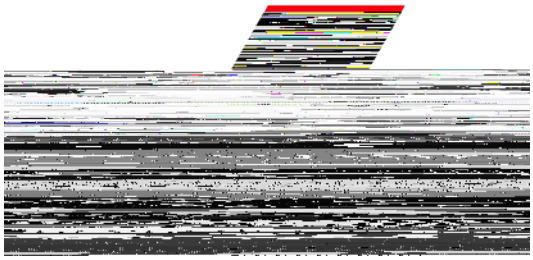

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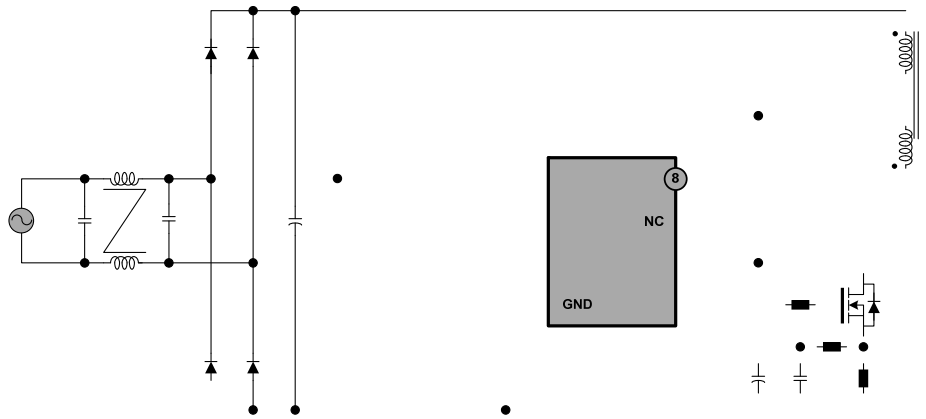
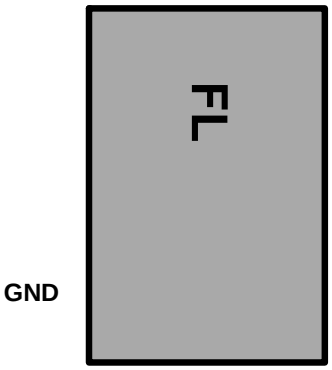
Please note: As part of the Fairchild Semiconductor integration, some of the Fairchild orderable part numbers will need to change in order to meet ON Semiconductor's system requirements. Since the ON Semiconductor product management systems do not have the ability to manage part nomenclature that utilizes an underscore (_), the underscore (_) in the Fairchild part numbers will be changed to a dash (-). This document may contain device numbers with an underscore (_). Please check the ON Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at www.onsemi.com. Please email any questions regarding the system integration to Fairchild_questions@onsemi.com.

November 2012

Application Diagram



Pin Configuration



Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only.

Symbol	Parameter	Min.	Max.	Unit
V_{VDD}	DC Supply Voltage		30	V
V_{HV}	HV		500	V
V_H	GATE	-0.3	25.0	V
V_L	V_{FB}, V_{CS}, V_{DET}	-0.3	7.0	V
P_D	Power Dissipation		400	mW
T_J	Operating Junction Temperature		+150	°C
T_{STG}	Storage Temperature Range	-55	+150	°C
T_L	Lead Temperature (Soldering 10 Seconds)		+270	°C

ESD

Electrical Characteristics

Unless otherwise specified, V_{DD}=10~25 V, T_A=-40°C~125°C (T_A=T_J).

