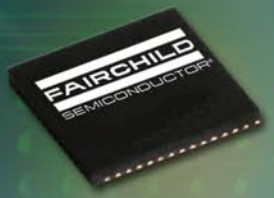
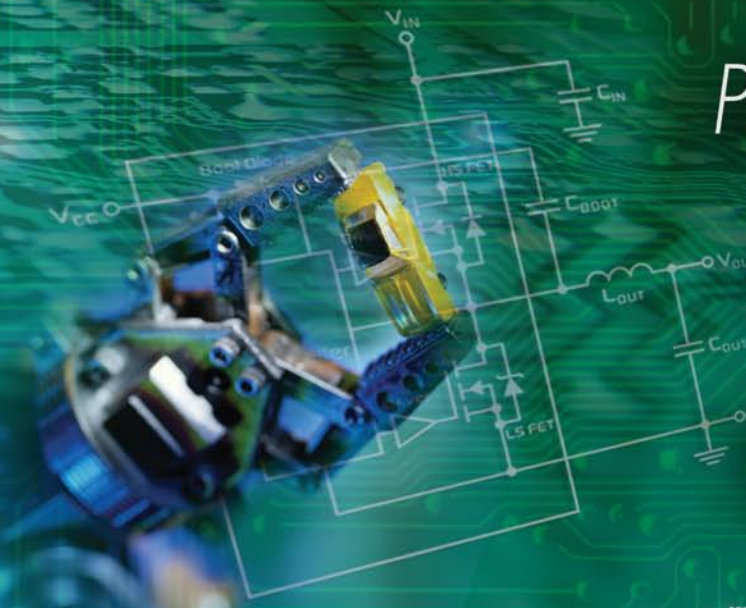
FAIRCHILD
SEMICONDUCTOR®

POWER
SOLUTIONS

TO MAXIMIZE ENERGY EFFICIENCY

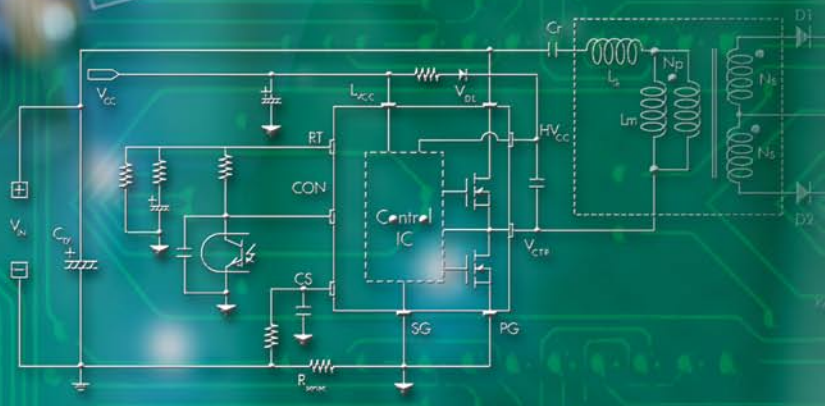




Power Management

AC-DC Conversion

DC-DC Conversion



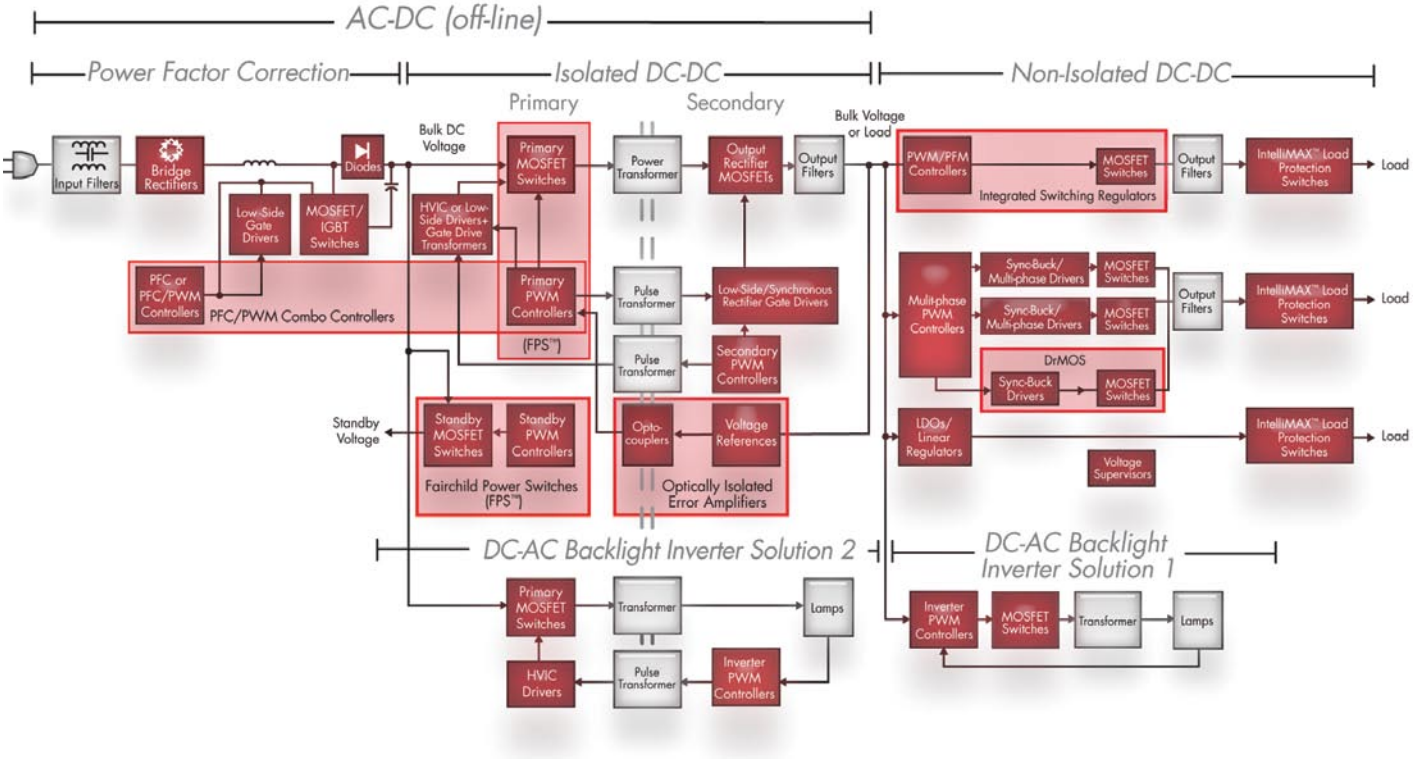
www.fairchildsemi.com

the power franchise®

FAIRCHILD'S POWER SOLUTIONS

Fairchild Semiconductor is a global leader in delivering energy-efficient power analog, power discrete, and optoelectronic solutions. These products maximize energy savings in power-sensitive applications such as power adapters, power supplies, lighting applications, computers, industrial controls, and home appliances. Fairchild's solutions drive efficiency while simplifying system design, reducing board space, improving system reliability, and speeding time-to-market. In addition, our Global Power Resource[SM]—comprised of online tools, FAEs, and regional centers staffed by experienced power engineers—is the industry standard for customer design support.

Complete Power Solutions



Note: Fairchild provides products for those blocks highlighted in red.

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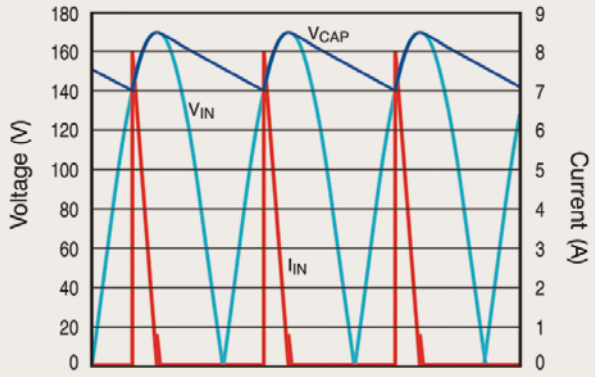
Power Factor Correction (PFC) Standalone and PFC/PWM Combo Controllers

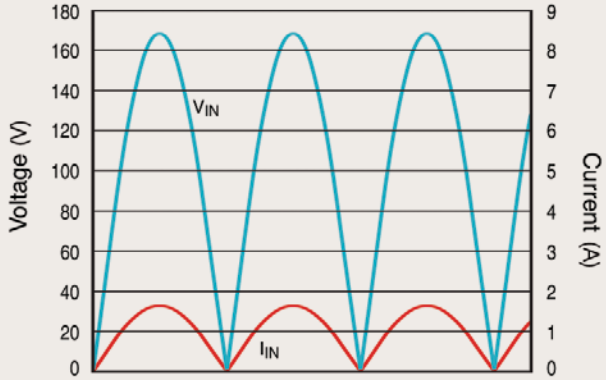
Fairchild's full line of both standalone PFC controllers and PFC/PWM combo controllers offer crucial cost and energy saving solutions that address the demanding requirements of a diverse range of medium and high power Switch Mode Power Supply (SMPS) designs.

- Offerings include both Boundary Conduction Mode (BCM) and Continuous Conduction Mode (CCM)
- Synchronized clock output to reduce system noise and to synchronize to downstream converter
- Patented one-pin voltage error amplifier with advanced input

Power Factor Correction

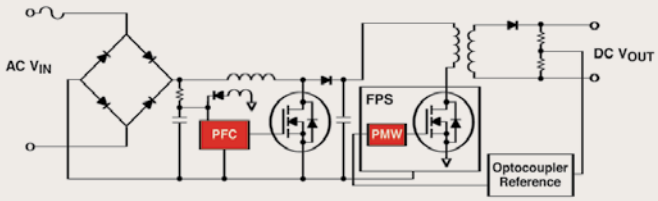


Before Power Factor Correction

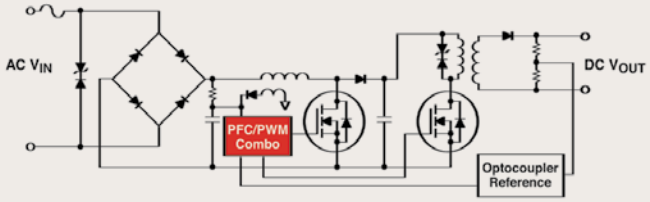


After Power Factor Correction

Simplified Application Circuits



Standalone PFC Controllers



PFC/PWM Combo Contollers

Power Factor Correction Stand Alone Controllers

Product Number	Type	Operating Current (mA)	Startup Current (µA)	Package
FAN7527B	BCM PFC	3	60	DIP-8, SOP-8
FAN7528	BCM PFC	2.5	40	DIP-8, SOP-8
FAN7529	BCM PFC	1.5	40	DIP-8, SOP-8
FAN7530	BCM PFC	1.5	40	DIP-8, SOP-8
SG6961	BCM PFC	4.5	10	DIP-8, SOP-8
FAN4810	CCM PFC	5.5	200	DIP-16, SOIC-16
SG6980	CCM PFC	4	10	DIP-16, SOIC-16

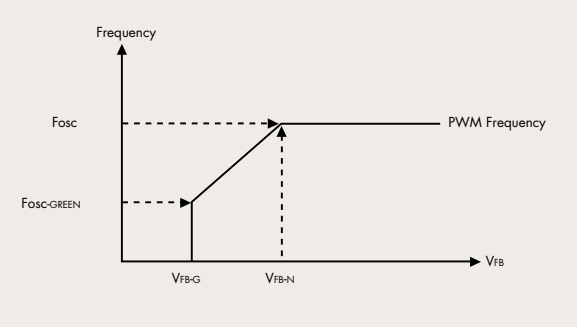
Note: BCM = Boundary Conduction Mode; CCM = Continuous Conduction Mode

Power Factor Correction Combo Controllers

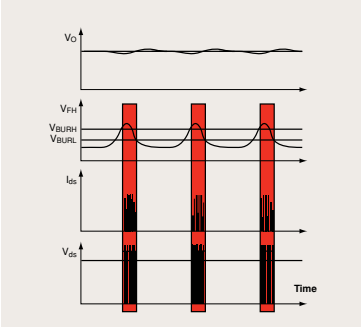
Product Number	PFC Control	Operating Current (mA)	Startup Current (µA)	PWM Duty Cycle Max. (%)	Package
FAN4803-1	Input Current Shaping Mode	2.5	200	50	DIP-8, SOIC-8
FAN4803-2	Input Current Shaping Mode	2.5	200	50	DIP-8, SOIC-8
FAN4800	Average Current Mode	2.5	200	49	DIP-16, SOIC-16
ML4800	Average Current Mode	2.5	200	49	DIP-16, SOIC-16
SG6901A	Average Current Mode	6	10	98	SOIC-20
SG6902	Average Current Mode	6	10	83	SOIC-20
SG6903	Average Current Mode	6	10	83	SOIC-16
SG6905	Average Current Mode	6	10	83	SOIC-20
SG6931	Average Current Mode	6	10	Programmable	DIP-20, SOIC-20
SG6932	Average Current Mode	6	10	Programmable	DIP-16, SOIC-16
ML4824-1	Average Current Mode	16	700	50	DIP-16, SOIC-16
ML4824-2	Average Current Mode	16	700	45	DIP-16, SOIC-16
ML4841	Average Current Mode	17	700	50	DIP-16, SOIC-16
ML4826	Average Current Mode	22	700	50	DIP-20

Pulse Width Modulator (PWM) Controllers

Fairchild's Green-mode PWM controllers have a function to minimize the standby power consumption enabling power supplies to meet international energy regulation requirements. The Green-mode function provides off-time modulation, which gradually decreases the switching frequency as the load drops under light load conditions. Under zero-load conditions, the power supply enters burst mode.



Frequency Decreasing



Burst Mode Operation Diagram

PWM Controllers								
Product Number	Number of Outputs	Control Mode	Switching Frequency (kHz)	Supply Voltage Max. (V)	Ouput Current Max. (A)	Duty Cycle (%)	Startup Current (µA)	Package
FAN7601	1	Current	300	20	0.25	98	Internal Switch	DIP-8, SO-8, SSOP-10
FAN7602	1	Current	65	20	0.25	75	Internal Switch	DIP-8, SO-8, SSOP-10
SG5841	1	Current	Programmble	30	-	70	14	DIP-8, SO-8
SG5841J*	1	Current	Programmble	30	-	70	14	DIP-8, SO-8
SG5842JA*	1	Current	Programmble	30	-	70	14	DIP-8, SO-8
SG6741*	1	Current	Programmble	30	-	70	30	SO-8
SG6742*	1	Current	68	30	-	70	30	DIP-8, SO-8
SG6846A*	1	Current	68	25	-	90	30	DIP-8, SO-8
SG6846C*	1	Current	130	25	-	90	8	DIP-8, SO-8
SG6858	1	Current	Programmble	30	-	80	10	DIP-8, SOT-26
SG6859*	1	Current	75	30	-	80	9	DIP-8, SOT-26
FAN7554	1	Current	500	30	1	98	200	SO-8
KA3524	-	Voltage	350	40	0.1	-	8000	DIP-16
KA3525A	2	Voltage	-	40	0.5	-	8000	DIP-16
KA3842A	1	Current	500	30	1	100	200	DIP-8, SO-14
KA3842B	1	Current	500	30	1	100	450	DIP-8, SO-14
KA3843A	1	Current	500	30	1	100	200	DIP-8, SO-14
KA3843B	1	Current	500	30	1	100	450	DIP-8, SO-14
KA3844B	1	Current	500	30	1	50	450	DIP-8, SO-14
KA3845B	1	Current	500	30	1	50	450	DIP-16
KA3846	2	Current	500	40	0.5	100	200	DIP-16
KA3882E	1	Current	500	30	1	100	200	SO-8
KA7500C	2	Voltage	300	42	0.25	-	1000	DIP-16, SO-16
KA7552A	1	Voltage	600	30	1.5	74	150	DIP-8
KA7553A	1	Voltage	600	30	1.55	49	150	DIP-8

Primary-side Only CV/CC PWM Controllers								
Product Number	Number of Outputs	Control Mode	Switching Frequency (kHz)	Supply Voltage Max. (V)	Ouput Current Max. (A)	Duty Cycle (%)	Startup Current (µA)	Package
SGP400	1	Current	68	30	-	80	8	DIP-8, SOT-26
SGP100	1	Current	45	30	-	80	10	SO-8

Note: Green-mode products are highlighted in green.
** These parts include a "Frequency Hopping" function that provides minimum line filters which supports reduced EMI emission in power supply designs.*

Fairchild's FPS products cover a wide range of power supply applications—from small battery chargers to large televisions, up to 250W. These highly integrated FPS devices combine the functionality of a fully avalanche-rugged SenseFET, a current mode pulse width modulation (PWM) IC and various protection functions, to simplify design and improve system reliability. Fairchild's FPS products provide the highest levels of efficiency to meet the standards as specified by International Regulatory Agencies.

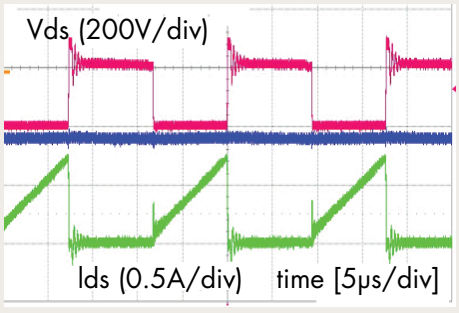
Green FPS™ e-Series™

Fairchild's Green FPS™ e-Series™ provides high energy efficiency and system reliability in DVD players, set-top boxes, LCD monitors, and other power supply designs below 25W. Based on Fairchild's proprietary valley switching technique, these Green FPS products increase power conversion efficiency by 1% and reduce EMI up to 5dB, when compared to conventional hard-switching topologies. Utilizing an advanced burst mode operation, the Green FPS e-Series devices meet stand-by power regulations by reducing standby power consumption to below 0.2W at no load conditions (below 1W at 0.5W load).

Features & Benefits

- Optimized for valley switching operation
  - Frequency clamp in the valley switching mode allows the efficiency levels to remain high at lighter load levels
- High efficiency through minimum voltage switching
- 1% improvement over hard-switching topologies
- Low EMI through valley switching and inherent frequency modulation
- Up to 5dB over hard-switching topologies
- Advanced burst-mode operation for low standby power consumption and minimized audible noise
- Narrow frequency variation range over wide load and input voltage variation
- Pulse-by-pulse current limit
- Various protection functions: over load protection (OLP), over voltage protection (OVP), abnormal over current protection (AOCP), internal thermal shutdown (TSD)
- Under voltage lock out (UVLO) with hysteresis
- Internal startup circuit
- Built-in soft-start (15ms)
- Minimum component counts on primary side

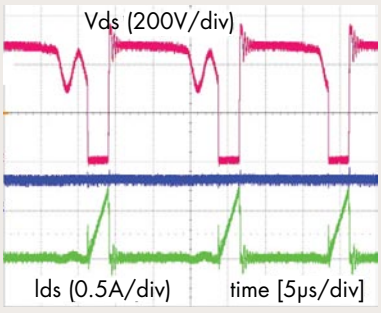
FSQ0365RN



- V_{IN} = 120V_{DC},
- P_O = 18W

CCM operation (fixed frequency, 55kHz)

FSQ0365RN



- V_{IN} = 375V_{DC},
- P_O = 18W

DCM operation (quasi-resonant switching, 55kHz < f_s < 66kHz)

Fairchild Power Switch

Products	Drain Voltage Max. (V)	Static Drain-Source On-Resistance Max. (V)	Peak Current Limit (A)	Output Power Max. (W)		Switching Frequency (kHz)	Protections				Package
				@ 85-265Vac	@ 230Vac		Over Current	Over Load	Over Voltage	Thermal Shutdown	
FSQ100	650	22	0.55	8	13	67	No	Auto Restart	No	Auto Restart	DIP
FSQ311*	650	19	0.6	8	10	55.6	Auto Restart	Auto Restart	Auto Restart	Auto Restart	DIP, LSOP
FSQ321*	650	19	0.6	10	12	89.3	Auto Restart	Auto Restart	Auto Restart	Auto Restart	DIP, LSOP
FSQ0165RN*	650	10	0.9	13	15	55.6	Auto Restart	Auto Restart	Auto Restart	Auto Restart	DIP, LSOP
FSQ0265RN*	650	6	1.2	16	20	55.6	Auto Restart	Auto Restart	Auto Restart	Auto Restart	DIP, LSOP
FSQ0365RN*	650	4.5	1.5	19	25	55.6	Auto Restart	Auto Restart	Auto Restart	Auto Restart	DIP, LSOP
FSQ510*	700	32	0.32	5	7	89.3	No	Auto Restart	No	Auto Restart	DIP, LSOP
FSQ0170RNA	700	11	0.8	13	20	100	No	Auto Restart	Auto Restart	Auto Restart	DIP
FSQ0270RNA	700	7.2	0.9	16	24	100	No	Auto Restart	Auto Restart	Auto Restart	DIP
FSQ0370RNA	700	4.75	1.1	19	27	100	No	Auto Restart	Auto Restart	Auto Restart	DIP
FSDM0465RE	650	2.6	1.8	48	56	67	Auto Restart	Auto Restart	Auto Restart	Auto Restart	TO-220F
FSDM0565RE	650	2.2	2.3	60	70	67	Auto Restart	Auto Restart	Auto Restart	Auto Restart	I^2-PAK-6L, TO-220F
FSDM07652RE	650	1.6	2.5	70	80	67	Auto Restart	Auto Restart	Auto Restart	Auto Restart	TO-220F
FSDM1265RB	650	0.9	3.2	90	110	67	Auto Restart	Auto Restart	Auto Restart	Auto Restart	TO-220F
KA5H0280R	800	7	1.2	20	24	100	Auto Restart	Auto Restart	Auto Restart	Auto Restart	TO-220F
KA5H0380R	800	5	2.2	32	40	100	Auto Restart	Auto Restart	Auto Restart	Auto Restart	TO-220F
KA5L0380R	800	5	2.2	32	40	50	Auto Restart	Auto Restart	Auto Restart	Auto Restart	TO-220F
KA5M0280R	800	7	1.2	20	24	67	Auto Restart	Auto Restart	Auto Restart	Auto Restart	TO-220F
KA5M0380R	800	5	2.2	32	40	67	Auto Restart	Auto Restart	Auto Restart	Auto Restart	TO-220F
FS7M0680	800	2	4	64	80	67	Latch	Latch	Latch	Latch	TO-3P
FS7M0880	800	1.5	5	88	104	67	Latch	Latch	Latch	Latch	TO-3P
FSCQ0565RT	650	2.2	3.5	56	64	QRC	Latch	Auto Restart	Auto Restart	Latch	TO-220F
FSCQ0765RT	650	1.6	5	85	100	QRC	Latch	Auto Restart	Auto Restart	Latch	TO-220F
FSCQ0965RT	650	1.2	6	110	130	QRC	Latch	Auto Restart	Auto Restart	Latch	TO-220F
FSCQ1265RT	650	0.9	7	140	170	QRC	Latch	Auto Restart	Auto Restart	Latch	TO-220F
FSCQ1465RT	650	0.8	8	160	190	QRC	Latch	Auto Restart	Auto Restart	Latch	TO-220F
FSCQ1565RT	650	0.7	8	170	210	QRC	Latch	Auto Restart	Auto Restart	Latch	TO-220F
FSCQ1565RP	650	0.7	11.5	210	250	QRC	Latch	Auto Restart	Auto Restart	Latch	TO-3P
FS6S1265RE	650	0.9	8	128	152	Synchroni-zation	Auto Restart	Auto Restart	Auto Restart	Auto Restart	TO-3P
FS6S1565RB	650	0.65	9.7	160	192	Synchroni-zation	Auto Restart	Auto Restart	Auto Restart	Auto Restart	TO-3P
FS8S0765RCB	650	1.6	4	70	90	Synchroni-zation	Auto Restart	Auto Restart	Auto Restart	Auto Restart	TO-220
FS8S0965RCB	650	1.2	6	96	116	Synchroni-zation	Auto Restart	Auto Restart	Auto Restart	Auto Restart	TO-220
FS6X0420RJ	200	1.2	1.4	14 (36~72V_{DC})		300	No	Auto Restart	Auto Restart	Auto Restart	D^2-PAK-6L
FS6X0720RJ	200	0.51	2.7	26 (36~72V_{DC})		300	No	Auto Restart	Auto Restart	Auto Restart	D^2-PAK-6L
FS6X1220RJ	200	0.3	3.2	36 (36~72V_{DC})		300	No	Auto Restart	Auto Restart	Auto Restart	D^2-PAK-6L
FSQ0565R*	650	2.2	3	60	80	66.7	Auto Restart	Auto Restart	Auto Restart	Auto Restart	TO-220F
FSQ0765R*	650	1.6	3.5	70	90	66.7	Auto Restart	Auto Restart	Auto Restart	Auto Restart	TO-220F

Note: Green FPS products highlighted in green.
** Green FPS eSeries with Fairchild's proprietary valley switching technique.*

The FSFR2100 is a highly integrated Green FPS™ product that increases power efficiency and system reliability, and reduces valuable design time in resonant converter designs. Offering a "system-in-a-package" approach that integrates everything necessary to build reliable and efficient resonant converters, this power switch includes a pulse-frequency-modulation (PFM) controller with a high voltage gate driver circuit and two fast recovery MOSFETs (FRFET®) along with soft-start, burst-mode operation, and important protection features into a thermally-efficient 9-SIP package.

