

BDV67A; B
BDV67C; D

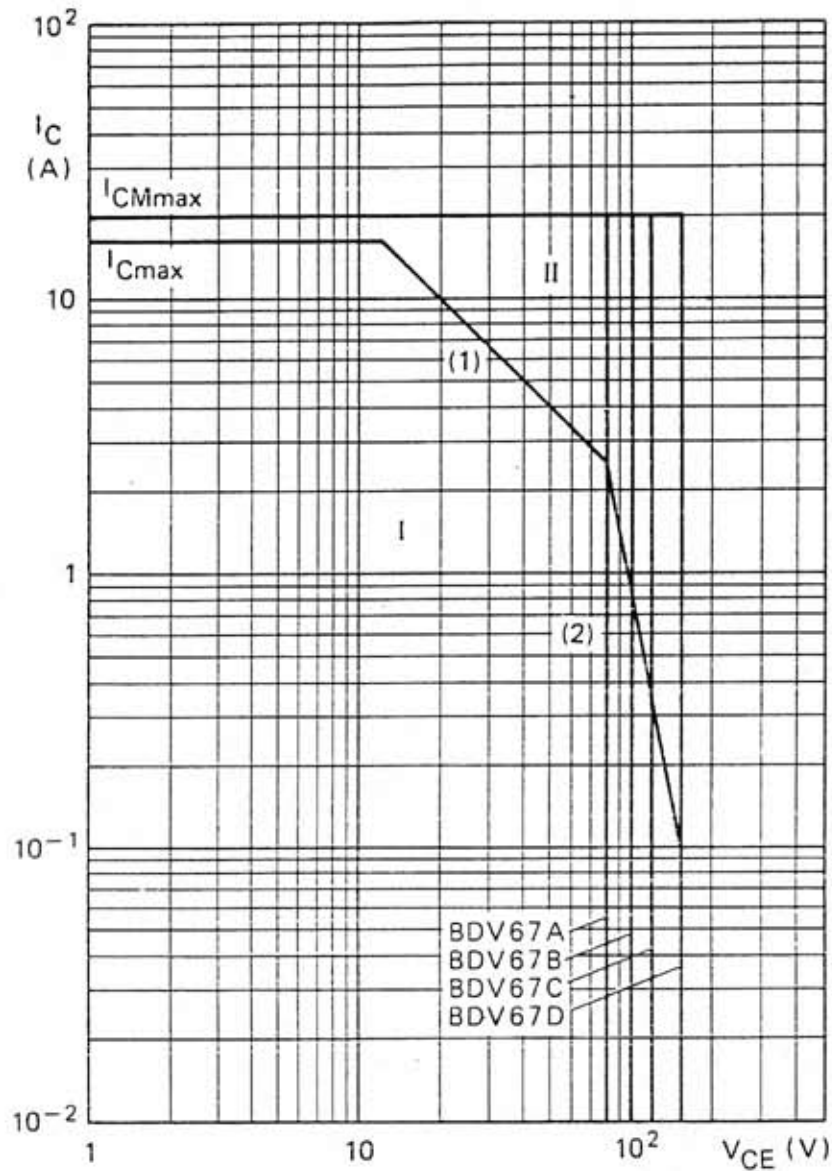


Fig. 4 Safe Operating Area; $T_{mb} \leq 25$ °C.

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).

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DARLINGTON POWER TRANSISTORS

N-P-N epitaxial base Darlington transistors for audio output stages and general amplifier and switching applications. P-N-P complements are BDV66A, B, C and D. Matched complementary pairs can be supplied.

