

SILICON DIFFUSED POWER TRANSISTOR

High-voltage, high-speed, glass-passivated npn switching transistor in a TO-3 envelope, intended for use in three-phase AC motor control systems.

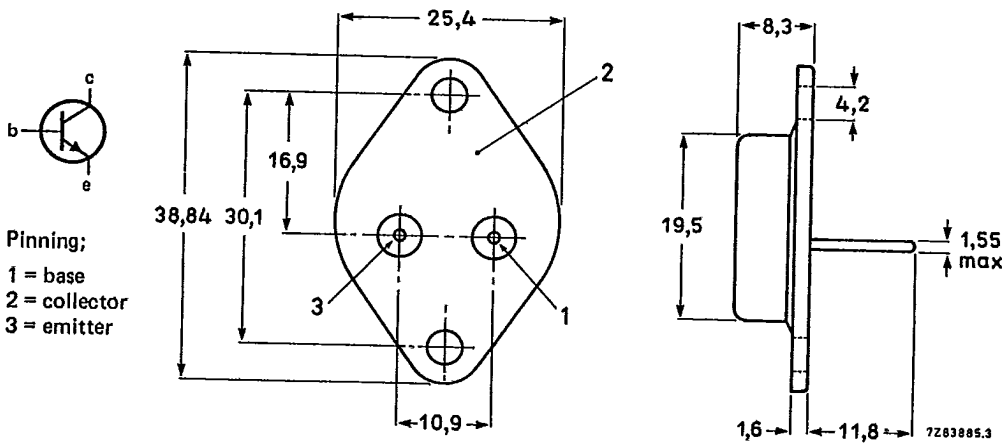
QUICK REFERENCE DATA

Collector-emitter voltage (peak value; $V_{BE} = 0$)	V_{CESM}	max.	1200 V
Collector-emitter voltage (open base)	V_{CEO}	max.	800 V
Collector-emitter saturation voltage	V_{CEsat}	max.	1 V
Collector current (DC)	I_C	max.	12 A
Collector current (peak value)	I_{CM}	max.	20 A
Total power dissipation up to $T_{mb} = 25\text{ }^\circ\text{C}$	P_{tot}	max.	160 W
Collector saturation current	I_{Csat}	max.	9 A
Fall time	t_f	typ.	0,5 μs

MECHANICAL DATA

Dimensions in mm

Fig. 1 TO-3.



Collector connected to case.

BUX88

T-33-15

RATINGS

Limiting values in accordance with the Absolute Maximum System (IEC 134)

Collector-emitter voltage (peak value; $V_{BE} = 0$)	V_{CESM}	max.	1200 V
Collector-emitter voltage (open base)	V_{CEO}	max.	800 V
Collector current (DC)	I_C	max.	12 A
Collector current (peak value); $t_p < 2$ ms	I_{CM}	max.	20 A
Base current (DC)	I_B	max.	8 A
Base current (peak value); $t_p < 2$ ms	I_{BM}	max.	12 A
Total power dissipation up to $T_{mb} = 25$ °C	P_{tot}	max.	160 W
Storage temperature range	T_{stg}		-65 to + 150 °C
Junction temperature	T_j	max.	150 °C

THERMAL RESISTANCE

From junction to mounting base	$R_{th\ j-mb}$	=	0,78 K/W
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CHARACTERISTICS

$T_j = 25$ °C unless otherwise specified

Collector cut-off current*

$V_{CE} = V_{CESMmax}; V_{BE} = 0$	I_{CES}	max.	1 mA
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$V_{CE} = V_{CESMmax}; V_{BE} = 0; T_j = 125$ °C	I_{CES}	max.	4 mA
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Emitter cut-off current

$I_C = 0; V_{EB} = 5$ V	I_{EBO}	max.	10 mA
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Saturation voltages

$I_C = 9$ A; $I_B = 4$ A	V_{CEsat}	max.	1 V
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	V_{BEsat}	max.	1,5 V
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$I_C = 12$ V; $I_B = 6$ A	V_{CEsat}	max.	3 V
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Collector-emitter sustaining voltage

$I_C = 200$ mA; $I_B = 0$; $L = 25$ mH	$V_{CEO_{sust}}$	min.	800 V
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Second breakdown collector current

$V_{CE} = 100$ V; $t_p = 1$ s	$I_{(SB)C}$	min.	0,4 A
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Transition frequency at $f = 5$ MHz

$I_C = 0,1$ A; $V_{CE} = 5$ V	f_T	typ.	7 MHz
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Collector capacitance at $f = 1$ MHz

$I_E = I_e = 0; V_{CB} = 10$ V	C_C	typ.	200 pF
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* Measured with a half-sinewave voltage (curve tracer).

