

RATINGS

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

			BD242	A	B	C
Collector-base voltage (open emitter)	$-V_{CBO}$	max.	45	60	80	100 V
Collector-emitter voltage (open base)	$-V_{CEO}$	max.	45	60	80	100 V
Collector-emitter voltage ($R_{BE} = 100 \Omega$)	$-V_{CER}$	max.	55	70	90	115 V
Emitter-base voltage (open collector)	$-V_{EBO}$	max.			5	V
Collector current (d.c.)	$-I_C$	max.			5	A
Collector current (peak value)	$-I_{CM}$	max.			8	A
Base current (d.c.)	$-I_B$	max.			1	A
Total power dissipation up to $T_{mb} = 25^\circ C$	P_{tot}	max.			40	W
Storage temperature	T_{stg}		-65 to +150			$^\circ C$
Junction temperature	T_j	max.			150	$^\circ C$

THERMAL RESISTANCE

From junction to mounting base	$R_{th j-mb}$	=		3,12	K/W
From junction to ambient in free air	$R_{th j-a}$	=		70	K/W

CHARACTERISTICS

$T_j = 25^\circ C$ unless otherwise specified

			BD242; A	BD242B; C
→ Collector cut-off current				
$-I_B = 0; -V_{CE} = 30 V$	$-I_{CEO}$	<	0,1	— mA
$-I_B = 0; -V_{CE} = 60 V$	$-I_{CEO}$	<	—	0,1 mA
$-V_{BE} = 0; -V_{CE} = -V_{CEOmax}$	$-I_{CES}$	<	0,2	mA
→ Emitter cut-off current				
$I_C = 0; -V_{EB} = 5 V$	$-I_{EBO}$	<	0,2	mA
D.C. current gain *				
$-I_C = 1 A; -V_{CE} = 4 V$	h_{FE}	>	25	
$-I_C = 3 A; -V_{CE} = 4 V$	h_{FE}	>	10	
Base-emitter voltage *				
$-I_C = 3 A; -V_{CE} = 4 V$	$-V_{BE}$	<	1,8	V
Collector-emitter saturation voltage *				
$-I_C = 3 A; -I_B = 0,6 A$	$-V_{CEsat}$	<	1,2	V
Small-signal current gain				
$-I_C = 0,5 A; -V_{CE} = 10 V; f = 1 kHz$	$ h_{fe} $	>	20	
Turn off breakdown energy				
$L = 20 mH; -I_{CC} = 1,22 A$	$E_{(BR)}$	>	15	mJ

* Measured under pulse conditions: $t_p \leq 300 \mu s; \delta < 0,02$.

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Transition frequency at $f = 1 \text{ MHz}$

$-I_C = 500 \text{ mA}; -V_{CE} = 10 \text{ V}$

$f_T > 3 \text{ MHz}$

Switching times

$-I_{Con} = 1 \text{ A}; -I_{Bon} = I_{Boff} = 0,1 \text{ A}$

turn-on time

turn-off time

$t_{on} \text{ typ. } 0,3 \mu\text{s}$

$t_{off} \text{ typ. } 1 \mu\text{s}$

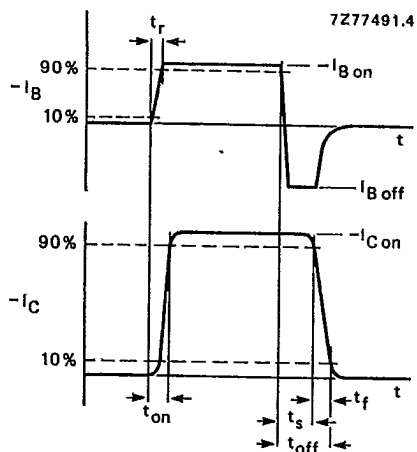


Fig. 2 Switching times waveforms.

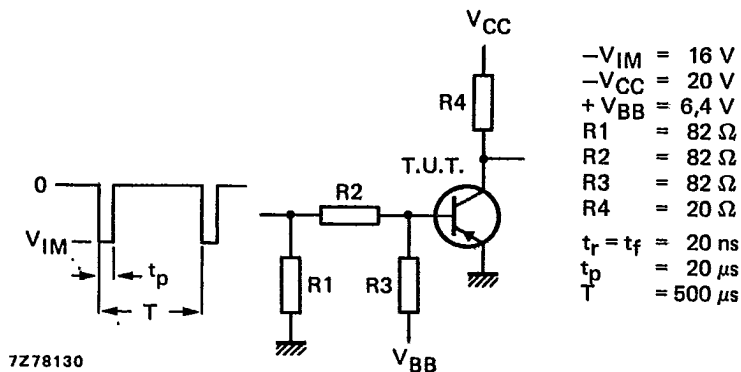


Fig. 3 Switching times test circuit.

