TEMIC

TELEFUNKEN Semiconductors

BUD86 • BUD87

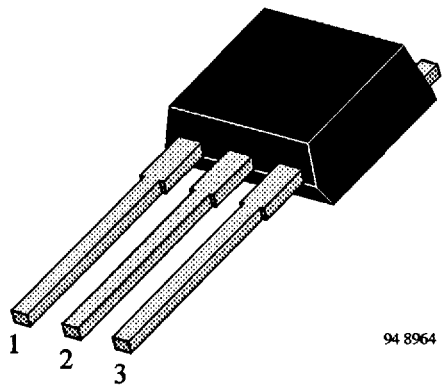
Silicon NPN High Voltage Switching Transistor

Features

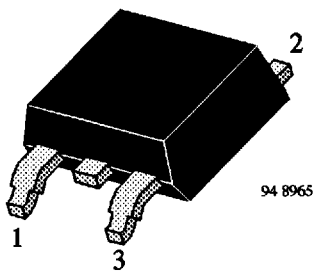
- Multi diffusion technology
- Glass passivation
- High reverse voltage
- Short switching times

Applications

Electronic lamp ballast circuits
Switch-mode power supplies



BUD86
BUD87
1 Emitter 2 Collector 3 Base



BUD86 -SMD
BUD87 -SMD
1 Emitter 2 Collector 3 Base

Absolute Maximum Ratings

T_{case} = 25°C, unless otherwise specified

Parameter	Test Conditions	Type	Symbol	Value	Unit
Collector-emitter voltage		BUD86	V_{CEO}	400	V
		BUD87	V_{CEO}	450	V
		BUD86	V_{CES}	800	V
		BUD87	V_{CES}	1000	V
Emitter-base voltage			V_{EBO}	5	V
Collector current			I_C	0.5	A
Collector peak current			I_{CM}	1	A
Base current			I_B	0.3	A
			$-I_B$	0.3	A
Total power dissipation	$T_{case} \leq 60°C$		P_{tot}	20	W
Junction temperature			T_j	150	°C
Storage temperature range			T_{stg}	-65 to +150	°C

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Maximum Thermal Resistance

T_{case} = 25°C, unless otherwise specified

Parameter	Test Conditions	Symbol	Value	Unit
Junction case		R_{thJC}	4.5	K/W

Electrical Characteristics

T_{case} = 25°C, unless otherwise specified

Parameter	Test Conditions	Type	Symbol	Min	Typ	Max	Unit
Collector cut-off current	V_{CE} = 800 V	BUD86	I_{CES}			100	µA
	V_{CE} = 1000 V	BUD87	I_{CES}			100	µA
	V_{CE} = 800 V; T_{case} = 125 °C	BUD86	I_{CES}			1	mA
	V_{CE} = 1000 V; T_{case} = 125 °C	BUD87	I_{CES}			1	mA
Collector-emitter breakdown voltage (figure 1)	I_C = 100 mA; L = 125 mH; $I_{measure}$ = 50 mA	BUD86	$V_{(BR)CEO}$	400			V
		BUD87	$V_{(BR)CEO}$	450			V
Emitter-base breakdown voltage	I_E = 1 mA		$V_{(BR)EBO}$	5			V
Collector-emitter saturation voltage	I_C = 100 mA; I_B = 10 mA		V_{CEsat}			0.8	V
	I_C = 200 mA; I_B = 20 mA		V_{CEsat}			1	V
Base-emitter saturation voltage	I_C = 200 mA; I_B = 20 mA		V_{BEsat}			1	V
DC forward current transfer ratio	V_{CE} = 5 V; I_C = 50 mA		h_{FE}		50		
Gain bandwidth product	I_C = 50 mA; V_{CE} = 10 V; f = 1 MHz		f_T		20		MHz

Switching Characteristics

T_{case} = 25°C, unless otherwise specified

Parameter	Test Conditions	Type	Symbol	Min	Typ	Max	Unit
Resistive load (figure 2)							
Storage time	I_C = 400 mA; I_{B1} = 20 mA; $-I_{B2}$ = 40 mA; V_S = 125 V		t_s			3.5	µs
Fall time			t_f		0.4		µs

