

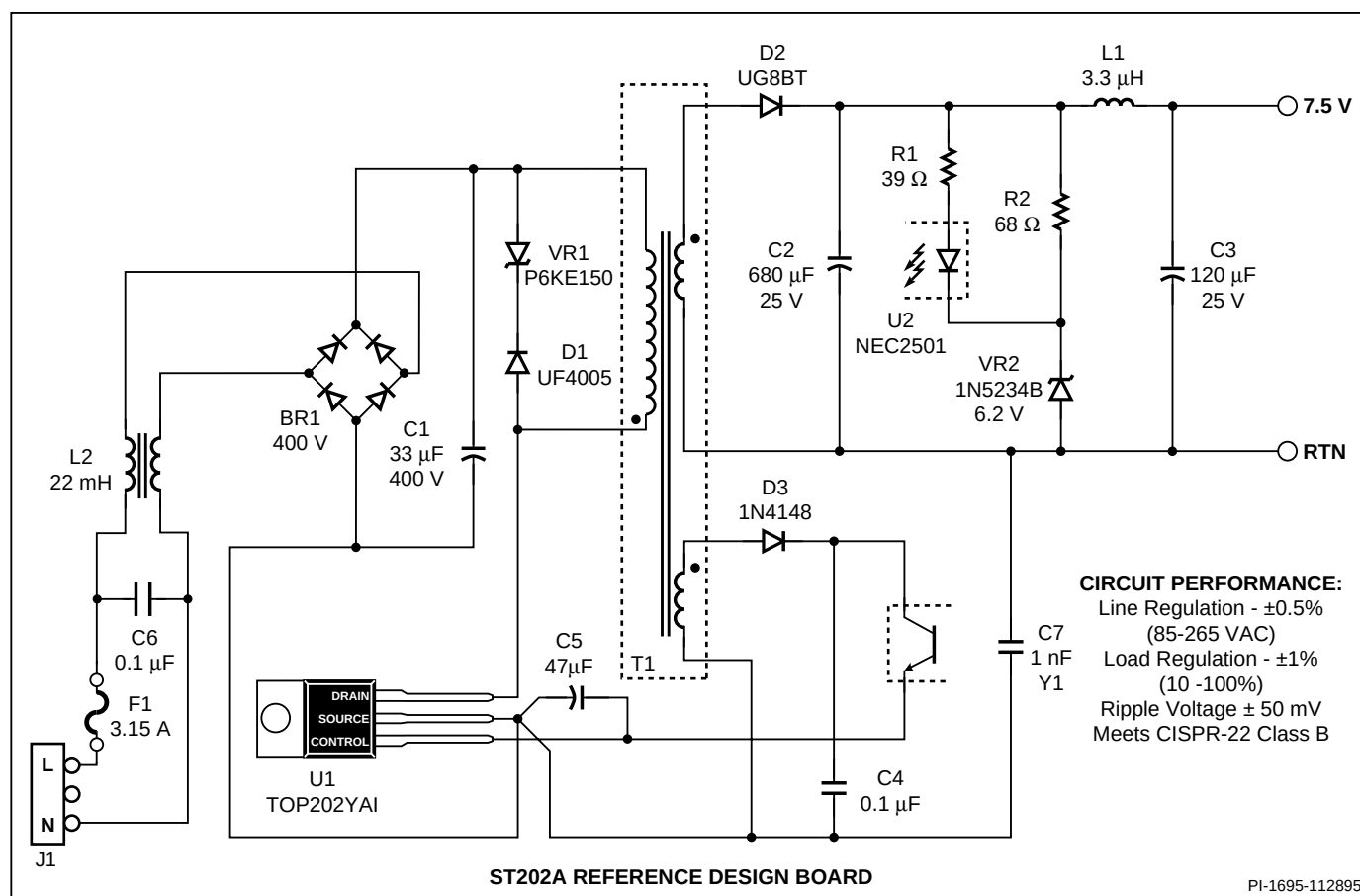


Figure 8. Schematic Diagram of a 15 W Universal Input Power Supply Utilizing the TOP202 and Simple Optocoupler Feedback.

Simple Optocoupler Feedback

The circuit shown in Figure 8 is a 7.5 V, 15 W secondary regulated flyback power supply using the TOP202 that will operate from 85 to 265 VAC input voltage. Improved output voltage accuracy and regulation over the circuit of Figure 7 is achieved by using an optocoupler and secondary referenced Zener diode. The general operation of the power stage of this circuit is the same as that described for Figure 7.

The input voltage is rectified and filtered by BR1 and C1. L2, C6 and C7 reduce conducted emission currents. The bias winding is rectified and filtered by D3 and C4 to create a typical 11 V bias voltage. Zener diode (VR2) voltage together with the forward voltage of the LED in the optocoupler U2 determine the output voltage. R1, the optocoupler

current transfer ratio, and the TOPSwitch control current to duty cycle transfer function set the DC control loop gain. C5 together with the control pin dynamic impedance and capacitor ESR establish a control loop pole-zero pair. C5 also determines the auto-restart frequency and filters internal gate drive switching currents. R2 and VR2 provide minimum current loading when output current is low. See DN-11 for more information regarding the use of the TOP202 in a low-cost, 15 W universal power supply.

Accurate Optocoupler Feedback

The circuit shown in Figure 9 is a highly accurate, 15 V, 30 W secondary-regulated flyback power supply that will operate from 85 to 265 VAC input voltage. A TL431 shunt regulator directly senses and accurately regulates the output voltage. The effective output

voltage can be fine tuned by adjusting the resistor divider formed by R4 and R5. Other output voltages are possible by adjusting the transformer turns ratios as well as the divider ratio.

The general operation of the input and power stages of this circuit are the same as that described for Figures 7 and 8. R3 and C5 tailor frequency response. The TL431 (U2) regulates the output voltage by controlling optocoupler LED current (and TOPSwitch duty cycle) to maintain an average voltage of 2.5 V at the TL431 input pin. Divider R4 and R5 determine the actual output voltage. C9 rolls off the high frequency gain of the TL431 for stable operation. R1 limits optocoupler LED current and determines high frequency loop gain. For more information, refer to application note AN-14.