Features & Benefits

Ease of Design

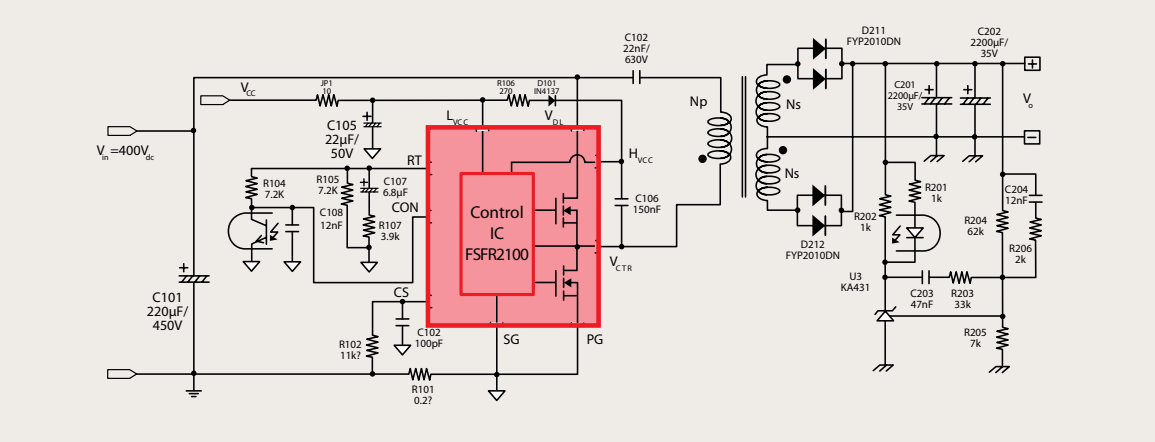
- Highly integrated 450W half-bridge resonant power switch
- Integrates PFM controller, high voltage gate driver circuit, two fast recovery MOSFETs (FRFET)
- No heatsink needed for normal power supplies up to 200W
- Minimum component count on primary-side

System Efficiency

- ZVS technique improves power efficiency and decreases EMI
- Advanced burst mode operation reduces power consumption to below 1W

System Reliability

- Excellent noise immunity due to built-in high-side drive circuit with common mode noise canceling technique
- Minimizes the effect of reverse recovery against abnormal operation conditions due to the MOSFET's fast recovery body diodes
- Built-in protection features: OVP, OLP, OCP, AOCP, TSD



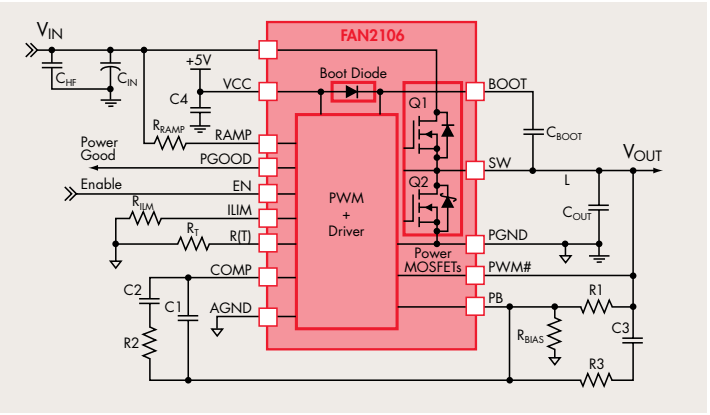
LLC Resonant Half-Bridge Converter

Half-Bridge Resonant Converter							
Product Number	Drain Voltage Max. (V)	$R_{DS(ON)}$ Max. (V)	t_{rr} (ns)	D_t (ns)	Output Power without Heatsink Max. (V_{IN}=350~400V) (W)	Output Power with Heatsink Max. (V_{IN}=350~400V) (W)	Package
FSFR2100	600	0.38	120	350	200	450	9-SIP

Fairchild's highly integrated non-isolated DC-DC controllers and regulators provide solutions for today's market demands that require lower power consumption, highly efficient integrated functions, and smaller packages.

Features & Benefits (FAN2106)

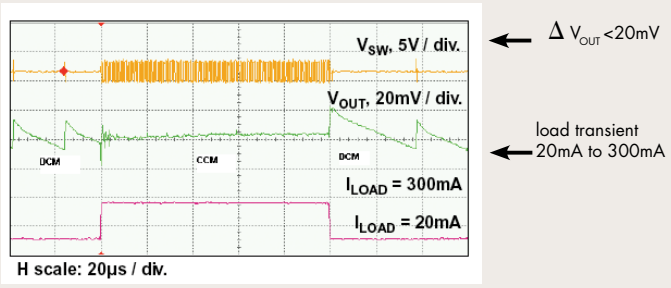
- 6A, 24V input synchronous Buck regulator
- Wide input range 3V to 24V
- Integrated module replaces one Buck controller, two gate drivers, and two MOSFETs
- TinyBuck™ (available) in MLP packaging saves 50% board space
- Integrated boot diode minimizes board space



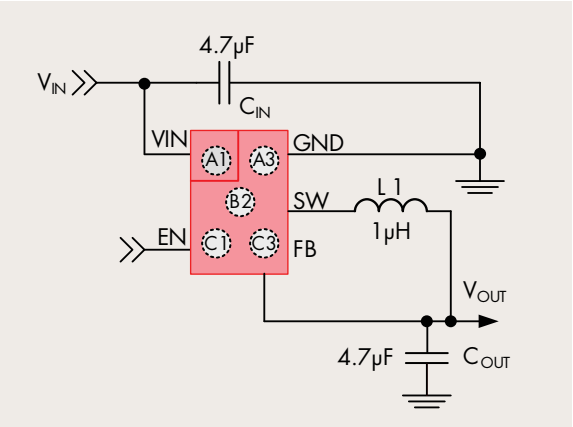
Controller with Drivers and MOSFETs in Ultra-Compact Package

Features & Benefits (FAN5350)

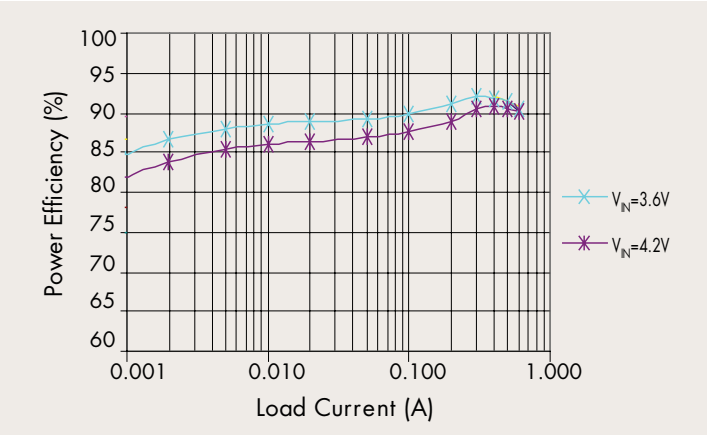
- 3MHz/600mA DC-DC synchronous converter
- 16µA quiescent current
- 20mV transient response
- Small footprint packaging
  – WL-CSP: 5 bump 1 x 1.4mm
  – MLP: 6-lead, 3 x 3mm



Fast Load Transient DCM-CCM-DCM



FAN5350



Power Efficiency vs. Load Current

Controllers with Integrated Drivers and MOSFETs

Product Number	Type	Power Input		Output Current	PWM V_{OUT}		PWM Voltage Outputs (V)	Frequency Range (kHz)	Efficiency (%)	Package
		Min. (V)	Max. (V)	(A)	Min. (V)	Max. (V)				
FAN2001	Sync. Buck	2.5	5.5	1	0.8	V_{IN}	Adj	1300	95	MLP
FAN2002	Sync. Buck	2.5	5.5	1	0.8	V_{IN}	Adj	1300	95	MLP
FAN2011	Sync. Buck	4.5	5.5	1.5	0.8	V_{IN}	Adj	1300	95	MLP
FAN2012	Sync. Buck	4.5	5.5	1.5	0.8	V_{IN}	Adj	1300	95	MLP
FAN2013	Sync. Buck	4.5	5.5	2	0.8	V_{IN}	Adj	1300	95	MLP
FAN20LV03*	Sync. Buck	4.5	5.5	3	0.8	V_{IN}	Adj	1300	95	MLP4x4
FAN2103	Sync. Buck	3	24	3	0.8	V_{IN} -1	Adj	200 - 750	90	MLP
FAN2106	Sync. Buck	3	24	6	0.8	90% of V_{IN}	Adj	200 - 600	95	MLP
FAN5307	Sync. Buck	2.5	5.5	0.3	0.7	V_{IN}	Fixed/Adj	800-1200	95	MLP SOT-23
FAN5308	Sync. Buck	2.5	5.5	0.8	0.8	V_{IN}	Adj	1300	95	MLP
FAN5350	Sync. Buck	2.7	5.5	0.6	1.82	1.82	Fixed	3000	94	MLP WL-CSP
FAN5355	Sync. Buck	2.7	5.5	1	0.75	1.975	Adj	3000	94	WL-CSP

** In development*

Controllers with Integrated Drivers

Product Number	Power Input		Number of PWM Outputs	Phases	PWM V_{OUT}		PWM Voltage Outputs (V)	Package
	Min. (V)	Max. (V)			Min. (V)	Max. (V)		
FAN5026	3	16	2	1	0.9	15	Adj, Adj	TSSOP-28
FAN5069	3	24	1	1	0.8	5	Adj	TSSOP-16
FAN5078	4.5	5.5	1	1	0.9	5.5	Adj	MLP-24
FAN5099	3	24	1	1	0.8	15	Adj	SOIC-16 TSSOP-16
FAN5232	5.6	24	1	1	5	80% V_{IN}	Adj	TSSOP-14
FAN5234	3	24	1	1	0.9	15	Adj	QSOP-16, TSSOP-16
FAN5236	3	24	2	1	0.9	15	Adj, Adj	QSOP-28 TSSOP-28
FAN6520A	4.5	5.5	1	1	0.8	5	Adj	SOIC-8
FAN6520B	1.5	5.5	1	1	0.8	5	Adj	SOIC-8

Multi-Phase Controllers for CPU Vcore Applications

Product Number	Power Input		Number of PWM Outputs	Phases	PWM V_{OUT}		PWM Voltage Outputs (V)	Package
	Min. (V)	Max. (V)			Min. (V)	Max. (V)		
FAN50FC3	9.6	14.4	1	3	0.8	1.6	Adj	MLP-32
FAN5029	9.6	14.4	1	5	0.8	1.6	Adj	MLP-40
FAN5031	9.6	14.4	1	4	0.8	1.6	Adj	MLP-40
FAN5032	9.6	14.4	1	4	0.8	1.6	Adj	MLP-40
FAN5033	9.6	14.4	1	3	0.8	1.6	Adj	MLP-32
FAN5182	10.8	13.2	1 to 3	3	0.16	5.0	Adj	QSOP-20
FAN5240	3	24	1	2	0.925	2	Adj	QSOP-28 TSSOP-28

Controllers for DDR Applications

Product Number	Power Input		Number of PWM Outputs	PWM V_{OUT}		PWM Voltage Outputs (V)	Package
	Min. (V)	Max. (V)		Min. (V)	Max. (V)		
FAN5026	3	16	2	0.9	15	Adj, Adj	TSSOP-28
FAN5236	3	24	2	0.9	15	Adj, Adj	QSOP-28 TSSOP-28

Controllers for ACPI Applications

Product Number	Power Input		Number of PWM Outputs	PWM V_{OUT}		PWM Voltage Outputs (V)	Package
	Min. (V)	Max. (V)		Min. (V)	Max. (V)		
FAN5068	4.5	5.5	1	0.7	4	Adj	MLP-24
FAN5078	4.5	5.5	1	0.9	5.5	Adj	MLP-24

Controllers for Notebook Applications

Product Number	Power Input		Number of PWM Outputs	PWM V_{OUT}		PWM Voltage Outputs (V)	Package
	Min. (V)	Max. (V)		Min. (V)	Max. (V)		
FAN5234	3	24	1	0.9	15	Adj	QSOP-16 TSSOP-16
FAN5236	3	24	2	0.9	15	Adj, Adj	QSOP-28 TSSOP-28

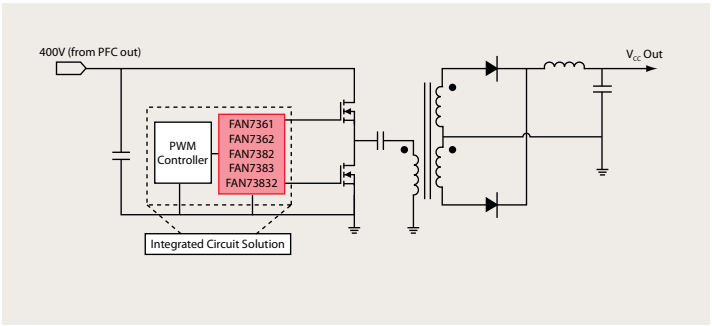
Synchronous and Asynchronous Boost Regulators

Part Number	Type	V_{IN} (V)	V_{OUT} (V)	Load (mA)	Operating Frequency (MHz)	Max. Efficiency (%)	Shutdown Current (µA)	Package
FAN5330	Async	1.8 - 5.5	<30, Adj	32	1.6	80	3	SOT-23
FAN5331	Async	2.7 - 5.5	<20, Adj	50	1.6	88	2	SOT-23
FAN5332A	Async	2.7 - 5.5	<30, Adj	75	1.6	88	3	SOT-23
FAN5333B	Async	1.8 - 5.5	<30, Adj	75	1.6	80	3	SOT-23
FAN5336	Async	2.7 - 5.5	<33V, Adj	125	1.5	80	3	MLP 3x3 6L
FAN4855	Sync	1.6 - 4.5	3-5, Adj	500	PFM	95	1	MSOP-8

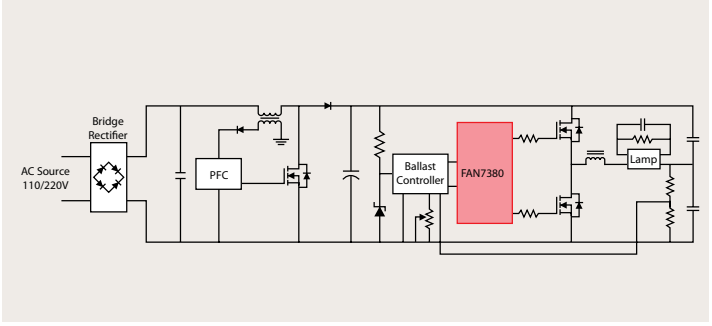
Fairchild's high voltage gate drivers (HVICs) improve system reliability by utilizing an innovative common-mode dv/dt noise canceling circuit that provides excellent noise immunity. With a voltage capability up to 600V and a very fast switching speed (dv/dt=50V/ns (Max.)), these drivers are optimal for driving MOSFETs and IGBTs in a wide array of applications.

Features & Benefits

- Better noise immunity (due to noise canceling circuit over high dv/dt common-mode noise)
- I_{QBS} and I_{QCC} are lower than in competitive devices
- Extended allowable negative V_S swing to –9.8V for signal propagation at V_{CC}=V_{BS}=15V
- Matched propagation delay below 50ns
- UVLO functions for both channels
- TTL-compatible input logic threshold levels



Half-Bridge-SMPS



Ballast

High Voltage Gate Drivers (HVICs)

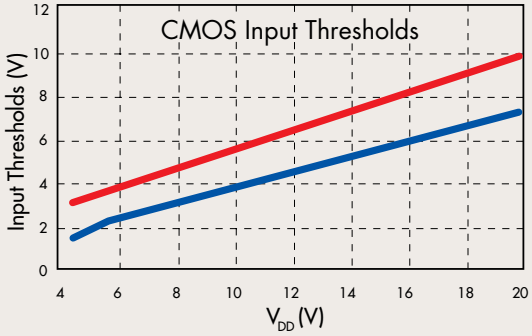
Product Number	Circuit		Offset Voltage	Output Current (mA)		Delay Time (nS)		Shut-down	Dead Time Control	Quiescent Current (µA)		dv/dt (V/ns)	V_B (V)	Package
	Type	Input to Output	(V)	Source	Sink	t_{ON}	t_{OFF}			I_{QBS}	I_{QCC}			
FAN7380	Half-bridge	2 to 2	600	90	180	135	130	No	Fixed	45	70	50	-9.8	8-SOP
FAN7361	High Side	1 to 1	600	250	500	120	90	No	No	50	30	50	-9.8	8-SOP
FAN7362	High Side	1 to 1	600	250	500	120	90	No	No	50	30	50	-9.8	8-SOP
FAN7384	Half-bridge	2 to 2	600	250	500	180	170	Yes	Fixed	50	600	50	-9.8	14-SOP
FAN7382	High & Low Side	2 to 2	600	350	650	170	200	No	No	45	70	50	-9.8	8-SOP/DIP
FAN7383	Half-bridge	1 to 2	600	350	650	500	170	Yes	Vari-able	35	650	50	-9.8	14-SOP
FAN73832	Half-bridge	1 to 2	600	350	650	580	180	Yes	Vari-able	35	300	50	-9.8	8-SOP/DIP
FAN7385	2 Ch. High Side	2 to 2	600	350	650	110	110	No	No	50	28	50	-9.8	14-SOP
FAN7388*	3 Phase	6 to 6	600	350	650	130	150	No	Fixed	50	160	50	-9.8	20-SOP
FAN7387*	Self Oscillation	1 to 2	600	350	650	170	200	Yes	Vari-able	50	220	50	-9.8	8-SOP/DIP
FAN7371	High Side	1 to 1	600	4000	4000	150	150	No	No	60	25	50	-9.8	8-SOP
FAN7390*	High & Low Side	2 to 2	600	4500	4500	140	140	No	No	45	65	50	-9.8	8-SOP/DIP

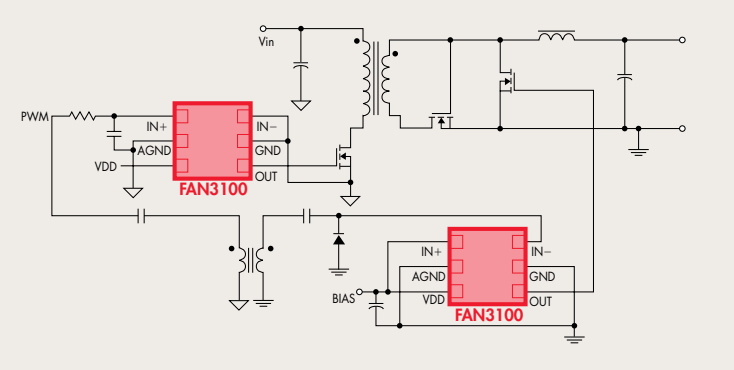
** In Development*

Fairchild's low-side gate drivers (FAN31xx and FAN32xx) offer an unequaled combination of higher performance, smaller size and more input options for driving N-Channel power MOSFETs and IGBTs. Forty different devices provide choices of 2A, 4A, or 9A current ratings in single- or dual-channel versions. These drivers deliver fast switching and accurate timing to maximize efficiency in high frequency power converter designs.

