

FAN5330/5333A/B

Evaluation Board User Manual

- 1.6MHz PWM Switching Frequency
- Adjustable Output Voltage
- 100mV Feedback Voltage (FAN5330 and FAN5333A)
- 300mV Feedback Voltage (FAN5333B)
- Low Shutdown Current: <1uA
- Cycle-by-Cycle Current Limit
- 1.5A Peak Switch Current
- Small 5-lead SOT23 Package

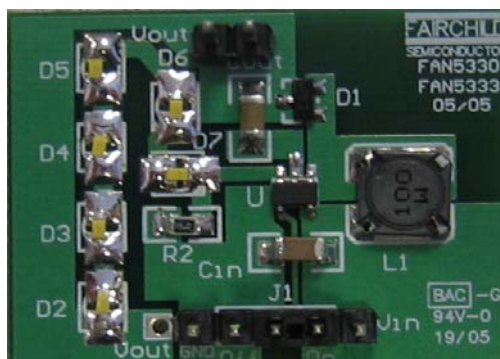


Figure 1: FAN5330/33 SX

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 V_{in} (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. $R = 50\Omega$ for the FAN5333A/FAN5330 and $R = 150\Omega$ 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 V_{in} .
- 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)

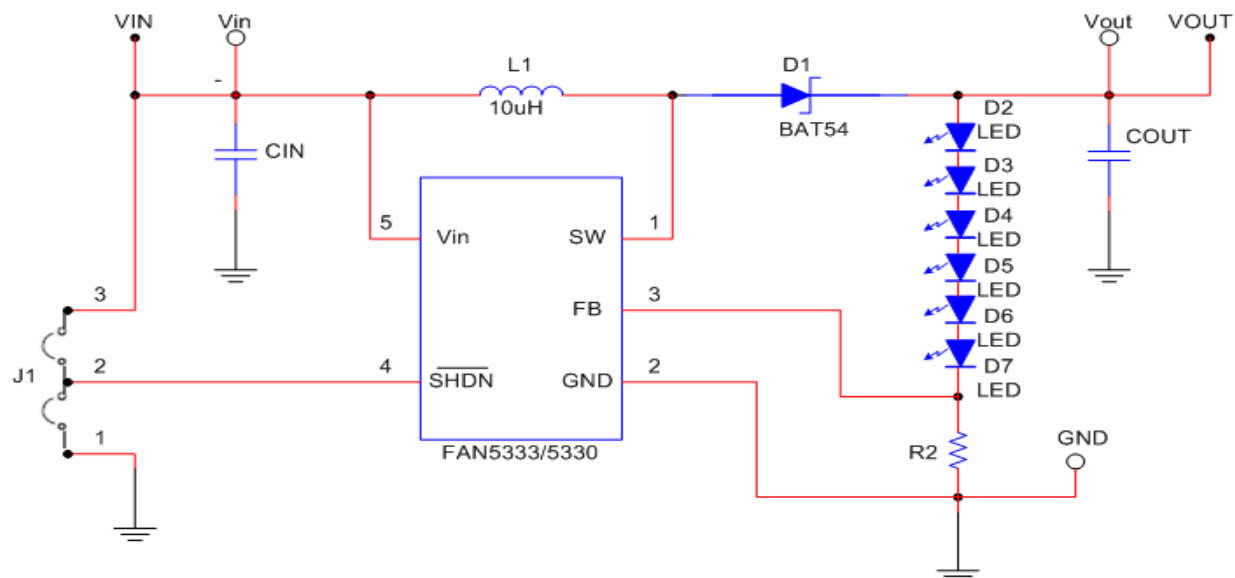
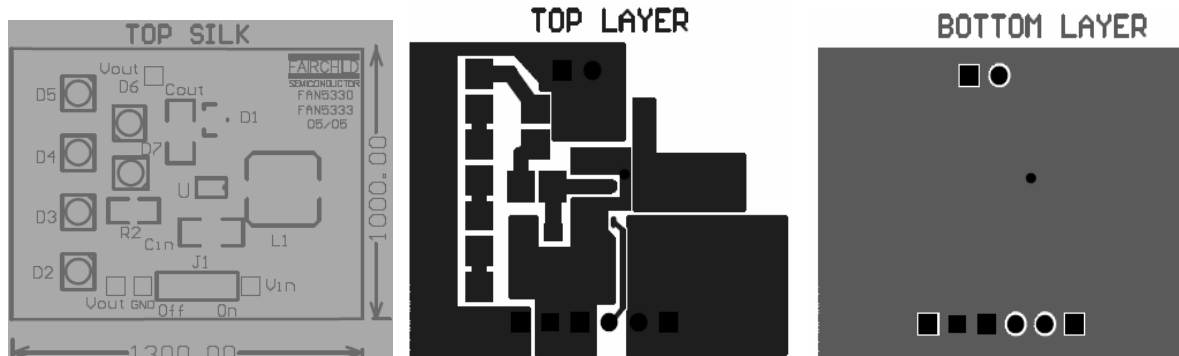
Figure 2: Schematic Diagram^(*)

