July 2005

FAN5330/5333A/B

Evaluation Board User Manual

- 1.6MHz PWM Switching Frequency
- Adjustable Output Voltage
- 100mV Feedback Voltage (FAN5330 and FAN333A)
- 300mV Feedback Voltage (FAN5333B)
- Low Shutdown Current: <1uA
- Cycle-by-Cycle Current Limit
- 1.5A Peak Switch Current
- Small 5-lead SOT23 Package

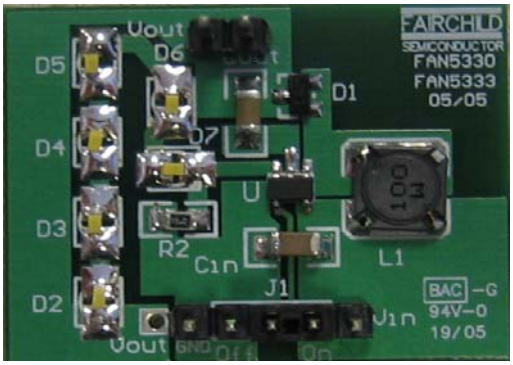

Figure 1: FAN5330/33 SX

Description:

The **FAN53330 and FAN5333A/B Evaluation Boards** are compact circuits including the FAN5330 SX or FAN5333A/B SX in a 5-Lead SOT23 package and an external Schottky diode which delivers stored inductor current to six of Fairchild's super bright white LEDs. The FAN5330 and FAN5333A/B demo boards are completely assembled and tested surface mount boards, providing easy probe access points to all inputs and outputs so that electrical characteristics and waveforms can be easily measured.

Where To Begin:

1: Connect Vin (1.8 to 5.5V) and Gnd (0V).

2: Use jumper J1 to select "ON" and "OFF" modes.

3: Verify that the output current I_{LED} = .02A for all models.
(**Note:** $I_{LED} = (V_{REF} / R)$ where V_{REF} = 0.1V(typical) for the FAN5333A/FAN5330 and V_{REF} = 0.3V(typical) for the FAN5333B. R = 5Ohm for the FAN5333A/FAN5330 and R = 15Ohm for the FAN5333B)

4: To verify output current at V_{OUT}, observe that the current remains constant for varying input voltage levels.

5: To verify supply current in “ON” and “OFF” modes, observe that in shutdown mode, supply current will drop below 1uA at Vin.

6: Verify that V_{OUT} is independent of V_{IN} in the 1.8 to 5.5V range and the load current does not exceed its maximum value.
(**Note:** Although the load current is indirectly limited by the maximum inductor current, V_{OUT} is not allowed to be shorted to ground. Failure results in damaging the Schottky diode and/or the IC)
(**Note:** The Schottky diode D1, rectifies the voltage pulses generated by the inductor)

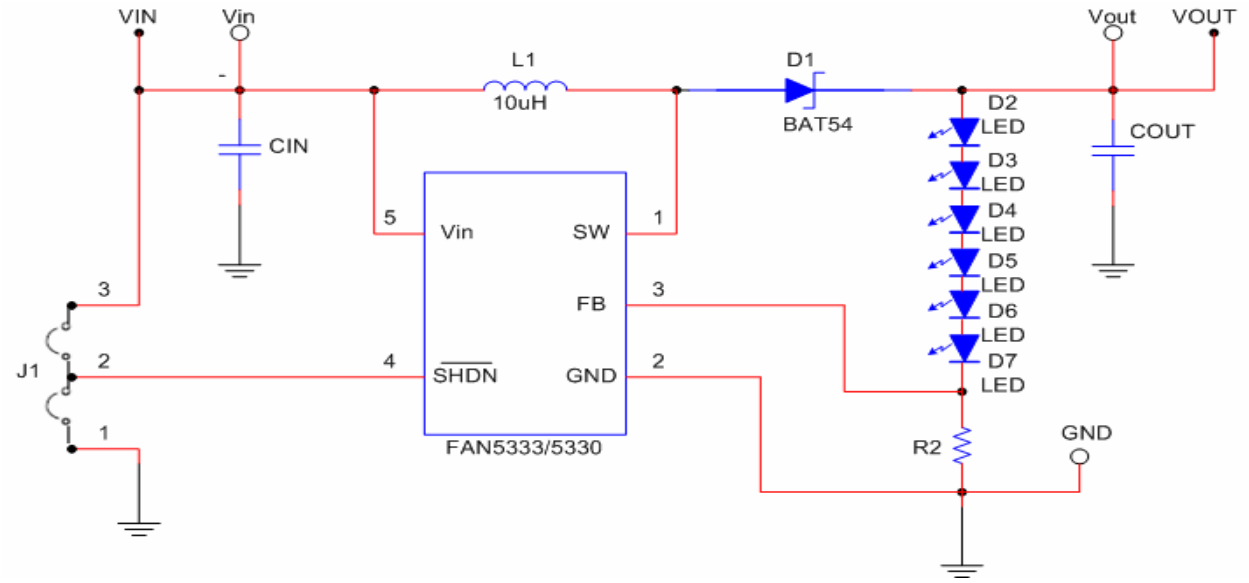

Figure 2: Schematic Diagram(*)

