Stereo 20 Parallel output.

Method:
Both inputs and outputs are in parallel.
Both outputs are in phase and have the same amplitude.

Single channel with the Impedance set to 16Ω and 10Watts RMS output:

W = Vsq/R = 12.649V x 12.649V /16Ω = <u>9.999 Watts</u>
V = √ R•W = √ 16Ω•10W = 12.649V
I = V/R = 12.649V/16Ω = 0.7905A

Now put both secondary in parallel, which doubles the current available (see below), but the voltage will not increase as they are in phase and have the same amplitude. This means with twice the current available, you can reduce the load by half to 8Ω but keeping the same voltage across the load.

Checked by:
(16Ω) V = I • R = 0.7905A • 16Ω = 12.648V
(8Ω) V = I • R = 1.581A • 8Ω = 12.648V

So for a an 8Ω load:
W = Vsq/R = 12.649 x 12.649/8 = <u>19.999 Watts</u>

Checking back for the current:
I = W/V = 19.999/12.649V = 1.581A

Taking into account that the equivalent circuit of both output circuits are the same, you can apply Thevenin's theory – and thus the current will be divided by two and 0.7905A will flow in each output circuit:
So the current supplied by one channel = I load (8Ω)/2 = 1.581/2 = 0.7905A

This verifies back to the single channel operation above.

Taking into account the transformer equations:
K = N1/N2 = V1/V2 = I1/I2
K = √ Z1/Z2

With impedance matches of 8KΩ (Z1) & 16Ω (Z2) K can be calculated.
K = √ Z1/Z2 = √ 8KΩ/16Ω =22.36

K = I2/I1 = 22.36 = 0.7905 / I1
Rearranging to get I1 = I2 / K = 0.7905 / 22.36 = 0.035mA

So it can be seen the current flowing in the anode circuit of one channel will be the same for both Parallel and single channel modes.