FAIRCHILD
SEMICONDUCTOR®

POWER SOLUTIONS

Energy-efficient power analog, power discrete, and optoelectronic solutions that maximize energy savings in power sensitive applications

DC-DC

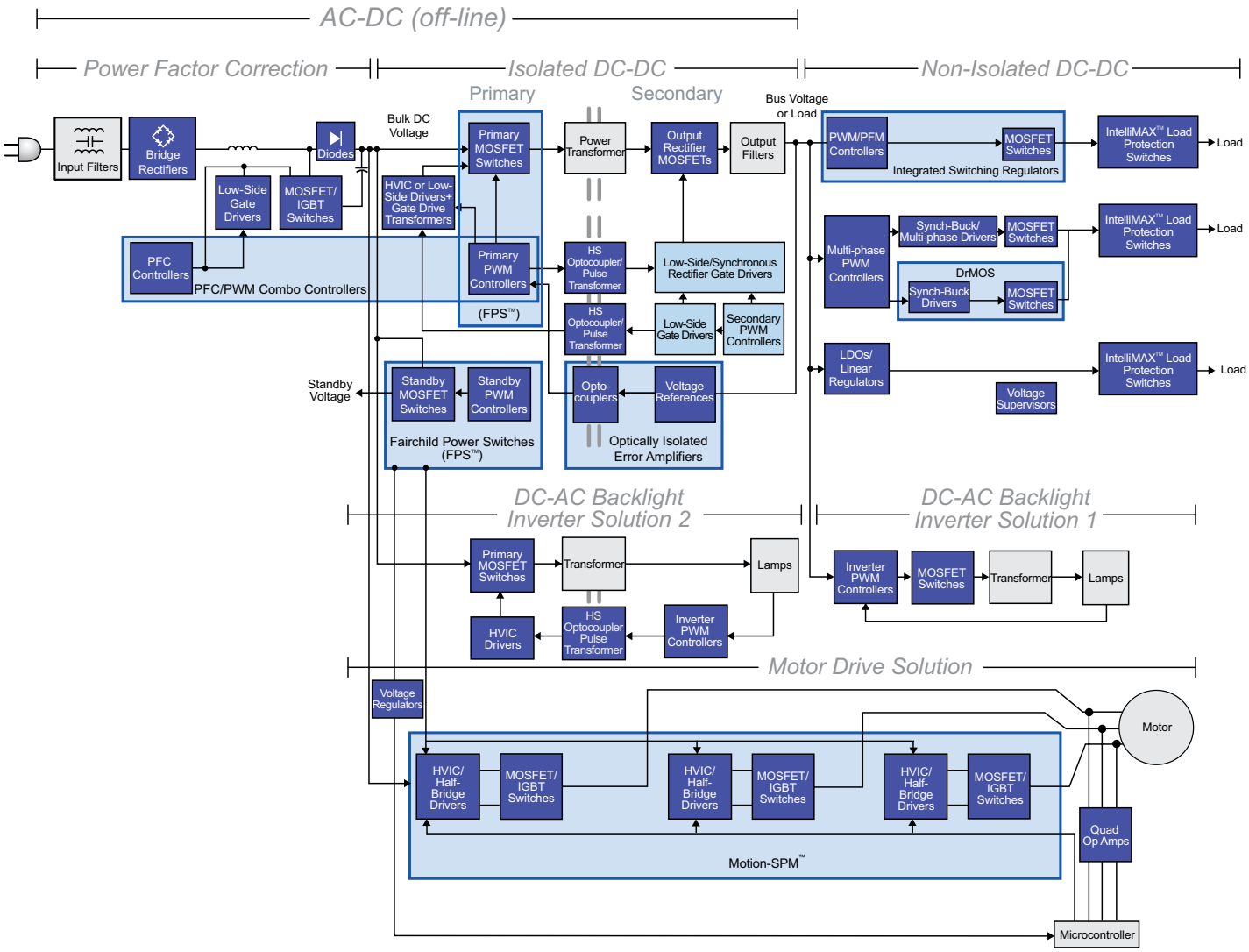
MOSFETs

IGBTs

AC-DC

As a global leader in power, Fairchild Semiconductor enables energy-efficient designs with a combination of advanced power technologies, brand reliability and unequaled customer support. We combine three core technologies—power analog, power discrete and optoelectronic—into unique solutions. Our functional, process and packaging innovations along with the industry's best power systems expertise ensure that system-level efficiencies are realized, allowing maximum energy savings in power-sensitive designs. With one of the broadest and deepest power portfolios, you can find just the component performance you need for virtually every application including: power supplies, lighting applications, computing, industrial controls, telecommunications and home appliances. In addition, Fairchild stands for quality and reliability as both a technology and business partner—an advantage made possible with our