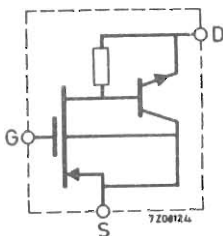


INTEGRATED MOST AMPLIFIER

CIRCUIT DIAGRAM

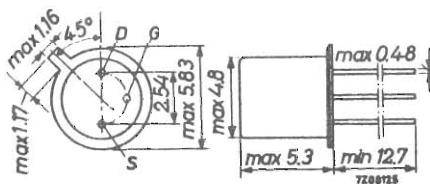


PACKAGE

TO-18

Dimensions in mm

Source connected to case



Accessories available: 56246, 56263

QUICK REFERENCE DATA

Drain-source voltage ($V_{GS} = 0$)	$-V_{DSS}$	max.	20 V
Drain current	$-I_D$	max.	25 mA
Gate-source voltage $-I_D = 10$ mA; $-V_{DS} = 10$ V	$-V_{GS}$	typ.	11 V
Gate-source resistance $-V_{GS}$ up to 20 V; T_j up to 125 °C	r_{GS}	>	100 Ω
Transfer admittance at $f = 1$ kHz $-I_D = 10$ mA; $-V_{DS} = 10$ V	$ y_{fs} $	typ.	75 $m\Omega^{-1}$

The TAA320 is a silicon monolithic integrated circuit, consisting of a MOS transistor and an n-p-n transistor in a TO-18 metal envelope.

The device is primarily intended for audio amplifiers with a very high input resistance (e.g. for crystal pick-ups).

Besides this application the TAA320 is also suitable for other applications where a high input resistance is required, like impedance converters, timing circuits, microphone-amplifiers, etc.

7Z3 1739

RATINGS (Limiting values) ¹⁾

Voltages

Drain-source voltage ($V_{GS} = 0$)	$-V_{DSS}$	max.	20 V
Gate-source voltage ($I_D = 0$)	$-V_{GSO}$	max.	20 V
Non repetitive peak gate-source voltage ($t \leq 10$ ms)	$-V_{GSM}$	max.	100 V

Current

Drain current	$-I_D$	max.	25 mA
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Power dissipation

Total power dissipation up to $T_{amb} = 25$ °C	P_{tot}	max.	200 mW
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Temperatures

Storage temperature	T_{stg}	-65 to +125	°C
Junction temperature	T_j	max.	125 °C

THERMAL RESISTANCE

From junction to ambient in free air	$R_{th\ j-a}$	=	0.5 °C/mW
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¹⁾ Limiting values according to the Absolute Maximum System as defined in IEC publication 134.