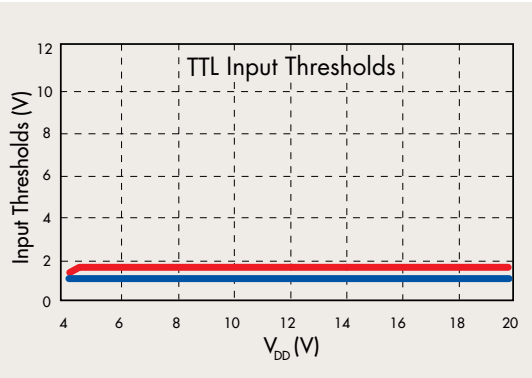
Features & Benefits

- Package options: industry's smallest packages (2 x 2 & 3 x 3mm MLP) in addition to standard packages (SOIC, SOT)
- Ease of design: CMOS or TTL input thresholds for all products
- Design flexibility: 2 inputs for each channel (dual-input or input + enable)
- Maximize efficiency: short and well-controlled time delays for 1MHz switching, paralleling drivers, and optimizing drive timing
- Rugged: 20V (V_{DD} to GND) abs max; >4kV ESD; >500mA reverse current; -40 to 125°C ambient temperature range





Forward Converter with Hybrid Synchronous Rectifier



Low-Side Gate Drivers

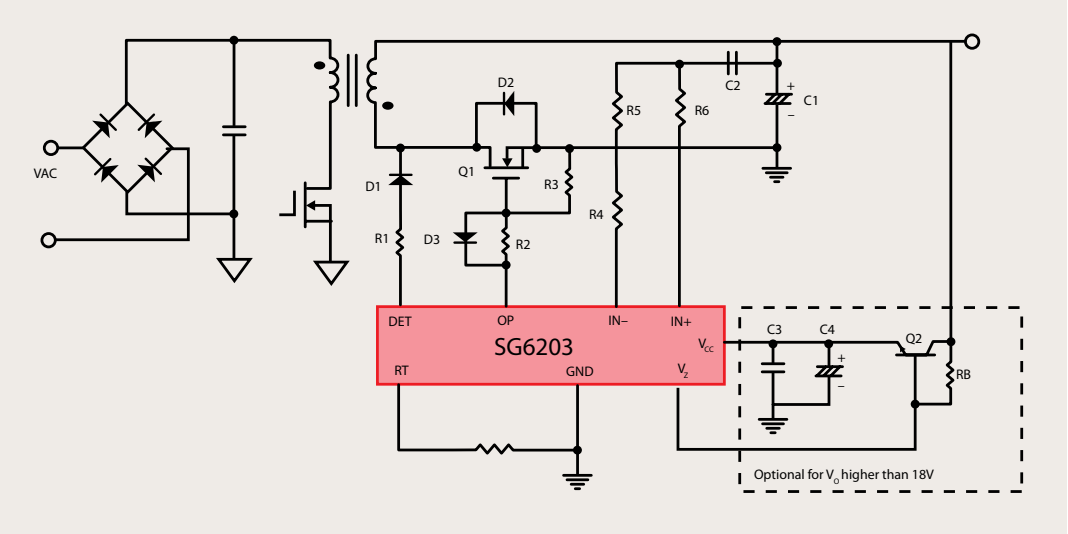
Product Number	Type	Gate Drive[1] (Sink/Source) (A)	Input Thresholds	Logic	Package
FAN3100	Single 2A	+2.5 / -1.8	CMOS, TTL	Single Channel of Two-Input/One-Output	SOT23-5, MLP-6
FAN3226	Dual 2A	+2.4 / -1.6	CMOS, TTL	Dual Inverting Channels + Dual Enable	SOIC-8, MLP-8
FAN3227	Dual 2A	+2.4 / -1.6	CMOS, TTL	Dual Non-Inverting Channels + Dual Enable	SOIC-8, MLP-8
FAN3228	Dual 2A	+2.4 / -1.6	CMOS, TTL	Dual Channels of Two-Input/One-Output, Pin Config.1	SOIC-8, MLP-8
FAN3229	Dual 2A	+2.4 / -1.6	CMOS, TTL	Dual Channels of Two-Input/One-Output, Pin Config.2	SOIC-8, MLP-8
FAN3223	Dual 4A	+4.3 / -2.8	CMOS, TTL	Dual Inverting Channels + Dual Enable	SOIC-8, MLP-8
FAN3224	Dual 4A	+4.3 / -2.8	CMOS, TTL	Dual Non-Inverting Channels + Dual Enable	SOIC-8, MLP-8
FAN3225	Dual 4A	+4.3 / -2.8	CMOS, TTL	Dual Channels of Two-Input/One-Output	SOIC-8, MLP-8
FAN3121[2]	Single 9A	+9 / -6	CMOS, TTL	Single Inverting Channel + Enable	SOIC-8, MLP-8
FAN3122[2]	Single 9A	+9 / -6	CMOS, TTL	Single Non-Inverting Channel + Enable	SOIC-8, MLP-8

(1) Typical currents with V_{DD} = 12V and OUT at 6V.
(2) In development

The SG6203 is designed to control and drive the synchronous rectifier for a flyback converter. The synchronous signal of the primary switch is obtained by a single diode connected between the secondary transformer winding and the SG6203 so that no additional transformer winding is required, minimizing the circuit complexity.

Features & Benefits

- Automatic tracking for optimum dead time
- Suitable for both CCM & DCM operation
- Wide supply voltage range from 6V to 20V
- No reverse energy flow at light load
- Built-in 18V Zener diode
- One resistor for timing setting
- Optional current sensing circuit
- Current shunt
- RC network



Synchronous Rectifier Diagram

Synchronous Rectifier Controller and Driver

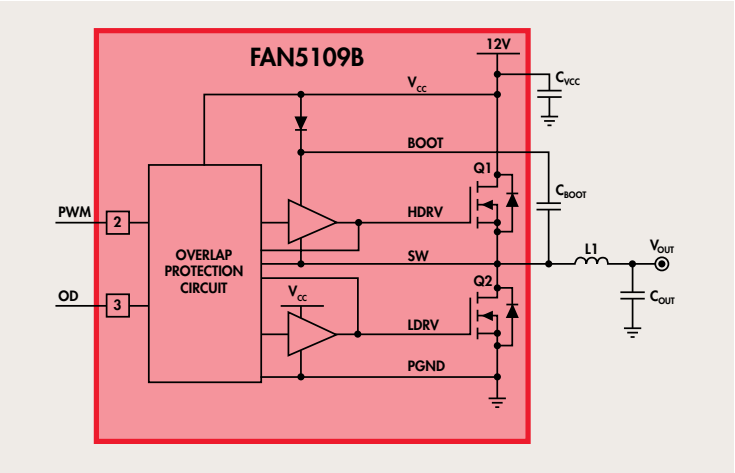
Product Number	Supply Voltage (V)	Max. DC Supply Voltage V_{cc} (V)	Operating Current (mA)	Operation Mode	Package
SG6203	6 - 20	25	1.7	CCM & DCM	SOP-8, DIP-8

Note: CCM = Continuous Conduction Mode; DCM= Discontinuous Conduction Mode

Fairchild provides dual, high frequency MOSFET drivers, specifically designed to drive N-Channel power MOSFETs in a synchronous-rectified buck converter. These drivers, when combined with a Fairchild multi-phase pulse-width-modulated (PWM) controller and Fairchild power MOSFETs, form a complete core voltage regulator solution for advanced microprocessors.

Features & Benefits

- 12V high-side and 12V low-side drive
- Internal adaptive shoot-through protection
- Fast rise and fall times
- Switching frequency above 500kHz
- Available in single- and dual-phase



Typical Application

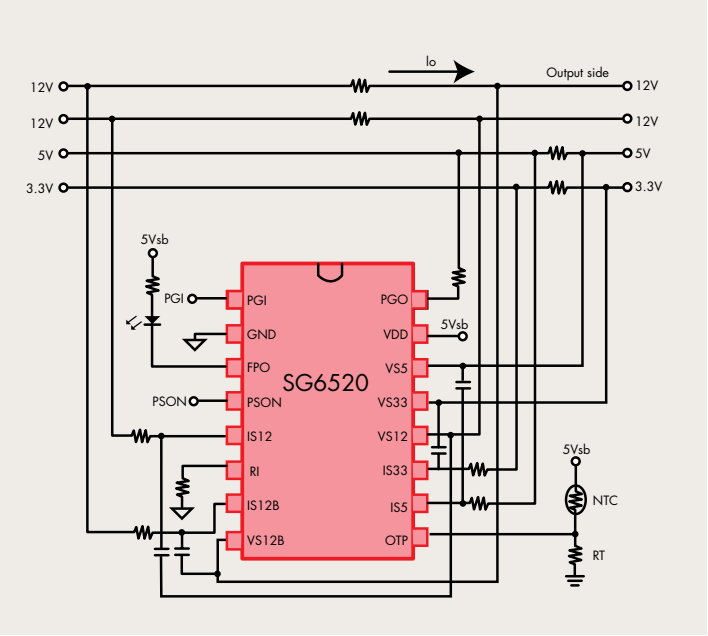
Synchronous Buck/Multi-Phase Drivers						
Product Number	# of Phase	V_{IN} (V)	Operating Current (mA)	Switching Frequency (kHz)	Operating Temperature (°C)	Package
FAN5109	1	12	3.5	Up to 500	0 to 85	SOIC-8
FAN5109B	1	12	4	Above 500	0 to 85	SOIC-8
FAN5110*	2	12	5.1	Above 500	0 to 85	SOIC-16

** In development*

Fairchild's family of supervisors is designed to provide the voltage and current supervisor function, remote on/off function (PSON), power good (PGO) indicator function, and fault protection (FPO) function for switching power systems. These products also provide the over-voltage protection (OVP), over-current protection (OCP), and under-voltage protection (UVP) for 3.3V, 5V, and two 12V.

Features & Benefits (SG6520)

- Two 12V sense input pins: VS12 and VS12B
- Over-voltage protection (OVP) for 3.3V, 5V, and two 12V
- Over-current protection (OCP) for 3.3V, 5V, and two 12V
- Under-voltage protection (UVP) for 3.3V, 5V, and two 12V
- Open drain output for PGO and FPO pins
- 300ms power good delay
- 300ms turn on delay for 3.3V, 5V and two 12V
- 2.8ms PSON control to FPO turn-off delay
- 48ms PSON control delay
- No lockup during the fast AC power on/off
- Wide supply voltage range from 4.2V to 15V
- Programmable over temperature protection (OTP)



SG6520: Typical Application Circuit with Minimal External Components

Supervisor								
Product Number	Operating Voltage Min. (V)	Operating Voltage (V Max.)	PG Inputs	Remote	Over Voltage Protection	Over Current Protection	Under Voltage Protection	Package
SG6510	4	15	1	Yes	Yes	No	Yes	DIP-8, SOP-8
FAN7680	4	15	1	No	Yes	No	Yes	SOP-8, DIP-8
FAN7687	4	15	1	No	Yes	No	Yes	SOP-14, DIP-14
SG6516	4	16	1	Yes	Yes	No	Yes	DIP-14, SOP-14
SG6520	4	16	1	Yes	Yes	Yes	Yes	DIP-16, SOP-16
SG6521	4.2	16	1	Yes	Yes	Yes	Yes	DIP-16, SOP-16
SG6108*	4.5	5.5	1	Yes	Yes	Yes	Yes	DIP-20
SG6105A*	4.5	16	1	Yes	Yes	No	Yes	DIP-20
FAN7585*	15	30	1	Yes	Yes	Yes	Yes	DIP-24

** Includes PWM controller*

Fairchild's suite of voltage regulators offers flexible output voltages, space-saving packages, and multiple voltage tolerances to meet the challenges of power supply designs.

Features & Benefits

- Programmable output voltages
- Temperature compensated
- Low output noise
- Fast turn-on time

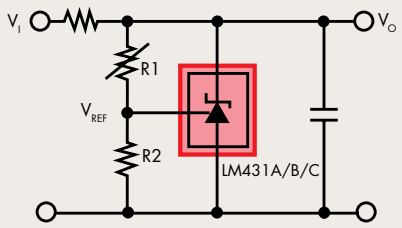
Linear Regulators (LDOs)

Product Number	Output Type	Preset Output Voltage Typ. (V)	Adj. Output Voltage		Output Current (A)	Dropout Voltage (V)	Input Voltage Max. (V)	Package
			Min. (V)	Max. (V)				
FAN1084	Single	Adj/1.5/3.3	1.25	5.7	4.5	1.5	7	TO-220AB/TO-252(DPAK)/ TO-263(D²PAK)
FAN1086	Single	Adj/2.5/2.85 3.3/5.0	1.25	5.5	1.5	1.5	7.5	SOT-223/TO-252(DPAK)/ TO-263(D²PAK)/TO-252(DPAK)/ TO-263(D²PAK)
FAN1112	Single	1.2	-	-	1	1.2	18	SOT-223/TO-252(DPAK)
FAN1117A	Single	Adj/1.8/2.5 2.85/3.3/5.0	1.25	18	1	1.1	17	SOT-223/TO-220AB/TO-252(DPAK)
FAN1539B	Single	3.3	-	-	1	1.2	7	MLP
FAN1540B	Single	3.3	-	-	1	1.2	7	MLP
FAN1581	Single	Adj/1.5/2.5	1.25	5.7	5	0.6	7	TO-263(D²PAK)
FAN1582	Single	Adj/1.5/2.5	1.25	5.7	3	0.6	7	TO-263(D²PAK)
FAN1585A	Single	Adj/1.5	1.25	7	5.4	1.3	7	TO-220AB/TO-263(D²PAK)
FAN1587A	Single	Adj/1.5/3.3	1.5	3.6	3	1.3	12	TO-220AB/TO-252(DPAK)/ TO-263(D²PAK)
FAN1589	Single	1.2	-	-	2.7	1.3	7	TO-252(DPAK)/TO-263(D²PAK)
FAN1616A	Single	Adj/1.8/2.5 3.3/5.0	1.25	18	0.5	1.1	18	SOT-223/TO-252(DPAK)
FAN1655	Single	DDR VTT	1.1	1.8	3	1.1	3.6	MLP/SOIC/eTSSOP
FAN1950	Single	1.8/2.5	-	-	1.5	0.5	14	TO-252(DPAK)
FAN2500	Single	Adj/2.5/2.6 2.7/2.8 2.85/3.0/3.3	1.32	7	0.1	0.1	7	SOT-23
FAN2501	Single	2.5/2.6/2.7/2.8/2.8 5/3.0/3.3	-	-	0.1	0.1	7	SOT-23
FAN2502	Single	Adj/2.5/2.6/2.7/2.8 2.85/3.0/3.3	1.32	7	0.15	0.15	7	SOT-23
FAN2503	Single	2.5/2.6/2.7/2.8/2.8 5/3.0/3.3	-	-	0.15	0.15	7	SOT-23
FAN2504	Single	Adj/2.5/2.6/2.7/2.8 2.85/3.0/3.3	1.32	7	0.2	0.2	7	SOT-23
FAN2505	Single	2.5/2.6/2.7/2.8/2.8 5/3.0/3.3	-	-	0.2	0.2	7	SOT-23
FAN2508	Single	Adj/2.5/2.6/2.7/2.8 2.85/3.0/3.3	1.8	7	0.05	0.05	7	SOT-23
FAN2509	Single	2.5/2.6/2.7/2.8/2.8 5/3.0/3.3	-	-	0.05	0.05	7	SOT-23

Linear Regulators (LDOs) - Continued

Product Number	Output Type	Preset Output Voltage Typ. (V)	Adj Output Voltage		Output Current (A)	Dropout Voltage (V)	Input Voltage Max. (V)	Package
			Min. (V)	Max. (V)				
FAN2510	Single	Adj/2.5/2.6/2.7/2.8/2.85/3.0/3.3	1.32	7	0.1	0.1	7	SOT-23
FAN2511	Single	2.5/3.3/2.6/2.7/2.8/2.85/3.0	-	-	0.1	0.1	7	SOT-23
FAN2512	Single	Adj/2.5/2.6/2.7/2.8/2.85/3.0/3.3	1.32	7	0.15	0.15	6.5	SOT-23
FAN2513	Single	2.5/2.6/2.7/2.8/2.85/3.0/3.3	-	-	0.15	0.15	6.5	SOT-23
FAN2514	Single	Adj/2.5/2.6/2.7/2.8/2.85/3.0/3.3	1.32	7	0.2	0.2	7	SOT-23
FAN2515	Single	2.5/2.6/2.7/2.8/2.85/3.0/3.3	-	-	0.2	0.2	7	SOT-23
FAN2518	Single	Adj/2.5/2.6/2.7/2.8/2.85/3.0/3.3	1.32	7	0.05	0.05	7	SOT-23
FAN2519	Single	2.5/2.6/2.7/2.8/2.85/3.0/3.3	-	-	0.05	0.05	7	SOT-23
FAN2558	Single	Adj/1.0/1.2/1.3/1.5/1.8/2.5/3.3/3.5/3.6/3.8	1	3.3	0.18	0.25	5.5	MLP/SOT-23
FAN2559	Single	Adj/1.0/1.2/1.3/1.5/1.8	1	3.3	0.18	0.25	5.5	MLP/SOT-23
FAN2560	Single	1.3/1.5	-	-	0.35	0.07	5.5	WL-CSP

$$V_0 = \left(1 + \frac{R1}{R2}\right) V_{ref}$$



Shunt Regulator

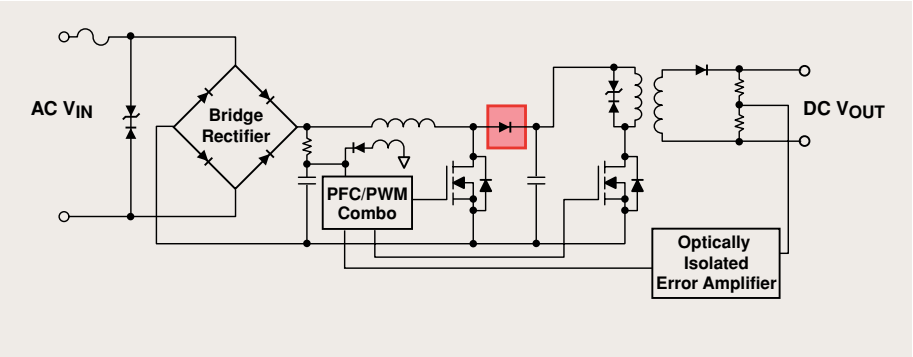
Shunt Regulators

Product Number	Description	Preset Output Voltage (V)	Adj Output Voltage Min. (V)	Adj Output Voltage Max. (V)	Tolerance (%)	Max Current (mA)	Package
LM431A	Adjustable	2.5	2.5	37	2	100	SOIC, TO-92R
LM431B	Adjustable	2.5	2.5	37	1	100	SOIC, TO-92R
LM431C	Adjustable	2.5	2.5	37	0.50	100	SOIC, TO-92R

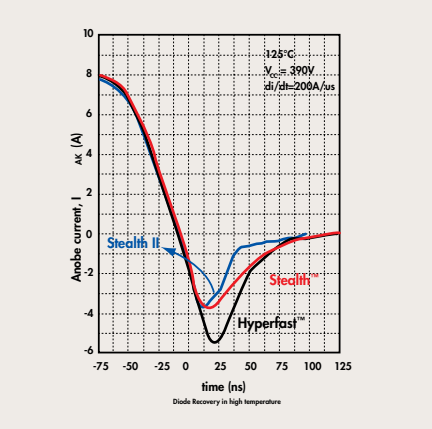
Fairchild's latest family of rectifiers (Stealth™ II and Hyperfast II) features fast reverse recovery and soft recovery characteristics that enable reduced MOSFET switching losses and EMI in continuous-current mode (CCM) power factor correction (PFC) designs.

Features and Benefits

- Energy efficiency through high speed switching and low forward voltage drop
- System reliability attained by softer recovery characteristics
- Space savings resulting from elimination of the snubber circuit and reduced EMI filter size
- Applications include PFC in server/telecom, PDP TV, computing, and adapters



Typical AC-DC Application



Rectifiers						
Product Number	V_{RRM} (V)	$I_{F(AV)}$ (A)	I_{FSM} (A)	V_F Max. (V)	t_{RR} Max. (ns)	Package
FFP04S60S	600	4	40	2.6	25	TO-220
FFPF04S60S	600	4	40	2.6	25	TO-220F
FFP04H60S	600	4	40	2.1	40	TO-220
FFPF04H60S	600	4	40	2.1	40	TO-220F
FFP08H60S	600	8	60	2.5	45	TO-220
FFPF08H60S	600	8	60	2.5	45	TO-220F
FFP08S60S	600	8	80	2.6	30	TO-220
FFPF08S60S	600	8	80	2.6	30	TO-220
FFPF10H60S	600	10	100	2.5	45	TO-220F
FFP15S60S	600	15	150	2.6	35	TO-220
FFPF15S60S	600	15	150	2.6	35	TO-220F
FFH15S60S	600	15	150	2.6	35	TO-247
FFP30S60S	600	30	300	2.6	40	TO-220
FFH30S60S	600	30	300	2.6	40	TO-247

The FDMFxxxx Series

The FDMFxxxx series is Fairchild's family of fully-optimized integrated driver plus MOSFET power stage solutions for applications requiring a high current synchronous Buck converter.

Features & Benefits

Higher System Efficiency

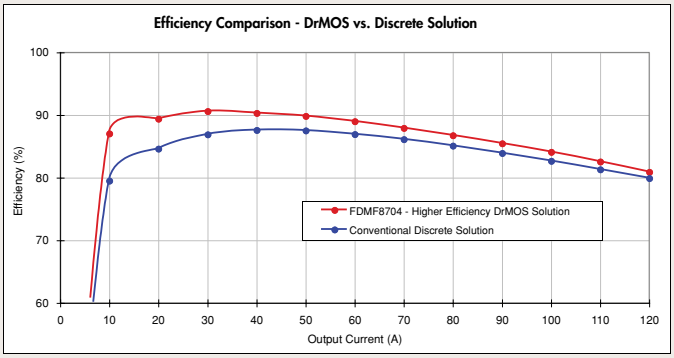
- Higher efficiency than conventional discrete solutions under high, medium, and light load conditions
- Average power losses across the full operating range are reduced by 14% when compared to discrete solutions

Critical Space Savings

- Replaces three MOSFETs, one diode (Schottky or bootstrap) and one driver IC
- Reduces 33% of component count compared to conventional discrete solutions
- Saves 72% to 85% of valuable board space

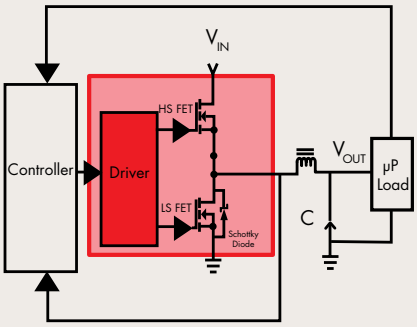
Easier and Faster Design

- Designers no longer need to spend valuable time and resources in optimizing and matching FETs with respective drivers. Fairchild has already achieved this optimization within DrMOS.

