

# FAN5350 Evaluation Board User Manual

- 3MHz Fixed Frequency Operation
- 16 $\mu$ A Typical Quiescent Current
- Best-in-Class Load Transient
- Up to 600mA Output Current
- 2.7V to 5.5V Input Voltage Range
- 1.82V Fixed Output Voltage
- Synchronous Operation
- Pulse Skip and Power Save Mode
- 6-lead 3x3mm MLP and 5-bump 1x1.37mm WLCSP Packages

## Description:

The **FAN5350 Evaluation Board** is a compact circuit including the FAN5350 MPX or FAN5350 UCX, a 1 $\mu$ H inductor and one small 4.7 $\mu$ F input and output capacitor. The FAN5350 demo board is a completely assembled and tested surface mount board, providing easy probe access points to all inputs and outputs so that electrical characteristics and waveforms can be easily measured.

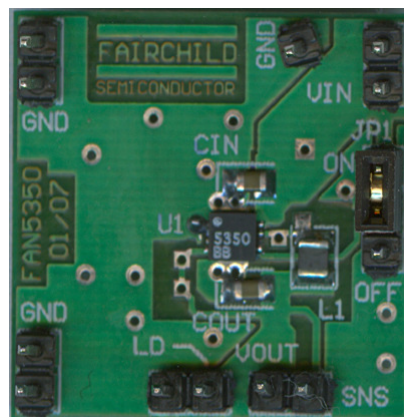


Figure 1: FAN5350 MPX

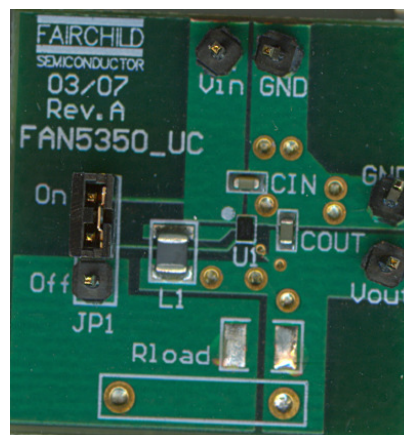


Figure 2: FAN5350 UCX

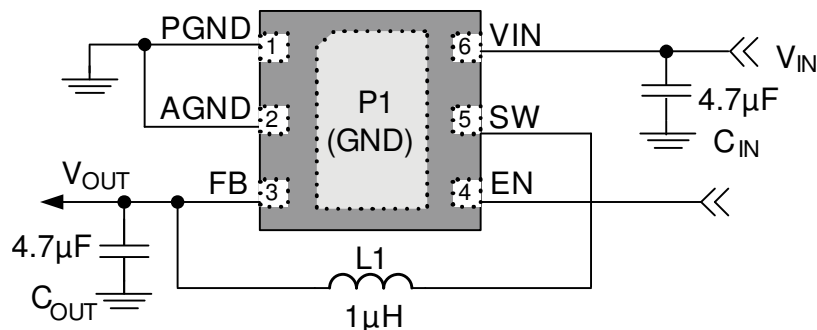


Figure 3: MLP Schematic Diagram

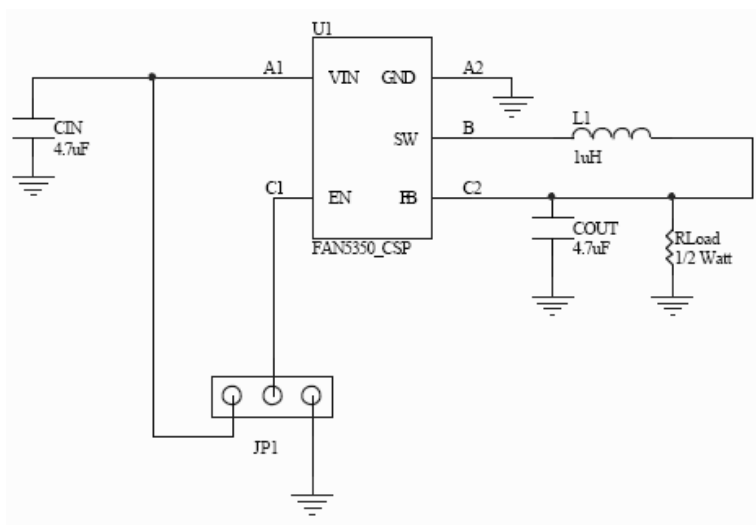


Figure 4: WLCSP Schematic Diagram

### Where To Begin:

- 1: Connect  $V_{IN}$  (2.7 to 5.5V) and GND (0V).
- 2: Use jumper JP1 to select "ON" and "OFF" modes.
- 3: Verify that the output voltage  $V_{OUT}$  remains constant at 1.82V for varying input voltages and the load current.
- 4: To measure the supply current in non-switching condition, the FB pin has to be forced with an external voltage higher than  $V_{OUT}$  nominal.  $V_{FB} = 2V$  is a good choice. To measure the supply current in switching condition, the digital current meter readings should be averaged until a stable value is displayed.
- 5: Observe that in OFF mode (EN connected to GND) the supply current drops below  $1\mu A$ . A typical value at room temperature is  $\sim 50nA$  provided that there is no leakage current through the PCB. Please ensure the PCB surface is very clean when performing this measurement.