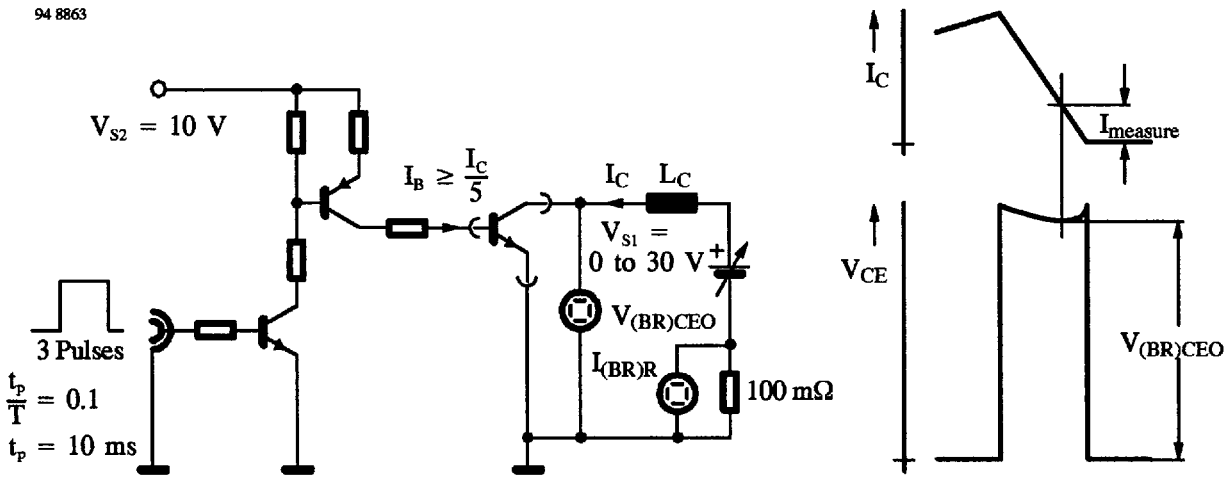
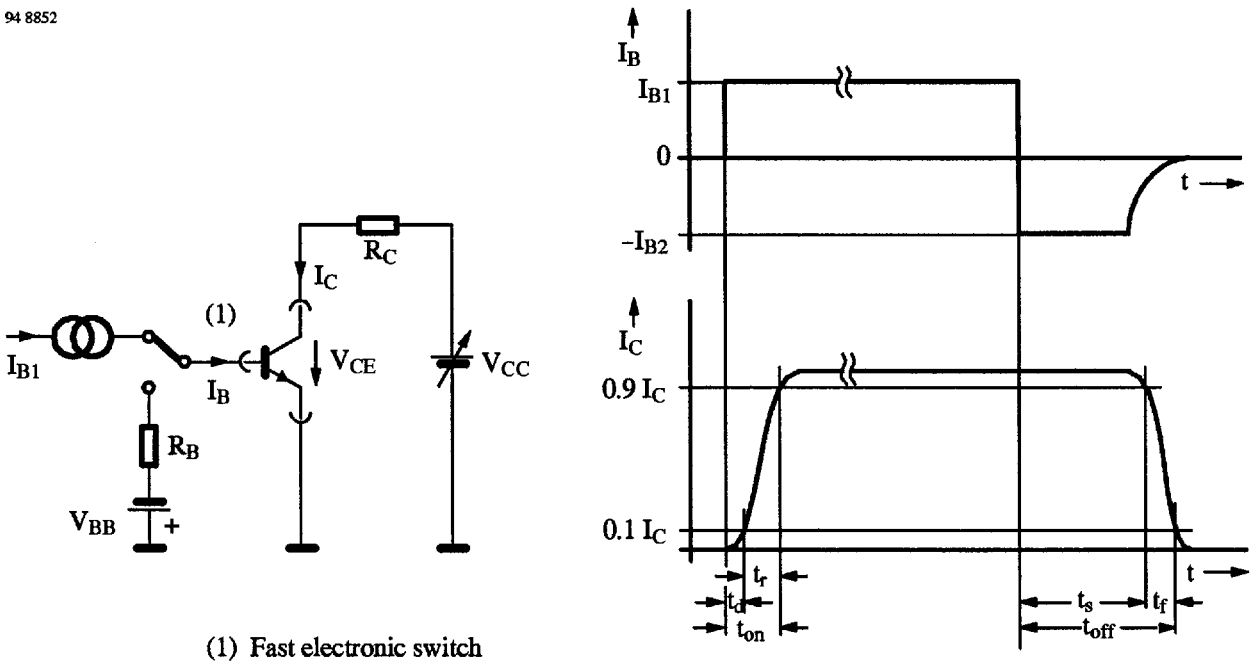


