



Is Now Part of



ON Semiconductor®

To learn more about ON Semiconductor, please visit our website at
www.onsemi.com

ON Semiconductor and the ON Semiconductor logo are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of ON Semiconductor's product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using ON Semiconductor products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by ON Semiconductor. "Typical" parameters which may be provided in ON Semiconductor data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. ON Semiconductor does not convey any license under its patent rights nor the rights of others. ON Semiconductor products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use ON Semiconductor products for any such unintended or unauthorized application, Buyer shall indemnify and hold ON Semiconductor and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that ON Semiconductor was negligent regarding the design or manufacture of the part. ON Semiconductor is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

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 $R3 = 0\Omega$ 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 $R_1 = 500\Omega$ and $C_1 = 0.1\mu F$.
- 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

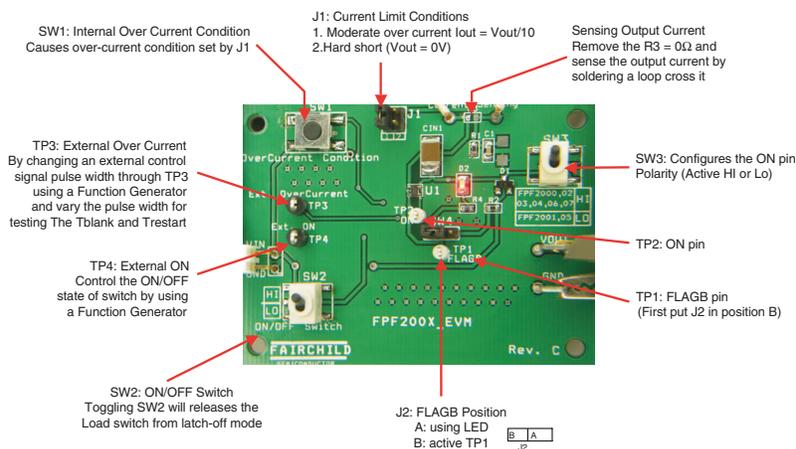


Figure 1. FPF200X Evaluation Module Board

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

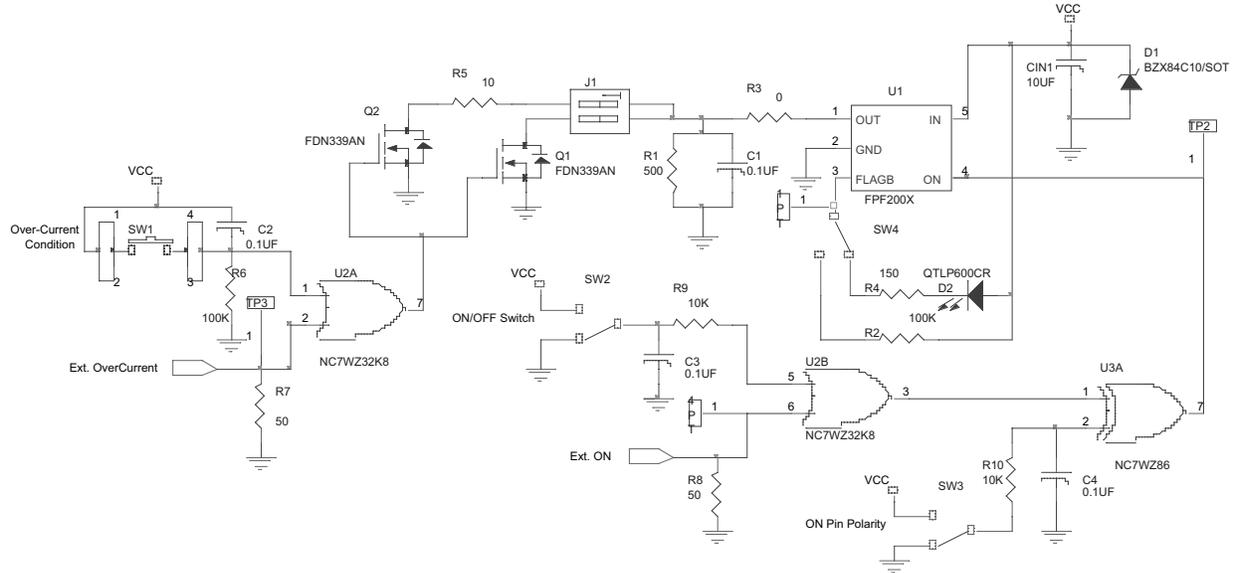


Figure 2. FPF200X Evaluation Module Schematic

Table 1. Bill of Materials

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

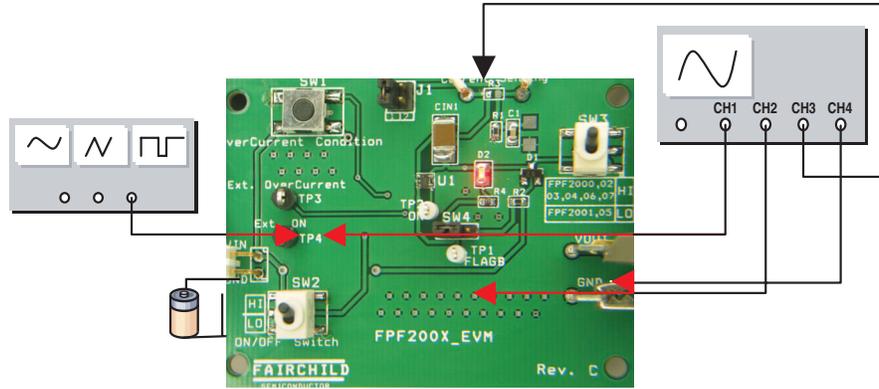


Figure 3. Test Setup for T_{BLANK} and $T_{RESTART}$

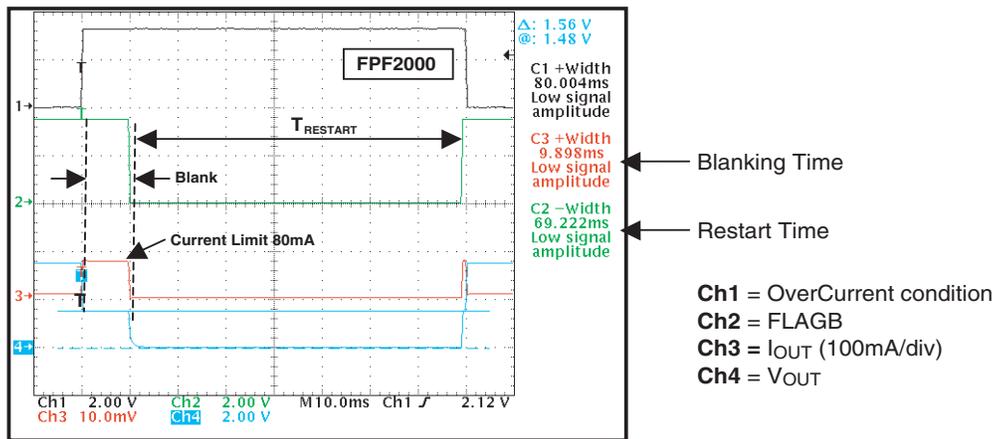


Figure 4. Scope Result

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 ^x ™	FAST®	IntelliMAX™	POP™	SPM™
ActiveArray™	FAST _r ™	ISOPLANAR™	Power247™	Stealth™
Bottomless™	FPS™	LittleFET™	PowerEdge™	SuperFET™
CoolFET™	FRFET™	MICROCOUPLER™	PowerSaver™	SuperSOT™-3
CROSSVOLT™	GlobalOptoisolator™	MicroFET™	PowerTrench®	SuperSOT™-6
DOMET™	GTO™	MicroPak™	QFET®	SuperSOT™-8
EcoSPARK™	HiSeC™	MICROWIRE™	QS™	SyncFET™
E ² CMOS™	ꞓC™	MSX™	QT Optoelectronics™	TinyLogic®
EnSigna™	<i>i-Lo</i> ™	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™