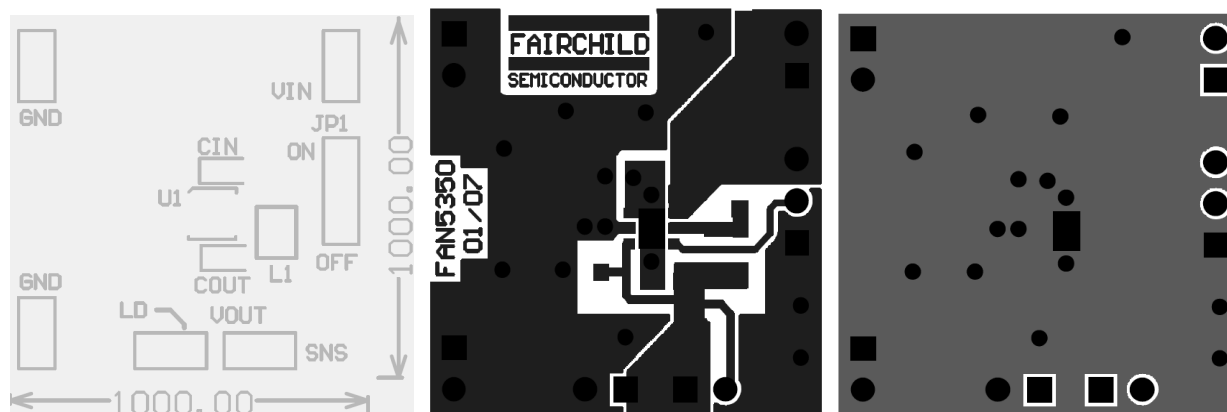


Figure 3: MLP PCB Layout

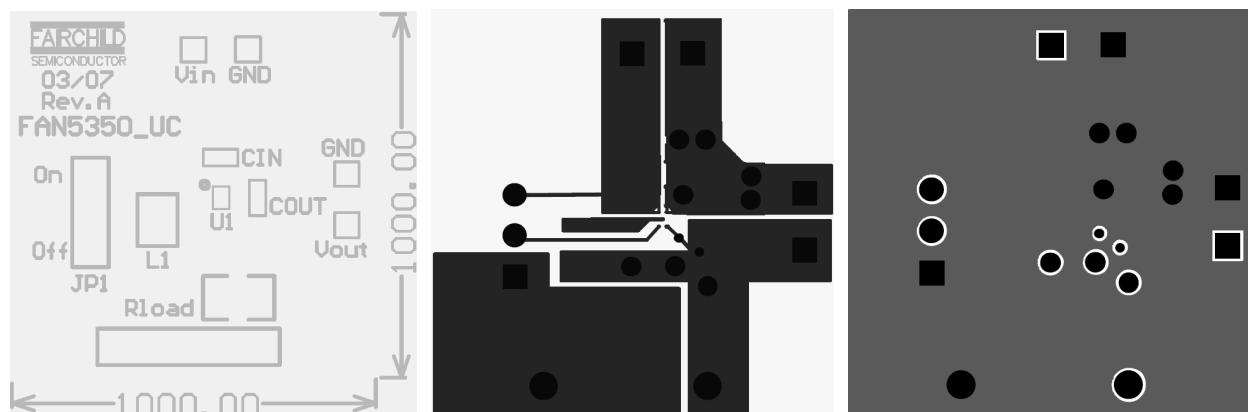


Figure 4: WLCSP PCB Layout

Table 1: WLCSP Bill of Materials

| Description                                   | Qty | Ref.                      | Vendor    | Part Number        |
|-----------------------------------------------|-----|---------------------------|-----------|--------------------|
| Inductor 1.3uH, 1.2A, 90mohm                  | 1   | L1                        | FDK       | MIPSA2520D1R0      |
| Capacitor 4.7uF, 10%, 6.3V, X5R, 0603         | 2   | CIN,COUT                  | MURATA    | GRM39 X5R 475K 6.3 |
| Hardware Connector Header .1 SINGLE STR 36POS | 7   | Vin,Vout,GND, ON/OFF(JP1) | Digi-Key  | S1011-36-ND        |
| IC DC/DC Regulator in CSP, 5 bumps            | 1   | U1                        | Fairchild | FAN5350UC          |
| Load Resistor                                 | 1   | Rload                     | Any       |                    |
| Hardware, SHUNT, PHBR 15 AU                   | 1   | ON, PWM                   | DIGI-KEY  | A26227-ND          |

Table 2: MLP Bill of Materials

| Description                                   | Qty | Ref.                          | Vendor    | Part Number        |
|-----------------------------------------------|-----|-------------------------------|-----------|--------------------|
| Inductor 1.3uH, 1.2A, 90mohm                  | 1   | L1                            | FDK       | MIPSA2520D1R0      |
| Capacitor 4.7uF, 10%, 6.3V, X5R, 0603         | 2   | CIN,COUT                      | MURATA    | GRM39 X5R 475K 6.3 |
| Hardware Connector Header .1 SINGLE STR 36POS | 14  | Vin,Vout,GND, LD, ON/OFF(JP1) | Digi-Key  | S1011-36-ND        |
| IC DC/DC Regulator in MLP, 6 pin              | 1   | U1                            | Fairchild | FAN5350MPX         |
| Hardware, SHUNT, PHBR 15 AU                   | 1   | ON, PWM                       | DIGI-KEY  | A26227-ND          |

Table 3: Ordering Information

| Product Number | Pb-Free | Operating Temperature Range | Package Type          |
|----------------|---------|-----------------------------|-----------------------|
| FAN5350UCX     | Yes     | -40°C to 85°C               | 5-bump WLCSP 1x1.37mm |
| FAN5350MPX     | Yes     | -40°C to 85°C               | 6-pin MLP 3x3mm       |