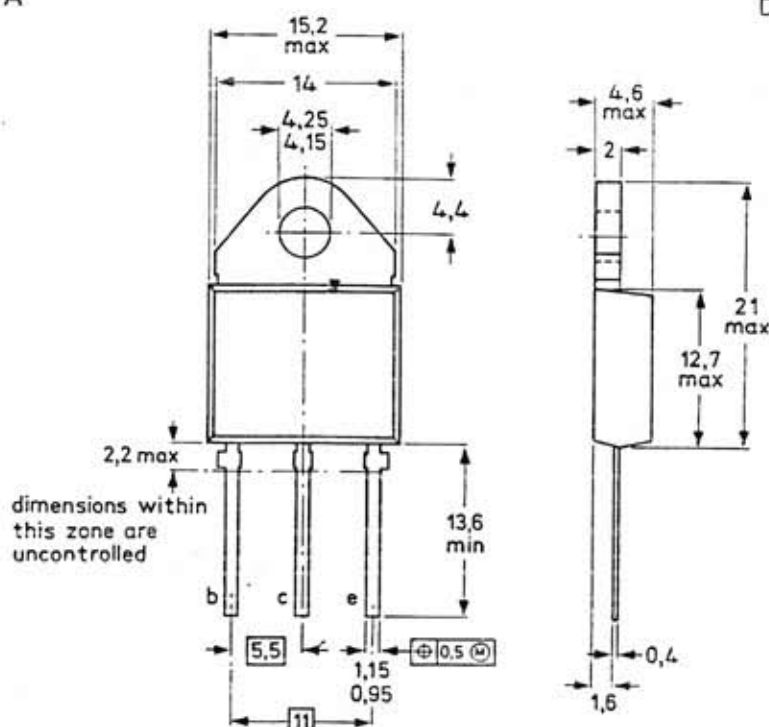
QUICK REFERENCE DATA

			BDV67A	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
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

Fig. 1 SOT-93.

Collector connected to mounting-base.



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CIRCUIT DIAGRAM

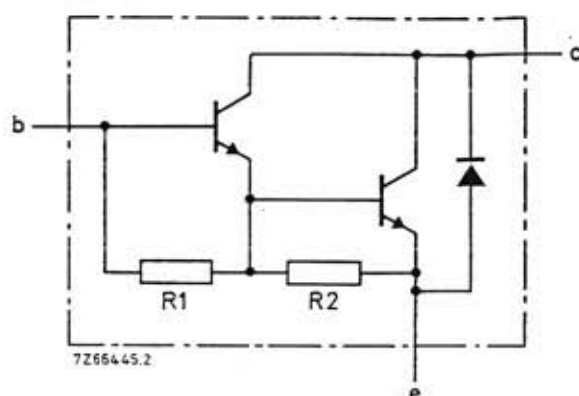


Fig. 2.
R1 typical 3 k Ω
R2 typical 80 Ω

RATINGS

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

			BDV67A	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 $f = 1 \text{ MHz}$

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

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

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

Turn-off breakdown energy with inductive load (see also Fig. 3).

$I_{Con} = 6,3 \text{ A}; -I_{Boff} = 0; t_p = 1 \text{ ms}; T = 100 \text{ ms}$

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
$E(BR)$	>	150 mJ
t_{on}	typ.	1 μs
t_{off}	typ.	3,5 μs