Figure 3: PCB Layout

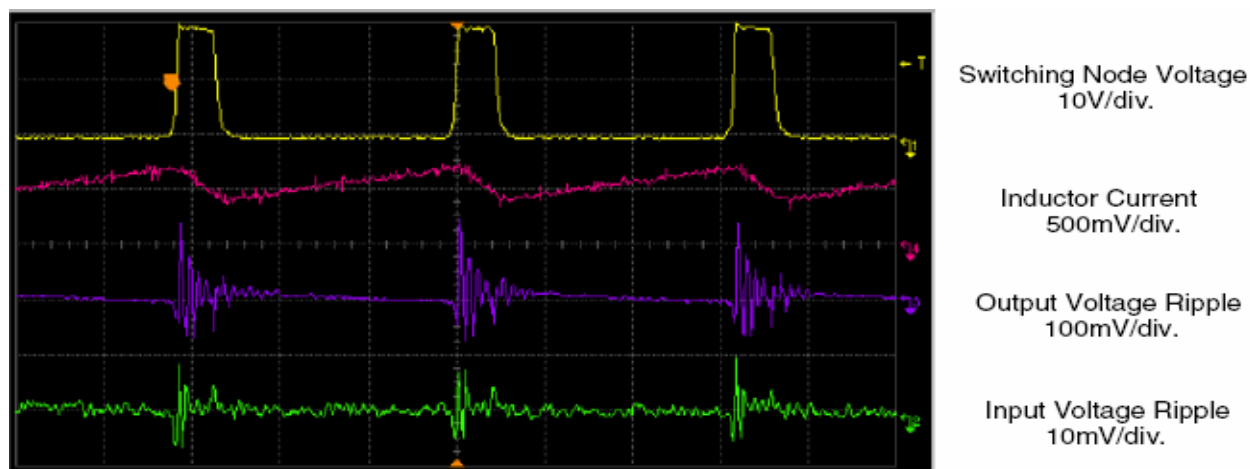


Figure 4: Switching Behavior

^(*) **FAN5333A:** R2 = 50Ohm, Cin = 4.7uF, Cout = 1uF; **FAN5333B:** R2 = 150Ohm, Cin = 4.7uF, Cout = 1uF
FAN5330: R2 = 50Ohm, 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	COU1	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
50Ohm Resistor, 0805	1	R	Any
LEDs	6	D2 to D7	Fairchild
0.1 to 1 uF Capacitor, 1206	1	COU1	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
150Ohm Resistor, 0805	1	R	Any
LEDs	6	D2 to D7	Fairchild
0.1 to 1 uF Capacitor, 1206	1	COU1	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

WARNING AND DISCLAIMER

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.

The Evaluation board is for demonstration purposes only and neither the Board nor this User's Guide constitute a sales contract or create any kind of warranty, whether express or implied, as to the applications or products involved. Fairchild warrants that its products will meet Fairchild's published specifications but does not guarantee that its products will work in any specific application. Fairchild reserves the right to make changes without notice to any products described herein to improve reliability, function, or design. Either the applicable sales contract signed by Fairchild and Buyer, or if no contract exists Fairchild's Stand Terms and Conditions on the back of Fairchild invoices, govern the terms of sale of the products described herein.

LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF FAIRCHILD SEMICONDUCTOR CORPORATION. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, or (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

TRADEMARKS

The following are registered and unregistered trademarks Fairchild Semiconductor owns or is authorized to use and is not intended to be an exhaustive list of all such trademarks.

ACE [™]	FAST [®]	IntelliMAX [™]	POP [™]	SPM [™]
ActiveArray [™]	FAST [™]	ISOPLANAR [™]	Power247 [™]	Stealth [™]
Bottomless [™]	FPS [™]	LittleFET [™]	PowerEdge [™]	SuperFET [™]
CoolFET [™]	FRFET [™]	MICROCOUPLER [™]	PowerSaver [™]	SuperSOT [™] -3
CROSSVOLT [™]	GlobalOptoisolator [™]	MicroFET [™]	PowerTrench [®]	SuperSOT [™] -6
DOME [™]	GTO [™]	MicroPak [™]	QFET [®]	SuperSOT [™] -8
EcoSPARK [™]	HiSeC [™]	MICROWIRE [™]	QS [™]	SyncFET [™]
E ² CMOS [™]	I ² C [™]	MSX [™]	QT Optoelectronics [™]	TinyLogic [®]
EnSigna [™]	i-Lo [™]	MSXPro [™]	Quiet Series [™]	TINYOPTO [™]
FACT [™]	ImpliedDisconnect [™]	OCX [™]	RapidConfigure [™]	TruTranslation [™]
FACT Quiet Series [™]		OCXPro [™]	RapidConnect [™]	UHC [™]
Across the board. Around the world.™		OPTOLOGIC [®]	μSerDes [™]	UltraFET [®]
The Power Franchise [®]		OPTOPLANAR [™]	SILENT SWITCHER [®]	UniFET [™]
Programmable Active Droop [™]		PACMAN [™]	SMART START [™]	VCX [™]

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Fairchild Semiconductor:](#)

[FEB141](#)