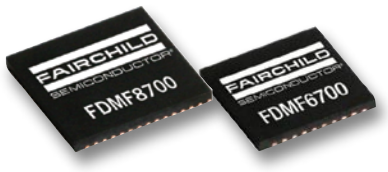


Test conditions:

- Input voltage = 12V
- Output voltage = 1.3V
- Frequency = 300kHz
- Soak time = 10 sec
- Inductor = 0.47µH
- No heatsink
- Airflow provided by VTT tool
- 4 phase VR11-compliant demo boards
- Efficiency measured at the output of the buck converter



Typical Buck Converter Application Circuit



Standard 8mm x 8mm, 56-pin & ultra-compact 6mm x 6mm, 40-pin MLP packages

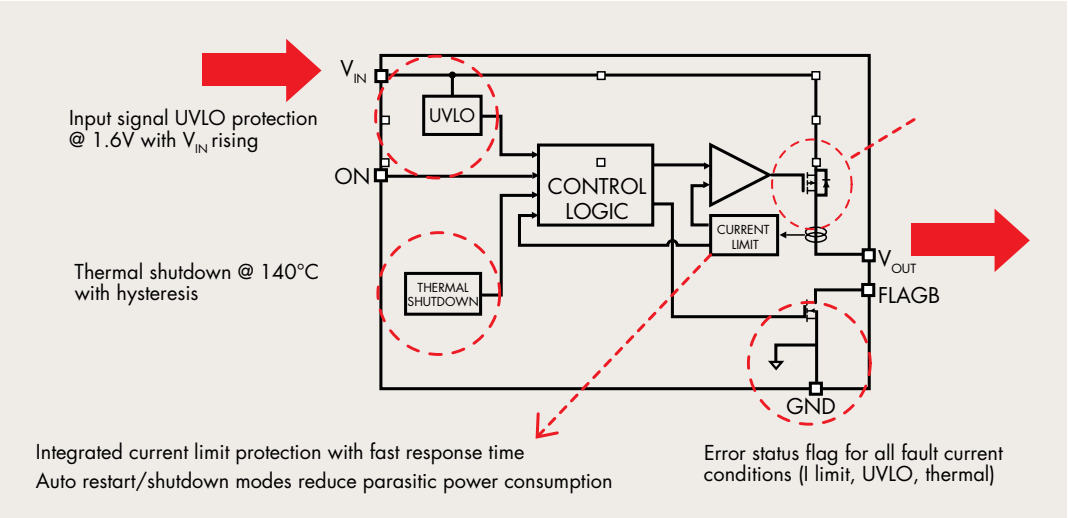
FET Plus Driver Multi-Chip Modules (DrMOS)

Product Number	Description	V_{IN} Range Typ. (V)	V_{OUT} Range Typ. (V)	I_{OUT} Max. (A)	Frequency	Package
FDMF8704	High efficiency/frequency DrMOS module	7 - 20	0.8 - 3.2	32	1MHz	MLP 8 x 8
FDMF8704V	High efficiency/frequency DrMOS module with VR	7 - 20	0.8 - 3.2	32	1MHz	MLP 8 x 8
FDMF8700	Standard DrMOS module	6.4 - 14	0.8 - 3.2	30	500kHz	MLP 8 x 8
FDMF8705	Low current DrMOS module	6.4 - 14	0.8 - 3.2	18	500kHz	MLP 8 x 8
FDMF6700	Ultra-compact DrMOS module	6.4 - 14	0.8 - 3.2	25	500kHz	MLP 6 x 6

Fairchild's IntelliMAX™ family of advanced full function load switches reduces board space, component count, and complexity in power management designs for the latest generation of battery-powered devices. This unique combination of protection, control, and fault monitoring features allows for a simple, space-saving solution in critical time-to-market product applications without sacrificing design performance.

Features & Benefits

- Product families address a wide operating voltage range (1.2V–20.0V)
- Soft-start control reduces in-rush current
- Integrated fixed and adjustable current-limit value
- Under-voltage lockout for system protection
- Thermal shutdown to reduce excessive heating or system damage
- Fast current limit response time
- Optional flag for fault conditions, fault blanking and auto re-start to optimize fault condition management
- Low shutdown current to conserve critical battery life
- Options for reverse current blocking capability



IntelliMAX Load Switches

Product Number	Family	V_{IN} Range (V)	R_{ON} (mΩ) Typ.	Current Limit Minimum (mA)	Package
FPF100x	Slew rate control	1.2 - 5.5	20/50	Slew rate control	CSP, MLP 2x2
FPF200x	Value current limiting	1.8 - 5.5	700	50, 100	SC70-6
FPF214x /FPF218x	Reverse current protection	1.8 - 5.5	110, 150	200, 400	MLP 2x2/CSP
FPF210x	Value reverse current protection	1.8 - 5.5	125	200, 400	SOT23-5
FPF216x/FPF219x	Reverse current protection (0.15 – 1.5A)	1.8 - 5.5	110	150 - 1500 Adj	MLP 2x2/CSP
FPF212x	Value 0.15 – 1.5A reverse current	1.8 - 5.5	125	150 - 1500 Adj	SOT23-5
FPF217x	Output over-voltage protection (w/Schottky)	1.8 - 5.5	125	200	Power33
FPF250x	Up to 20 V_{IN} current limiting	4.5 - 20	280	400/800/ 500 – 2000 Adj	SOT23-5

The FDMS9600S and FDMS9620S are two integrated MOSFET modules that enable higher conversion efficiency while significantly reducing board space in synchronous Buck designs. Each module in the FDMS96xx series combines a carefully selected high side and low side N-Channel MOSFET and one monolithically integrated Schottky diode into a single, space-efficient, 5mm x 6mm MLP package. The pin-out design of the FDMS96xx series is optimized for direct and easy connection in PCB layouts to standard driver ICs. This innovative package concept shortens design time and reduces parasitic inductances in board layout traces, improving overall system efficiency.

Features & Benefits

Higher efficiency compared to conventional discrete solutions

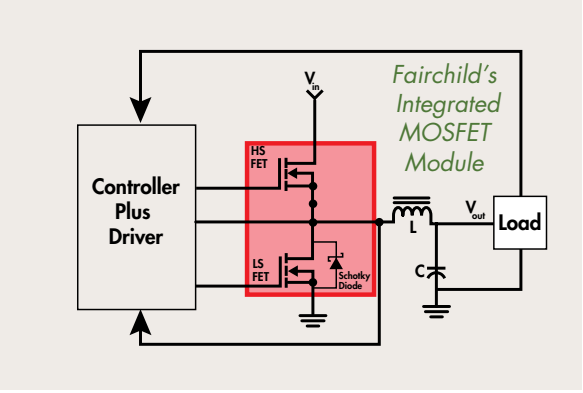
- Optimized matching and sizing of high and low side MOSFETs for better efficiency in buck converters
- Integrated Schottky diode for improved low side MOSFETs performance

Ultra-compact size

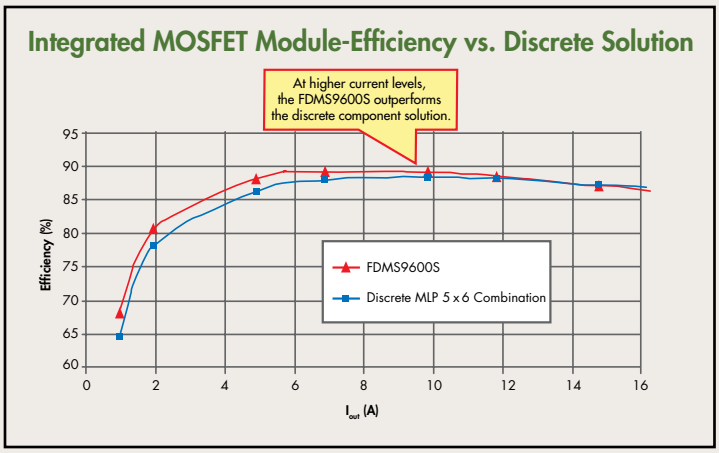
- Space savings up to 50% vs. discrete options

Faster and easier design. Faster time to market

- High side and low side MOSFETs internally connected
- Optimized pin-out for easier layout with standard driver ICs



Buck Converter Block Diagram



Test Conditions

- V_{IN} = 12V, Single phase board, V_{out} =1.5V
- V_{DRIVE} =12V, Freq = 300kHz
- T_A = 20C, No heatsink
- One high side and one low side MOSFET for the discrete MLP 5 x 6 combination
- Discrete MOSFET ratings:
  – High side: 6.6mΩ @ 10V V_{GS}, 13nC @ 5V V_{GS}
  – Low side: 2.8mΩ @ 10V V_{GS}, 24nC @ 5V V_{GS}

FDMS96xx Series

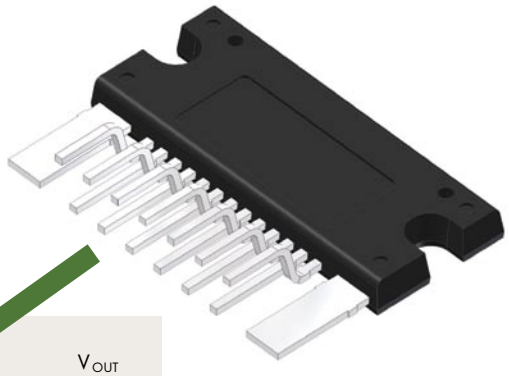
Product Number	V_{DS} (V)	V_{GS} (V)	Current (A)	Max. $R_{DS(ON)}$ @ 10V		Max. $R_{DS(ON)}$ @ 4.5V		Typ. Q_{gTOT} @ 4.5V	
				HS (mV)	LS (mV)	HS (mV)	LS (mV)	HS (nC)	LS (nC)
FDMS9600S	30	20	12 – 14	8.5	5	12	6.5	10	30
FDMS9620S	30	20	7.5 – 10	21	13	29.5	17	5	9

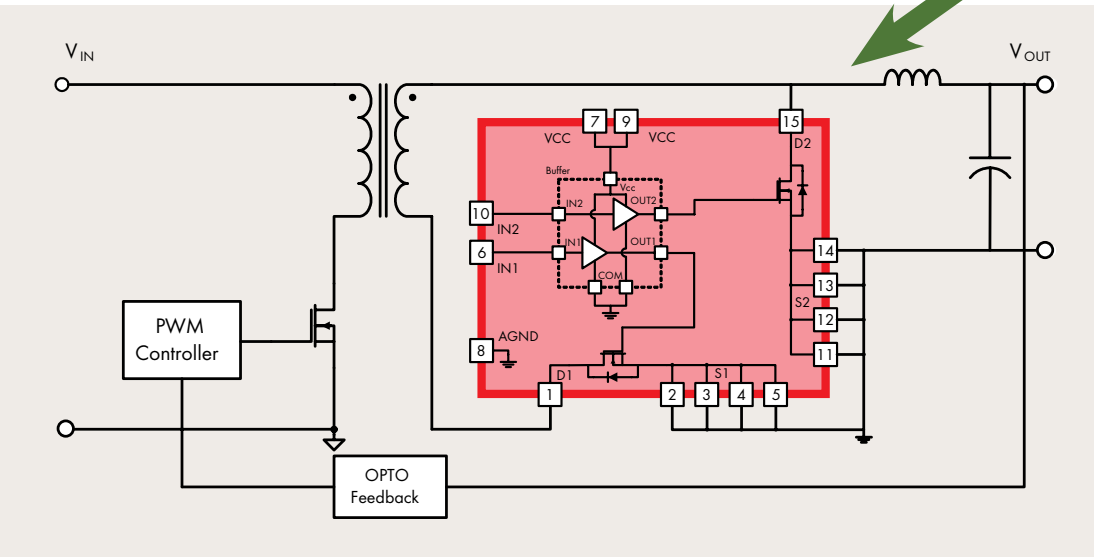
Synchronous Rectification Module (Power-SPM)

The Power-SPM product family is an application-optimized solution for more compact and more efficient synchronous rectification applications such as Internet server power supplies and telecom system power supplies. For higher efficiency, it includes built-in very low $R_{DS(ON)}$ MOSFETs. In addition, it includes a superior gate driver that supports higher driving capability to be more suitable for these low $R_{DS(ON)}$ MOSFETs. This Power-SPM device can be used in the secondary side of the PWM transformer of forward/bridge converters to provide high current rectification at output voltages ranging from 12 volts down to 5 volts.

Features and Benefits

- Reduces MOSFET stress and enhances system reliability by minimizing stray inductance
- Integrated solution with few external components saves board space and provides higher power density and reliability
- Robust package (SPM6) provides lower wired inductance and resistance



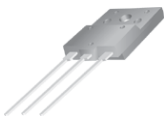
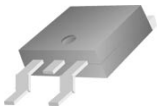
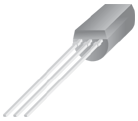
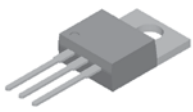
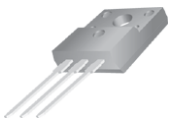
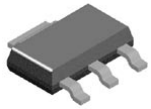


Synchronous Rectification Modules				
Product Number	B_{VDSS} (V)	$R_{DS(ON)}$ Max. (mΩ)	Output	Configuration
FPP06R001	75	4.3	<12V/20A	2 FETs + Driver
FD6M016N03*	30	1.6	<5V/48A	Dual FETs
FD6M033N06*	60	3.3	<12V/20A	Dual FETs
FD6M043N08*	75	4.3	<12V/20A	Dual FETs

In Development

Fairchild offers an array of switching solutions for each application.

Fairchild Switching Technologies - High Voltage		
High Voltage MOSFET Technologies	**Voltage Range**	**Applications**
QFET® C-Series	200V to 1000V	Lighting Ballast, Power Supply, Flat Panel TV, PFC
QFET® V2-Series	200V to 500V	
UniFET™	150V to 650V	
SuperFET™	600V and 650V	
SuperFET™ FRFET	500V and 600V	
SupreMOS™	600V and 650V	
High Voltage IGBT Technologies	**Voltage Range**	**Applications**
Planar	300V to 1200V	Drives, UPS, Photovoltaic, Inductive Heating
NPT Trench IGBT	1000V and 1200V	
SMPS IGBT	600V and 1200V	
Field Stop (FS) IGBT	600V, 1200V	
Standard IGBT Modules	600V	

Package Type	Package Image	Package Type	Package Image
TO-3P		TO-3PF	
D^2PAK		1^2-PAK	
D-PAK		I-PAK	
TO-126		8-DIP	
TO-247		TO-264	
TO-92		TO-92L	
TO-220		TO-220F	
8-SOP		SOT-223	

IGBTs

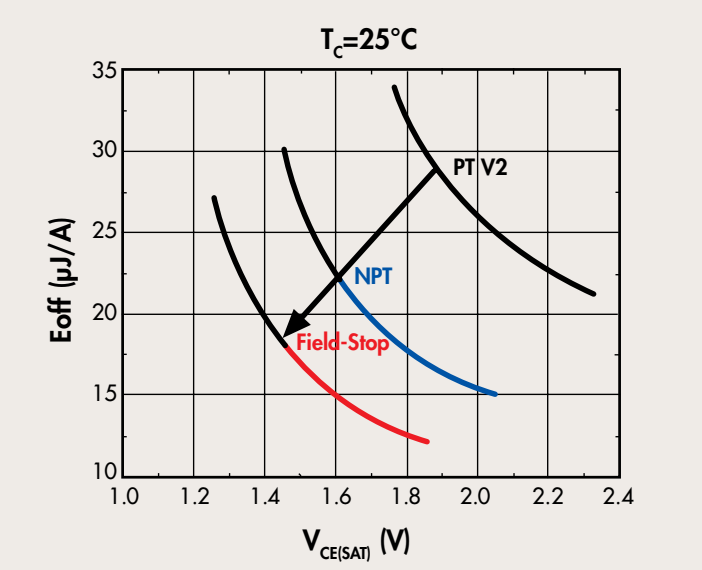
Fairchild's IGBTs are optimized for switch mode power supply designs offering better V_{SAT} and E_{OFF}. Additionally, this control smoothes the switching waveforms for less EMI. IGBTs are manufactured using stepper-based technology which offers better control and repeatability of the top side structure, thereby providing tighter specifications.

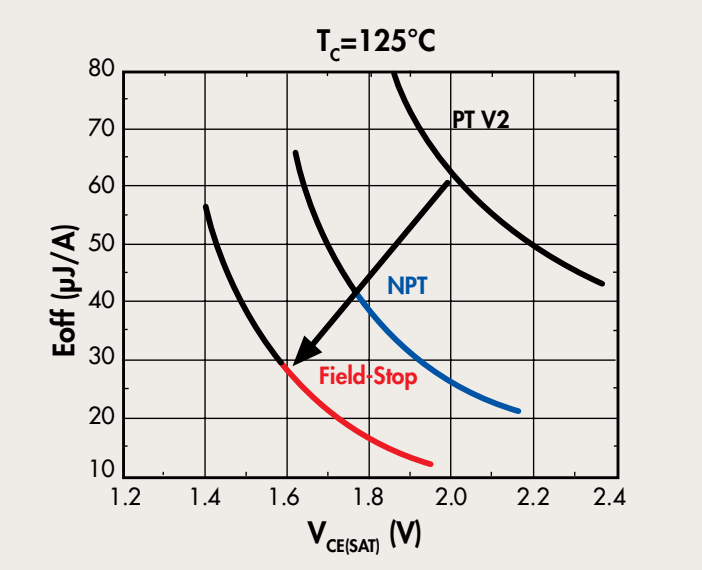
IGBTs vs. MOSFETs

- Reduce conduction losses due to low saturation voltage
- Reduce current tail, reduce switching losses
- Improve transistor and system reliability
- IGBTs superior in current density facilitates higher output power

Reduce System Cost

- Smaller die size for higher voltages reduces overall costs
- May eliminate components
- Increase operating frequency and reduce transformer/filter costs
- Fastest switching IGBTs in the market today





600V IGBT Trade-off Curve(E_{OFF} vs $V_{CE(sat)}$)

IGBTs						
Product Number	BV_{CES} Min. (V)	I_C (A)	$V_{CE(sat)}$ Typ. (V)	t_f Typ. (ns)	Built in Diode	Package
FGPF30N30	300	30	1.8	180	No	TO-220F
FGPF70N30T	300	70	1.8	170	No	TO-220F
FGH50N3	300	75	1.3	12	No	TO-247
FGA90N30	300	90	1.9	140	No	TO-3P
FGA90N30D	300	90	1.9	140	Yes	TO-3P
FGP90N30	300	90	1.9	140	No	TO-220
FGPF90N30	300	90	1.9	130	No	TO-220F
FGPF90N30D	300	90	1.9	130	Yes	TO-220F
FGA120N30D	300	120	1.9	130	Yes	TO-3P
FGPF120N30	300	120	1.9	140	No	TO-220F
FGA180N30D	300	180	1.9	140	Yes	TO-3P
FGPF7N60LSD	600	7	1.4	2320	Yes	TO-220F
HGT1S7N60C3DS	600	7	1.6	140	Yes	TO-263(D^2PAK)
HGTP7N60C3D	600	7	1.6	140	Yes	TO-220
HGTP3N60A4	600	8	2	47	No	TO-220
HGTP3N60A4D	600	8	2	47	Yes	TO-220
HGTP12N60C3D	600	12	1.65	210	Yes	TO-220
HGT1S7N60C3D	600	14	1.6	140	Yes	TO-220
HGTD7N60C3S	600	14	1.6	140	No	TO-252(DPAK)
HGTG7N60A4	600	14	1.9	140	No	TO-3P
HGTG7N60A4D	600	14	1.9	45	Yes	TO-247
HGTP7N60A4	600	14	1.9	45	No	TO-220
HGTP7N60A4D	600	14	1.9	45	Yes	TO-220
HGTG20N60B3D	600	20	1.8	210	Yes	TO-247
HGTG12N60A4	600	23	2	18	No	TO-247
HGTG12N60A4D	600	23	2	18	Yes	TO-247
HGTP12N60A4	600	23	2	18	No	TO-220
HGTP12N60A4D	600	23	2	18	Yes	TO-220
FGAF40N60UF	600	40	2.3	35	No	TO-3PF
FGAF40N60UFD	600	40	2.3	35	No	TO-3PF
FGH80N60FD*	600	40	1.8	50	No	TO-247
HGT1S20N60A4S9A	600	40	1.8	32	No	TO-263(D^2PAK)
HGTG20N60A4	600	40	2	32	No	TO-247
HGTG20N60A4D	600	40	2	73	Yes	TO-247
HGTP20N60A4	600	40	1.8	32	No	TO-220
HGTG30N60A4	600	60	1.8	38	No	TO-247
HGTG30N60A4D	600	60	1.8	38	Yes	TO-247
FGA50N100BNTD	1000	50	1.5	130	Yes	TO-3P
FGA50N100BNTD	1000	50	1.5	130	Yes	TO-3P
FGL60N100BNTD	1000	60	2.5	130	Yes	TO-264
HGTD1N120BNS	1200	5.3	2.5	226	No	TO-252(DPAK)
FGA15N120AND	1200	15	2.4	60	Yes	TO-3P
FGA20N120FTD*	1200	20	1.6	217	No	TO-3PN
FGA25N120ANTD	1200	25	2	100	Yes	TO-3P
FGL40N120AND	1200	40	2.6	40	Yes	TO-264

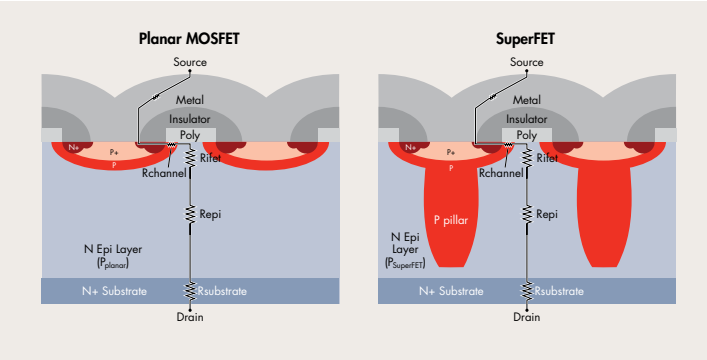
**New Field Stop IGBTs*

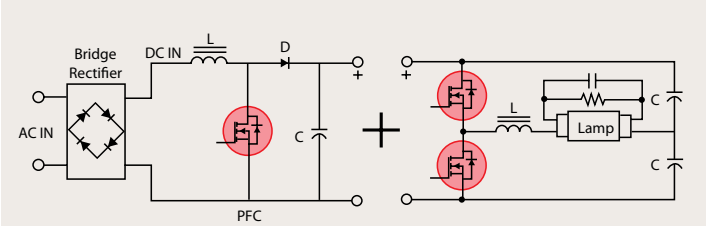
High Voltage MOSFETs

Fairchild's MOSFET portfolio is one of the industry's broadest with outstanding low on-resistance and low gate charge performance. This is the result of proprietary technologies such as the SuperFET™, QFET™, UniFET™, and FRFET® MOSFETs. Fairchild's extensive packaging solutions have advantages such as superior size, low package height, and excellent thermal and electrical performance.