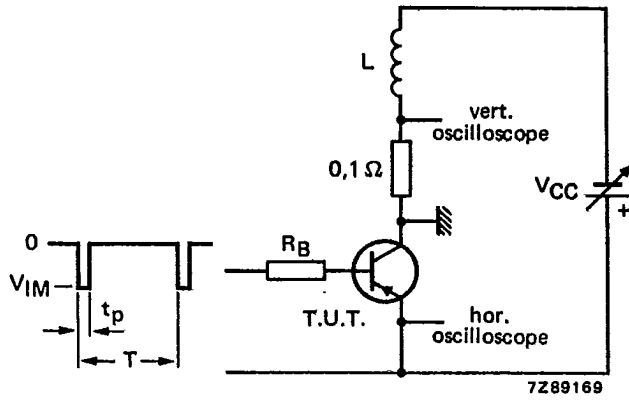


Fig. 4 Test circuit for turn-off breakdown energy.
 $V_{IM} = -12 \text{ V}$; $R_B = 270 \Omega$; $-I_{CC} = 1,22 \text{ A}$; $t_p = 1 \text{ ms}$; $\delta = 0,01$.

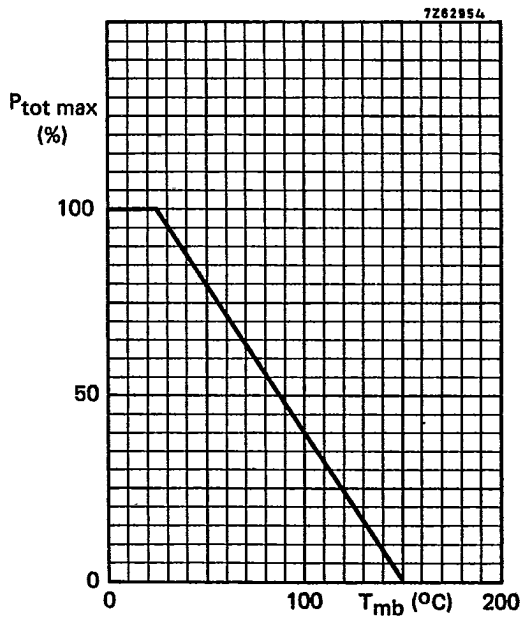


Fig. 4a Power derating curve.

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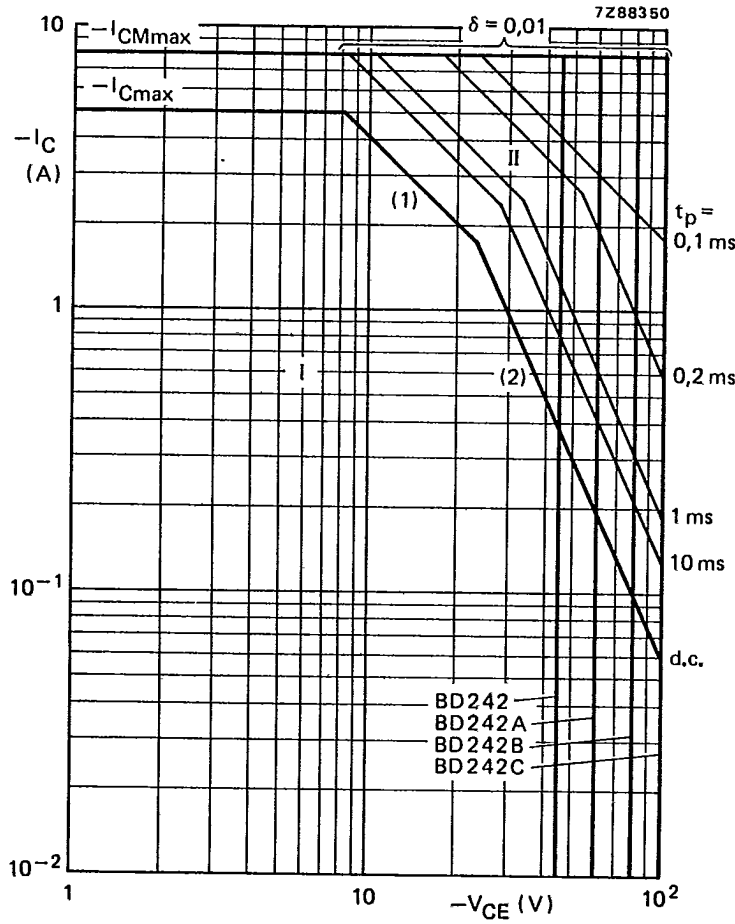


Fig. 5 Safe Operating Area; $T_{mb} = 25^\circ C$.

