AN-7008

FPF200X Evaluation Module

Introduction

The FPF200X EVM is an Evaluation Module for Fairchild Semiconductor FPF2000 smart load switches family. The FPF200X family is a 0.7Ω PMOS load switches with controlled turn-on, fast turn-off, and current limit. The current Limit is guaranteed for 50mA and 100mA with 1.8V to 5.5V range of input voltage.

The Evaluation Module has test points for convenient access to the all pins and jumpers for setting the various load conditions along with switches for toggling the ON/OFF and configuring the ON pin polarity. The Board can be presented as a stand alone unit with a 1.8-5.5V battery for testing the basic functions.

Current-Limit Condition

The Output current can be sensed by removing R3 = 0Ω and soldering a loop across it.

The FPF200X EVM can demonstrate the current condition stand alone (Nominal, Hard- short and Moderate over-current) through SW1 or by using an external pulse generator through the EXT. over-current terminal. The three load conditions are as follows:

- Nominal load: for normal operation with R_1 = 500Ω and C_1 = 0.1µF.
- Moderate over-current: where the output is pulled down by a 10Ω resistor to ground (set J1 as shown in Figure 1)
- Hard short: where the output is pulled down directly to ground (set J1 as shown in Figure 1)

Extra space has been left on the board beside R_1 and C_1 if user should want to mount and experiment with a special load (for example an inductive load).

Monitoring the FLAGB (TP1)

The status of the FLAGB pin can be monitored through TP1 either by probing it or by lighting a small LED in current limit events. (J2 needs to be set as shown in figure1)

For non-Auto-Restart parts the LED stays lit in current limit conditions until the SW2 switch is toggled. For Auto-Restart parts, the LED will light as long as the pushbottom switch (SW1) is being held down.

ON Pin

TP2 for monitoring the status of the ON pin

SW2 for manual ON/OFF switching

Ext. ON for activating the ON pin by external pulse generator

This may be useful for testing the switching characteristics of the switch.

SW3 for setting the ON pin polarity

- LO for FPF2001 and FPF2005
- HI for FPF2000,2002,2003,2004,2006,2007

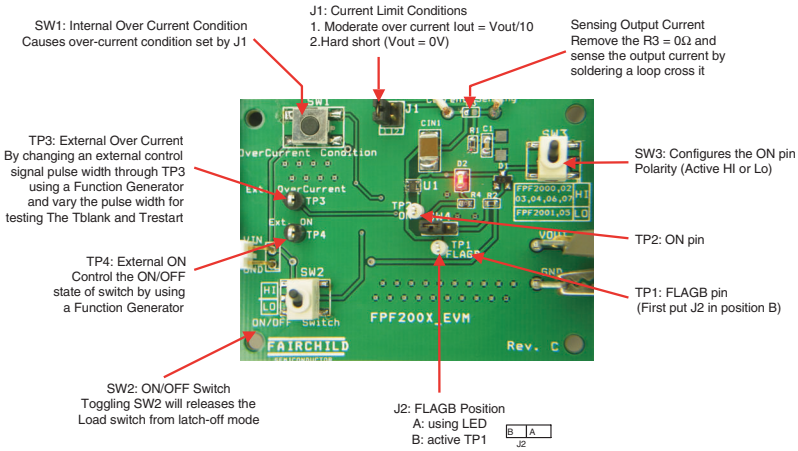


Figure 1. FPF200X Evaluation Module Board

Evaluation Module Setup

The following equipment is recommended for testing:

- A four-channel Oscilloscope
- Current Probe
- One Adjustable power supply 0V-6V@2A
- Volt-meter
- Function Generator with Burst function single pulse