Figure 1. Test circuit for $V_{(BR)CE0}$



(1) Fast electronic switch

Figure 2. Test circuit for switching characteristics - resistive load

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Typical Characteristics (T_{case} = 25°C unless otherwise specified)

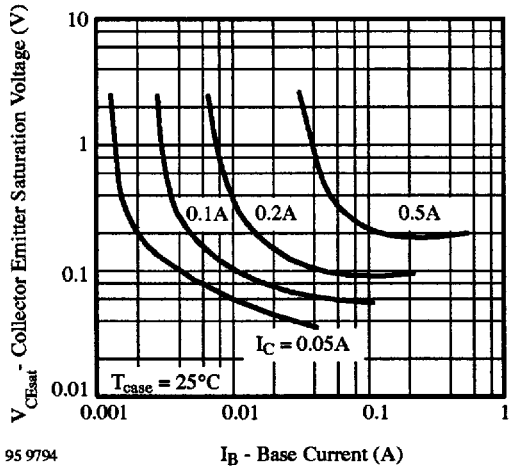


Figure 3. V_{CEsat} vs. I_B

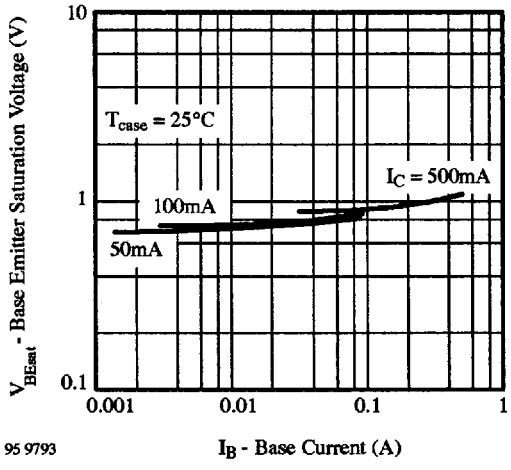


