

Key Design Points

- For nominal undervoltage set point VUV:
 $R1 = (V_{UV} - 2.35 \text{ V}) / 50 \mu\text{A}$. $V_{OV} = (R1 \times 135 \mu\text{A}) + 2.5 \text{ V}$.
- Locate C10, C11, and R3 close to the U1 CONTROL pin, with ground connections returned to SOURCE pin.
- Minimize primary and secondary high current loop areas to reduce parasitic inductance.
- Optocoupler U2 should have a controlled CTR range of 100 to 200% for optimum loop stability.
- Size transformer reset components to ensure transformer reset at minimum operating voltage without exceeding.
- 170 V drain voltage at high line. It may be necessary to gap T1 to offset effect of Q4-Q6 gate capacitance.
- Set Zener VR1 clamp voltage to 150 V to both safely limit the DRAIN below BV_{DSS} and guarantee transformer reset.
- Select number of bias turns to provide 12 V to 14 V at minimum input voltage and full load.
- Main primary power return should be connected to the DPA-Switch tab, not to the SOURCE pin.
- Scale time constant of C9 and L2 to allow C9 to reset completely during minimum on-time conditions.
- Consult AN-31 for additional design tips and information.

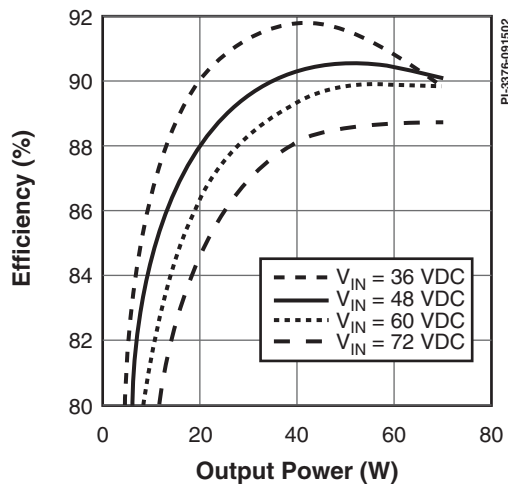


Figure 2. Efficiency vs. Output Power.

Transformer Parameters

Core Material	EFD25, 3F3 or equivalent, gapped for $A_{LG} = 1100 \text{ nH/t}^2$
Bobbin	EFD25, 10 pin (B&B B-025 or equivalent)
Winding Details	Bias: 5T, 30 AWG Primary: 6T + 5T, 4 × 26 AWG Secondary: 3T, 0.005" Cu foil
Winding Order (pin numbers)	Primary (3-2), tape, Bias (4-5), tape, Secondary (6,7-9,10), tape, Primary (2-1), tape
Inductance	Primary: 130 μH , $\pm 10\%$ Leakage: 10 μH (maximum)
Primary Resonant Frequency	3 MHz (minimum)

Table 1. Transformer Parameters. (AWG = American Wire Gauge, NC = No Connection)

Output Inductor Parameters

Core Material	EE22, TDK PC40 Material, gapped for $A_{LG} = 250 \text{ nH/t}^2$
Bobbin	TDK BE-22-5116
Winding Details	4T, 0.016" Cu foil
Inductance	4 μH , $\pm 10\%$

Table 1. Output Inductor Parameters.

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