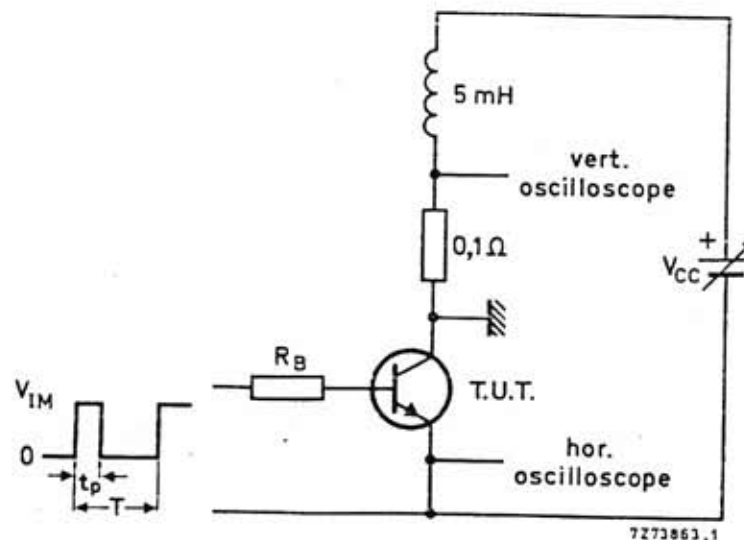


Fig. 3 Test circuit; $V_1 = 12 \text{ V}; R_B = 270 \Omega$.

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

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

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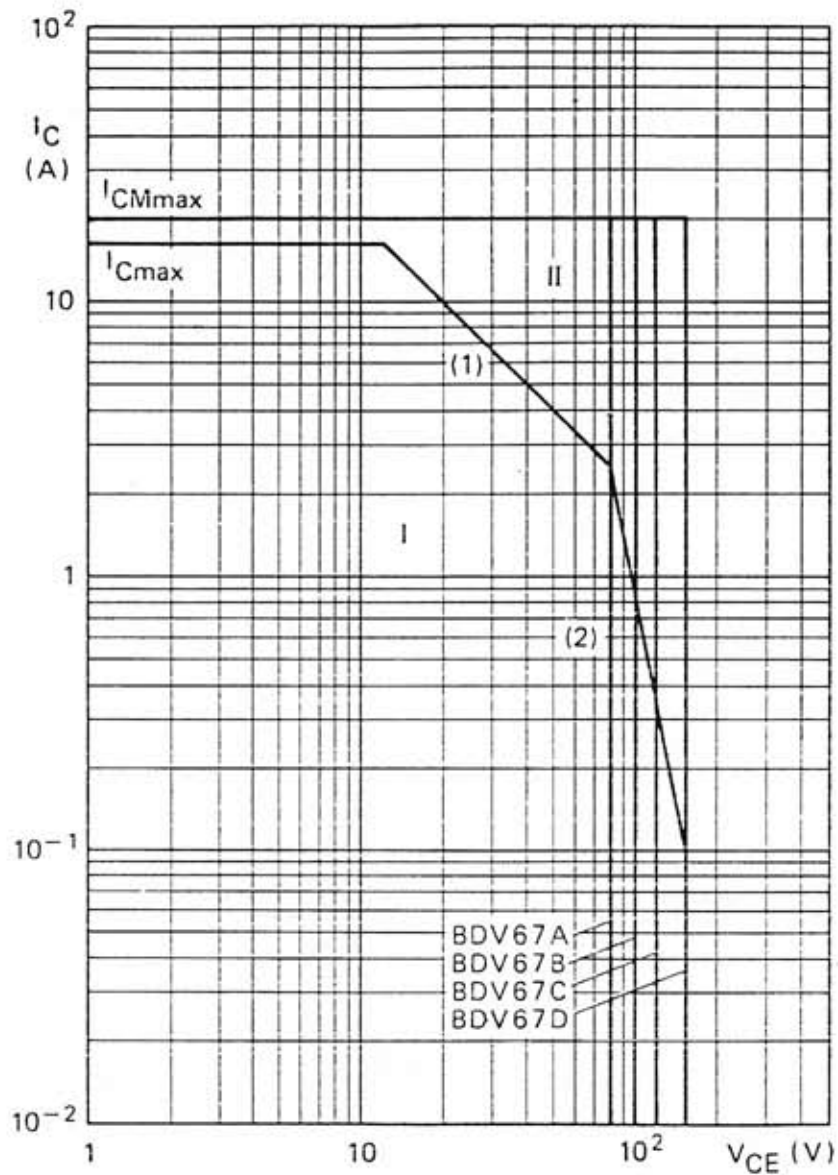


Fig. 4 Safe Operating ARea; $T_{mb} \leq 25^\circ C$.

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).