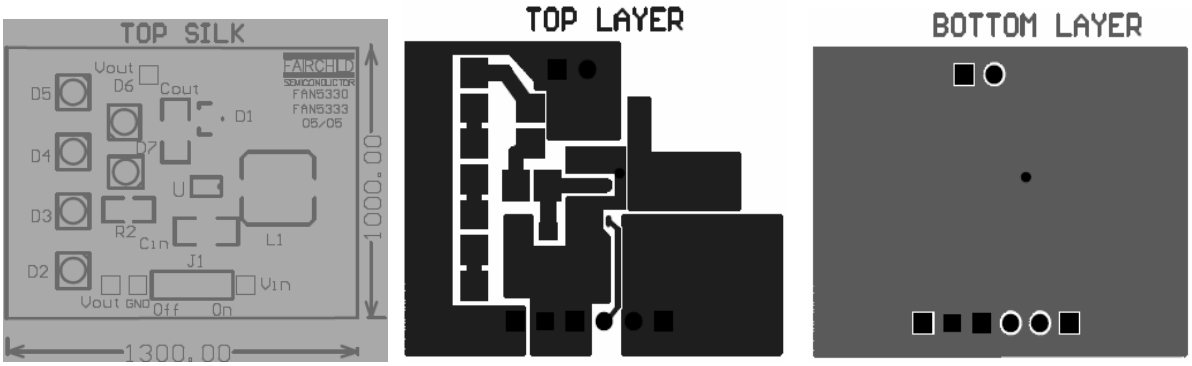

Figure 3: PCB Layout

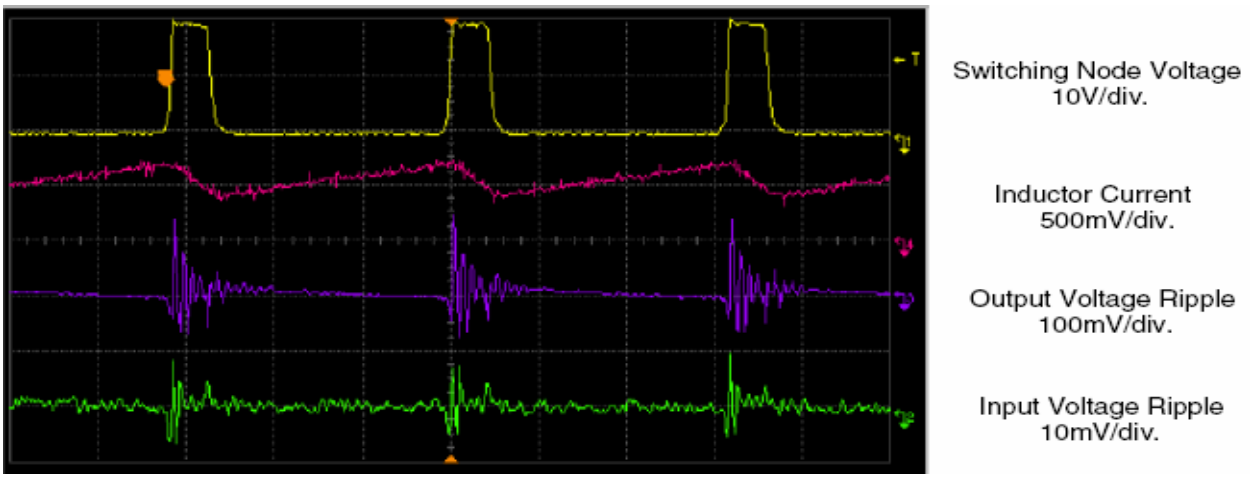

Figure 4: Switching Behavior

(*) **FAN5333A:** R2 = 5Ohm, Cin = 4.7uF, Cout = 1uF; **FAN5333B:** R2 = 15Ohm, Cin = 4.7uF, Cout = 1uF
FAN5330: R2 = 5Ohm, Cin = 2.2uF, Cout = 0.47uF

Table 1: FAN5330 List of Materials

Description	Qty	Ref.	Vendor
2.2uF, 10V, MLCC	1	CIN	MURATA
0.47uF/25V MLCC	1	COUT	PANASONIC
White LEDS	6	LED Dn	Fairchild
Inductor 10uH/0.7A	1	L1	Copper
Resistor SMD, 5 Ohm, 5%	1	R2	Any
Schottky Diode	1	D1	Fairchild

Table 2: FAN5333A List of Materials

Description	Qty	Ref.	Vendor
4.7 uF Capacitor, 1206	1	CIN	MURATA
6.8 to 10 uH Inductor	1	L	Copper
5Ohm Resistor, 0805	1	R	Any
LEDs	6	D2 to D7	Fairchild
0.1 to 1 uF Capacitor, 1206	1	COUT	PANASONIC
BAT54 Schottky Diode	1	D1	Fairchild

Table 3: FAN5333B List of Materials

Description	Qty	Ref.	Vendor
4.7 uF Capacitor, 1206	1	CIN	MURATA
6.8 to 10 uH Inductor	1	L	Copper
15Ohm Resistor, 0805	1	R	Any
LEDs	6	D2 to D7	Fairchild
0.1 to 1 uF Capacitor, 1206	1	COUT	PANASONIC
BAT54 Schottky Diode	1	D1	Fairchild

Table 4: Ordering Information

Product Number	Package Type	Order Code
FAN5333A	5-Lead SOT23	FAN5333A SX
FAN5333B	5-Lead SOT23	FAN5333B SX
FAN5330	5-Lead SOT23	FAN5330 SX

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Replace components on the Evaluation Board only with those parts shown on the parts list in the User's Guide. Contact an authorized Fairchild representative with any questions.

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