Features & Benefits

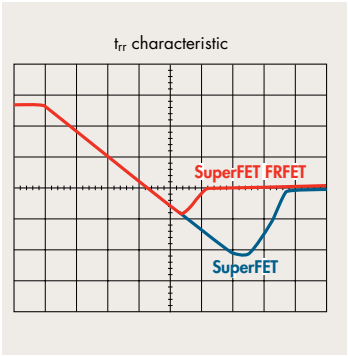
- Ultra-low $R_{DS(ON)}$ resulting in low conduction losses and improved efficiency
- Best-in-class di/dt rating that allows the devices to operate at higher frequencies to ensure ruggedness and reliability
- Lower switching losses due to lower effective output capacitance (C_{OSS}.eff) that allows high frequency switching.





Electronic Ballast

SuperFET™ technology utilizes a stripe-based horizontal layout with vertical deep P-stripes, which significantly reduces on-resistance and enhances avalanche energy in commutation mode. It implements a compensation region using multi-epi layers, which lower resistance in the vertical drift region of a MOSFET in order to improve the on-resistance.



FRFET offers over 50% improvement in diode reverse recovery characteristics (Q_{rr}, T_{rr}) which is ideal for phase-shifted full bridge topologies (ZVS) and half-bridge/full-bridge topologies (hard switching).

UniFET					
Product Number	BV_{DSS} Min. (V)	$R_{DS(ON)}$ Max. (Ω) @ V_{GS} =10V	Qg Typ. (nC) @V_{GS}=10V	I_D (A)	Package
FDD6N20TF	200	0.8	4.7	4.5	TO-252(DPAK)
FDD6N20TM	200	0.8	4.7	4.5	TO-252(DPAK)
FDD6N25	250	1.1	4.5	4.4	TO-252(DPAK)
FDB28N30TM	300	0.13	39	28	TO-263(D^2PAK)
FDB14N30	300	0.29	18	14	TO-263(D^2PAK)
FDPF14N30	300	0.29	18	14	TO-220F
FDP24N40	400	0.18	46	24	TO-220
FDD3N40	400	3.4	4.5	2	TO-252(DPAK)
FDU3N40	400	3.4	4.5	2	TO-251(IPAK)
FDP20N50	500	0.23	45.6	20	TO-220
FDPF20N50	500	0.23	45.6	20	TO-220F
FDPF20N50T	500	0.23	45.6	20	TO-220F
FDA20N50	500	0.23	45.6	22	TO-3P
FDP20N50F	500	0.26	50	20	TO-220
FDPF20N50FT	500	0.26	50	20	TO-220F
FDA20N50F	500	0.26	50	22	TO-3PN
FDP18N50	500	0.27	45	8	TO-220
FDPF18N50	500	0.27	45	8	TO-220F
FDPF18N50T	500	0.27	45	8	TO-220F
FDA18N50	500	0.27	45	19	TO-3PN
FDPF16N50	500	0.38	32	16	TO-220F
FDPF16N50T	500	0.38	32	16	TO-220F
FDA16N50	500	0.38	32	16.5	TO-3P
FDP16N50	500	0.39	32	16	TO-220
FDPF13N50FT	500	0.54	30	12	TO-220F
FDB12N50TM	500	0.65	22	11.5	TO-263(D^2PAK)
FDP12N50	500	0.65	22	11.5	TO-220
FDPF12N50T	500	0.65	22	11.5	TO-220F
FDD6N50	500	0.9	12.8	6	TO-252(DPAK)
FDPF7N50	500	0.9	12.8	7	TO-220F
FDD6N50F	500	1.15	15	5.5	TO-252(DPAK)
FDPF7N50F	500	1.15	15	6	TO-220F
FDPF5N50T	500	1.4	11	5	TO-220F
FDPF5N50FT	500	1.55	11	4.5	TO-220F
FDPF15N65	650	0.44	48.5	15	TO-220F
FDP15N65	650	0.44	48.5	15	TO-220
FDA15N65	650	0.44	48.5	16	TO-3PN

SuperFET					
Product Number	BV_{DSS} Min. (V)	$R_{DS(ON)}$ Max. (Ω) @ V_{GS} =10V	Qg Typ. (nC) @V_{GS}=10V	I_D (A)	Package
FCA47N60	600	0.07	210	47	TO-3P
FCA47N60_F109	600	0.07	210	47	TO-3PN
FCH47N60	600	0.07	210	47	TO-247
FCH47N60F	600	0.073	210	47	TO-247
FCA20N60_F109	600	0.19	75	20	TO-3PN
FCA20N60F	600	0.19	75	20	TO-3PN
FCB20N60	600	0.19	75	20	TO-263(D^2PAK)
FCB20N60F	600	0.19	75	20	TO-263(D^2PAK)
FCH20N60	600	0.19	75	20	TO-247
FCP20N60	600	0.19	75	20	TO-220
FCPF20N60	600	0.19	75	20	TO-220F
FCPF16N60	600	0.26	50	16	TO-220F
FCA16N60_F109	600	0.26	55	16	TO-3PN
FCA16N60	600	0.26	55	16	TO-3P
FCP16N60	600	0.26	55	16	TO-220
FCB11N60	600	0.38	40	11	TO-263(D^2PAK)
FCB11N60F	600	0.38	40	11	TO-263(D^2PAK)
FCI11N60	600	0.38	40	11	TO-262(I^2PAK)
FCP11N60	600	0.38	40	11	TO-220
FCP11N60F	600	0.38	40	11	TO-220
FCPF11N60	600	0.38	40	11	TO-220F
FCPF11N60F	600	0.38	40	11	TO-220F
FCPF11N60T	600	0.38	40	11	TO-220F
FCD7N60	600	0.6	23	7	TO-252(DPAK)
FCI7N60	600	0.6	25	7	TO-262(I^2PAK)
FCP7N60	600	0.6	25	7	TO-220
FCPF7N60	600	0.6	25	7	TO-220F
FCU7N60	600	0.6	23	7	TO-251(IPAK)
FCD5N60	600	0.95	16	4.6	TO-252(DPAK)
FCU5N60	600	0.95	16	4.6	TO-251(IPAK)
FCD4N60	600	1.2	12.8	3.9	TO-252(DPAK)
FCP4N60	600	1.2	12.8	3.9	TO-220

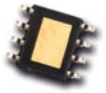
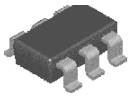
Fast Recovery MOSFETs (FRFET®)							
Product Number	B_{VDSS} Min. (V)	$R_{DS(ON)}$ Max. (Ω) @ V_{GS} = 10V	Qg Typ. (nC) @ V_{GS} = 10V	I_D (A)	P_D (W)	t_{rr} Typ. (ns)	Package
FDD5N50F	500	1.70	8	4.5	40	65	TO-252 (DPAK)
FDPF5N50FT	500	1.55	11	5.0	28	65	TO-220F
FQPF5N50CF	500	1.55	18	5.0	38	65	TO-220F
FQB5N50CF	500	1.55	18	5.0	96	85	TO-263 (D^2PAK)
FDD6N50F	500	1.15	15	5.5	89	75	TO-252 (DPAK)
FDPF7N50F	500	1.15	15	6.0	38.5	85	TO-220F
FQPF9N50CF	500	0.85	28	9.0	44	100	TO-220F
FQB9N50CF	500	0.85	28	9.0	173	100	TO-263 (D^2PAK)
FQPF10N50CF	500	0.61	43	10.0	48	50	TO-220F
FQPF11N50CF	500	0.55	43	11.0	48	90	TO-220F
FQP11N50CF	500	0.55	43	11.0	195	90	TO-220
FDPF12N50FT	500	0.70	21	11.5	42	95	TO-220F
FDB12N50F	500	0.68	22	12.0	165	95	TO-263 (D^2PAK)
FQPF13N50CF	500	0.54	43	13.0	48	100	TO-220F
FDPF20N50FT	500	0.26	50	20.0	38.5	154	TO-220F
FQPF8N60CF	600	1.50	28	6.3	48	82	TO-220F
FQB8N60CF	600	1.50	28	6.3	147	82	TO-263 (D^2PAK)
FQPF10N60CF	600	0.80	44	9.0	50	120	TO-220F
FCPF11N60F	600	0.38	40	11.0	36	120	TO-220F
FCP11N60F	600	0.38	40	11.0	125	120	TO-220
FCA20N60F	600	0.19	75	20.0	208	160	TO-3PN
FCB20N60F	600	0.19	75	20.0	208	160	TO-263 (D^2PAK)

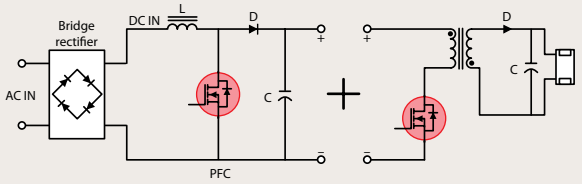
Fairchild's <200V power MOSFETs have been specifically designed to improve the efficiency of DC–DC converters. Leveraging new techniques in MOSFET construction, the various components of gate charge and capacitance have been optimized to reduce switching losses. Low gate resistance and very low Miller charge enable excellent performance with both adaptive and fixed dead time gate drive circuits. Very low $R_{DS(ON)}$ has been maintained to provide an extremely versatile device.

Features & Benefits

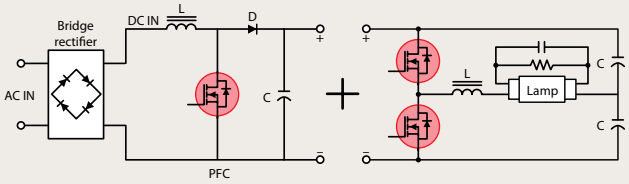
- High performance trench technology for extremely low $R_{DS(ON)}$ and gate charge
- RoHS compliant
- State-of-the-art packaging provides low thermal resistance

Overview of Fairchild Packaging Technology

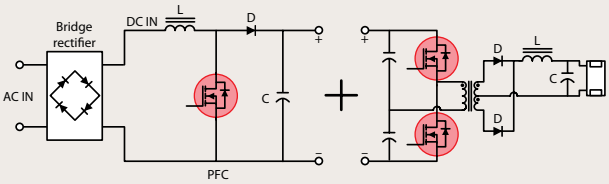
Package Type	Package Image	Dimension (mm)	Package Type	Package Image	Dimension (mm)
BGA 1.5x1.5		1.5 x 1.5	SOIC-14		14 Leads
MLP 8 Lead Dual		3 x 1.9	SOIC-16		16 Leads
MLP 8 Lead Single		3 x 1.9	SO-8		5 x 6
MicroPak™		6, 8, & 10 Leads	SO-8 FMLP		5 x 6
MLP 2x5		2 x 5	SSOT-6		3 x 3
MLP 3x3		3 x 3	SSOT-6 FMLP		3 x 3
MLP (MicroFET™)		2 x 2	TSSOP-8		3.1 x 6.6
DQFN		14, 16, 20, 24 Leads	WL-CSP 5 lead		1 x 1.37
SC70-6		2 x 2.1	WL-CSP 6 lead		1 x 1.5
SC75 FMLP		1.7 x 2.15	WL-CSP 8 lead		1.21 x 1.21



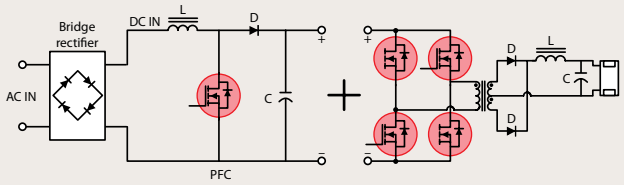
Flyback Converter



Electronic Ballast



Half-bridge Converter



Full-bridge Converter

60V - 220V MOSFET in MLP 3 x 3

Part Number	V_{DS} (V)	V_{GS} (V)	$R_{DS(ON)}$ Max. (mΩ)		Q_g (nC)	Q_{gd} (nC)	I_D (A)
			@ 10V	@ 6V			
FDMC5614	-60	20	100	135	15.3	2.7	5.7
FDMC2523P	-150	20	1500	-	6.2	3.3	1.5
FDM3622	100	20	60	80	13	3.4	4.4
FDMC2610	200	20	200	215	12.3	3.6	2.2
FDMC2674	220	20	366	-	12.7	2.9	1

60V - 220V MOSFET in MLP 5 x 6

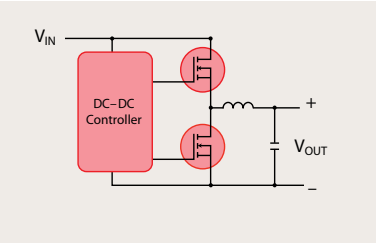
Part Number	V_{DS} (V)	V_{GS} (V)	$R_{DS(ON)}$ Max. (mΩ)		Q_g (nC)	Q_{gd} (nC)	I_D (A)
			@ 10V	@ 6V			
FDMS5672	60	20	11.5	16.5	32	8.3	10.6
FDMS5352*	60	20	6.1	8.3	30	-	15.5
FDMS3500*	75	20	11	14	37	14	11
FDMS3572	80	20	16.5	24	28	8	8.8
FDMS3662*	100	20	15	-	50	17	8.9
FDMS3672	100	20	23	29	31	8	7.4
FDMS2572	150	20	47	53	31	7	4.5
FDMS2672	200	20	77	88	30	9	4
FDMS2734	250	20	125	135	30	9	2.8

** In Development*

60V - 100V MOSFETs in TO-220 & D²PAK

Part Number	V_{DS} (V)	V_{GS} (V)	$R_{DS(ON)}$ Max. (mΩ) @ 10V	Q_g (nC)	Q_{gd} (nC)	Package
FDB029N06*	60	20	<2.9	181	47	D²PAK
FDP030N06*	60	20	<3.0	181	47	TO-220
FDP047N08*	75	20	4.7	110	28	TO-220
FDB036N08*	75	20	<3.6	184	50	D²PAK
FDP037N08*	75	20	<3.7	184	50	TO-220
FDP047N10*	100	20	4.7	188	53	TO-220
FDP090N10*	100	20	9	88	22	TO-220
FDP100N10	100	20	10	76	20	TO-220

** In Development*



Synchronous Buck for DC–DC Applications

30V MOSFET in MLP 3x3

Product Number	Configuration	V_{DS} (V)	V_{GS} (V)	$R_{DS(ON)}$ Max. (mΩ)		Q_g Typ (nC)		Q_{gd} Typ (nC)	I_D (A)
				@ 10V	@ 4.5V	@ 10V	@ 4.5V		
FDMC8554	Single	20	±20	5	6.4	44	24	10	14
FDMC8854	Single	30	±20	5.7	7.6	41	21	6.6	13
FDMC8676	Single	30	±20	8	10	20	10	2.3	13
FDM6296	Single	30	±20	10.5	15	25	12	3	11.5
FDMC8878	Single	30	±20	14	17	18	9	3	10
FDMC8678S	SyncFET	30	±20	6	9.2	22	12	3	15

40V MOSFET in MLP 3x3

Product Number	Configuration	V_{DS} (V)	V_{GS} (V)	$R_{DS(ON)}$ Max. (mΩ)		Q_g Typ (nC)		Q_{gd} Typ (nC)	I_D (A)
				@ 10V	@ 4.5V	@ 10V	@ 4.5V		
FDMC8462	Single	40	±20	7.5	9.3	22	13	3	12

30V MOSFET in MLP 5x6

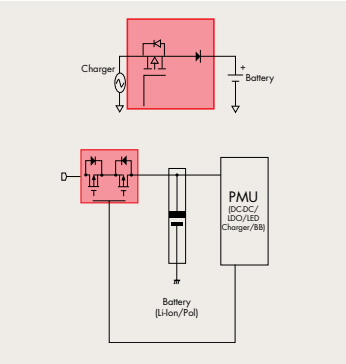
Product Number	Configuration	V_{DS} (V)	V_{GS} (V)	$R_{DS(ON)}$ Max. (mΩ)		Q_g Typ (nC)		Q_{gd} Typ (nC)	I_D (A)
				@ 10V	@ 4.5V	@ 10V	@ 5V		
FDMS8662	Single	30	±20	2.1	3.1	81	42	10	49
FDMS8674	Single	30	±20	5.3	8.5	27.5	14.1	3.3	21
FDMS8680	Single	30	±20	8	12	18	9.5	2.7	35
FDMS8690	Single	30	±20	9	12.5	18.8	10	2.9	27
FDMS8692	Single	30	±20	11	14	15	7	2	28
FDMS8660AS	SyncFET	30	±20	2.3	3.4	53	27.6	6.4	49
FDMS8660S	SyncFET	30	±20	2.4	3.5	81	44	16	25
FDMS8670AS	SyncFET	30	±20	3	4.9	44	22.8	5.3	42
FDMS8670S	SyncFET	30	±20	3.5	5	52	33	12	42
FDMS8672AS	SyncFET	30	±20	3.9	6.5	32.5	16	3.9	28
FDMS8672S	SyncFET	30	±20	5	7	33	16	6	35

40V MOSFET in MLP 5x6

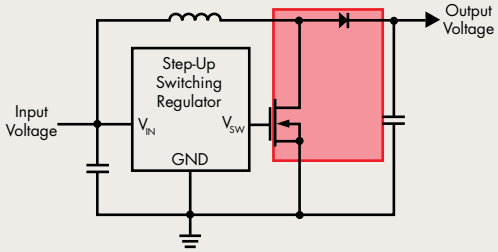
Product Number	Configuration	V_{DS} (V)	V_{GS} (V)	$R_{DS(ON)}$ Max. (mΩ)		Q_g Typ. (nC)		Q_{gd} Typ (nC)	I_D (A)
				@ 10V	@ 4.5V	@ 10V	@ 5V		
FDMS8460	Single	40	20	2.2	3.3	78	36	10	25

20V MOSFETs in SC75 MicroFET

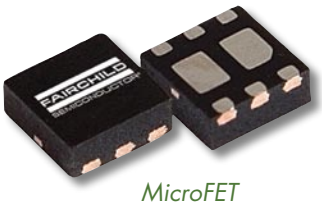
Product Number	Configuration	V_{DS} (V)	V_{GS} (V)	$R_{DS(ON)}$ Max. mΩ				I_D (A)
				@ 4.5V	@ 2.5V	@ 1.8V	@ 1.5V	
FDMJ2P023Z	Single P-Channel w/Schottky	20	8	112	160	210	300	-2.9
FDMJ1023PZ	Dual P-Channel (w/Zener)	20	8	112	160	210	300	-2.9



Charger Application MOSFET used as a current source



Typical Boost Application



MicroFET

WL-CSP

20V MOSFETs in WL-CSP

Product Number	Configuration	V_{DS} (V)	V_{GS} (V)	$R_{DS(ON)}$ Max. (mΩ)					I_D (A)
				@ 4.5V	@ 2.5V	@ 1.8V	@ 1.7V	@ 1.5V	
FDZ191P	Single P-Channel	20	8	85	123	-	-	200	-3
FDZ193	Single P-Channel	20	12	90	130	-	300	-	-3
FDZ1905P*	Dual P-Channel (w/Zener)	20	8	72	98	225		300	-3

** In Development*

MOSFETs in MicroFET 2x2

Product Number	Configuration	V_{DS} (V)	V_{GS} (V)	$R_{DS(ON)}$ Max. (mΩ)				I_D (A)
				@ 4.5V	@ 2.5V	@ 1.8V	@ 1.5V	
FDMA1023PZ	Dual P-Channel	20	8	72	95	130	195	-3.7
FDMA1023PZ	Dual P-Channel	20	8	72	95	130	195	3.7
FDMA1027P	Dual P-Channel	20	8	120	160	240	-	2.2
FDMA1028NZ	Dual P-Channel	20	12	68	86	-	-	3.7
FDMA1029PZ	Dual P-Channel	20	12	95	141	-	-	3.1
FDMA1025P	Dual P-Channel	20	12	155	220	-	-	3.1
FDMA2002NZ	Dual P-Channel	30	12	123	163	-	-	2.9
FDMA420NZ	Single N-Channel	20	12	30	40	-	-	5.7
FDMA430NZ	Single N-Channel	30	12	40	50	-	-	5
FDMA510PZ	Single P-Channel	20	8	30	37	50	90	-7.8
FDMA291P	Single P-Channel	20	8	42	58	98	-	6.6
FDMA520PZ	Single P-Channel	20	12	30	53	-	-	7.3

MOSFETs in MicroFET 2x2 Integrated P-channel and Schottky Diode

Product Number	V_{DS} (V)	V_{GS} (V)	$R_{DS(ON)}$ Max. (mΩ)		Schottky Diode		I_D (A)
			@ 4.5V	@ 2.5V	V_F @ 1A (V)	I_R @ 20V (μA)	
FDFMA2P853	-20	8	120	160	0.55	100	2.2
FDFMA2P857	-20	8	120	160	0.54	8	3
FDFMA2P029Z	-20	12	95	141	0.435	300	3.1

MOSFETs in MicroFET 2x2 Integrated N-channel and Schottky Diode

Product Number	V_{DS} (V)	V_{GS} (V)	$R_{DS(ON)}$ Max. (mΩ)		Schottky Diode		I_D (A)
			4.5V	2.5V	V_F @ 1A (V)	I_R @ 20V (μA)	
FDFMA2N028Z	20	12	68	86	0.37	300	3.7
FDFMA3N109	30	12	123	163	0.5	70	2.9

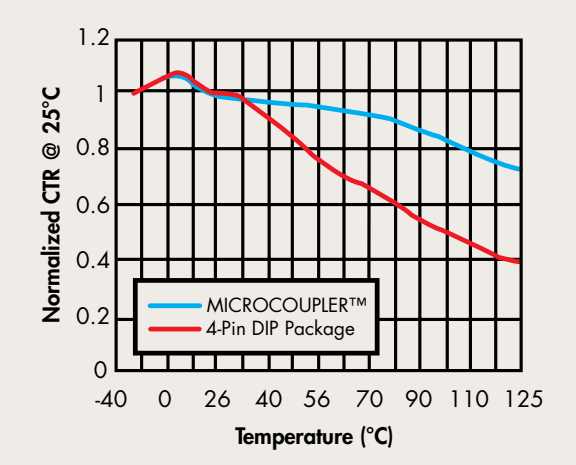
Fairchild's family of optocouplers offers a broad range of optocoupler package platforms, various combinations of input and output configurations, low-bandwidth, general switching applications, high performance optocouplers for high-bandwidth, high-gain applications, and high voltage optocouplers for AC load switching applications. These products are lead (Pb) free and RoHS compliant. In addition, all are certified by major safety regulations.

