8020-PP

The wide bandwidth toroidal push-pull output transformer 8020 is meant for medium power (20 Watt) high quality tube amplifiers with special tubes like the famous 300B and 2A3 triodes, or the standard EL84 or 6V6 medium power pentodes. Due to its 8 kOhm primary the effective primary load line is close to horizontal, thus creating extreme low distortions plus a good speaker damping without any feedback. For most domestic applications this is THE standard for extreme detailed clean sound reproduction with horn loudspeakers. The transformer has 33 % Ultra Linear feedback taps and the secondary impedance is at the standardized 5 Ohm. See (*) for a detailed description of this amplifier set up

(*) Menno van der Veen: Modern High-end Valve Amplifiers based on toroidal output transformers; Elektor, ISBN: 978-0-905705-63-7; chapter 11.

dimensions: 105mm x 55mm

weight: 1.2 Kg.

price: 160€

technical data:
WIDE BANDWIDTH TOROIDAL PUSH-PULL TUBE OUTPUT TRANSFORMER

Type and Application: VDV-8020.

Primary Impedance: $R_{aa} = 8 \, [k\Omega]$

Secondary Impedance: $R_{ls} = 5 \, [\Omega]$

Turns Ratio $N_p/N_s$: Ratio = 40

UL-tap: $\text{tap} = 33 \, [%]$

Cathode Feedback Ratio: $cfb = 0 \, [%]$

-$0.1 \, \text{dB Frequency Range [Hz to kHz]}$ (3): $f_{ff} = 8.261 \, f_{hf} = 51.826$

-$1 \, \text{dB Frequency Range [Hz to kHz]}$ (3): $f_{fl} = 3.524 \, f_{h1} = 89.045$

-$3 \, \text{dB Frequency Range [Hz to kHz]}$ (3): $f_{f3} = 1.793 \, f_{h3} = 131.564$

Nominal Power (1): $P_n = 20 \, [W]$

-$3 \, \text{dB Power Bandwidth starting at}$: $f_u = 28.5 \, [Hz]$

Total primary Inductance (2): $L_p = 485 \, [H]$

Primary Leakage Inductance: $L_{sp} = 8 \, [mH]$

Effective Primary Capacitance: $C_{ip} = 0.25 \, [nF]$

Total Primary DC Resistance: $R_{ip} = 155.4 \, [\Omega]$

Total Secondary DC Resistance: $R_{is} = 0.161 \, [\Omega]$

Tubes Plate Resistance per section: $r_i = 8 \, [k\Omega]$

Insertion Loss: $I_{loss} = 0.219 \, [dB]$

Q-factor 2nd order HF roll-off (5): $Q = 0.671$

HF roll-off Specific Frequency (5): $F_o = 139.013 \, [kHz]$

Quality Factor (5): $Q_F = 6.063 \times 10^4$

Quality Decade Factor = log($Q_F$) (5): $Q_{DF} = 4.783$

Tuning Factor (5): $T_F = 1.21$

Tuning Decade Factor = log($T_F$) (5): $T_{DF} = 0.083$

Frequency Decade Factor (4,5): $F_{DF} = 4.866$

(1): calculated under the conditions of balancing the DC-currents and the AC-anode voltages of the powertubes driving the transformer
(2): measured at 230Vrms at 50Hz over total primary
(3): calculation at 1 Watt in $R_{ls}$; $r_i$ and $R_{ls}$ are pure Ohmic
(4): defined as $F_{DF} = \log(f_{h3}/f_{f3}) = \text{number of frequency decades transferred}$
(5): ir. Menno van der Veen; Theory and Practise of Wide Bandwidth Toroidal Output Transformers; preprint 3887, 97th AES Convention San Francisco
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Final specs can deviate 15% or improve without notice.
TRAFCO TOROIDAL PUSH-PULL TRANSFORMER; VDV-8020

Frequency Response; Vertical 1 dB/div; Horizontal .1 Hz to 1 MHz

Phase Response; Vertical 30 deg./div; Horizontal .1 Hz to 1 MHz

Differential Phase Distortion; vert. 30 deg./div; hor .1 Hz to 1 MHz

See: W.M. Leach, Differential Time Delay.; JAES sept.89 pp.709-715

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