CHARACTERISTICS

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

Drain current

$-V_{DS} = 20\text{ V}; V_{GS} = 0$

$-I_{DSS}$ typ. 5 nA
< 1 μA

Gate-source voltage ¹⁾

$-I_D = 10\text{ mA}; -V_{DS} = 10\text{ V}$

$-V_{GS}$ typ. 11 V
9 to 14 V

Gate-source resistance

$-V_{GS}$ up to 20 V; T_j up to 125 $^\circ\text{C}$

$r_{GS} > 100 \cdot \Omega$

Equivalent noise voltage

$-I_D = 10\text{ mA}; -V_{DS} = 10\text{ V}$
B = 50 Hz to 15 kHz

v_n typ. 25 μV

y parameters at $f = 1\text{ kHz}$

$-I_D = 10\text{ mA}; -V_{DS} = 10\text{ V}$

Transfer admittance

$|y_{fs}|$ typ. 75 $\text{m}\Omega^{-1}$
40 to 120 $\text{m}\Omega^{-1}$

Input capacitance

C_{is} typ. 8 pF

Feedback capacitance

$-C_{rs}$ typ. 1.5 pF

Output conductance

g_{os} typ. 0.65 $\text{m}\Omega^{-1}$

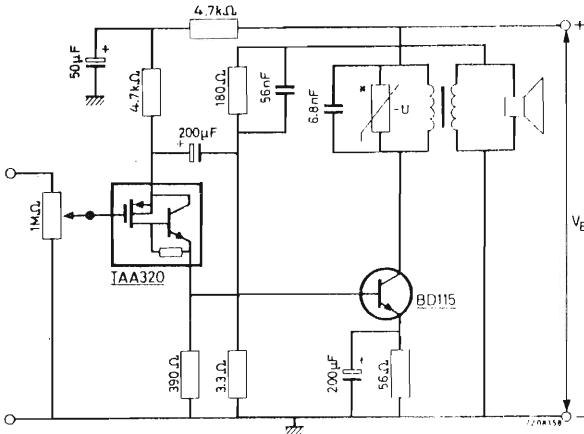
NOTE

To exclude the possibility of damage to the gate oxide layer by an electrostatic charge building up on the high resistance gate electrode, the leads of the device have been short circuited by a clip. The clip has been arranged so that it need not be removed until the device has been mounted in the circuit.

1) $-V_{GS}$ decreases about 6 mV/ $^\circ\text{C}$ with increasing ambient temperature at a constant $-I_D$.

TAA320

APPLICATION INFORMATION 2 W audio amplifier with TAA320 and BD115



* The voltage dependent resistor (2322 552 03381) suppresses voltage transients that might otherwise exceed the safe operating limits of the BD115.

Supply voltage	V_B	=	100 V
Collector current of BD115	I_C	typ.	50 mA
Drain current of TAA320	$-I_D$	typ.	9.5 mA
Primary d.c. resistance of output transformer			140 Ω
Primary inductance of output transformer			2.7 H
A.C. collector load for BD115			1.8 k Ω

Performance at $f = 1$ kHz; feedback = 16 dB

Output power at $d_{tot} = 10\%$

(on primary of the output transformer)

P_O typ. 2.6 W

Input voltage for $P_O = 50$ mW

$V_i(\text{rms})$ typ. 13.5 mV

Input voltage for $P_O = 2$ W

$V_i(\text{rms})$ typ. 86 mV

Total distortion at $P_O = 2$ W

d_{tot} typ. 3.6 %

Minimum frequency response (-3 dB)

60 Hz to 20 kHz

Signal-noise ratio at $P_O = 2$ W

typ. 73 dB

Mounting instruction for BD115

Proper continuous operation is ensured up to $T_{amb} = 50$ °C, provided the BD115 is directly mounted on a 1.5 mm blackened Al. heatsink of 30 cm² with a clamping washer of type 56218.

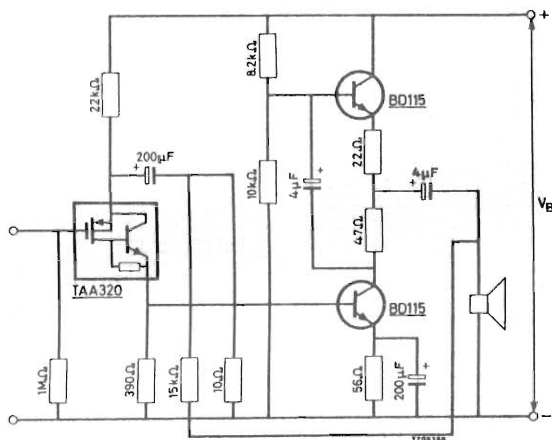
If the transistor is mounted on a heatsink with a mica washer, the heatsink should have an area of 50 cm².

Recommended diameter of hole in heatsink: 7.7 mm.

7Z3 1740

APPLICATION INFORMATION (continued)

4 W audio amplifier with TAA320 and 2 transistors of type BD115.



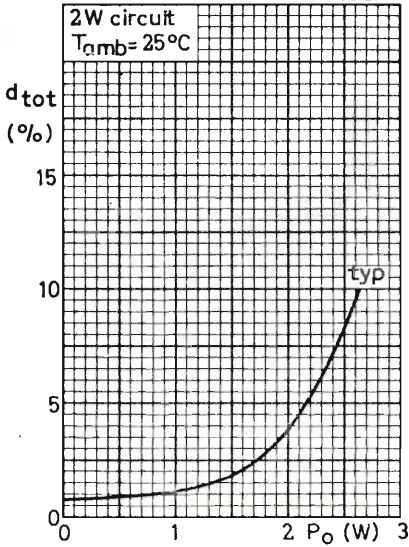
Supply voltage	V_B	=	200 V
Collector current of a BD115	I_C	typ.	52 mA
Drain current of TAA320	$-I_D$	typ.	8.6 mA

