

FAN5608 Evaluation Board User Manual

Features:

- 2.7 to 5V Input Range
- Up to 2 x 20mA Output Current
- Digital, Analog and PWM Brightness Control
- Two Independent Channels Drive up to Six LEDs per Channel
- Open/Short Circuit Protection, Shutdown Mode and Soft Start
- .5MHz Operating Frequency
- Up to 85% Efficiency
- Small 8-lead 3x3mm or 12 lead 4x4mm MLP Package

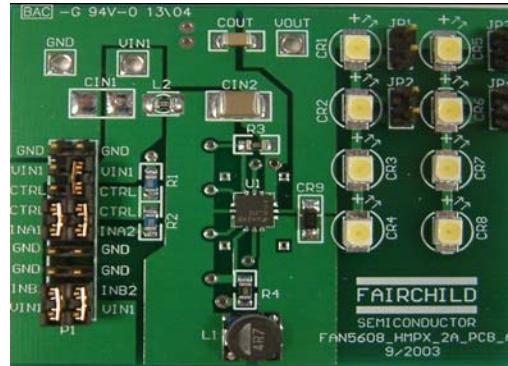


Figure 1: FAN5608 HMPX/DHMPX

Description:

The **FAN5608 Evaluation Board** is a compact circuit including either the FAN5608 DMPX/MPX in a 3x3 MLP package or the FAN5608 DHMPX/HMPX in a 4x4 MLP package. Both models are available with either an internal or external Schottky diode which delivers the inductor's stored energy to the load. The FAN5608 demo board, a completely assembled and tested surface mount board, provides easy probe access points to all inputs and outputs so that electrical characteristics and waveforms can be easily measured.

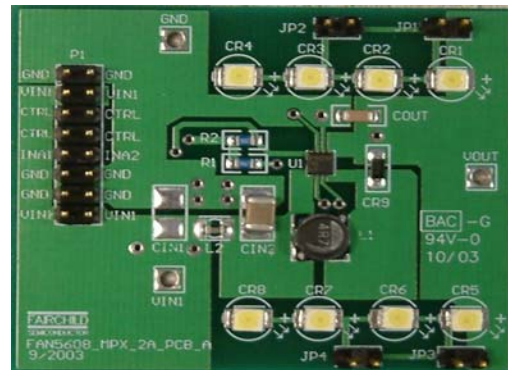


Figure 2: FAN5608 MPX/DMPX

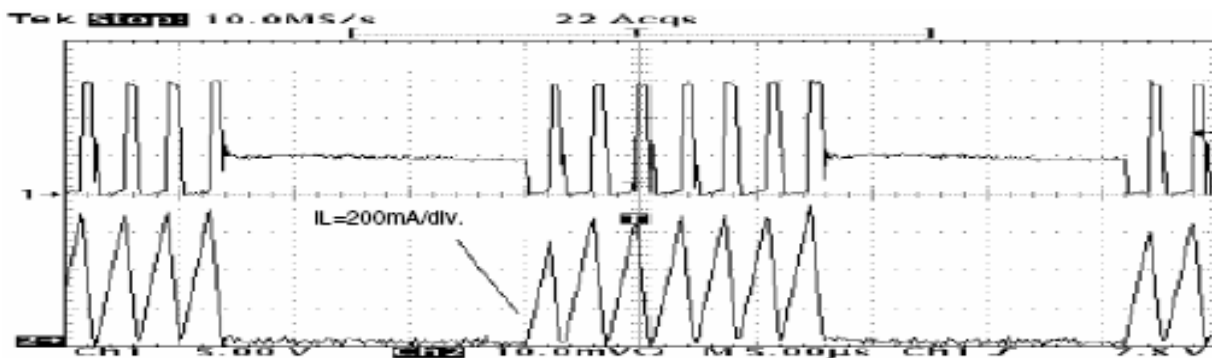


Figure 3: Switching Waveform

Where To Begin:

- 1: Connect Vin1 (2.7 to 5V) and Gnd (0V).
- 2: For analog mode, ground input “B” (pins 3 and 7) and connect input “A” (pins 2 and 8 for MPX/DMPX; pins 4 and 6 for HMPX/DHMPX) to a fixed supply voltage through resistors R1 and R2.
 (Note: the MPX/DMPX is analog only and input “B” is grounded internally)
- 3: For digital mode, select 5mA (A=1,B=0), 10mA (A=0,B=1), or 20mA (A=1,B=1).
 Use a jumper to connect input “A” directly to Vin or Gnd and input “B” directly to Vin or Gnd. (Note: use control inputs A1 and B1 for CH1 and inputs A2 and B2 for CH2; unused inputs must be connected to either Vin or Gnd at all times)
- 4: To verify output current or change the number of operating LEDs, apply jumpers to pins JP1 and JP2 for CH1 and pins JP3 and JP4 for CH2. (Observe that the current remains constant for varying input voltage levels and LEDs driven)
- 5: To verify supply current in “ON” and “OFF” modes, observe that in shutdown mode, supply current will drop below 1uA.
- 6: If you choose, you may add a capacitor C1 and inductor L2 to reduce ripple at the battery input.
- 7: In analog mode $I_{LED} = \{(V_{EXT} - 1.22V) / R_{1 \text{ or } 2}\} \times 1000$
 (Note: R1 = 86.6K is chosen to set I_{LED} to 20mA when V_{EXT} = 3V. The resistances of R1 and R2 may be lowered to accommodate lower values of V_{CTRL}.)