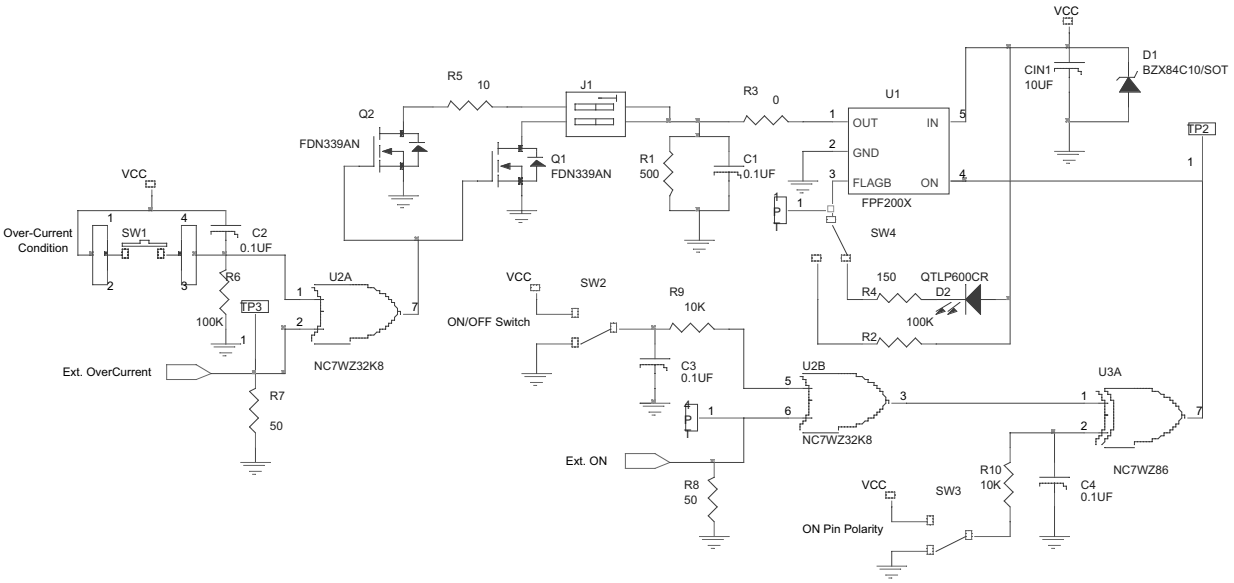


Figure 2. FPF200X Evaluation Module Schematic

Table 1. Bill of Materials

Reference	Part	Reference	Part
C1, C2, C3, C4	0.1µF	R8	50Ω
CIN	10µF	R9	10KΩ
D1	BZX84C10/SOT	R9, R10	10KΩ
D2	QLTP600CR	R11	10KΩ
Q1, Q2	FDN339AN	SW1	SW Pushbutton-SPST
R1	500Ω	SW2, SW3	SW SPDT
R2, R6	100K	SW4	Jumper_2mm
R3	0Ω	J1	Dual Jumper_2mm
R4	150Ω	TP1, TP2, TP3, TP4	Test Point
R5	10Ω	U1	FPF200X
R7, R8	50Ω	U2	NC7WZ32K8
R7	50Ω	U3	NC7WZ86

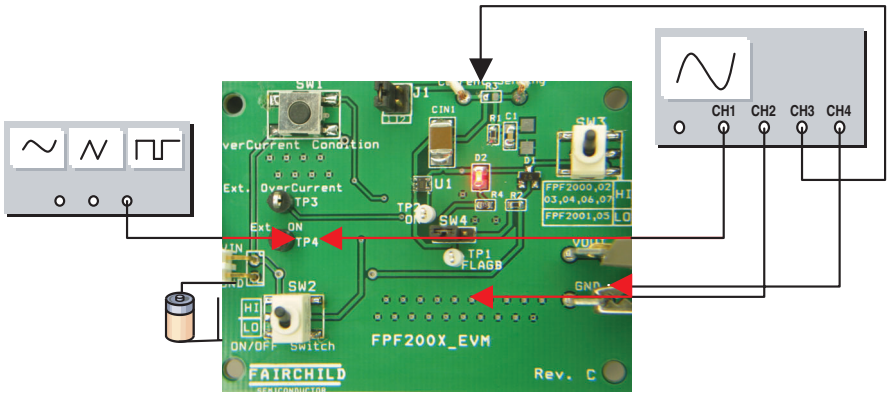
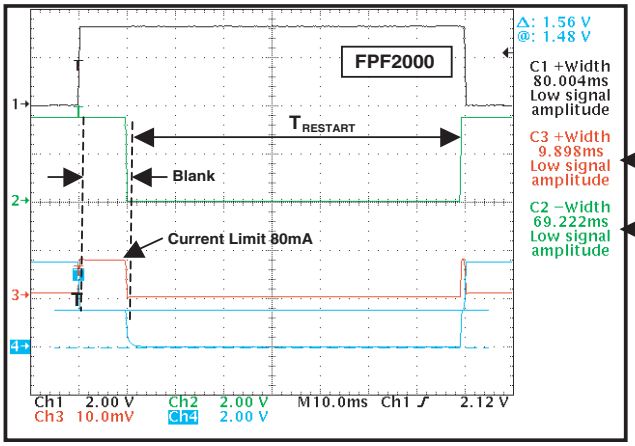


Figure 3. Test Setup for T_{BLANK} and $T_{RESTART}$



Blanking Time

Restart Time

Ch1 = OverCurrent condition
Ch2 = FLAGB
Ch3 = I_{OUT} (100mA/div)
Ch4 = V_{OUT}

Figure 4. Scope Result

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