Magnatec

BS5750
Stockist Level A
Qualification Pending

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MAGNA TEC

BD201
BD203

SILICON EPITAXIAL-BASE POWER TRANSISTORS

N-P-N transistors in a plastic envelope. With their p-n-p complements BD202 and BD204 they are primarily intended for use in hi-fi equipment delivering an output of 15 to 25 W into a 4 Ω or 8 Ω load.

QUICK REFERENCE DATA

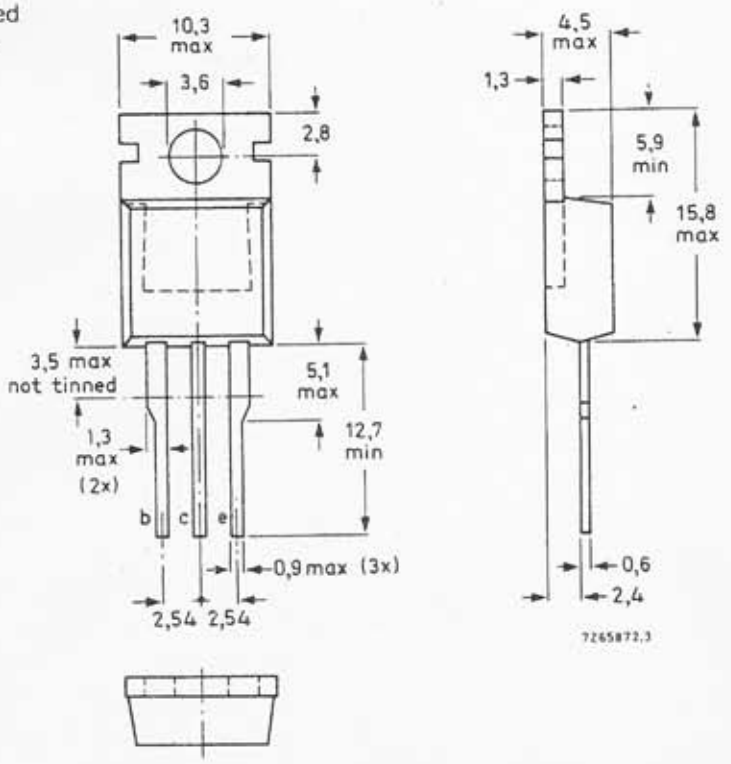
			BD201	BD203
Collector-emitter voltage (open base)	V_{CEO}	max.	45	60 V
Collector current (d.c.)	I_C	max.	8	8 A
Total power dissipation up to T_{mb} = 25 °C	P_{tot}	max.	60	60 W
Cut-off frequency I_C = 0,3 A; V_{CE} = 3 V	f_{hfe}	>	25	25 kHz

MECHANICAL DATA

Dimensions in mm

Fig. 1 TO-220.

Collector connected to mounting base.



BD201
BD203

RATINGS

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

			BD201	BD203	
Collector-base voltage (open emitter)	V_{CBO}	max.	60	60	V
Collector-emitter voltage (open base)	V_{CEO}	max.	45	60	V
Emitter-base voltage (open collector)	V_{EBO}	max.	5	5	V
Collector current (d.c.)	I_C	max.	8		A
Collector current (peak value, $t_p \leqslant 10$ ms)	I_{CM}	max.	12		A
Collector current (non-repetitive peak value, $t_p \leqslant 2$ ms)	I_{CSM}	max.	25		A
Base current (d.c.)	I_B	max.	3		A
Total power dissipation up to $T_{mb} = 25$ °C	P_{tot}	max.	60		W
Storage temperature	T_{stg}		−65 to + 150		°C
Junction temperature	T_j	max.	150		°C

THERMAL RESISTANCE

From junction to mounting base	$R_{th\ j\text{-}mb}$	=	2,08	K/W
From junction to ambient in free air	$R_{th\ j\text{-}a}$	=	70	K/W