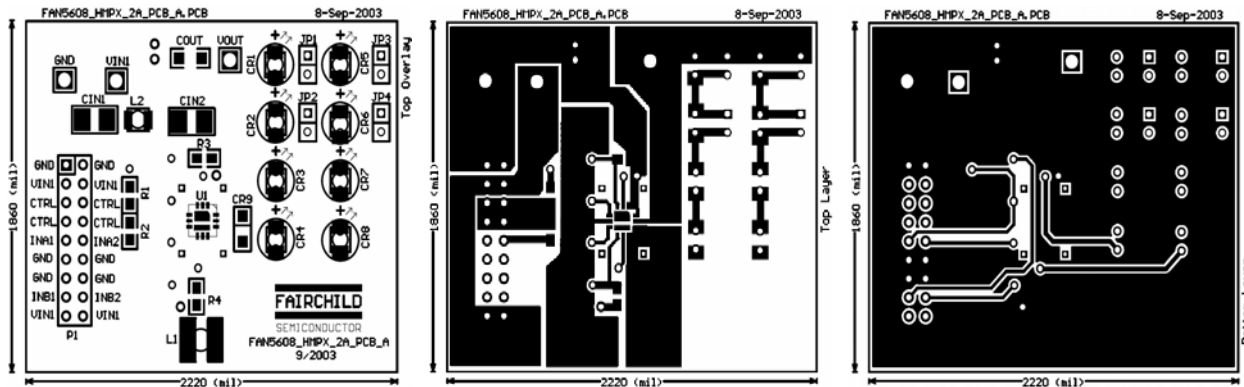


Figure 4: PCB Layout FAN5608 HMPX/DHMPX

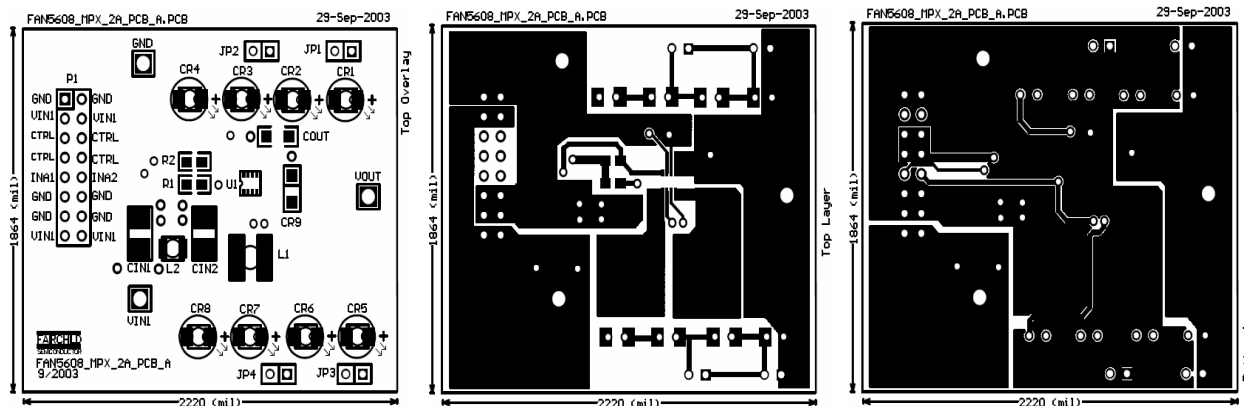


Figure 5: PCB Layout FAN5608 MPX/DMPX

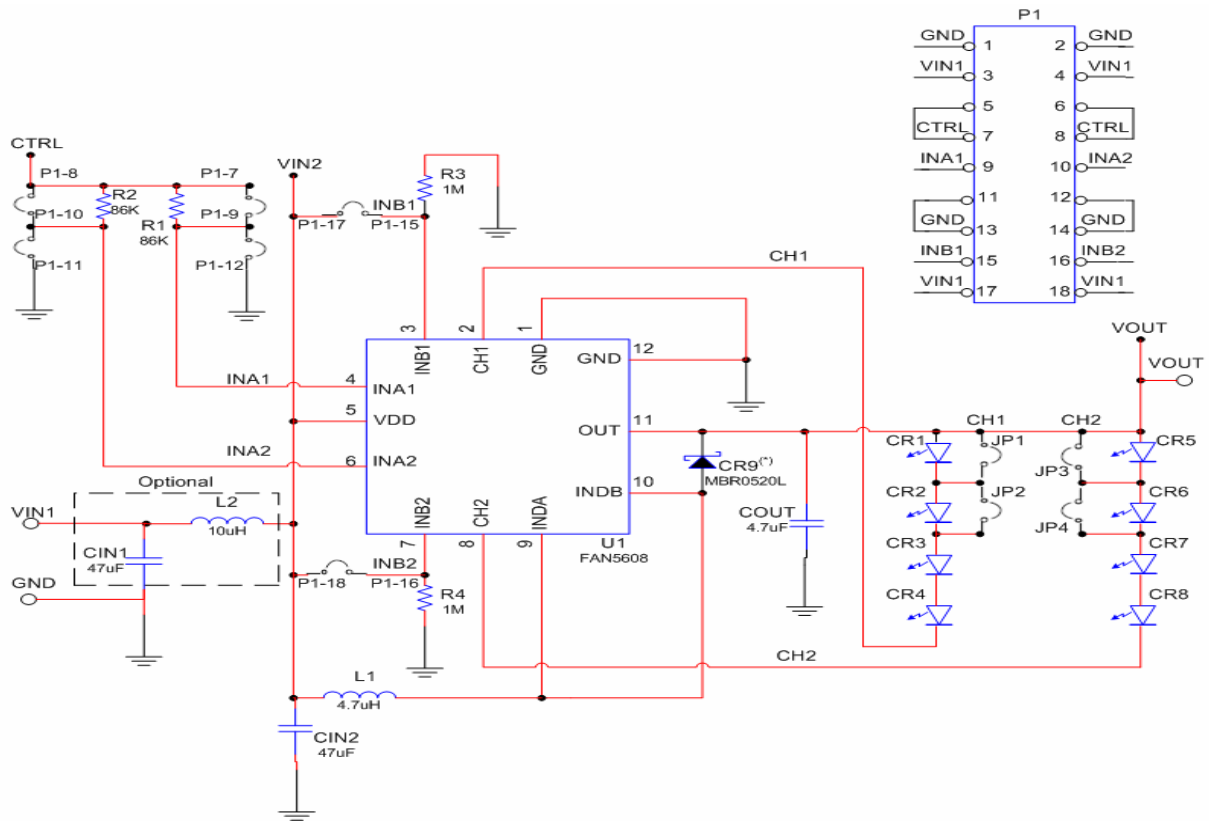


Figure 6: Schematic Diagram FAN5608 HMPX/DHMPX^(*)