own design, fabrication, assembly and testing facilities worldwide. Overall, Fairchild makes the design challenge easier with our products that require less tweaking, adjusting or calibrating; the elimination of external components; and the best customer support in the industry comprised of online tools, design labs, FAEs and regional centers staffed with experienced power engineers.

Complete Power Solutions



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

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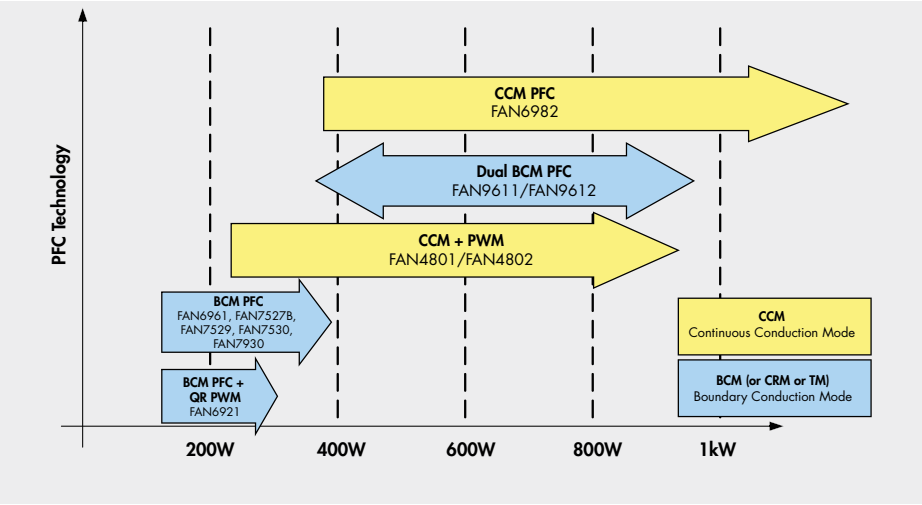
Power Factor Correction (PFC) Stand-Alone and PFC/PWM Combo Controllers

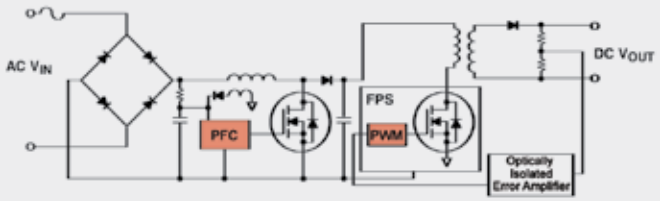
Fairchild's full line of both stand-alone PFC controllers and PFC/PWM combo controllers offer crucial cost and energy saving solutions that address the demanding requirements of a diverse range of medium and high power Switch Mode Power Supply (SMPS) designs.

- 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

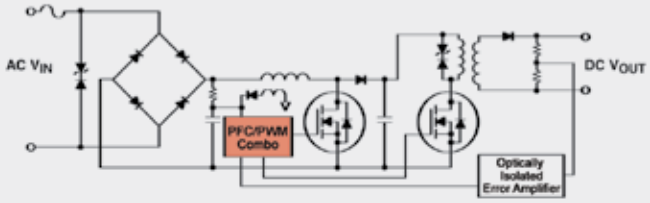


Fairchild has a complete PFC technology portfolio from low to high power levels to make energy delivery more efficient

