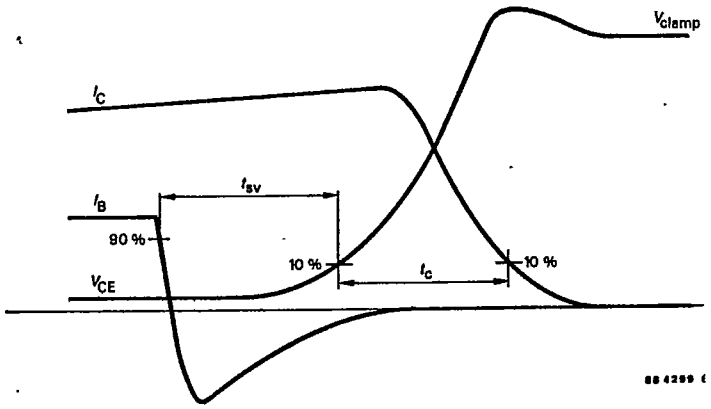

Fig. 5 Pulse diagram

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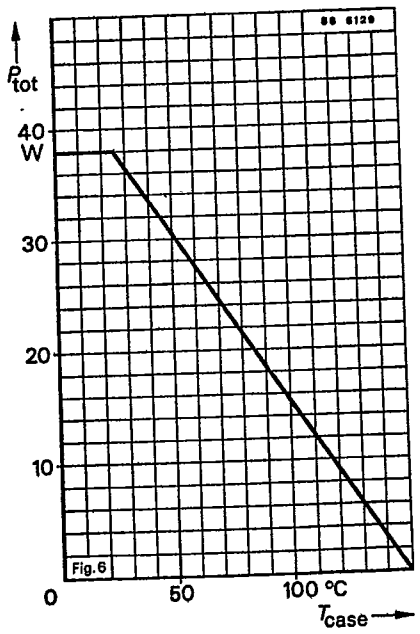

