

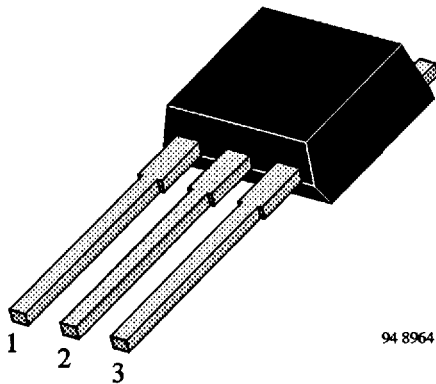
### Silicon NPN High Voltage Switching Transistor

#### Features

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

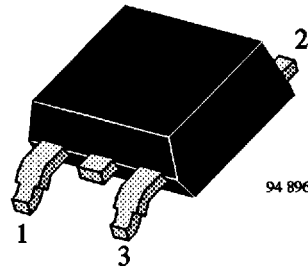
#### Applications

Electronic lamp ballast circuits  
Switch-mode power supplies



94 8964

BUD86  
BUD87  
1 Emitter 2 Collector 3 Base



94 8965

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

#### Absolute Maximum Ratings

$T_{case} = 25^{\circ}C$ , 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	$T_{case} \leq 60^{\circ}C$		$P_{tot}$	20	W
Junction temperature			$T_j$	150	$^{\circ}C$
Storage temperature range			$T_{stg}$	-65 to +150	$^{\circ}C$

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### Maximum Thermal Resistance

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

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

### Electrical Characteristics

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

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

### Switching Characteristics

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

Parameter	Test Conditions	Type	Symbol	Min	Typ	Max	Unit
Resistive load (figure 2)							
Storage time	$I_{\text{C}} = 400 \text{ mA}; I_{\text{B1}} = 20 \text{ mA}; -I_{\text{B2}} = 40 \text{ mA}; V_{\text{S}} = 125 \text{ V}$		$t_{\text{s}}$			3.5	$\mu\text{s}$
Fall time				$t_{\text{f}}$		0.4	