DISCLAIMER

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

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.

PRODUCT STATUS DEFINITIONS**Definition of Terms**

Datasheet Identification	Product Status	Definition
Advance Information	Formative or In Design	This datasheet contains the design specifications for product development. Specifications may change in any manner without notice.
Preliminary	First Production	This datasheet contains preliminary data, and supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
No Identification Needed	Full Production	This datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
Obsolete	Not In Production	This datasheet contains specifications on a product that has been discontinued by Fairchild semiconductor. The datasheet is printed for reference information only.

Rev. 115

ON Semiconductor and  are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of ON Semiconductor's product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using ON Semiconductor products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by ON Semiconductor. "Typical" parameters which may be provided in ON Semiconductor data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. ON Semiconductor does not convey any license under its patent rights nor the rights of others. ON Semiconductor products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use ON Semiconductor products for any such unintended or unauthorized application, Buyer shall indemnify and hold ON Semiconductor and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that ON Semiconductor was negligent regarding the design or manufacture of the part. ON Semiconductor is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:

Literature Distribution Center for ON Semiconductor
19521 E. 32nd Pkwy, Aurora, Colorado 80011 USA
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800-282-9855 Toll Free
USA/Canada
Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910
Japan Customer Focus Center
Phone: 81-3-5817-1050

ON Semiconductor Website: www.onsemi.com
Order Literature: <http://www.onsemi.com/orderlit>
For additional information, please contact your local
Sales Representative