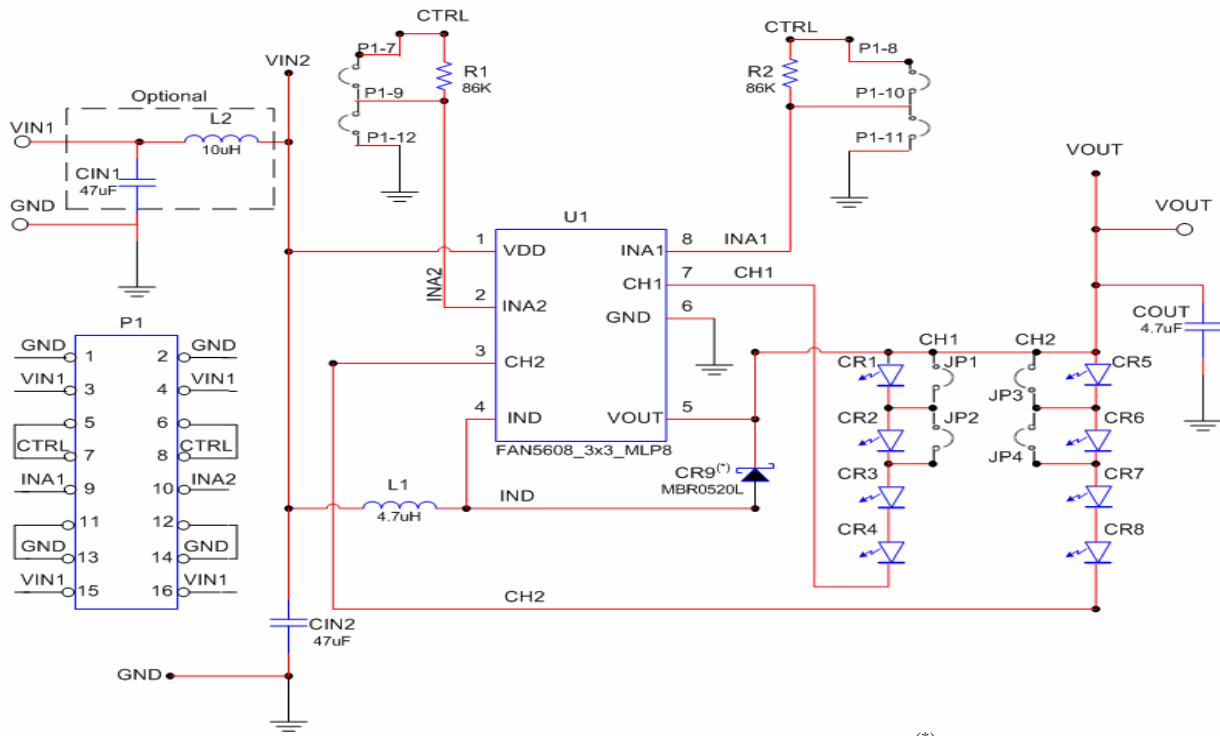


Figure 7: Schematic Diagram FAN5608 MPX/DMPX^(*)

(*) CR9 is not installed for the FAN5608 DMPX and the FAN5608 DHMPX

Table 1: FAN5608 MPX/DMPX List of Materials

Description	Qty	Ref.	Vendor	Part Number
Capacitor 47 uF, 10%, 1812	1	CIN2	MURATA	GRM43ER60J476K
Capacitor 4.7uF, 20%, 25VDC, X5R, 1206	1	COUT	Kemet Panasonic	C1206C475K3PACTU ECJ-3YB1E475M
Inductor 4.7uH, 1A	1	L1	Cooper	SD3118-4R7
Resistor 86.6 K, 1%, 0805	2	R1,R2	Any	
LED Super Bright PLCC-2 White	8	CR1-CR8	Fairchild	QTPL670C -IW
IC System Regulator, MLP-8 3x3, FSID: FAN5608MPX/DMPX	1	U1	Fairchild	FAN5608 MPX/DMPX
Hardware Connector Header .1 SINGLE STR 36POS	24	P1,JP	Digi-Key	S1011-36-ND
Resistor 0 Ohm, 5%, 0805	1	L2	Yageo	9C08052A0R00JLHFT
Diode Schottky 30V, .5A FSID: MBR0540	1	CR9 ^(*)	Fairchild	SOD123R

Table 2: FAN5608 HMPX/DHMPX List of Materials

Description	Qty.	Ref.	Vendor	Part Number
Capacitor 47 uF, 10%, 1812	1	CIN2	MURATA	GRM43ER60J476K
Resistor 1 M, 1%, 0805	2	R3,R4	Any	
Resistor 86.6 K, 1%, 0805	2	R1,R2	Any	
LED Super Bright PLCC-2 White	8	CR1-CR8	Fairchild	QTPL670C -IW
Resistor 0 Ohm, 5%, 0805	1	L2	Yageo	9C08052A0R00JLHFT
Hardware Connector Header .1 SINGLE STR 36POS	26	P1,JP	Digi-Key	S1011-36-ND
IC System Regulator, MLP-12 4x4, FSID: FAN5608HMPX/DHMPX	1	U1	Fairchild	FAN5608 HMPX/DHMPX
Inductor 4.7uH, 1A	1	L1	Cooper	SD3118-4R7
Capacitor 4.7uF, 20%, 25VDC, X5R, 1206	1	COUT	Kemet Panasonic	C1206C475K3PACTU ECJ-3YB1E475M
Diode Schottky 30V, .5A FSID: MBR0540	1	CR9 ^(*)	Fairchild	SOD123R

Table 3: Ordering Information

Product Number	Package Type	Schottky Diode	Order Code
FAN5608	12-Lead 4x4mm MLP	Internal	FAN5608DHMPX
		External	FAN5608HMPX
	8-Lead 3x3mm MLP	Internal	FAN5608DMPX
		External	FAN5608MPX

(*) CR9 is not installed for FAN5608 DMPX and FAN5608 DHMPX

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.

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