- I Region of permissible d.c. operation.
- II Permissible extension for repetitive pulse operation.
- (1) $P_{tot max}$ and $P_{peak max}$ lines.
- (2) Second breakdown limits.

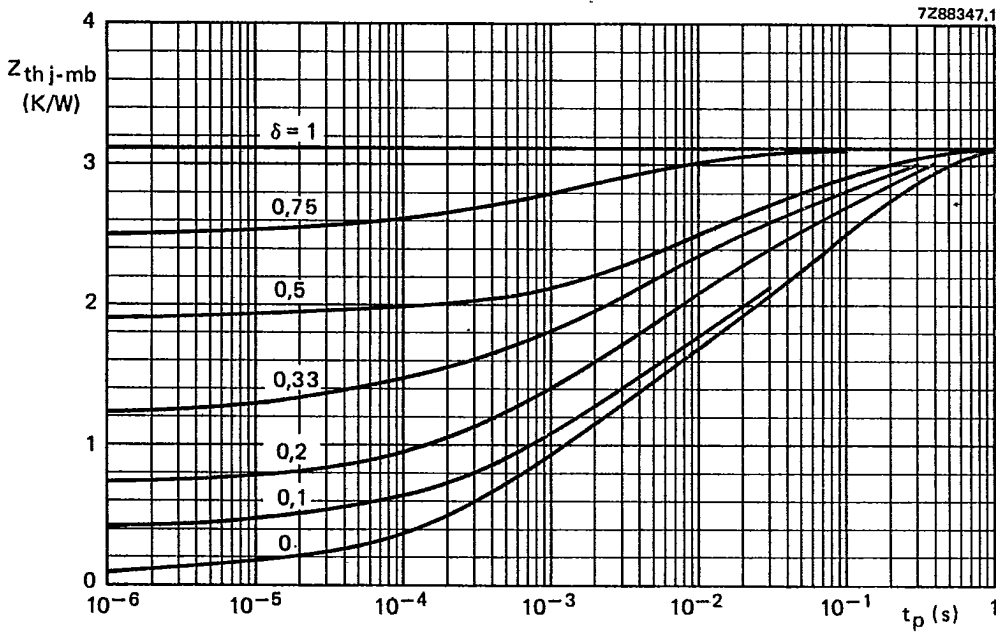


Fig. 6 Power pulse rating chart.

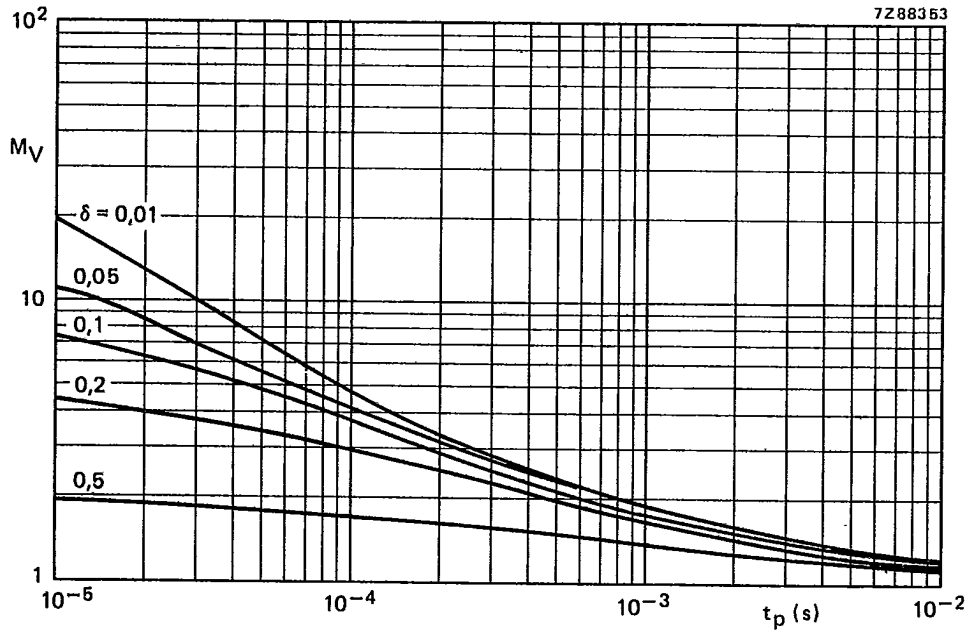


Fig. 7 S.B. voltage multiplying factor at the I_{Cmax} level.