Performance at $f = 1$ kHz; feedback = 12 dB

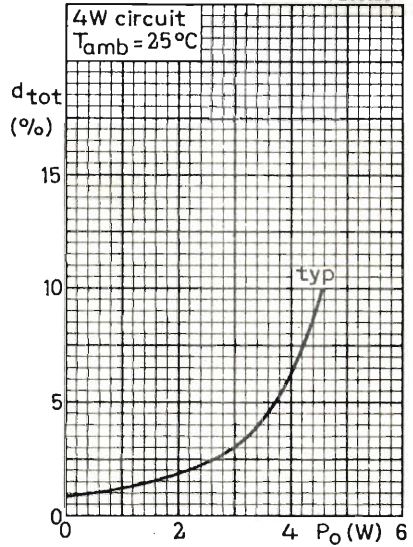
Output power at $d_{tot} = 10\%$	P_o	typ.	4.5 W
Input voltage for $P_o = 50$ mW	$V_{i(rms)}$	typ.	7.5 mV
Input voltage for $P_o = 4$ W	$V_{i(rms)}$	typ.	67 mV
Total distortion at $P_o = 4$ W	d_{tot}	typ.	6 %
Minimum frequency response (-3 dB)			50 Hz to 20 kHz
Signal-noise ratio at $P_o = 4$ W		typ.	73 dB
Mounting instruction for BD115 see page 4			