Switching times resistive load (Figs 2 and 3)

$I_{Con} = 9 A$; $I_{Bon} = -I_{Boff} = 4 A$

Turn-on time

t_{on} typ. 1,5 μs

Turn-off: Storage time

t_s typ. 4,5 μs

Fall time

t_f typ. 0,5 μs

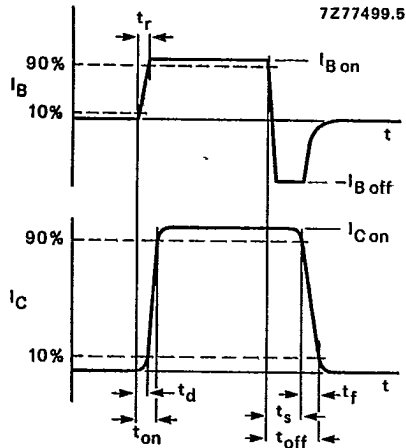


Fig. 2 Switching times waveforms with resistive load.

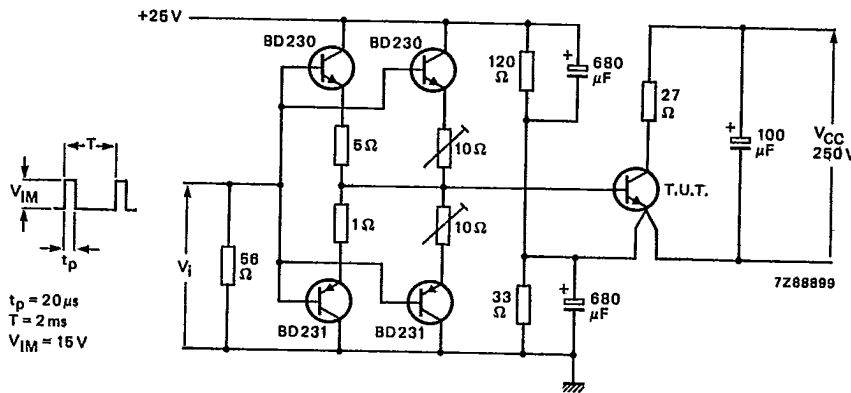
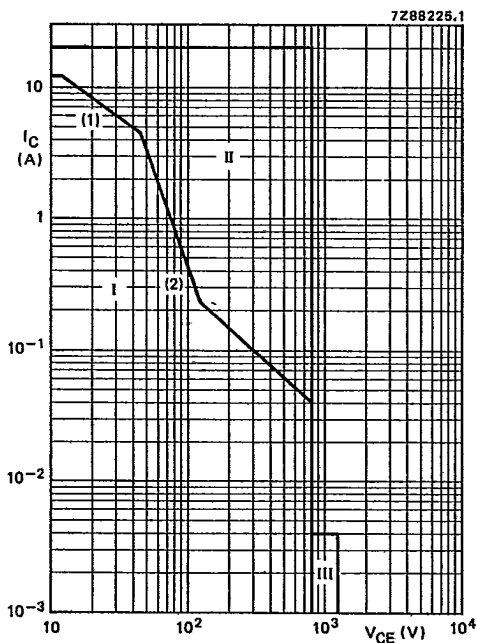


Fig. 3 Test circuit resistive load.



- (1) P_{tot} max line.
- (2) Second-breakdown limits.
- I Region of permissible DC operation.
- II Permissible extension for repetitive pulse operation.
- III Repetitive pulse operation in this region is permissible, provided $V_{BE} \leq 0$ and $t_p \leq 5$ ms.

Fig. 4 Safe operating area at $T_{mb} \leq 25$ °C.