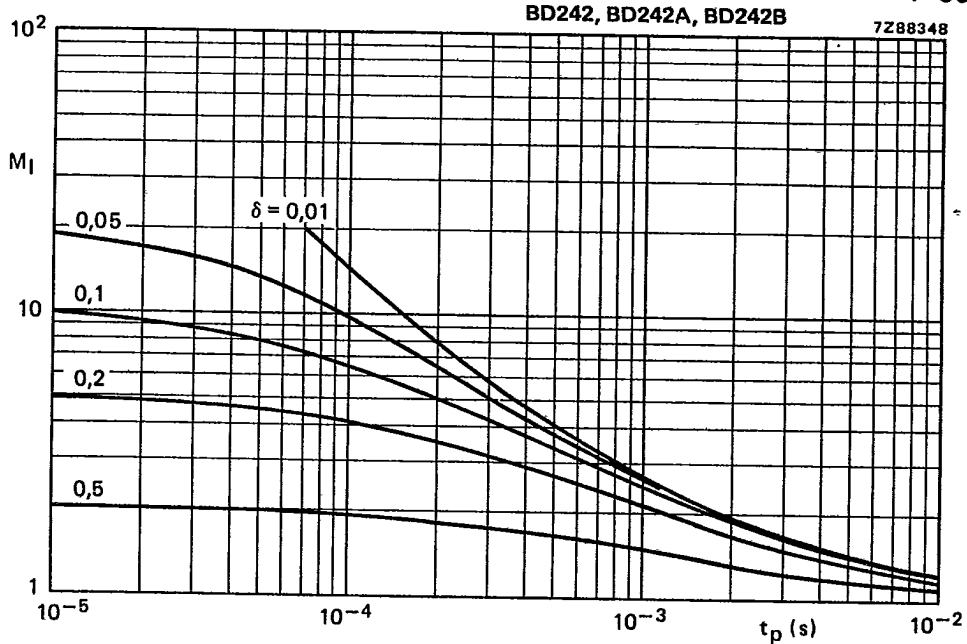


Fig. 8 S.B. current multiplying factor at the V_{CE0max} level.

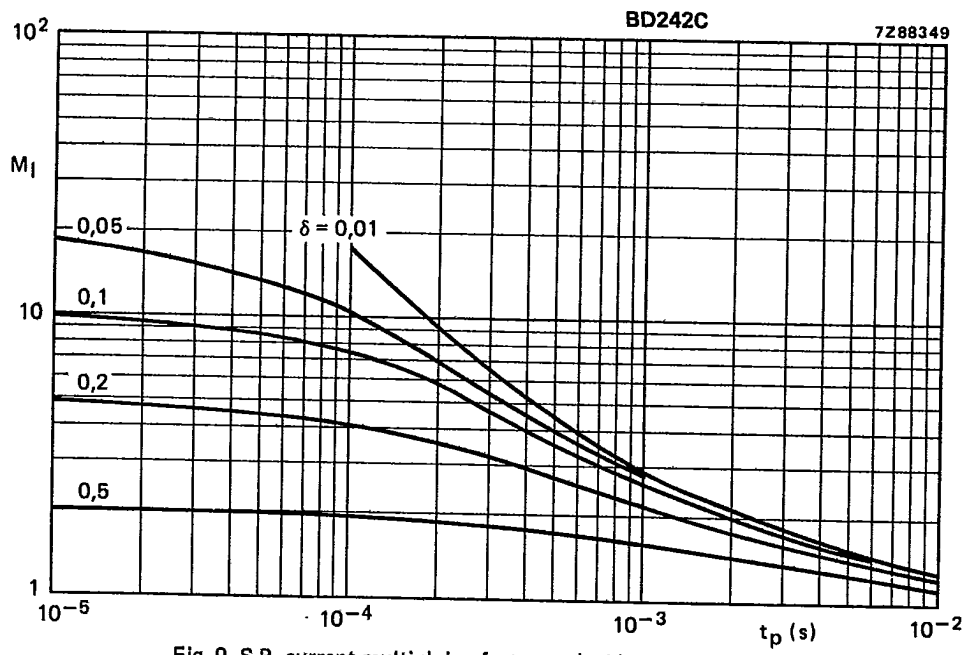


Fig. 9 S.B. current multiplying factor at the V_{CE0max} level.