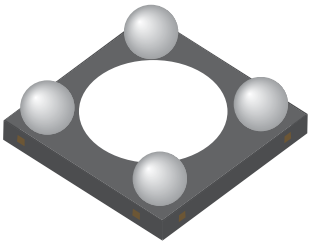
To meet the growing demands of today's designs, Fairchild offers optocouplers capable of withstanding operating temperatures up to +125°C. The MICROCOUPLER™ devices are the only plastic package optocouplers capable of meeting this temperature limit allowing for improved Current Transfer Ratio (CTR) stability at elevated temperatures. Our 4-pin full pitch Mini-Flat Package (MFP) and 4-Pin DIP, phototransistor output optocouplers are all rated with a maximum operation temperature of +110°C.

Optocoupler Solutions

The MICROCOUPLER package platform of optocouplers reduces board space and offers stable CTR up to 125°C, while offering high input to output isolation voltages.

- High Current Transfer Ratio, CTR at low I_F
- Operating Temperature Range, T_{opr}: -40°C to +125°C
- Ultra small packaging: Low profile 1.2mm
- Applicable to Pb-free IR reflow soldering profile: 260°C peak

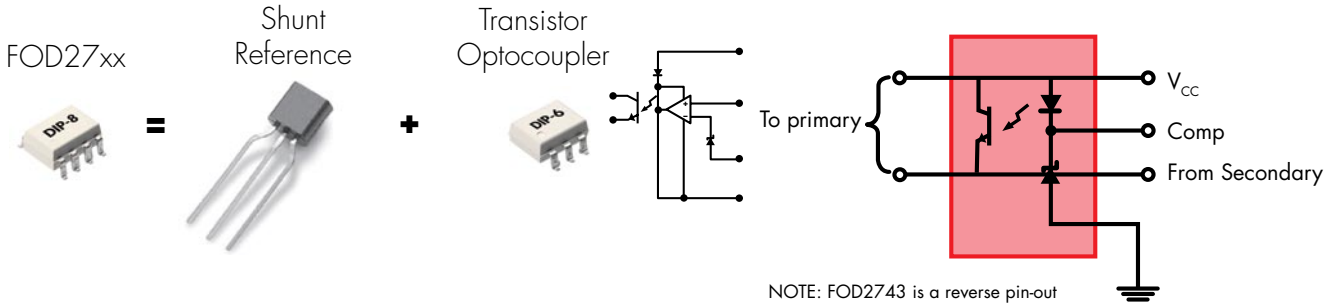




BGA Package

Optically Isolated Error Amplifiers

Fairchild's FOD27XX series of optically isolated error amplifiers offers designers a comprehensive selection of reference voltages, tolerances, isolation voltages, and package sizes to optimize their specific power design.



NOTE: FOD2743 is a reverse pin-out

4-Lead BGA, Phototransistor Output, DC Sensing Input (Microcoupler™)

Product Number	CTR @ 1mA I_F (%)		BV_{CEO} (V) Min.	BV_{ECO} (V) Min.	t_R/t_F (µs) Typ.	V_{ISO} AC_{RMS} (V) 1 Minute	T_{OPR} Range (°C)
	Min.	Max.					
FODB100	100	–	75	7	1/5	2000	-40 to +125
FODB101	100	200	75	7	1/5	2000	-40 to +125
FODB102	150	300	75	7	1/5	2000	-40 to +125

8-Pin SOIC, Optically Isolated Error Amplifier, DC Sensing Input with Voltage Reference

Product Number	CTR @ 10mA I_F (%)		V_{REF} (V) Min.		BV_{CEO} (V) Min.	V_{ISO} AC_{RMS} (V) 1 Minute	T_{OPR} Range (°C)
	Min.	Max.	Min.	Max.			
FOD2712	100	200	1.221	1.259	70	2500	-40 to +85
FOD2742A	100	200	2.482	2.508	70	2500	-25 to +85
FOD2742B	100	200	2.470	2.520	70	2500	-25 to +85
FOD2742C	100	200	2.450	2.550	70	2500	-25 to +85

8-Pin DIP, Optically Isolated Error Amplifier, DC Sensing Input with Voltage Reference

Product Number	CTR @ ≤10mA I_F (%)		V_{REF} (V)		BV_{CEO} (V) Min.	V_{ISO} AC_{RMS} (V) 1 Minute	T_{OPR} Range (°C)
	Min.	Max.	Min.	Max.			
FOD2711	100	200	1.221	1.259	70	5000	-40 to +85
FOD2741A	100	200	2.482	2.508	70	5000	-25 to +85
FOD2741B	100	200	2.470	2.520	70	5000	-25 to +85
FOD2741C	100	200	2.450	2.550	70	5000	-25 to +85
FOD2743A	50	100	2.482	2.508	70	5000	-25 to +85
FOD2743B	50	100	2.470	2.520	70	5000	-25 to +85
FOD2743C	50	100	2.450	2.550	70	5000	-25 to +85

4-Pin Full Pitch MFP, Phototransistor Output, DC Sensing Input

Product Number	CTR @ 5mA I_F (%)		BV_{CEO} (V) Min.	BV_{ECO} (V) Min.	t_R/t_F (µs) Typ.	V_{ISO} AC_{RMS} (V) 1 Minute	T_{OPR} Range (°C)
	Min.	Max.					
FODM121	50	600	80	7	3/3	3750	-40 to +110
FODM121A	100	300	80	7	3/3	3750	-40 to +110
FODM121B	50	150	80	7	3/3	3750	-40 to +110
FODM121C	100	200	80	7	3/3	3750	-40 to +110
FODM121D	50	100	80	7	3/3	3750	-40 to +110
FODM121E	150	300	80	7	3/3	3750	-40 to +110
FODM121F	100	600	80	7	3/3	3750	-40 to +110
FODM121G	200	400	80	7	3/3	3750	-40 to +110
FODM124	100	1200	80	7	3/3	3750	-40 to +110
FODM2701	50	300	40	7	3/3	3750	-40 to +110
FODM2701A	150	300	40	7	3/3	3750	-40 to +110
FODM2701B	80	160	40	7	3/3	3750	-40 to +110

4-Pin Half Pitch MFP, Phototransistor Output, DC Sensing Input

Part Number	CTR @ 5mA I_F (%)		BV_{CEO} (V) Min.	BV_{ECO} (V) Min.	t_R/t_F (µs) Typ.	V_{ISO} AC_{RMS} (V) 1 Minute	T_{OPR} Range (°C)
	Min.	Max.					
HMHA2801	80	600	80	7	3/3	2500	-55 to +100
HMHA2801A	80	160	80	7	3/3	2500	-55 to +100
HMHA2801B	50	150	80	7	3/3	2500	-55 to +100
HMHA2801C	50	100	80	7	3/3	2500	-55 to +100
HMHA281	50	600	80	7	3/3	2500	-55 to +100

4-Pin DIP, Phototransistor Output, DC Sensing Input

Part Number	CTR @ ≤10mA I_F (%)		BV_{CEO} (V) Min.	BV_{ECO} (V) Min.	t_R/t_F (µs) Typ.	V_{ISO} AC_{RMS} (V) 1 Minute	T_{OPR} Range (°C)
	Min.	Max.					
FOD617A	40	80	70	7	4 / 3	5000	-55 to +110
FOD617B	63	125	70	7	4 / 3	5000	-55 to +110
FOD617C	100	200	70	7	4 / 3	5000	-55 to +110
FOD617D	160	320	70	7	4 / 3	5000	-55 to +110
FOD817	50	600	70	6	4 / 3	5000	-55 to +110
FOD817A	80	160	70	6	4 / 3	5000	-55 to +110
FOD817B	130	260	70	6	4 / 3	5000	-55 to +110
FOD817C	200	400	70	6	4 / 3	5000	-55 to +110
FOD817D	300	600	70	6	4 / 3	5000	-55 to +110

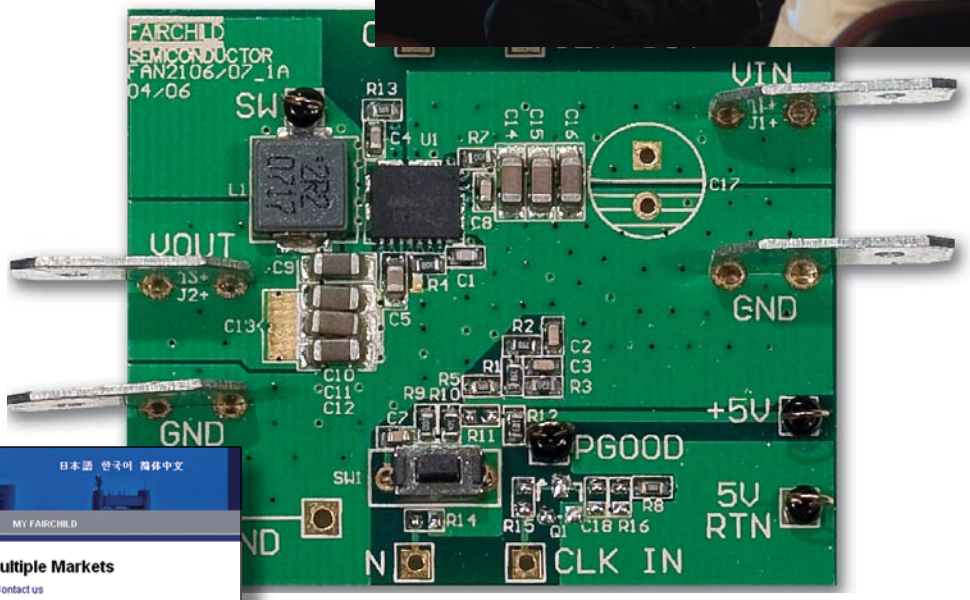
GLOBAL POWER RESOURCE℠

Engineers need a comprehensive portfolio of components and design support services to solve today's power and energy problems. It is this foundation of practical solutions that has allowed us to deploy the industry standard for customer support. We call it our Global Power Resource (GPR)—and here are some of the ways you can leverage it for your designs.

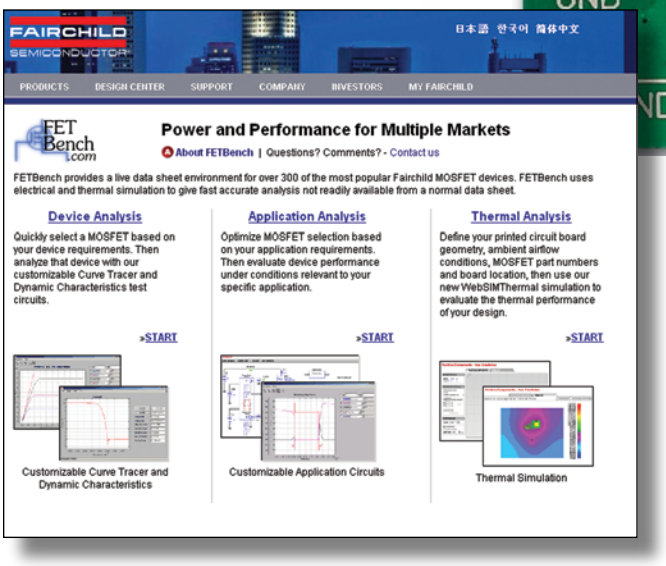
Online Support—Our power and application engineers in the labs, and in the field, have combined their skills to offer a comprehensive suite of design and knowledge tools. These are available 24/7 in the Design Center found on our website. The Design Center includes application notes, evaluation boards, on-line design tools, and other resources.

GPR Centers—Each is a fully-equipped applications laboratory, staffed by an experienced team of power engineers. These regional centers can take a design from concept, to full schematics, to a completed board with fully characterized engineering and manufacturing files, or to any stage in between.

Field Application Engineers—Our FAEs are power engineers, with years of design experience. They bring the full range of Fairchild's power expertise to your facility, to be an extension of your design team.



The FEB167 Evaluation Board (FAN2106)



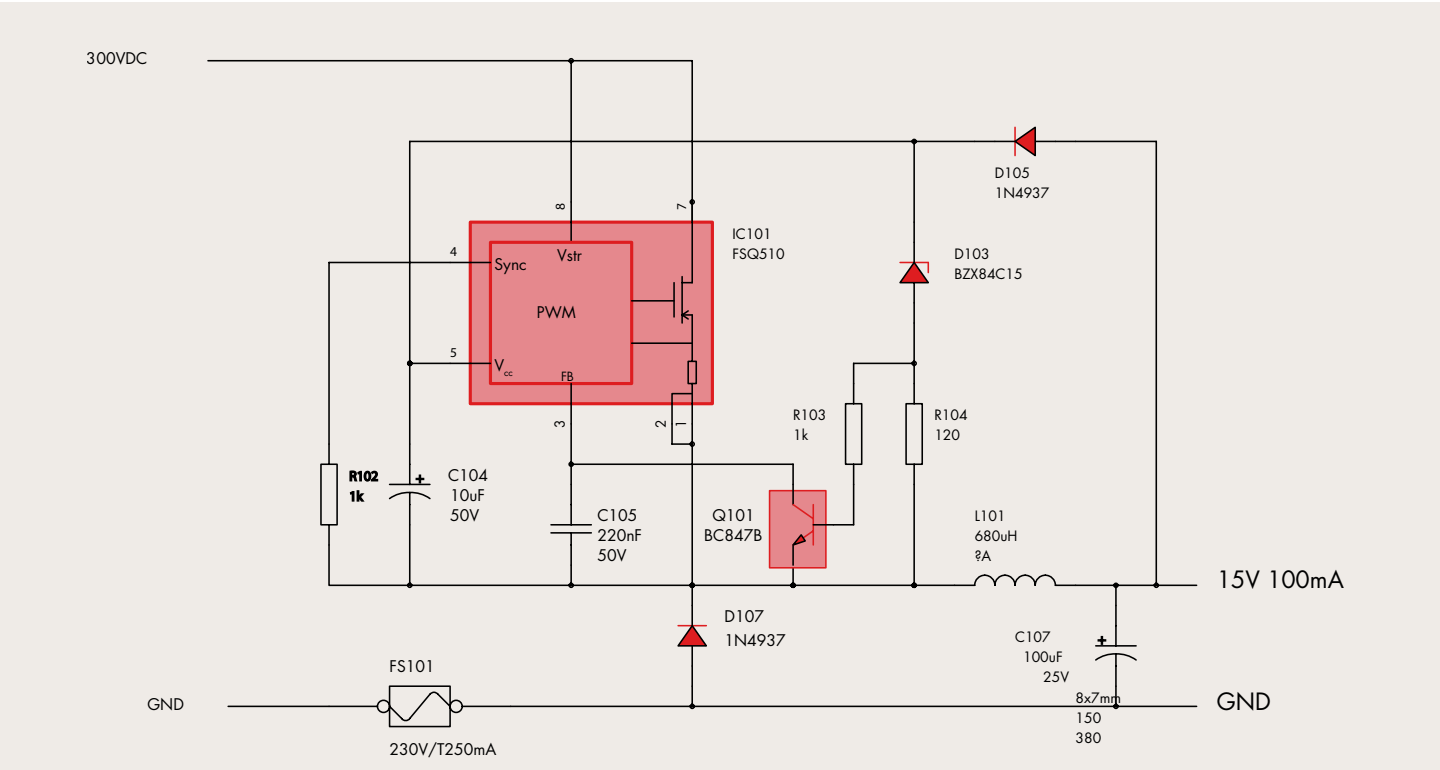
Design Tools – FETBench™

1.5W Single Output Buck using FSQ510 Fairchild Power Switch

Typical Applications: Small home or factory automation systems, auxiliary power supply in large automation systems

This compact non-isolated Buck solution draws less than 170mW standby power and uses a minimal number of components. D103 is used to set the output voltage to 15V. The voltage can be increased by adding an additional Zener diode in series with D105, facing the other direction. Here the valley switching is disabled with R102 to minimize component count.

- Less than 170mW standby power
  – Ideal for applications permanently connected to the AC supply
- Full load efficiency better than 75%
  – Excellent efficiency for such a low wattage power supply
- Line and load regulation within 2% for test board
  – FSQ510 is a current mode device



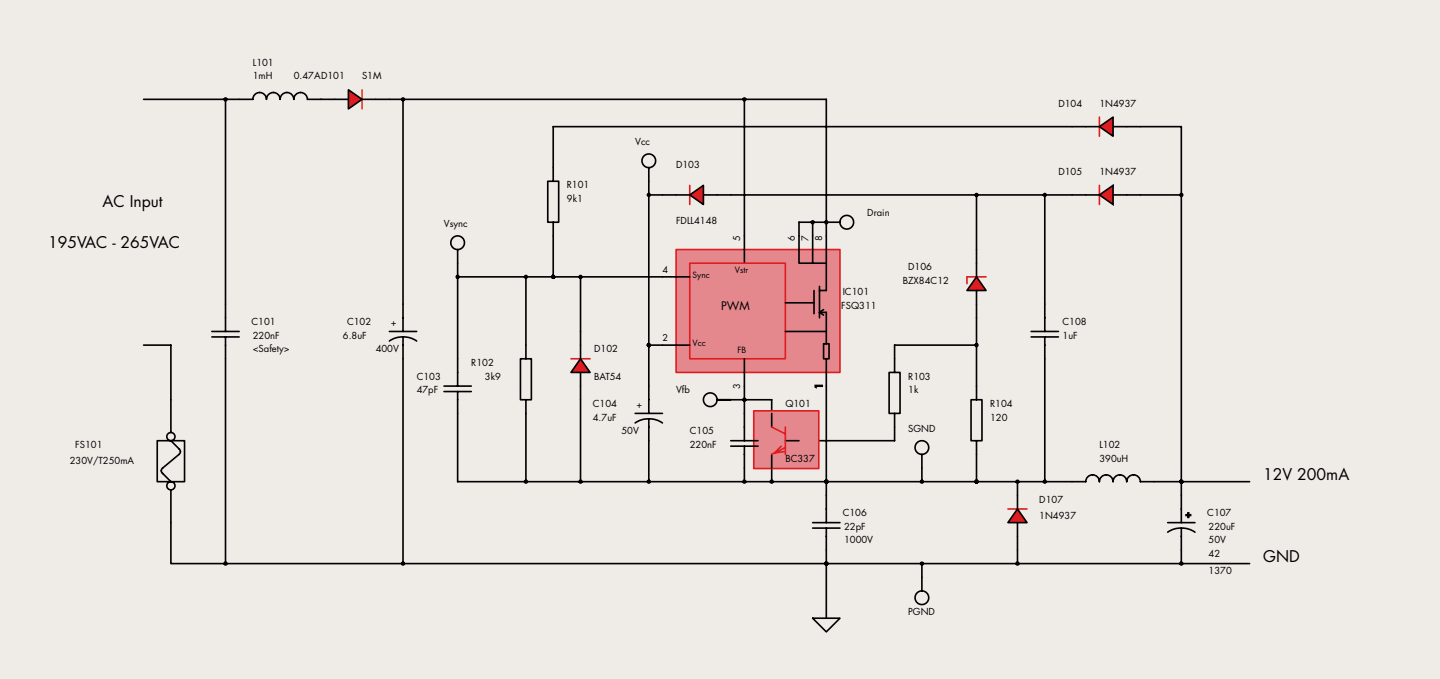
Products	Description
FSQ510	Green-mode Fairchild power switch (320mA/700V)
BZX84C15	Zener diode (15V/0.35W)
1N4937	Fast recovery diode (1A/600V)
BC847B	General purpose transistor (50V/100mA)

2.4W Single Output Buck using FSQ311 Fairchild Power Switch

Typical Applications: Small home or factory automation systems, auxiliary power supply in large automation systems

This compact non-isolated Buck solution shows how valley switching is enabled in an FSQ311 Buck solution by adding components R101, R102, and C103. Losses in the freewheel diode are thereby reduced leading to higher efficiency.

