

BDV66A; B
BDV66C; D

DARLINGTON POWER TRANSISTORS

P-N-P epitaxial base Darlington transistors for audio output stages and general amplifier and switching applications. N-P-N complements are BDV67A; B; C and D. Matched complementary pairs can be supplied.

QUICK REFERENCE DATA

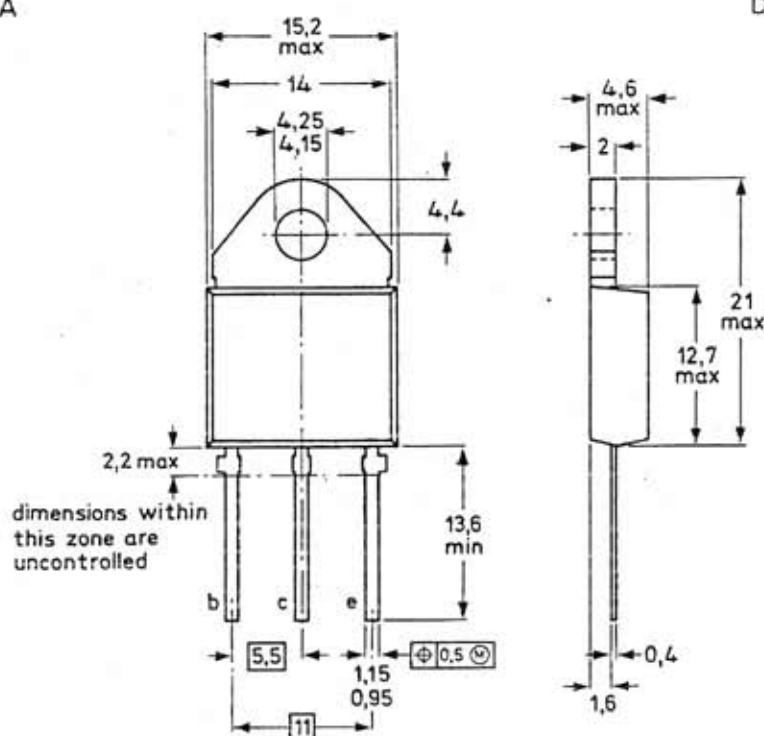
			BDV66A	B	C	D
Collector-base voltage (open emitter)	$-V_{CB0}$	max.	100	120	140	160 V
Collector-emitter voltage (open base)	$-V_{CEO}$	max.	80	100	120	150 V
Collector current (peak value)	$-I_{CM}$	max.		20		A
Total power dissipation up to $T_{mb} = 25^{\circ}\text{C}$	P_{tot}	max.		200		W
Junction temperature	T_j	max.		150		$^{\circ}\text{C}$
D.C. current gain						
$-I_C = 1\text{ A}; -V_{CE} = 3\text{ V}$	h_{FE}	typ.		3000		
$-I_C = 10\text{ A}; -V_{CE} = 3\text{ V}$	h_{FE}	>		1000		
Cut-off frequency						
$-I_C = 5\text{ A}; -V_{CE} = 3\text{ V}$	f_{hfe}	typ.		60		kHz

MECHANICAL DATA

Dimensions in mm

Fig. 1 SOT-93.

Collector connected
to mounting base.



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CIRCUIT DIAGRAM

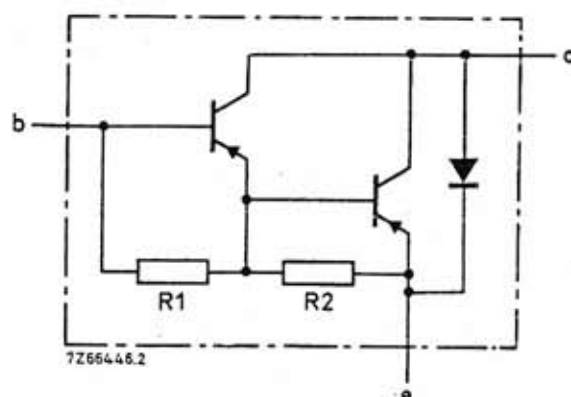


Fig. 2.
R1 typical 3 k Ω
R2 typical 80 Ω

RATINGS

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

			BDV66A	B	C	D
Collector-base voltage (open emitter)	$-V_{CBO}$	max.	100	120	140	160 V
Collector-emitter voltage (open base)	$-V_{CEO}$	max.	80	100	120	150 V
Emitter-base voltage (open collector)	$-V_{EBO}$	max.	5	5	5	5 V
Collector current (d.c.)	$-I_C$	max.		16		A
Collector current (peak value)	$-I_{CM}$	max.		20		A
Base current (d.c.)	$-I_B$	max.		0,5		A
Total power dissipation up to $T_{mb} = 25\text{ }^{\circ}\text{C}$	P_{tot}	max.		200		W
Storage temperature	T_{stg}			-65 to + 150		$^{\circ}\text{C}$
Junction temperature*	T_j	max.		150		$^{\circ}\text{C}$

THERMAL RESISTANCE

From junction to mounting base*	$R_{th\ j-mb}$	=	0,625	K/W
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CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise specified.

Collector cut-off currents

$I_E = 0; -V_{CB} = -V_{CBOmax}$	$-I_{CBO}$	<	1	mA
$I_E = 0; -V_{CB} = -\frac{1}{2}V_{CBOmax}; T_j = 150\text{ }^{\circ}\text{C}$	$-I_{CBO}$	<	4	mA
$I_B = 0; -V_{CE} = -\frac{1}{2}V_{CEOmax}$	$-I_{CEO}$	<	3	mA

Emitter cut-off current

$I_C = 0; -V_{EB} = 5\text{ V}$	$-I_{EBO}$	<	5	mA
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* Based on maximum average junction temperature in line with common industrial practice. The resulting higher junction temperature of the output transistor part is taken into account.