Simplified Application Circuits



Stand-Alone PFC Controllers



PFC/PWM Combo Controllers

Stand-alone PFC Controllers

Product Number	Power Level	Control Mode [1]	Startup Current (µA)	Operating Current (mA)	UVLO Thresholds (V)	Special Features[2]	Package
FAN6982	>300W	CCM	30	2.3	9~11	Programmable frequency brownout protection power-on sequence control	SOIC-14
FAN6961	75W to 400W	BCM	10	4.5	12~9.5	OVP	DIP-8, SOIC-8
FAN7527B	75W to 400W	BCM	60	3	11.5~8.5	OVP	DIP-8, SOIC-8
FAN7930	75W to 400W	BCM	120	1.5	12 / 8.5	OVP, OFP, OCP, IVaD, UVLO	SOIC-8

Interleaving PFC Controllers

Product Number	Power Level	Control Mode [1]	Startup Current (µA)	Operating Current (mA)	UVLO Thresholds (V)	Special Features[2]	Package
FAN9611	100W to 1kW	BCM	80	3.7	10 / 7.5	2 channel interleaved PFC, power limit, VFF, OVP, OVP2, brownout, restart timer, SS, phase shedding at light load	SOIC-16
FAN9612	100W to 1kW	BCM	80	3.7	12.5~7.5	2 channel interleaved PFC, SS, VFF, OVP, OVP2, BO, line OVP, power limit, restart timer, phase shedding at light load	SOIC-16

PFC + PWM Combo Controllers

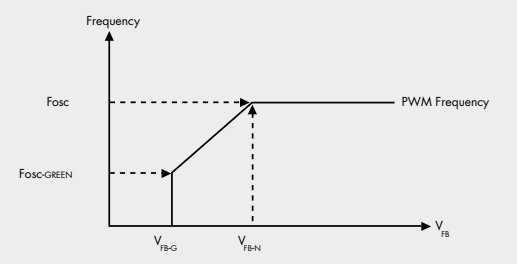
Product Number	Power Level	Control Mode[1]	Startup Current (µA)	Operating Current (mA)	UVLO Thresholds (V)	Special Features [2]	Package
FAN4800A	75W to 1kW+	CCM	100	2.5	13 / 10		DIP-16
FAN4800C	75W to 1kW+	CCM	30	2.6	11 / 9.3	Synchronized operation of PFC and PWM, OVP, open feedback protection, VFF, power on sequence control, brownout protection	
FAN4801	75W to 1kW+	CCM	30	2.6	11 / 9.3	Synchronized operation of PFC and PWM, OVP, open feedback protection, VFF, power on sequence control, brownout protection, output voltage adjustable for better efficiency	DIP-16 SOIC-16
FAN4802	75W to 1kW+	CCM	30	2.6	11 / 9.3	Synchronized operation of PFC and PWM, OVP, open feedback protection, VFF, power on sequence control, brownout protection, output voltage adjustable for better efficiency	DIP-16, SOIC-16
FAN6921	75W to 150W	BCM +QR	30	10	8.5 / 6.5	Extended valley detection for light load efficiency improvement. Highly integrated to include OVP, OCP, OTP, OLP, brownout. Built-in two level PFC output to improve low line efficiency. Turn off PFC at light load for extra power saving	SOIC-16
ML4800	75W to 1kW+	CCM	200	5.5	13 / 10		DIP-16 SOIC-16
ML4824-1	75W to 1kW+	CCM	700	16	13 / 10		DIP-16, SOICW-16
ML4824-2	75W to 1kW+	CCM	700	16	13 / 10	1x: 2x PFC: PWM switching frequency	SOICW-16
SG6901	75W to 1kW+	CCM	10	5	12 / 10		SOICW-20
SG6932	75W to 1kW+	CCM	10	6	14 / 10	Green-mode, PFC + Forward PWM	DIP-16

Note [1] CCM – Continuous Conduction Mode, also known as Average Current Mode (ACM)
BCM – Boundary Conduction Mode, also known as Critical Conduction Mode (CRM) or Transition Mode (TM)
DCM – Discontinuous Conduction Mode

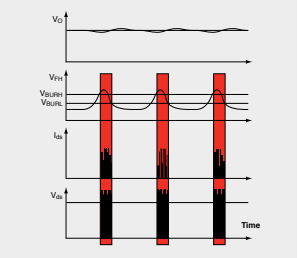
Note [2] VFF – Input voltage feed-forward
OVP – Over-voltage protection
OTP – Over-temperature protection
SS – Soft start