- Less than 500mW input active standby power
  – Measured when the load is 20mA
- Full load efficiency better than 75%
  – Good efficiency for such a low wattage power supply
- No problems with compensation in a buck solution
  – FSQ510 is a current mode device
- Low component count needed to meet Typ.ical EMI requirements
  – Single LC filter (L101/C101) and coupling capacitor (C106)



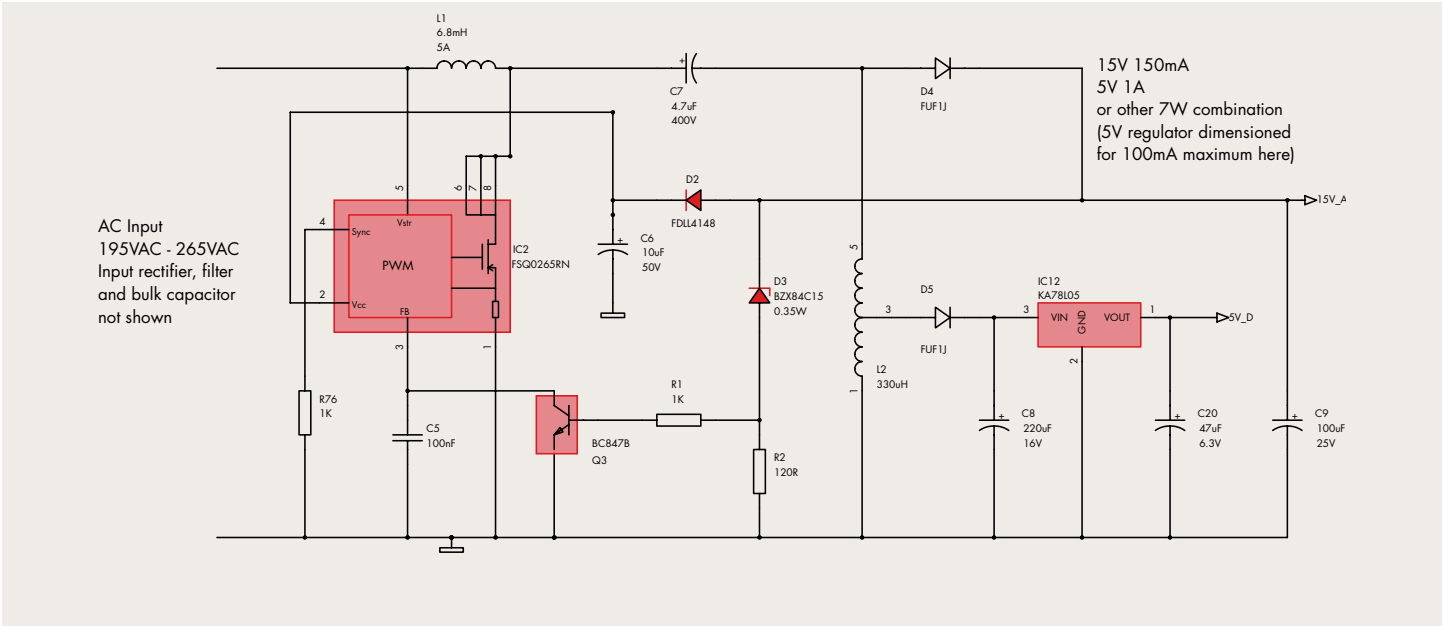
Products	Description
FSQ311	Green-mode Fairchild power switch (600mA/700V)
BZX84C12	Zener diode (12V/0.35W)
1N4937	Fast recovery diode (1A/600V)
BC337	General purpose transistor (50V/100mA)
S1M	General purpose diode (1A/1000V)
BAT54	Schottky diode (300mA/30V)
FDLL4148	General purpose diode (200mA/100V)

7W Dual Output SEPIC using FSQ0265 Fairchild Power Switch

Typical Applications: Power supply for motor drive bootstrap and microcontroller circuit

This compact non-isolated SEPIC solution provides the two voltage outputs needed for a motor drive circuit: a 15V output to power the bootstrap circuit for a high voltage driver, and the power for microcontroller/DSP and the auxiliary components.

- Ideal solution for motor drive power
  – Dual output possible without the need for large inductors
- Low EMI generation from the switching power supply
  – SEPIC EMI is lower than Buck EMI due to continuous input current
  – Simplifies EMI design



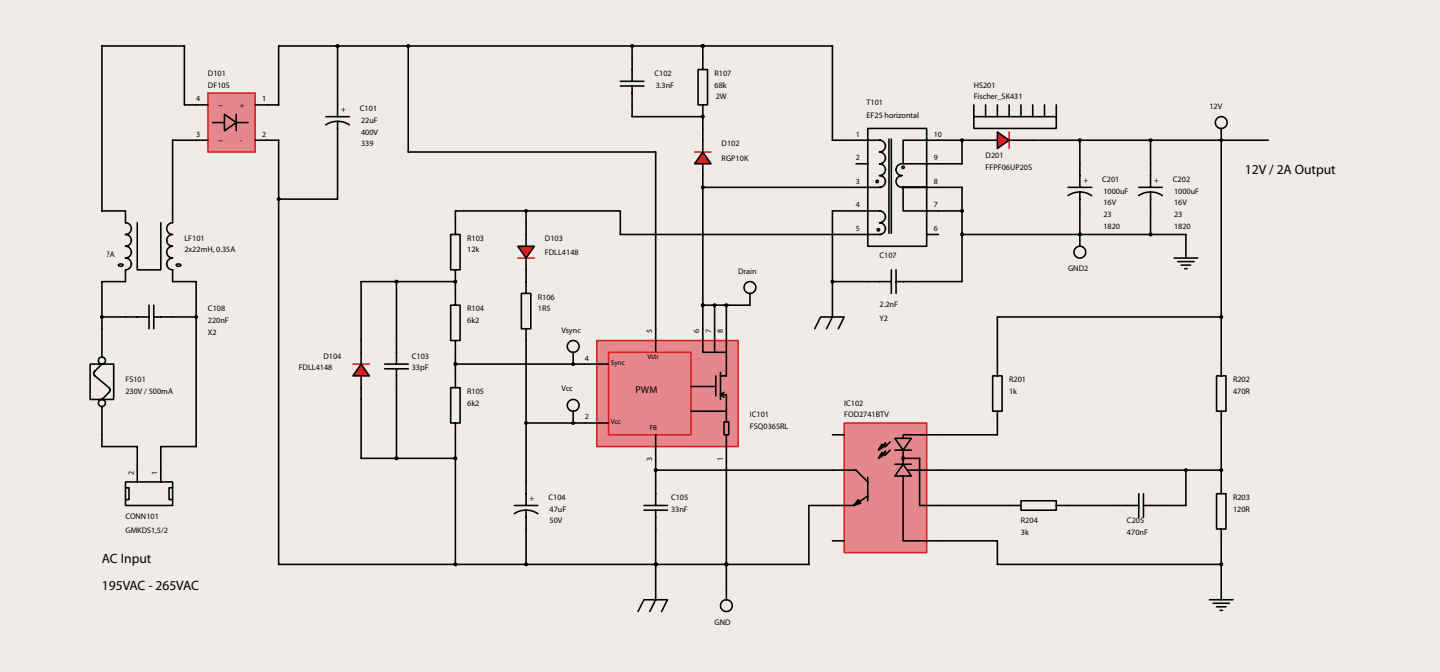
Products	Description
FSQ0265RN	Green mode Fairchild power switch (1.2A/600V)
KA78L05	Voltage regulator (5V/100mA)
FDLL4148	General purpose diode (200mA/100V)
BZX84C15	Zener diode (15V/0.35W)
BC847B	General purpose transistor (50V/100mA)

25W Single Output Flyback using FSQ0365 Fairchild Power Switch

Typical Applications: Set-top box and home audio power supplies

This compact non-isolated Buck solution shows how valley switching is enabled in an FSQ311 Buck solution by adding components R101, R102, and C103. The losses in the freewheel diode are therby reduced, leading to higher efficiency.

- Less than 450mW input standby power
  – Measured with no load
- Full load efficiency better than 82%
  – Good efficiency for such a low wattage power supply
- Excellent load and line regulatio
  – FSQ0365 is a current mode device
- Short circuit protection on output and for output diode short
  – Provided by overvoltage, overload and abnormal over current protection



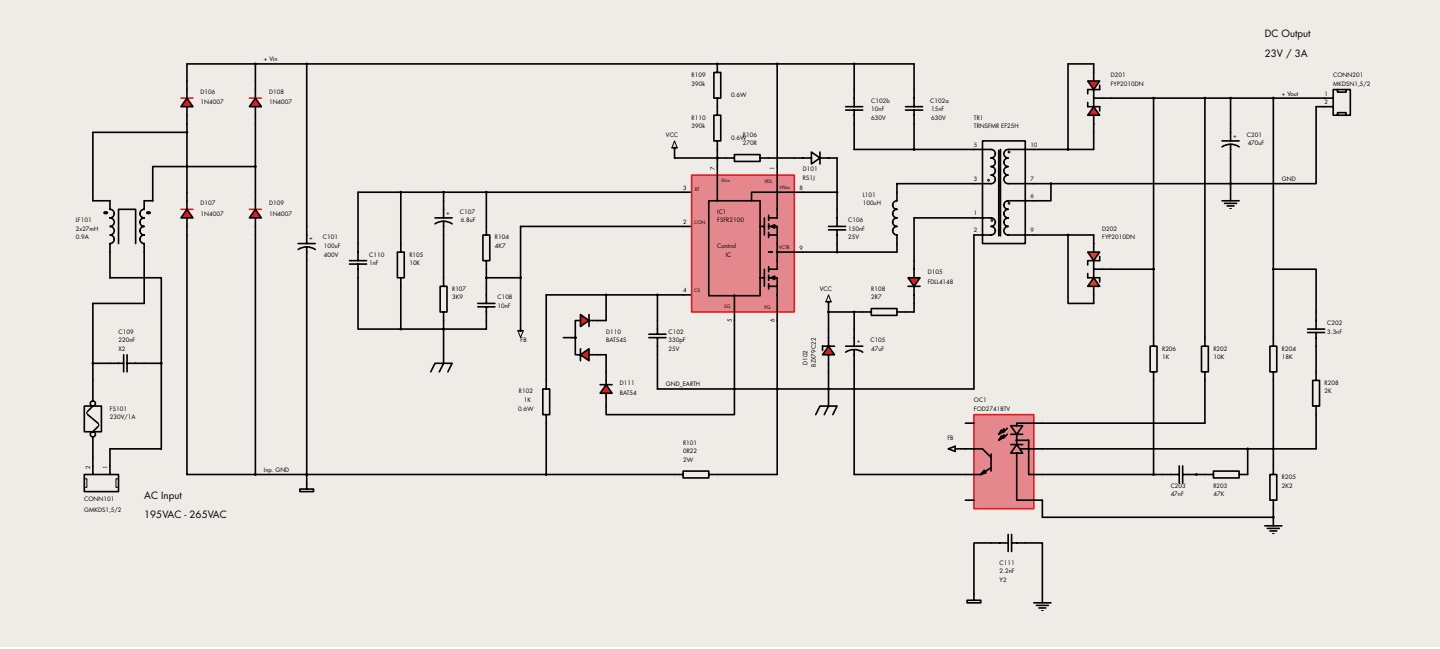
Products	Description
FSQ0365RL	Green mode Fairchild power switch (1.5A/650V)
FOD2741BTV	Optically isolated amplifier (1%)
DF10S	Bridge rectifier (1.5A/1000V)
RGP10K	Fast recovery rectifier (1A/800V)
FFPF06UP20S	Ultrafast rectifier (6A/200V)
FDLL4148	General purpose diode (200mA/100V)

70W Output LLC Resonant Converter Power Supply using FSFR2100

Typical Applications: Power supply for industrial applications (70W - 450W), consumer set-top box applications

The FSFR2100 LLC resonant regulator can be used as the building block for resonant power supplies ranging from 70W to 450W. Resonant converters are extremely efficient. The co-packaged MOSFETs and controller make the design easier, simpler, and more cost effective. The example below shows an industrial application requiring 70W output. No heatsink is needed.

- No heatsink needed for power levels up to 200W
- Less than 1.8W input standby power
  – Excellent for a resonant converter
  – Achieved using power save mode of operation
- Full load efficiency better than 90%
  – Good efficiency for a 70W power supply
  – For 200W power supplies this is more



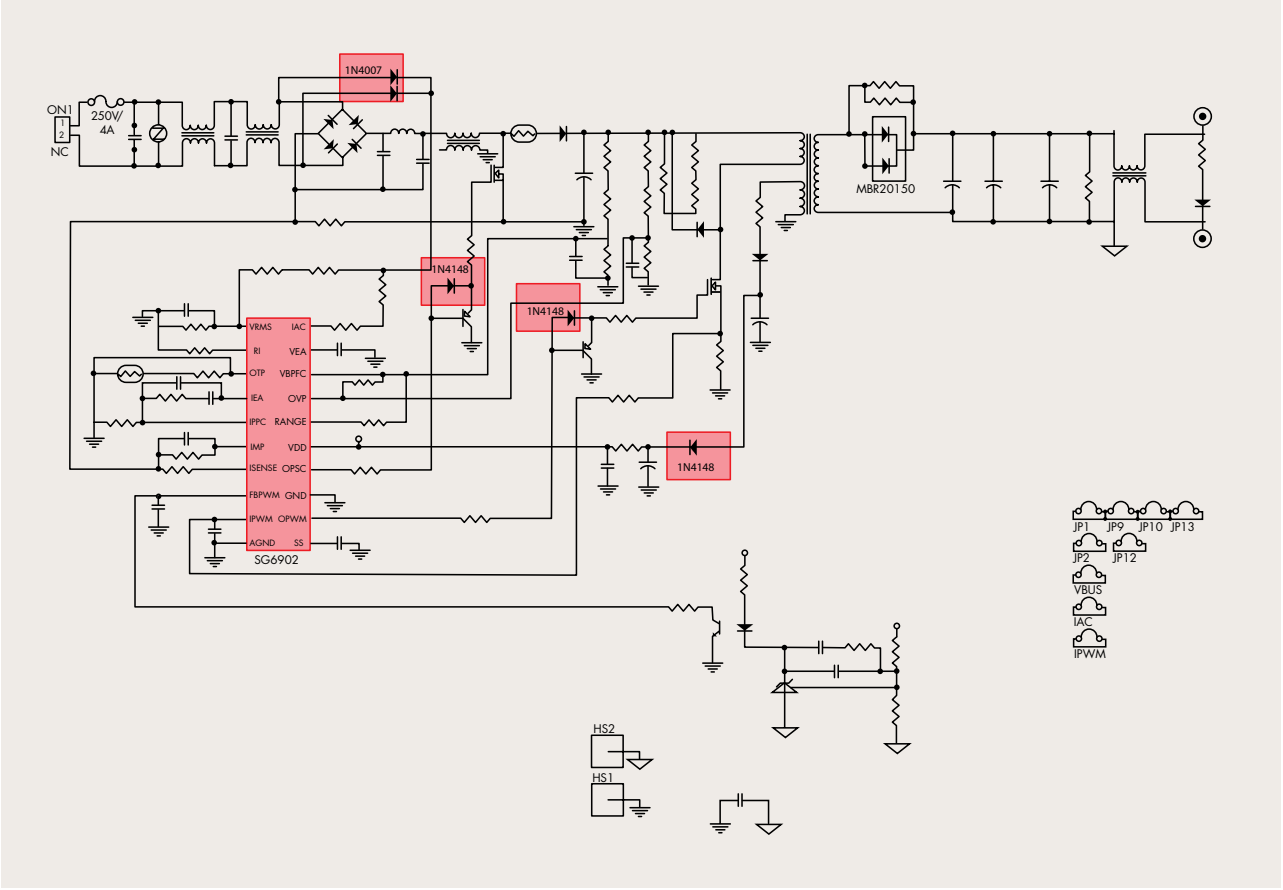
Products	Description
FSFR2100	LLC resonant regulator
FOD2741BTV	Optically isolated amplifier (1%)
FYP2010DN	Dual power Schottky diode (20A/100V)
RS1J	Fast recovery rectifier (1A/600V)
1N4007	General purpose rectifier (1A/1000V)
BAT54S	Dual Schottky diode (300mA/30V)
BAT54	Single Schottky diode (300mA/30V)
FDLL4148	General purpose diode (200mA/100V)
BZX79C22	Zener diode (22V/ 0.5W)

120W CCM PFC Flyback Power Supply Using SG6902

Typical Applications: LCD TV, high power adaptors

This high power CCM boost PFC and flyback application requires fewer external components to achieve Green-mode operation and versatile system protection. The SG6902 uses interleaved switching to synchronize the PFC and flyback stages, which reduces switching noise and spreads the EMI emissions.

- CCM PFC/Flyback PWM controller
  - Average-current-mode control for PFC and synchronized slope compensation for flyback PWM
  - Green-mode PFC and PWM operation
  - Switching frequency is continuously decreased when output loading is further reduced
- Less than 0.5W input standby power
  - No switching of PFC at light loads



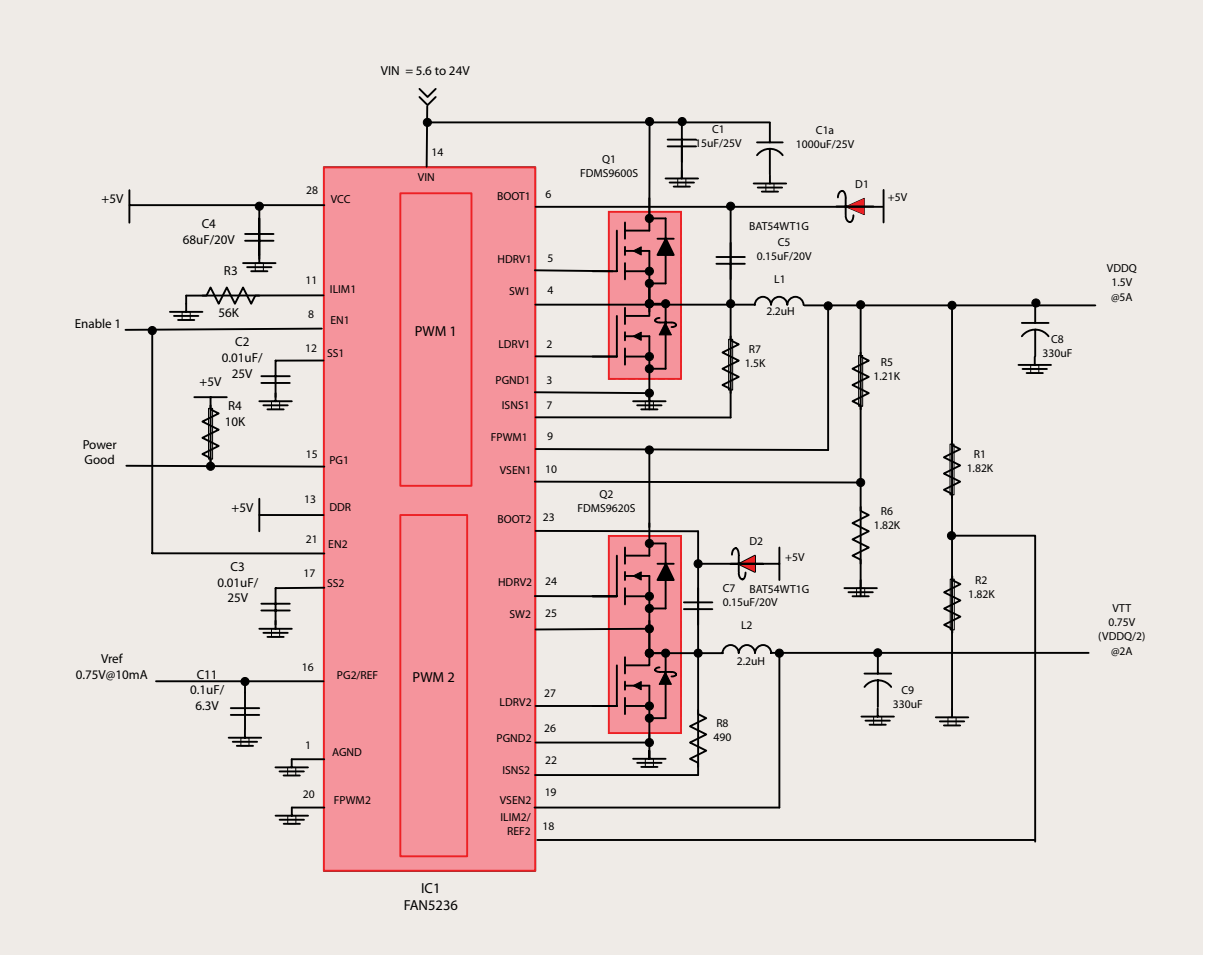
Products	Description
SG6902	CCM PFC/flyback PWM controller
1N4007	Diode (1A/1000V)
1N4148	Genral purpose diode (10mA/100V)

DDR3 Memory Power Supply

Typical Applications: Notebooks, servers, set-top boxes, general high performance/low power applications

This small form factor solution provides the three main supplies (V_{DDQ}, V_{TT}, V_{ref}) for DDR1, DDR2 or DDR3 applications. By simple component changes, this solution can support down to 1.5V V_{DDQ} and 0.75V V_{TT}. The FAN5236 controller with external dual MOSFETs can deliver up to 14A, and by changing the selected MOSFETs, higher currents can be achieved. The three main ICs (controller + 2 dual FETs with integrated Schottky diodes) reduce component count and increase efficiency.