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{DD} Section						
V_{OP}	Continuously Operating Voltage				25	V
V_{DD-ON}	Turn-On Threshold Voltage		15	16	17	V
$V_{DD-PWM-OFF}$	PWM Off Threshold Voltage		9	10	11	V
V_{DD-OFF}	Turn-Off Threshold Voltage		7	8	9	V
I_{DD-ST}	Startup Current	V_{DD}=V_{DD-ON} -0.16 V GATE Open		10	20	µA
I_{DD-OP}	Operating Current	V_{DD}=15 V, f_S=60 kHz, C_L=2 nF		4.5	5.5	mA
$I_{DD-GREEN}$	Green-Mode Operating Supply Current (Average)	V_{DD}=15 V, f_S=2 kHz, C_L=2 nF			3.5	mA
$I_{DD-PWM-OFF}$	Operating Current at PWM-Off Phase	V_{DD}=$V_{DD-PWM-OFF}$-0.5 V	70	80	90	µA
V_{DD-OVP}	V_{DD} Over-Voltage Protection (Latch-Off)		26	27	28	V
$t_{VDD-OVP}$	V_{DD} OVP Debounce Time		100	150	200	µs
$I_{DD-LATCH}$	V_{DD} OVP Latch-Up Holding Current	V_{DD}=5 V		42		µA
HV Startup Current Source Section						
V_{HV-MIN}	Minimum Startup Voltage on Pin HV				50	V
I_{HV}	Supply Current Drawn from Pin HV	V_{AC}=90 V (V_{DC}=120 V) V_{DD}=0 V	1.5		4.0	mA
I_{HV-LC}	Leakage Current After Startup	HV=500 V, V_{DD}=V_{DD-OFF} +1 V		1	20	µA
Feedback Input Section						
A_V	Input-Voltage to Current Sense Attenuation	A_V= V_{CS}/ V_{FB}, 0<V_{CS}<0.9	1/2.75	1/3.00	1/3.25	V/V
Z_{FB}	Input Impedance		3	5	7	KΩ
I_{OZ}	Bias Current	FB=V_{OZ}		1.2	2.0	mA
V_{OZ}	Zero Duty Cycle Input Voltage		0.8	1.0	1.2	V
V_{FB-OLP}	Open-Loop Protection Threshold Voltage		3.9	4.2	4.5	V
t_{D-OLP}	Debounce Time for Open-Loop/Overload Protection		46	52	62	ms
t_{SS}	Internal Soft-Start Time			5		ms

Continued on the following page...

Electrical Characteristics (Continued)

Unless otherwise specified, V_{DD}=10~25 V, T_A=-40°C ~125°C (T_A=T_J).

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Current Sense Section						
t_{PD}	Delay to Output		20	150	200	ns
V_{LIMIT}	Limit Voltage on CS Pin for Over-Power Compensation	I_{DET} < 74.41 µA	0.82	0.85	0.88	V
		I_{DET}=550 µA	0.380	0.415	0.450	
V_{SLOPE}	Slope Compensation(3)	t_{ON}=45 µs		0.3		V
		t_{ON}=0 µs		0.1		
t_{BNK}	Leading-Edge-Blanking Time (MOS Turns ON)		525	625	725	ns
V_{CS-H}	V_{CS} Clamped High Voltage once CS Pin Floating	CS Pin Floating	4.5		5.0	V
t_{CS-H}	Delay Time Once CS Pin Floating	CS Pin Floating		150		µs
Internal Over-Temperature Protection Section						
T_{OTP}	Internal Threshold Temperature for OTP(3)			+140		°C
$T_{OTP-HYST}$	Hysteresis Temperature for Internal OTP(3)			+15		°C

Note:

3. This parameter, although guaranteed by design, is not tested in production.

Current Sensing and PWM Current Limiting

Peak-current-mode control is

Physical Dimensions

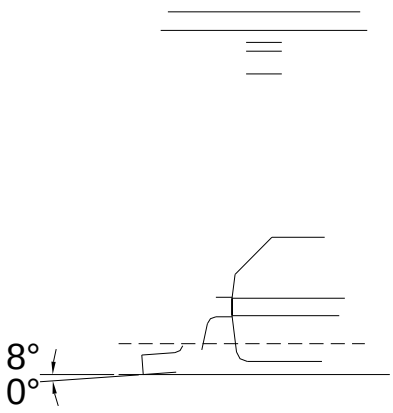


Figure 24. 8-Pin Small Outline Package (SOP)

Package drawings are provided as a service to customers considering Fairchild components. Drawings may change in any manner without notice. Please note the revision and/or date on the drawing and contact a Fairchild Semiconductor representative to verify or obtain the most recent revision. Package specifications do not expand the terms of Fairchild's worldwide terms and conditions, specifically the warranty therein, which covers Fairchild products.

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