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 Typical (kHz)	Supply Voltage Max. (V)	Output Current Max. (A)	Duty Cycle (%)	Startup Current (µA)	Package
FAN6300A	1	Current	Below 100	30	-	-	20	DIP-8, SO-8
FAN6300H	1	Current	Up to 190	30	-	-	20	DIP-8, SO-8
FAN6754	1	Current	65	30	-	92	30	SO-8
FAN6755	1	Current	65	30	-	90	30	SO-7
FAN6862	1	Current	65	30	-	70	8	DIP-8, SSOT-6
FAN7554	1	Current	50	30	1	98	200	SO-8
FAN7601	1	Current	100	29	0.25	98	Internal Switch	DIP-8, SO-8, SSOP-10
FAN7602B	1	Current	65	20	0.25	75	Internal Switch	DIP-8, SO-8
SG5842JA	1	Current	Programmable	30	-	70	14	DIP-8, SO-8
SG6742	1	Current	65	30	-	70	30	DIP-8, SO-8
SG6846A	1	Current	65	25	-	90	30	DIP-8, SO-8
SG6846C	1	Current	65	25	-	90	8	DIP-8, SO-8
SG6859A	1	Current	70	30	-	72	9	DIP-8, SSOT-6

Primary-side Only CV/CC PWM Controllers

Product Number	Drain Voltage (V) Max.	Switching Frequency (kHz)	$R_{DS(ON)}$ (Ω)	PSR			Frequency Hopping	H/L Line Comp	Features	Package
				CV (±%)	CC (±%)	Ripple (mV)				
FAN100	–	42	–	7	7	100	Yes	Yes	PSR Controller	SOP-8
FAN102	–	42	–	5	7	100	Yes	Yes	PSR Controller	SOP-8
FAN103	–	50	–	5	7	100	Yes	Yes	PSR Controller	SOP-8
FAN400A	–	65	–	25	25	100	Yes	Yes	PSR Controller	DIP-8/SSOT-6
FSEZ1016A	600	42	11.5	7	7	100	Yes	Yes	PSR Controller + MOSFET	SOP-7/ DIP
FSEZ1216	600	42	11.5	5	7	100	Yes	Yes	PSR Controller + MOSFET	DIP-8
FSEZ1216B	600	50	11.5	5	7	100	Yes	Yes	PSR Controller + MOSFET	DIP-8
FSEZ1307	700	50	20.0	5	7	100	Yes	Yes	PSR Controller + MOSFET	SOP-7
FSEZ1317	700	50	16.0	5	7	100	Yes	Yes	PSR Controller + MOSFET	SOP-7

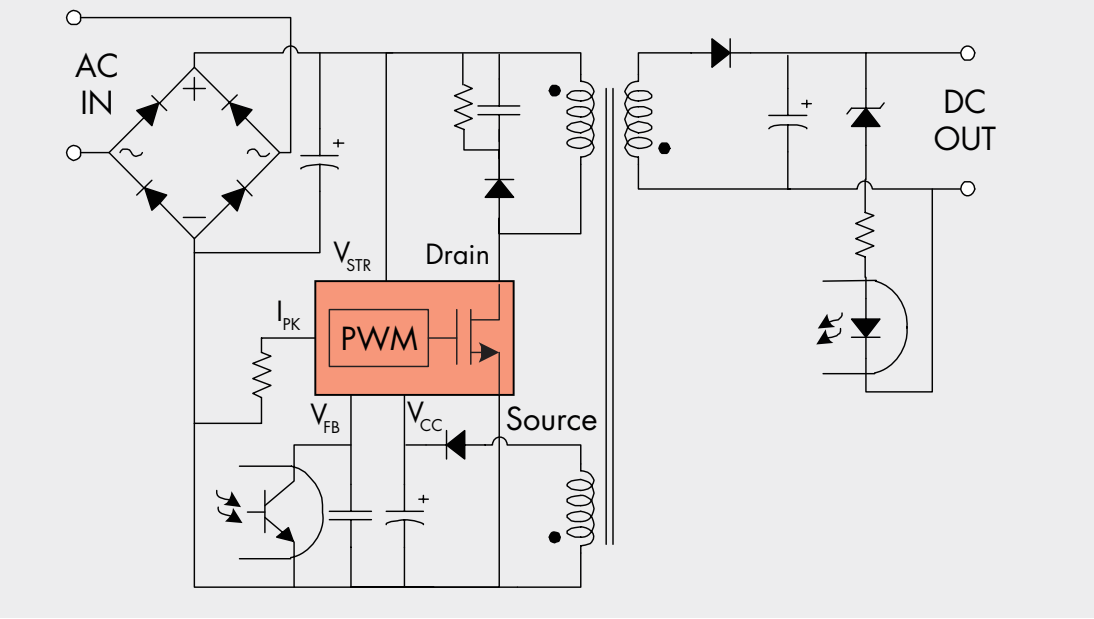
Fairchild's FPS products cover a wide range of power supply applications—from small battery chargers to large televisions, up to 250W. These highly integrated FPS devices combine the functionality of a fully avalanche-rugged SenseFET, a current mode pulse width modulation (PWM) IC and various protection 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™