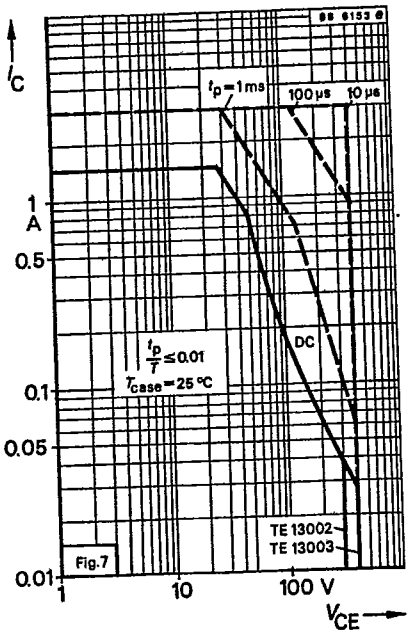

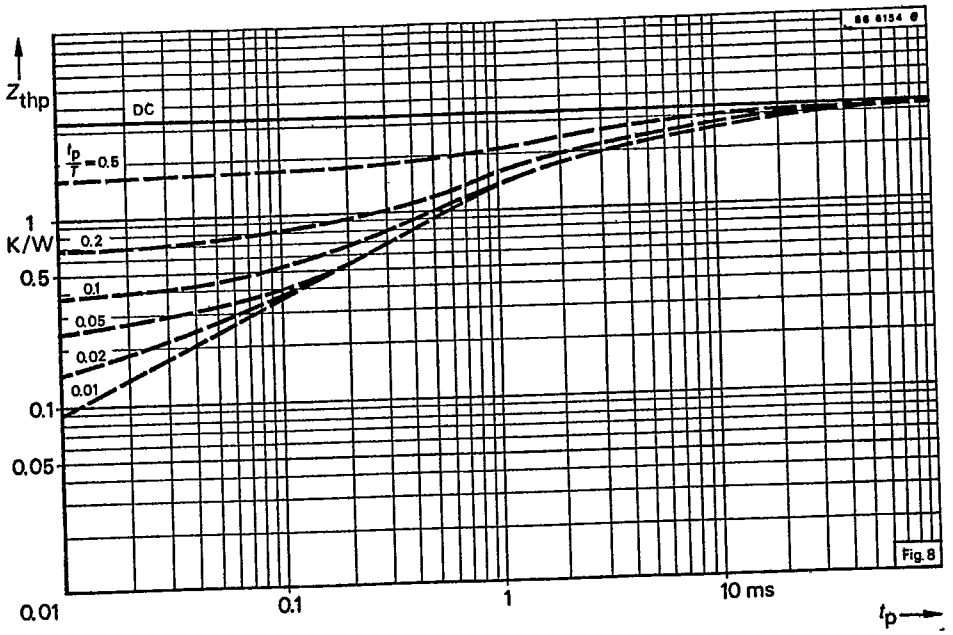

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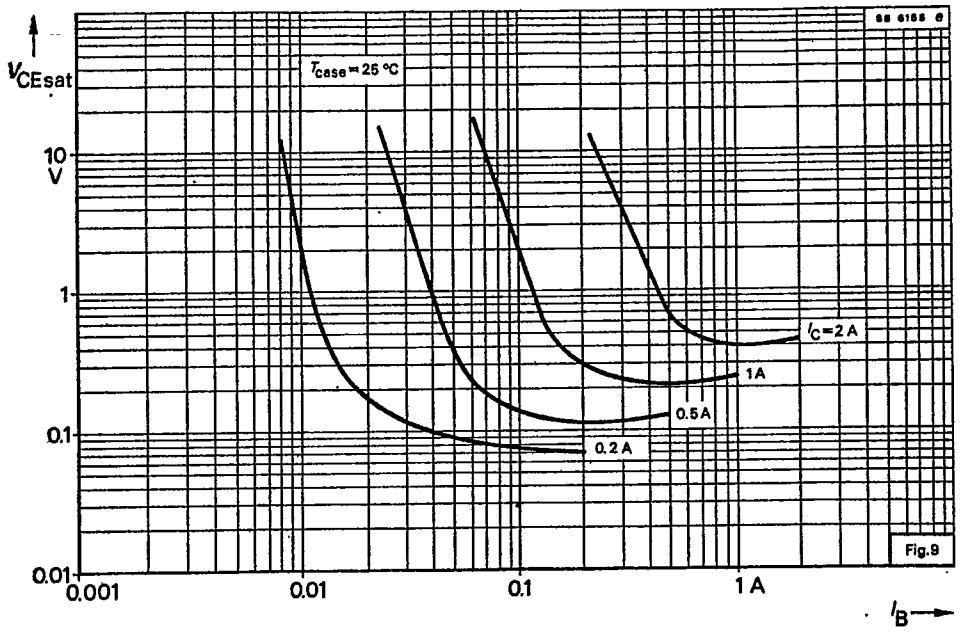