BD242; BD242A
BD242B; BD242C

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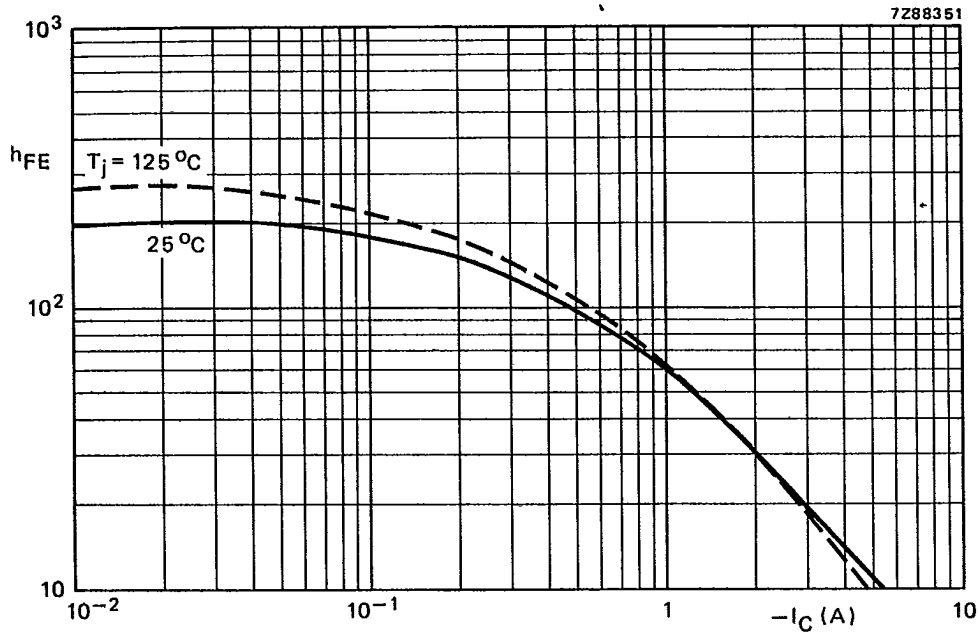


Fig. 10 Typical static forward current transfer ratio as a function of the collector current; $-V_{CE} = 4\text{ V}$.

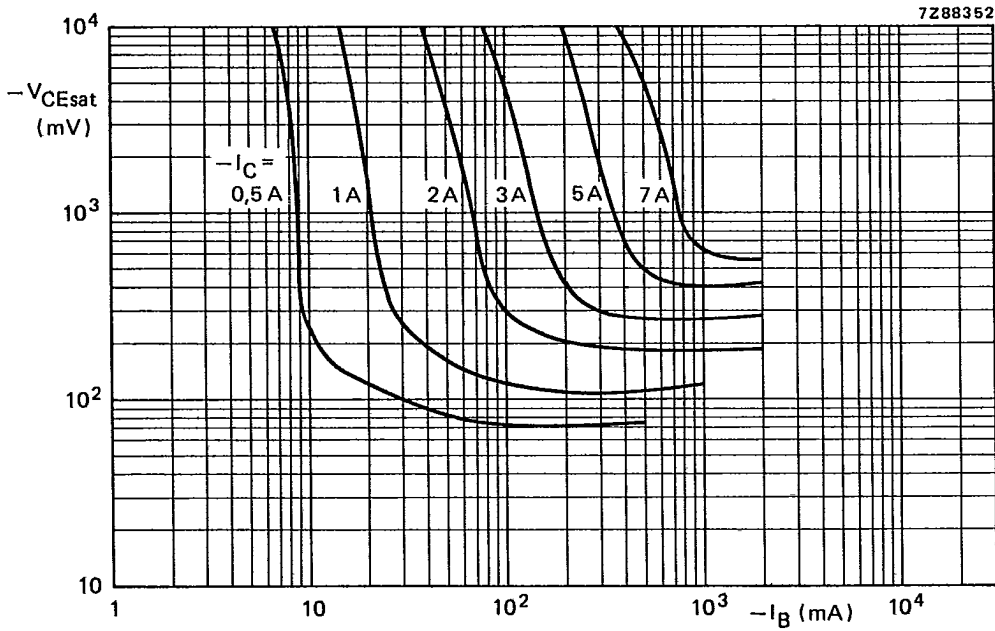


Fig. 11 Typical values collector-emitter saturation voltage at $T_j = 25^\circ\text{C}$.