CHARACTERISTICS

$T_j = 25$ °C unless otherwise specified

Collector cut-off current				
$I_B = 0$; $V_{CE} = 30$ V	I_{CEO}	<	1	mA
$I_E = 0$; $V_{CB} = 40$ V; $T_j = 150$ °C	I_{CBO}	<	1	mA
Emitter cut-off current				
$I_C = 0$; $V_{EB} = 5$ V	I_{EBO}	<	5	mA
Base-emitter voltage*				
$I_C = 3$ A; $V_{CE} = 2$ V	V_{BE}	<	1,5	V
Knee voltage*				
$I_C = 3$ A; I_B = value for which $I_C = 3{,}3$ A at $V_{CE} = 2$ V	V_{CEK}	typ.	1	V
Saturation voltage*				
$I_C = 3$ A; $I_B = 0{,}3$ A	V_{CEsat}	<	1	V
$I_C = 6$ A; $I_B = 0{,}6$ A	V_{CEsat}	<	1,5	V
	V_{BEsat}	<	2	V
D.C. current gain*				
BD201; $I_C = 3$ A; $V_{CE} = 2$ V	h_{FE}	>	30	
BD203; $I_C = 2$ A; $V_{CE} = 2$ V	h_{FE}	>	30	
$I_C = 1$ A; $V_{CE} = 2$ V	h_{FE}	>	30	
Cut-off frequency				
$I_C = 0{,}3$ A; $V_{CE} = 3$ V	f_{hfe}	>	25	kHz

* Measured under pulse conditions: $t_p < 300\ \mu s$, $\delta < 2\%$.

Transition frequency at f = 1 MHz I_C = 0,3 A; V_{CE} = 3 V	f_T	>	7 MHz ←
D.C. current gain ratio of matched complementary pairs I_C = 1 A; V_{CE} = 2 V	h_{FE1}/h_{FE2}	<	2,5
Forward bias second breakdown collector current V_{CE} = 40 V; t_p = 0,1 s; T_{amb} = 25 °C	$I_{(SB)}$	>	1,5 A
Switching times I_{Con} = 2 A; I_{Bon} = $-I_{Boff}$ = 0,2 A			
Turn-on time	t_{on}	<	1 μs
Turn-off time	t_{off}	<	4 μs

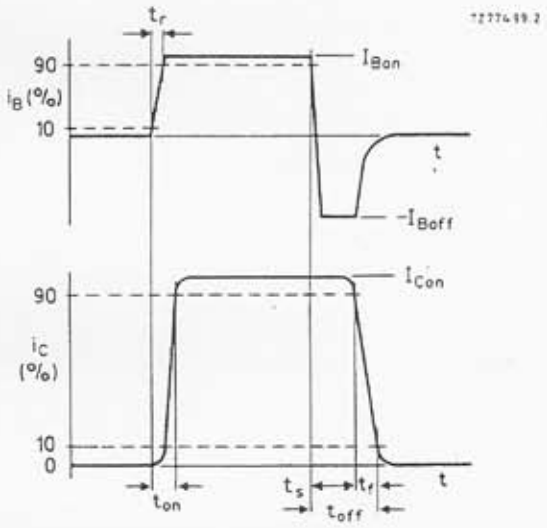


Fig. 2 Switching time waveforms.

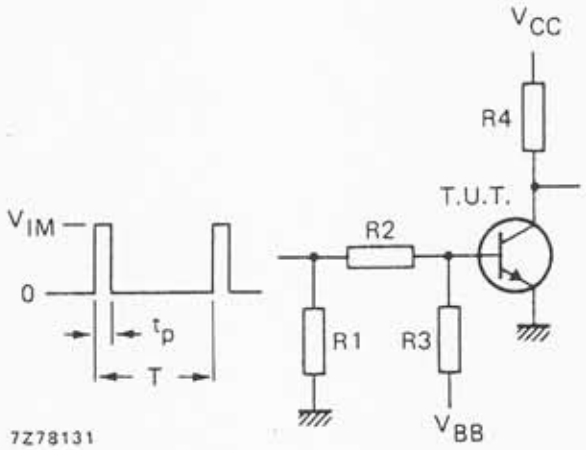


Fig. 3 Switching times test circuit.

V_{IM}	= 15 V	R3	= 22 Ω
V_{CC}	= 20 V	R4	= 10 Ω
V_{BB}	= −4 V	$t_r = t_f$	⩽ 15 ns
R1	= —	t_p	= 20 μs
R2	= 33 Ω	T	= 500 μs