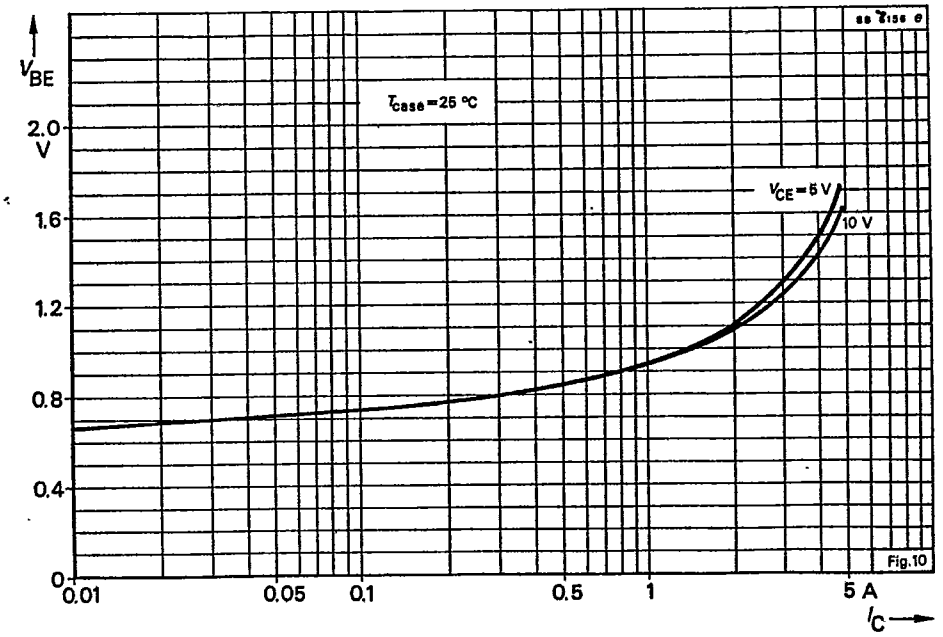

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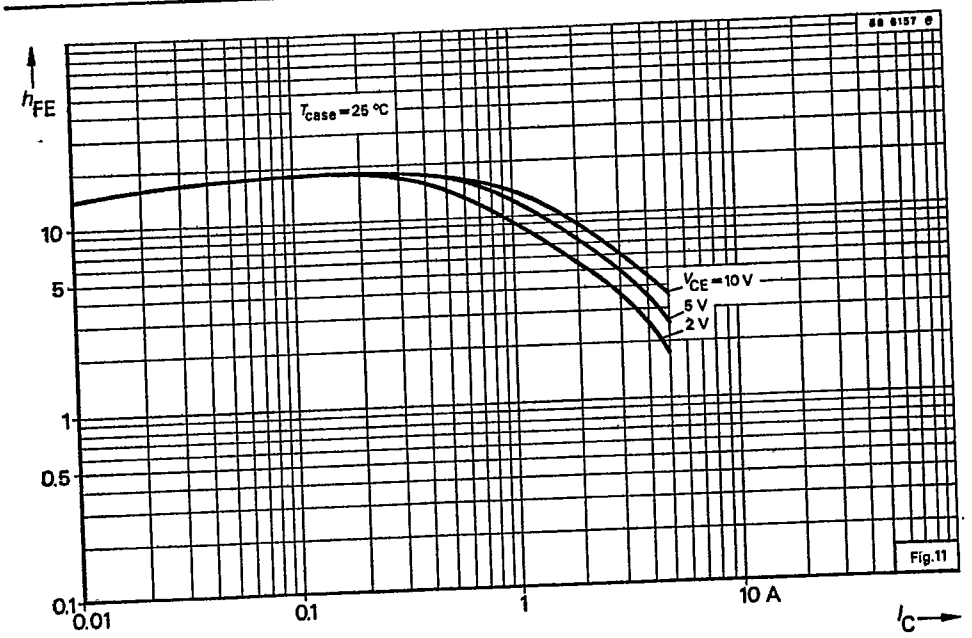

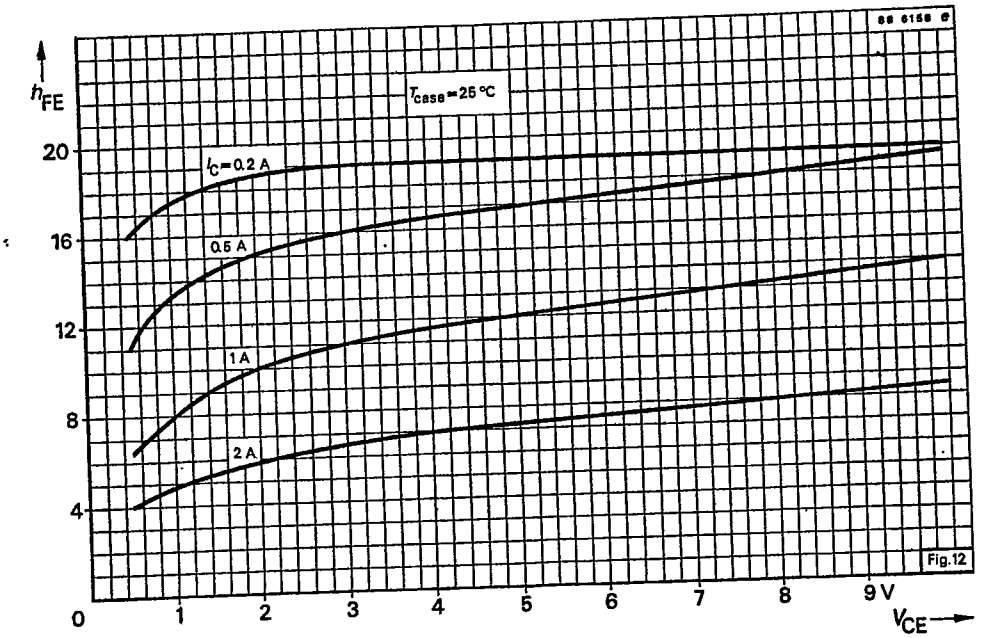

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