

Reference Design RD-324

Fairchild PFM Controller FAN7621 - 200W Design

Featured Device	Application	Input Voltage Range	Output Voltage (Rated Current)	Rated Output Power	Topology
FAN7621 FYP2010DN FQPF8N60C	LCD TV	340~400V _{DC}	24V (8.3A)	200W	LLC Resonant Half-Bridge Converter

Key Features

FAN7621

- Variable Frequency Control with 50% Duty Cycle for Half-Bridge Resonant Converter Topology
- High-Efficiency through Zero Voltage Switching (ZVS)
- Fixed Dead Time: 350ns
- Up to 300kHz Operating Frequency
- Pulse Skipping for Frequency Limit (Programmable) at Light-Load Condition
- Remote On/Off Control Using Control Pin
- Various Protection functions: Over-Voltage Protection (OVP), Overload Protection (OLP), Over-Current Protection (OCP), Abnormal Over-Current Protection (AOCP), and Internal Thermal Shutdown (TSD)

FYP2010DN

- 100V/20A Schottky Barrier Rectifier, Common Cathode
- Low Forward Voltage Drop: 0.77V T_A= 25°C, 10A

FQPF8N60C

- 600V/7.5A Advanced QFET
- Low Gate Charge : Typical: 28nC
- Low R_{ds}^{on} : 1.2Ω Max. T_A= 25°C

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2. Transformer

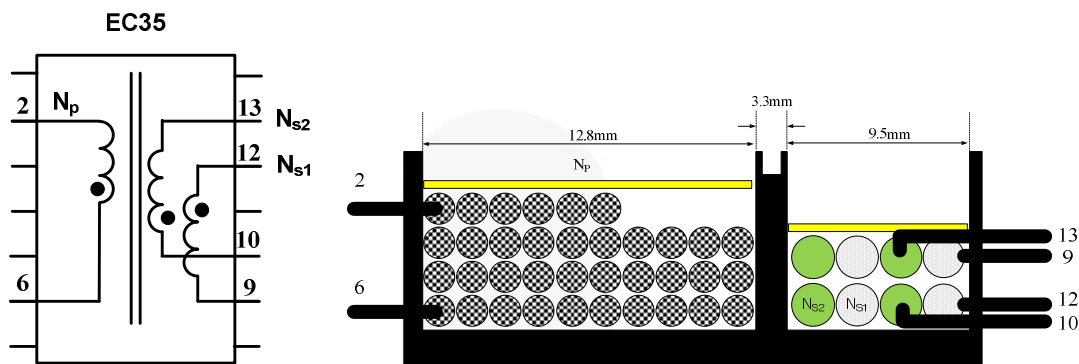


Figure 2. Transformer Schematic Diagram

2.1. Winding Specification

	Pin (S → F)	Wire	Turns	Winding Method
N_p	6 → 2	0.08 ϕ ×88 (Litz Wire)	36	
N_{s1}	12 → 9	0.08 ϕ ×234 (Litz Wire)	4	Bifilar Winding
N_{s2}	10 → 13	0.08 ϕ ×234 (Litz Wire)	4	Bifilar Winding

Core: EC35 ($A_e=106 \text{ mm}^2$)

Bobbin: EC35 (Horizontal)

2.2. Electrical Characteristics

	Pin	Specification	Remark
Primary-Side Inductance (L_p)	2 – 6	550 $\mu\text{H} \pm 10\%$	100kHz, 1V
Primary-Side Effective Leakage Inductance (L_r)	2 – 6	110 $\mu\text{H} \pm 10\%$	Short One of the secondary Windings

3. Typical Efficiency

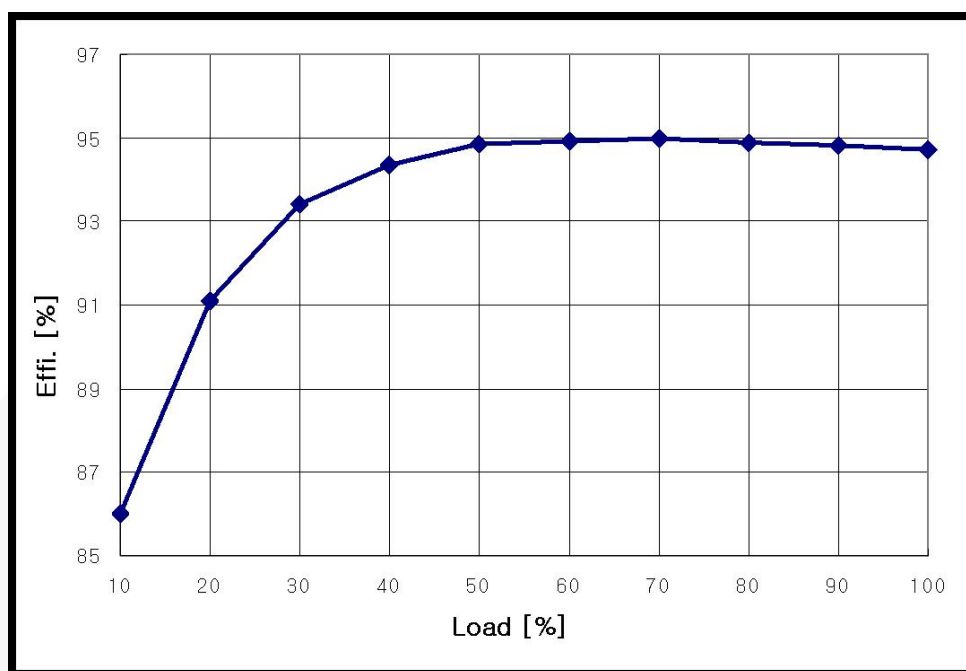


Figure 3. Typical Efficiency

Related Resources

[*FAN7621 — PFM Controller for Half-Bridge Resonant Converters Datasheet*](#)

[*AN-4151 — Half-Bridge LLC Replacement Converter Design using FSFR-Series Fairchild Power Switches \(FPS™\)*](#)

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