TAA320

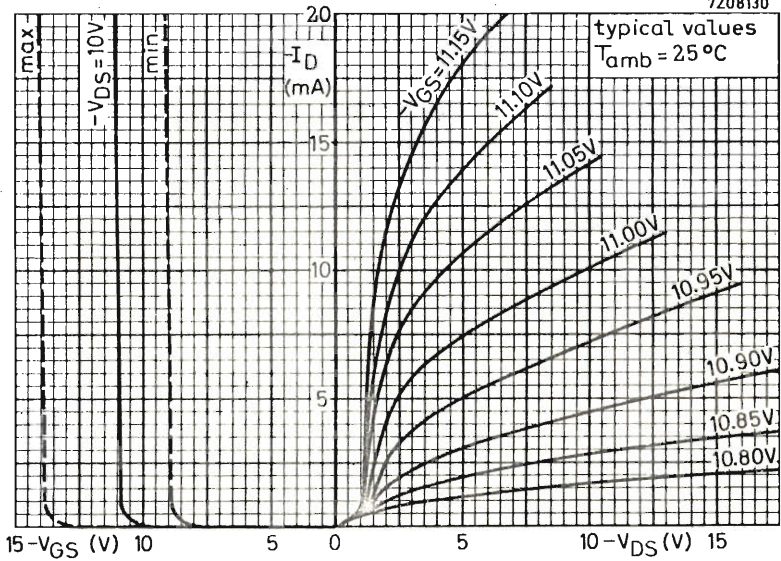
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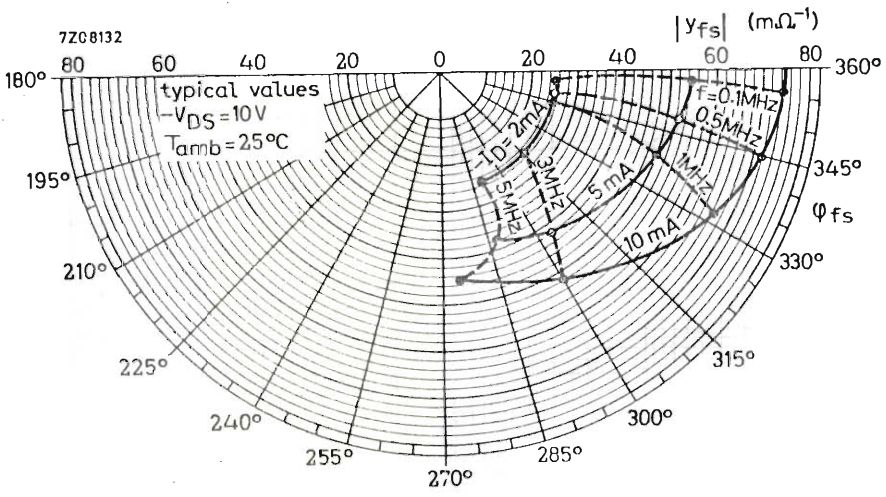
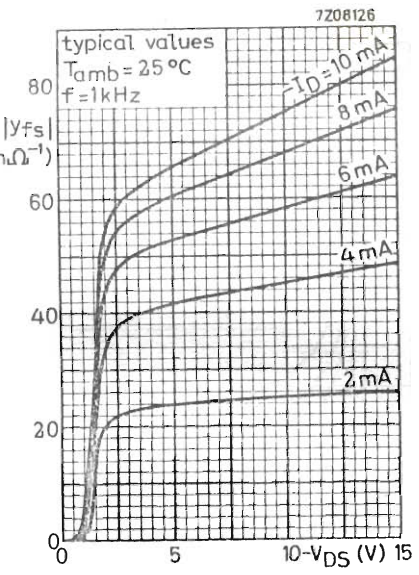
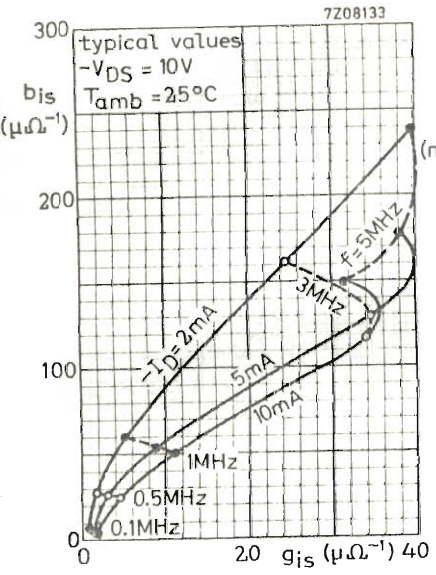


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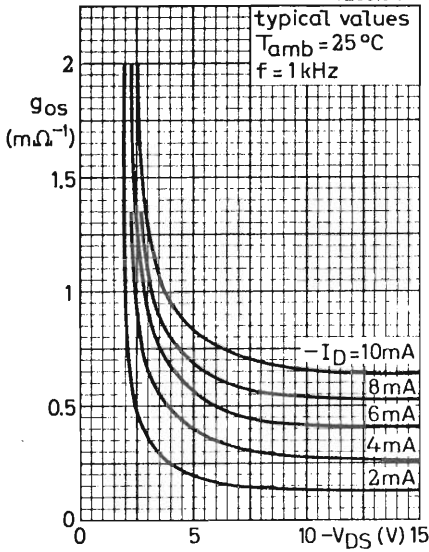
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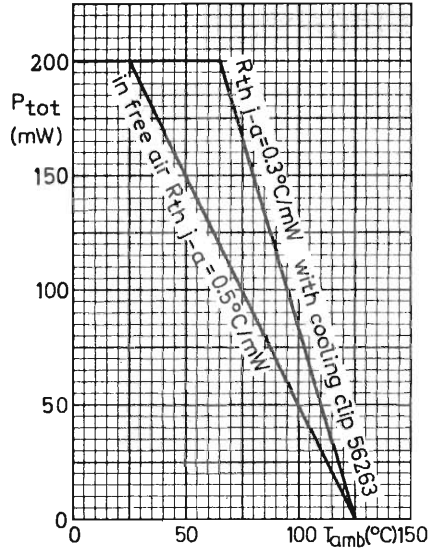


TAA320

7208134



7208129



7208131