Figure 5. V_{BEsat} vs. I_B

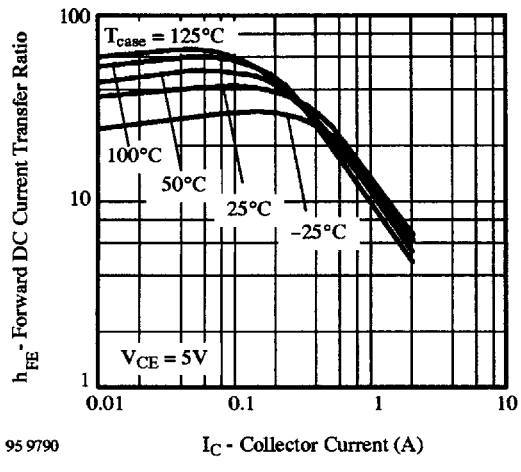


Figure 4. h_{FE} vs. I_C

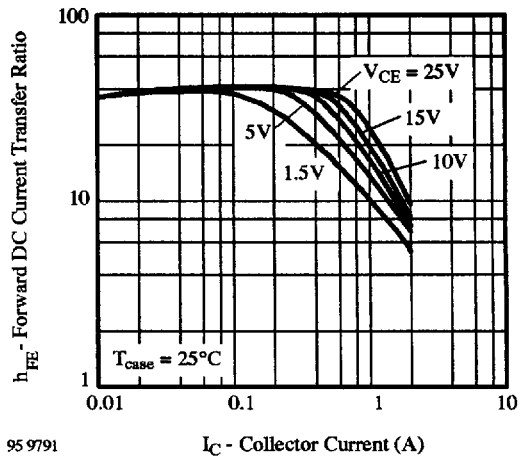
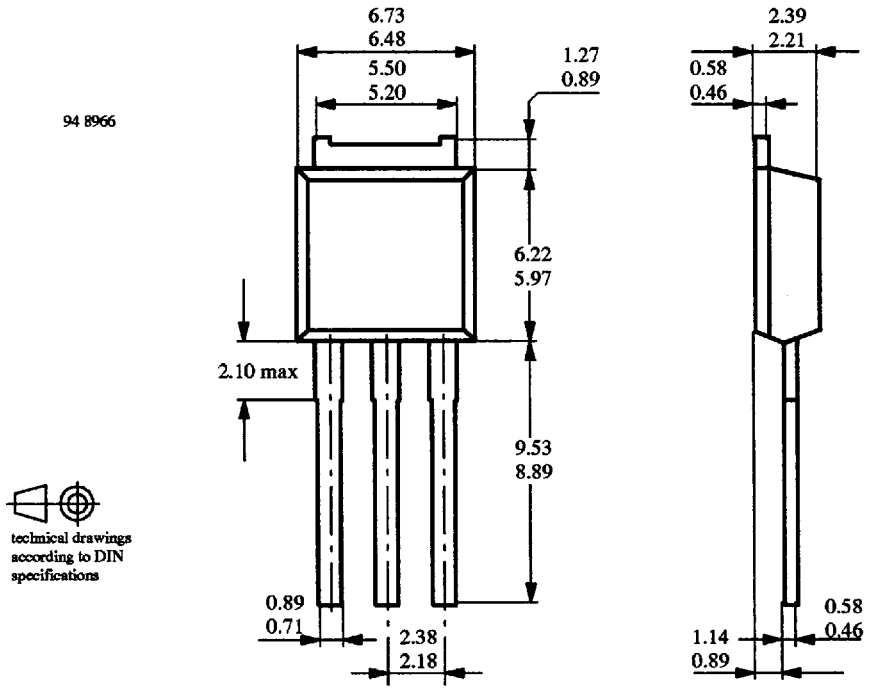


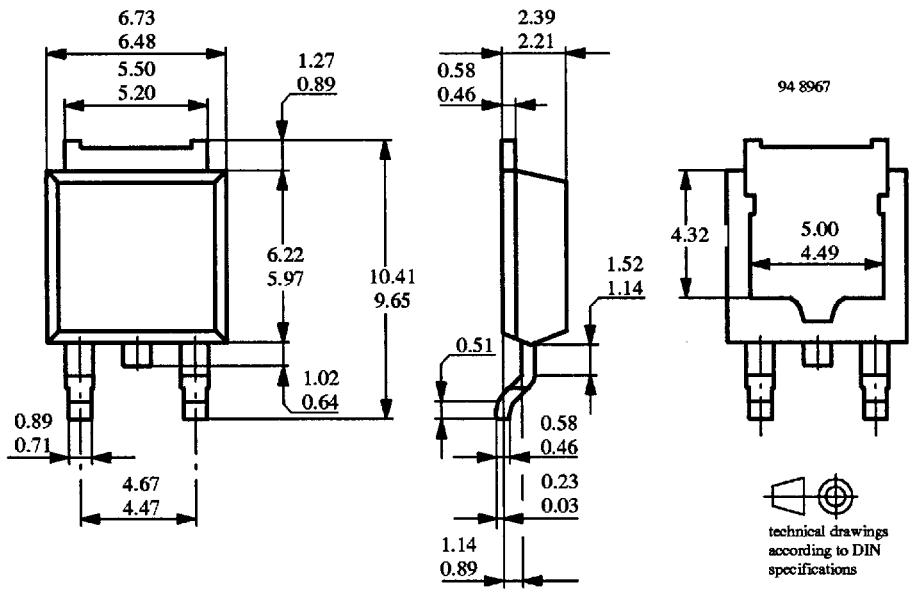
Figure 6. h_{FE} vs. I_C

Dimensions in mm

TO251



TO252



For ordering TO 252 add SMD to the type number (i.e. BUD86-SMD)