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D.C. current gain*

$$-I_C = 1 \text{ A}; -V_{CE} = 3 \text{ V}$$

$$-I_C = 10 \text{ A}; -V_{CE} = 3 \text{ V}$$

$$-I_C = 16 \text{ A}; -V_{CE} = 3 \text{ V}$$

Base-emitter voltage**

$$-I_C = 10 \text{ A}; -V_{CE} = 3 \text{ V}$$

Collector-emitter saturation voltage*

$$-I_C = 10 \text{ A}; -I_B = 40 \text{ mA}$$

Collector capacitance at $f = 1 \text{ MHz}$

$$I_E = I_e = 0; -V_{CB} = 10 \text{ V}$$

Cut-off frequency

$$-I_C = 5 \text{ A}; -V_{CE} = 3 \text{ V}$$

Diode, forward voltage

$$I_F = 10 \text{ A}$$

D.C. current gain ratio of matched complementary pairs

$$-I_C = 10 \text{ A}; -V_{CE} = 3 \text{ V}$$

Small-signal current gain

$$-I_C = 5 \text{ A}; -V_{CE} = 3 \text{ V}; f = 1 \text{ MHz}$$

Switching times

$$-I_{Con} = 10 \text{ A}; -I_{Bon} = I_{Boff} = 40 \text{ mA}; V_{CC} = -12 \text{ V}$$

Turn-on time

Turn-off time

h_{FE}	typ.	3000
h_{FE}	>	1000
h_{FE}	typ.	1000
$-V_{BE}$	<	2,5 V
$-V_{CEsat}$	<	2 V
C_C	typ.	300 pF
f_{hfe}	typ.	60 kHz
V_F	<	3 V
h_{FE1}/h_{FE2}	<	2,5
h_{fe}	typ.	40
t_{on}	typ.	1 μs
t_{off}	typ.	3,5 μs

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

** $-V_{BE}$ decreases by about 3,6 mV/K with increasing temperature.

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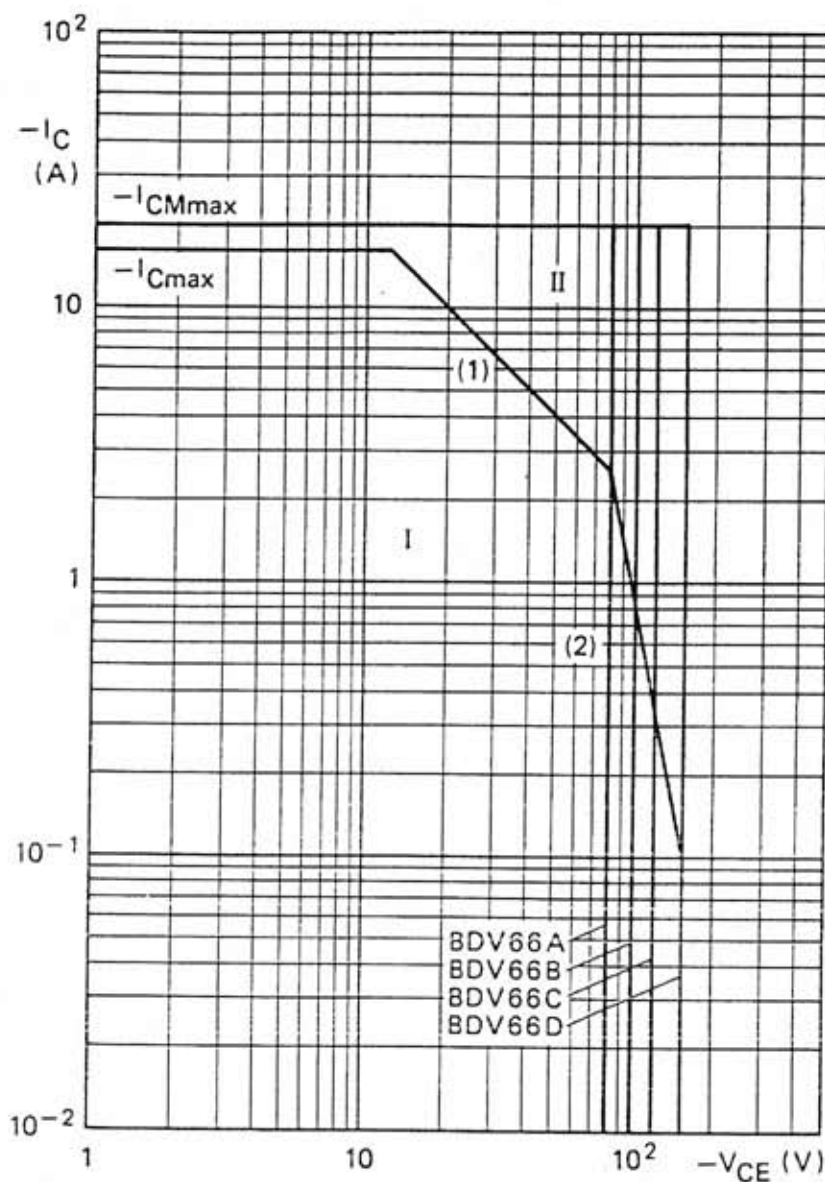


Fig. 3 Safe Operating Area; $T_{mb} \leq 25^\circ C$.

I Region of permissible d.c. operation.

II Permissible extension for repetitive pulse operation.

(1) $P_{tot max}$ line.

(2) Second breakdown limits (independent of temperature).