## Typical Characteristics ( $T_{case} = 25^{\circ}C$ unless otherwise specified)

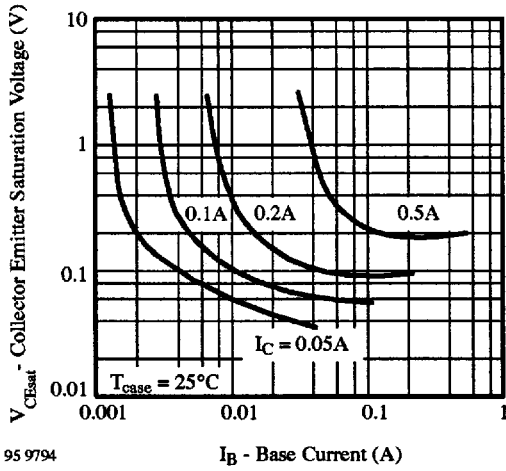


Figure 3.  $V_{CEsat}$  vs.  $I_B$

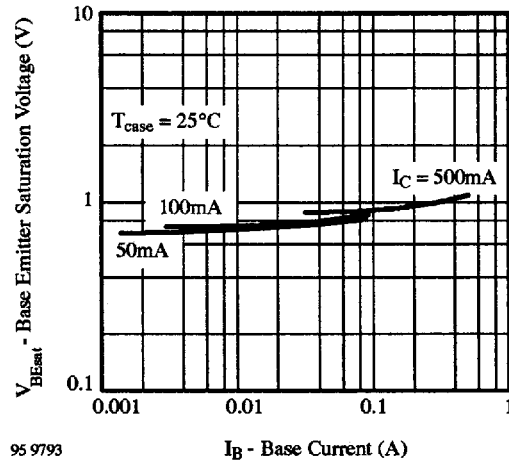


Figure 5.  $V_{BEsat}$  vs.  $I_B$

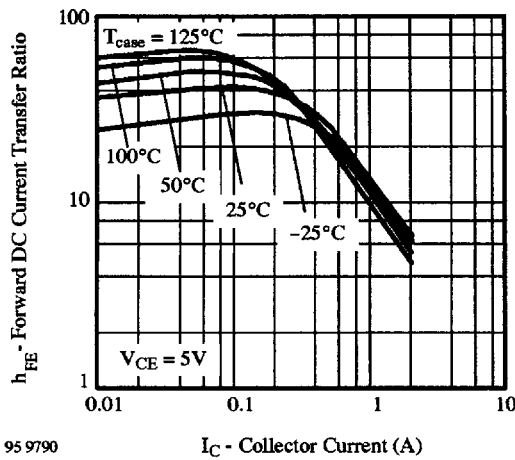


Figure 4.  $h_{FE}$  vs.  $I_C$

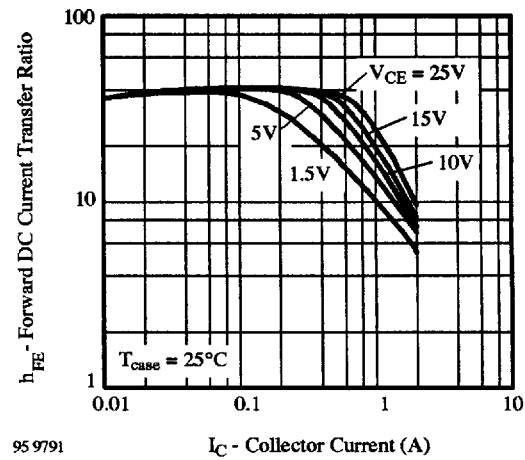


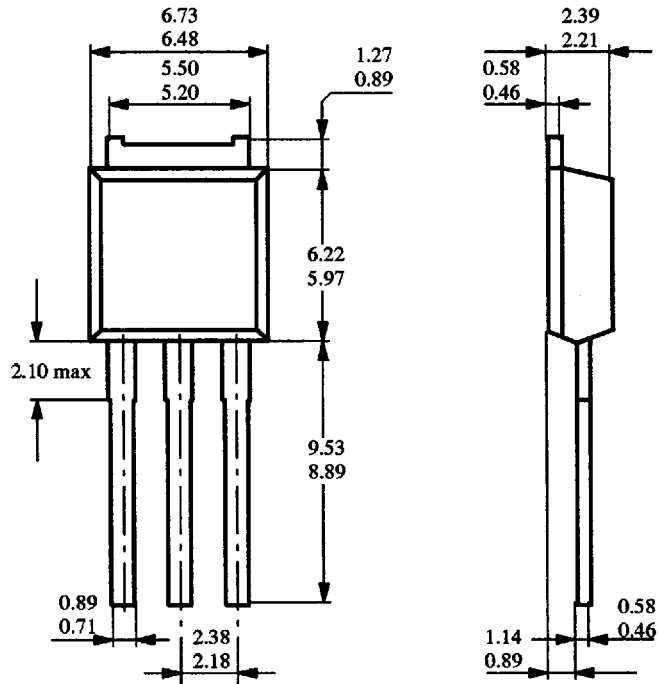
Figure 6.  $h_{FE}$  vs.  $I_C$

## Dimensions in mm

TO251

94 8966

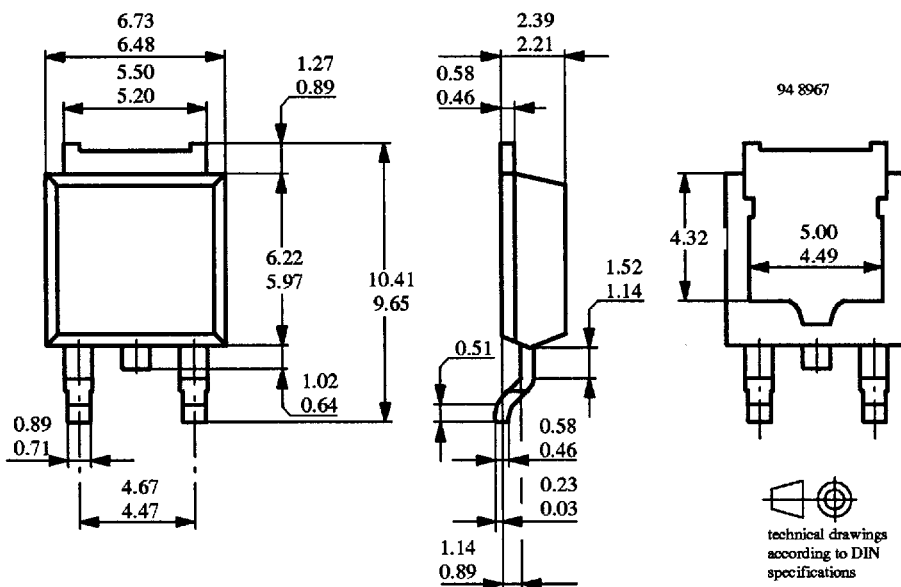
  
technical drawings  
according to DIN  
specifications



TO252

94 8967

  
technical drawings  
according to DIN  
specifications



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