- Wide input voltage range: 5V to 24V
- Typical DDR3 requirements: 1.5V, 0.5A and 0.75V, 2A output supplies
- Very low 1µA shutdown
- > 94% overall system efficiency



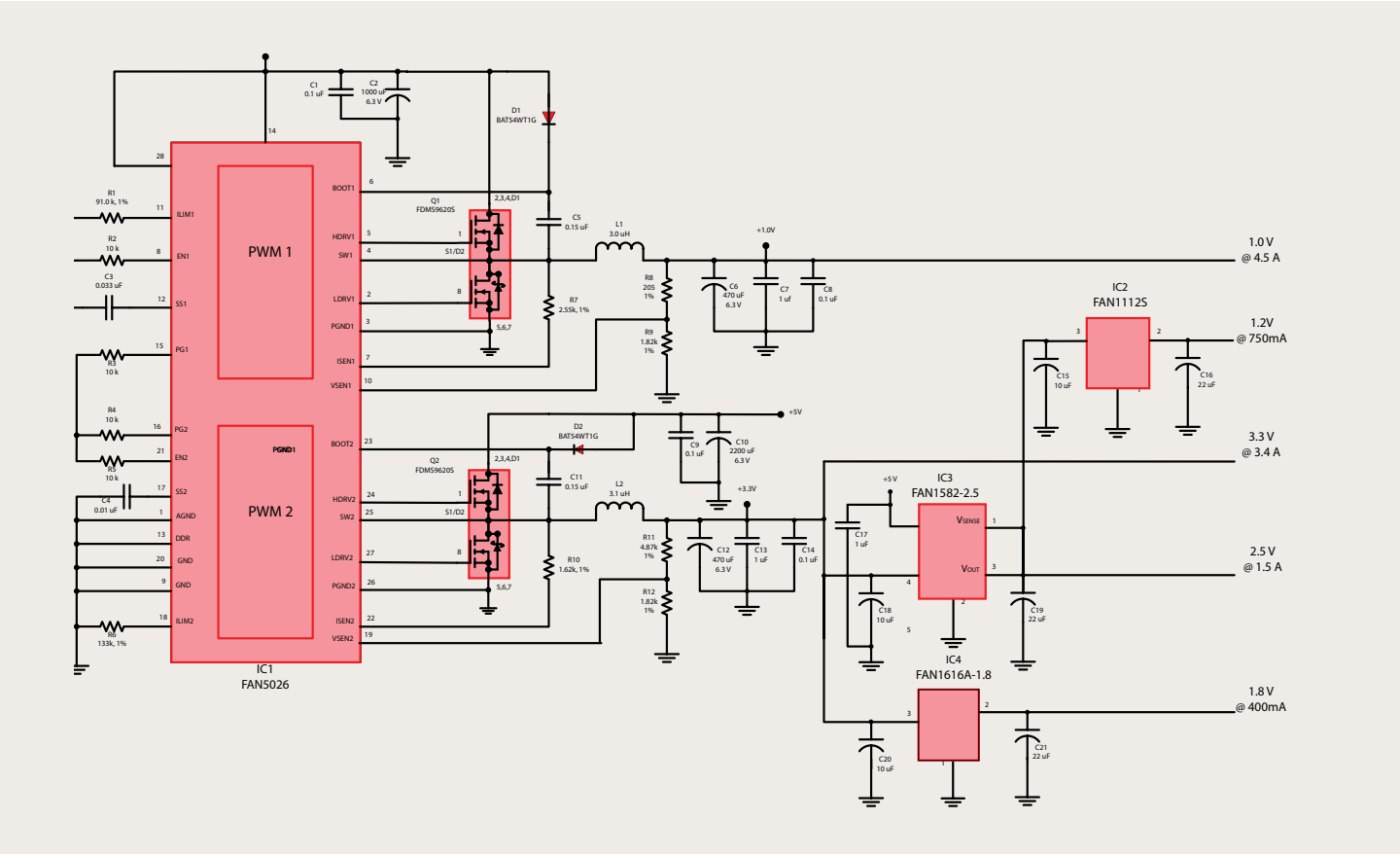
Products	Description
FAN5236	Fairchild DDR/dual output PWM controller
FDMF9600S	Fairchild dual high current MOSFETs with integrated SyncFET™
FDMF9620S	Fairchild dual MOSFETs with integrated SyncFET™
BAT54WT1G	Dual Schottky diode with common cathode

Multi-Output DC-DC Power Supply Solution

Typical Applications: Set-top box, DVD player, consumer devices

This circuit supports a wide range of output power supplies balancing system efficiency with low component count and cost. The example provides a complete DC-DC power solution for high volume consumer applications. The FAN5026 dual controllers with discrete dual MLP 5x6 MOSFETs efficiently deliver both the high current 1.0V supply and an intermediate 3.3V supply in conjunction with Low Drop Out linear regulators for thee remaining outputs.

- Wide input voltage range (3V – 16V)
- Down to 0.9V and up to 14 amps controller output
- >90% switching regulator overall efficiency
- <10µA standby current



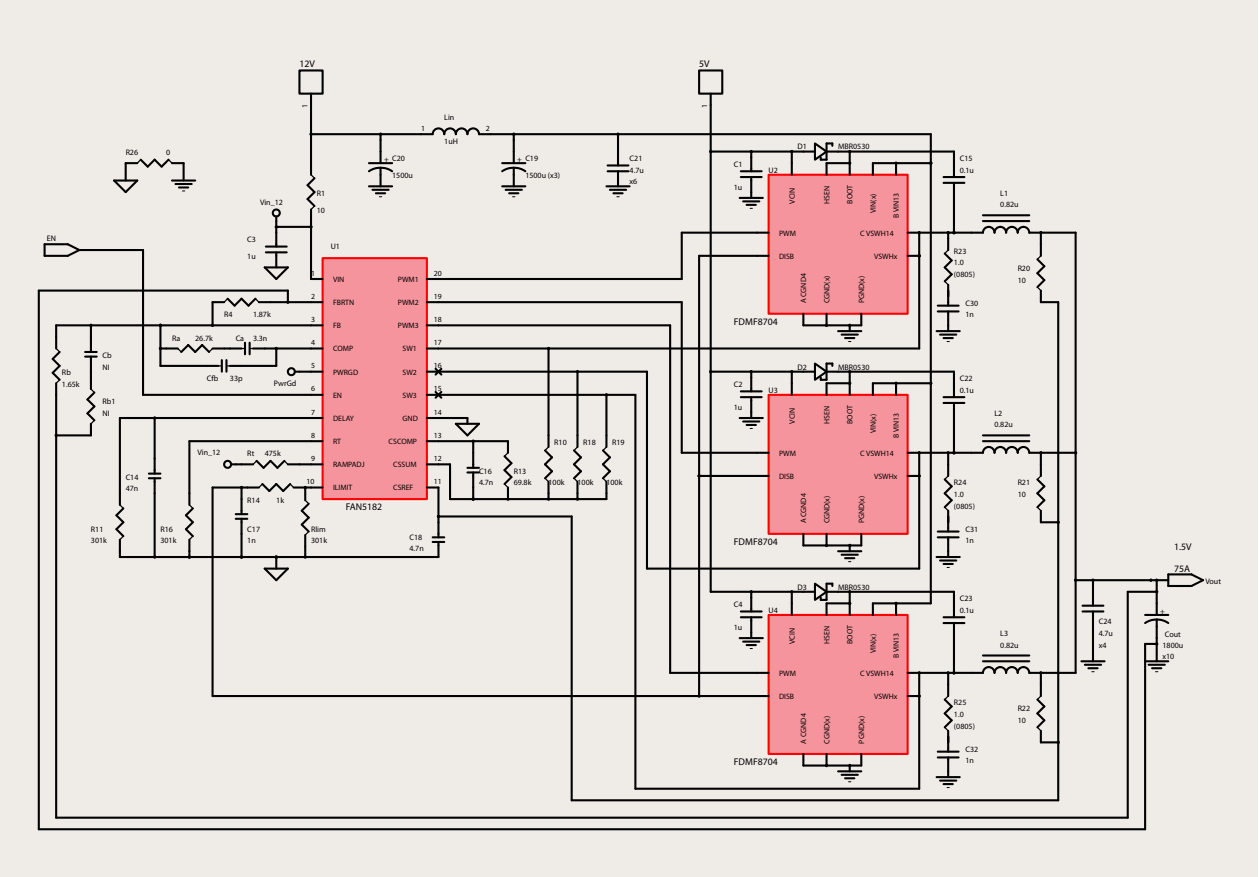
Products	Description
FAN5026	Fairchild dual output PWM controller
FDMF9620S	Fairchild dual MOSFETs with integrated SyncFET™
FAN1112	Fixed 1.2V output 1A LDO
FAN1582-2.5	Fixed 2.5V output 3A LDO
FAN1616A-1.8	Fixed 1.8V output 500mA LDO
BAT54	Dual Schottky diode with common cathode

Multi-Phase High-Current DC-DC power supply solution

Typical Applications: Computing desktop, server, notebook, blade server, graphics card, Communication System

This application demonstrates a high-performance, high-current multi-phase supply with minimum number of components to delivery up to 90A supply current. It uses the configurable multiphase FAN5182 controller in conjunction with the integrated DrMOS, (FDMF8704) to maximize efficiency and minimize design complexity.

- Programmable 1-, 2-, or 3-Phase support with active current balancing.
- Wide input voltage range: 7V to 20V
- Externally adjustable output voltages down to 0.8V
- Output current: Up to 32A
- Switching frequency: Up to 1MHz

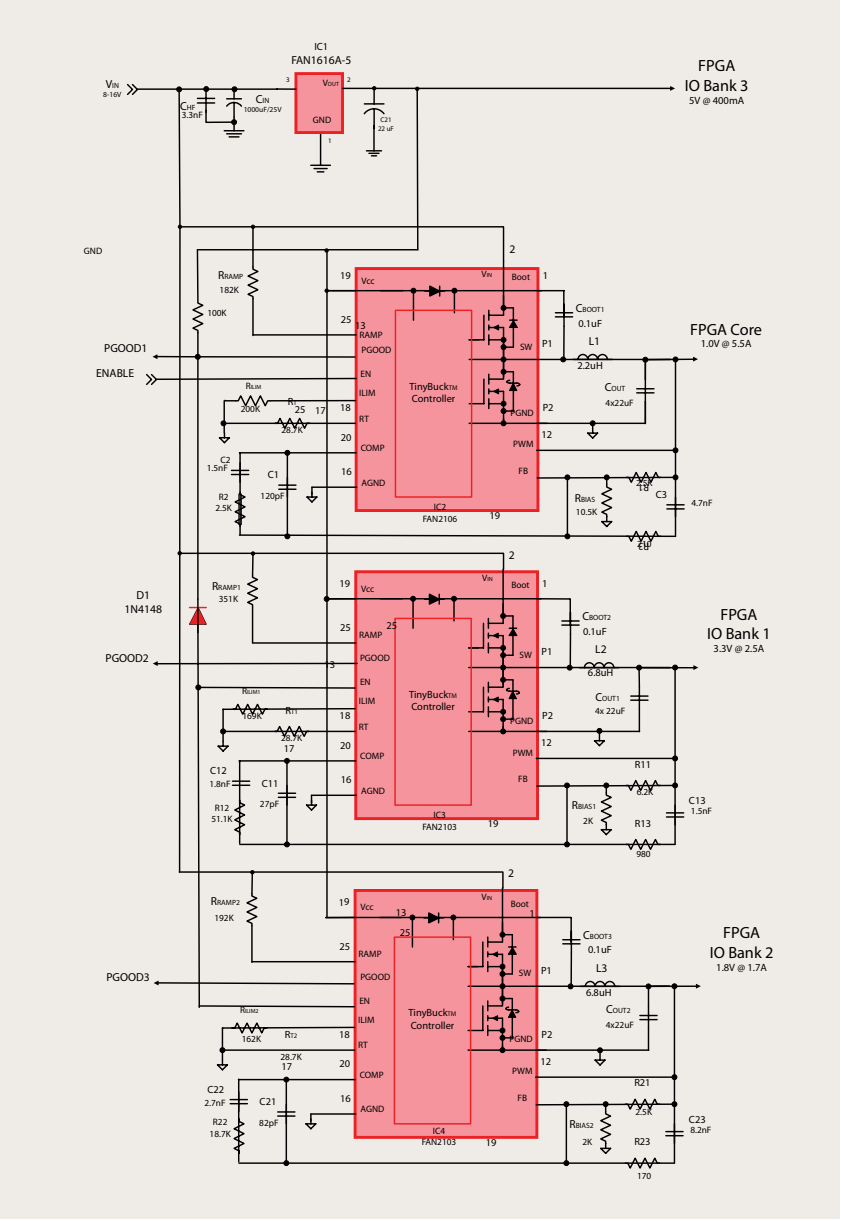


Products	Description
FAN5182	Fairchild multi-phase synchronous controller
FDMF8704	Fairchild FET plus driver multi-chip module

Multiple Voltage Solution for FPGAs Using TinyBuck™ Integrated Regulators

Typical Applications: Power supply for Xilinx Virtex 5 or Altera Stratex III FPGAs

This application supports wide range of demanding FPGA supply needs of high current, low output voltages and power sequencing. Provides 1.0V at 5A for main FPGA core supply with up to 3A continuous current for IO bank support. Each output requires only a 30mm x 30mm package for significant board space savings.



- Wide input voltage range (Up to 24V)
- Multiple output supplies (1.0V 6A, 3.3V 2.5A and 1.8V 1.7A)
- Individual output current limit control
- > 93% system efficiency

Products	Description
FAN2106	Fairchild TinyBuck™ 6A integrated Buck regulator
FAN2103	Fairchild TinyBuck™ 3A integrated Buck regulator
FAN1616A-5	Fairchild fixed output 5V, 500mA low drop out linear regulator
1N4148	General purpose diode (10mA/100V)

APPLICATION NOTES & EVALUATION BOARD HIGHLIGHTS

Application Notes

App Notes	Description
AN-4121	Design of Power Factor Correction circuit using FAN7527B
AN-4140	Transformer design consideration for offline flyback converters using Fairchild Power Switch
AN-4141	Troubleshooting and design tips for Fairchild Power Switch flyback applications
AN-4148	Audible noise reduction techniques for Fairchild Power Switch
AN-4150	Design guidelines for flyback converters using FSQ-series Fairchild Power Switch
AN-4151	Half-bridge LLC resonant converter design using FSFR-series Fairchild Power Switch
AN-6002	Component calculations and simulation tools for FAN5234 or FAN5236
AN-6006	FAN5068/FAN5078 components calculations and simulation tools
AN-6009	Components calculations and imulation tools for FAN6520A
AN-6010	FAN5069 components calculations and simulation tools
AN-6011	FAN2011 family component calculation and simulation tools
AN-6020	FAN5099 component calculation and simulation tools
AN-6026	Design of Power Factor Correction circuit using FAN7529
AN-6033	Component calculation & simulation tools for FAN2106
AN-9036	Guidelines for using Fairchild's Power56 (MLP 5x6) package
AN-9040	Guidelines for using Fairchild's Power33 (MLP 3x3) package

Evaluation Boards

Board #/User Guide	Description	Featured Products
FEB131-001	LED driver with adaptive charge pump DC/DC converter	FAN5607HMPX
FEB132-001	High efficiency step down DC-DC converter	FAN5307MPX
FEB135-001	FAN5608DHMPX (with internal Schottky diode and 12-Lead 4x4 MLP) - serial/parallel LED driver with current-regulated, step-up DC/DC converter	FAN5608DHMPX
FEB137-001	FAN2001MPX (6-Lead 3x3 MLP) - 1A high efficiency step-down DC/DC converter	FAN2001
FEB138-001	FAN2002MPX (6-Lead 3x3 MLP) - 1A high efficiency step-down DC/DC converter	FAN2002
FEB140-001	FAN5308MPX (6-Lead 3x3 MLP) - 800mA high efficiency step-down DC/DC converter	FAN5308
FEB141-001	FAN5330SX (5-Lead SOT23) - high efficiency serial LED driver with 30V integrated switch	FAN5330
FEB142-001	FAN5331SX (5-Lead SOT23) - high efficiency serial LED driver and OLED supply with 20V integrated switch	FAN5331
FEB143-001	FAN5332ASX (5-Lead SOT23) - high efficiency, high current serial LED driver and OLED supply with 30V integrated switch	FAN5332
FEB144-001	FAN5333ASX (110mV feedback voltage in a 5-Lead SOT23) - high efficiency, high current serial LED driver with 30V integrated switch	FAN5333
FEB145-001	4.5W non-isolated SEPIC power supply	FSDL0165RN
FEB167-001	FAN2106, 6A, 24V input integrated synchronous Buck regulator	FAN2106
FEB169-001	1.5a low voltage current mode Synchronous PWM Buck regulator	FAN2012MPX
FEB170-001	2A low voltage current mode Synchronous PWM Buck regulator	FAN2013MPX
FEB171-001	500mA high efficiency boost regulator with adjustable output, shutdown and low battery detect	FAN4855MTCS
FEB172-001	High-efficiency, high-current serial LED driver with 30V Integrated Switch	FAN5333BSX
FEB173-001	1.5MHz boost regulator with 33V integrated FET switch	FAN5336MPX
FEB174-001	High efficiency, constant-current LED driver with adaptive charge pump	FAN5616MPX
FEB175-001	High efficiency, constant-current LED driver with TinyWire™ brightness control	FAN5617MPX
FEB176-001	Regulated step-down charge pump DC/DC converter	FAN5631MPX
FEB177-001	Regulated step-down charge pump DC/DC converter	FAN5631MPX
FEB178-001	3MHz, 600mA step-down, DC-DC converter in chip-scale packaging	FAN5350MPX
FEB179-001	3MHz, 600mA step-down, DC-DC converter in chip-scale packaging	FAN5350UCX
FEB181-001	60W(12V) PWM controller and fix 65KHz frequently evaluation board	SG6742

Evaluation Boards		
Board #/User Guide	**Description**	**Featured Products**
FEB182-001	15W(5V) high performance fly-back converter module	SG6858
FEB183-001	15W(12V) high performance fly-back converter module	SG6858
FEB184-001	10W(5V&41); high performance fly-back converter module	SG6859
FEB185-001	5W(5V) mobile phone battery charger with PSR (primary-side-regulation)	SGP100
FEB187-001	5W(5V) mobile phone battery charger with PSR (primary-side-regulation)	SGP400
FEB188-001	12W(12V) mobile phone battery charger with PSR (primary-side-regulation)	SGP400
FEB191-001	60W(12V) high performance with HV startup evaluation board	SG6741
FEB192-001	60W(12V) 22" LCD monitor with PWM evaluation board	SG5841
FEB193-001	34W(5V/2A+12V/2A),17" LCD monitor with PWM evaluation board	SG6859
FEB195-001	300W 80+ ATX power supply with CCM PFC+dual-forward evaluation board	SG6931/SG6516/SG6858
FEB196-001	300W(Only 230V) 80+ ATX power supply, with CCM PFC+dual-forward evaluation board	SG6931/SG6516/SG6858
FEB197-001	300W dual output single stage PFC universal input with 5Vsb module	SG6980
FEB198-001	60W(12V) high performance with PWM controller and latch function evaluation board	SG5842
FEB200-001	65W(19V) PWM controller and fix 65KHz frequently evaluation board	SG6742
FEB203-001	Green-mode Fairchild Power Switch (FPSTM) for quasi-resonant operation	FSQ0565R/KA431A/FOD817A
FEB204-001	Green-mode Fairchild Power Switch (FPSTM) for quasi-resonant operation	FSQ0765
FEB212-001	FSFR2100 is an integrated PFM controller and MOSFETs especially designed for ZVS resonant half-bridge converter topologies	FSFR2100/KA431A
730012-001	IntelliMAX FPF210X & 2110 demo board	FPF210x /FPF2110
730014-001	FPF2123/FPF2124/FPF2125 demo board	FPF2123/FPF2124/FPF2125
730016-001	IntelliMAX FPF200X demo board	FPF200x
730017-001	IntelliMAX FPF1003 demo board	FPF1003
730018-001	IntelliMAX FPF1005 demo board	FPF1005
730019-001	IntelliMAX FPF1004 demo board	FPF1004
730021-001	IntelliMAX FPF2172 demo board	FPF2172
730022-001	IntelliMAX FPF2174 demo board	FPF2174
730023-001	IntelliMAX FPF2500,1,2 demo board	FPF2500/FPF2501/FPF2502
730024-001	IntelliMAX FPF2503, 4, 5, 6 demo board	FPF2503/FPF2504/ FPF2505/FPF2506
730025-001	IntelliMAX FPF1006 demo board	FPF1006
730028-001	IntelliMAX FPF2144 demo board	FPF2144

ADDITIONAL RESOURCES

For additional information and a complete listing of all Fairchild power management products please visit ***www.fairchildsemi.com/power.***

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POWER MANAGEMENT ICs

AC-DC: Power Factor Correction

- Continuous Conduction Mode (CCM) PFC Controllers
- Critical (CrCM) / Boundary Conduction Mode (BCM) PFC Controllers
- PFC + PWM Combination (Combo) Controllers

Isolated DC-DC

- Green-Mode PWM Controllers
- Integrated Green-Mode PWM Regulators (Green FPS™)
- Integrated PWM Regulators (FPS™)
- Primary-side only CV/CC Controllers
- Standard SMPS PWM Controllers

Non-Isolated DC-DC

- Charge-Pump Converters
- Multi-phase Controllers
- Step-down Controllers (External Switch)
- Step-down Regulators (Integrated Switch)
- Step-up Regulators (Integrated Switch)

Power Drivers

- High Voltage Gate Drivers (HVIC)
- Low-Side Gate Drivers
- Synchronous Rectifier Controllers/Drivers
- Synchronous-Buck/Multi-phase Drivers

Supervisory/Monitor ICs

- Ground Fault Interrupt (GFI) Controllers
- Supervisors + PWM
- Temperature Sensors
- Voltage Supervisors/Detectors/Stabilizers

Voltage Regulators

- LDOs
- Positive Voltage Linear Regulators
- Negative Voltage Linear Regulators
- Shunt Regulators

POWER SEMICONDUCTORS

Diodes & Rectifiers

- Bridge Rectifiers
- Rectifiers
- Schottky Diodes and Rectifiers
- Small Signal Diodes
- Transient Voltage Suppressors
- Zener Diodes

Integrated Power Solutions

- DrMOS FET Plus Driver Multi-Chip Module
- IGBT Module
- Full Function Load Switches (IntelliMAX™)
- MOSFET/Schottky Combos
- Solenoid Drivers
- Smart Power Modules (SPM®)

Transistors

- BJTs
- IGBT Discrete
- JFETs
- Load Switches
- MOSFETs
- MOSFET/Schottky Combos
- Small Signal Transistors

TRIACs

- TRIACs

LIGHTING AND DISPLAY

- CCFL Ballast IC
- CFL/Lighting Ballast Control IC
- Critical (CrCM)/Boundary Conduction Mode (BCM) PFC Controllers for Lighting
- High Voltage Gate Drivers (HVIC)
- LED Drivers
- PDP Smart Power Module (PDP-SPM™)

SIGNAL PATH ICs

Amplifiers & Comparators

- Comparators
- High Performance Amplifiers (>15 MHz)
- Operational Amplifiers

Signal Conversion

- Triple Video DACs
- Video Filter Drivers
- Video Switch Matrix/Multiplexers

Interface

- LVDS
- Serializer/Deserializer (µSerDes™)
- USB Transceiver

Switches

- Analog/Audio Switches
- Bus Switches
- USB Switches
- Video Switches

LOGIC | TINYLOGIC®

- Buffers, Drivers, Transceivers
- Flip flops, Latches, Registers
- Gates
- MSI Functions
- Multiplexer/Demultiplexer Encoders/Decoders
- Specialty Logic
- TinyLogic®
- Voltage Level Translators

OPTOELECTRONICS

- Infrared Products
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