Fairchild's Green FPS™ 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 standby 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), output short protection (OSP)
- Under voltage lock out (UVLO) with hysteresis
- Internal startup circuit
- Built-in soft-start (15ms)
- Minimum component counts on primary side



Fairchild Power Switch												
Product Number	Drain Voltage Max. (V)	Static Drain-Source On-Resistance Max. (Ω)	Peak Current Limit (A)	Output Power Max. (W)		Switching Frequency (kHz)	Protections					Package
				@ $85V_{AC}$ to $265V_{AC}$	@ $230V_{AC}$		Over Current	Over Load	Over Voltage	Output Short	Thermal Shutdown	
FSFM260	650	2.6	1.5	26	35	66	AR	AR	AR	–	AR	DIP-8
FSFM300	650	2.2	1.6	30	40	66	AR	AR	AR	–	AR	DIP-8
FSGM0465R	650	2.6	1.8	48	70	66	AR	AR	AR	AR	AR	TO-220F-6L
FSGM0465RB	650	2.6	2.7	48	70	66	AR	AR	AR	AR	AR	TO-220F-6L
FSGM0565R	650	2.2	2.2	60	80	66	AR	AR	AR	AR	AR	TO-220F-6L
FSGM0565RB	650	2.2	3	70	80	66	AR	AR	AR	AR	AR	TO-220F-6L
FSGM0765R	650	1.6	2.6	70	90	66	AR	AR	AR	AR	AR	TO-220F-6L
FSL136MR	650	4.0	2.15	20	26	67	AR	AR	AR	AR	AR	DIP-8
FSL106MR	650	19	0.55	8	10	67	AR	AR	AR	AR	AR	DIP-8
FSL206MR	650	19	0.6	7	12	67	No	AR	AR	AR	AR	DIP-8, SO-8
FSQ100	650	22	0.55	8	13	67	–	AR	AR	–	AR	DIP
FSQ110	650	19	0.7	12	17	100	–	AR	AR	–	AR	DIP
FSQ321	650	19	0.6	10	12	89	AR	AR	AR	–	AR	DIP, LSOP
FSQ0165RN	650	10	0.9	13	15	QRC-67	AR	AR	AR	–	AR	DIP, LSOP
FSQ0265RN	650	6	1.2	16	20	QRC-67	AR	AR	AR	–	AR	DIP, LSOP
FSQ0365RN	650	4.5	1.5	19	25	QRC-67	AR	AR	AR	–	AR	DIP, LSOP
FSQ0465RS	650	2.6	1.8	48	70	67	AR	AR	AR	AR	AR	TO-220F-6L
FSQ0465RU	650	3.95	1.8	40	60	67	AR	AR	AR	AR	AR	TO-220F-6L
FSQ0565RS	650	2.2	2.25	60	80	67	AR	AR	AR	AR	AR	TO-220F-6L
FSQ0565RQ	650	2.2	3	60	80	67	AR	AR	AR	AR	AR	TO-220F-6L
FSQ0765RS	650	1.6	2.5	70	90	67	AR	AR	AR	AR	AR	TO-220F-6L
FSQ0765RQ	650	1.6	3.5	70	90	67	AR	AR	AR	AR	AR	TO-220F-6L
FSBH0F70A	700	19	0.73	8	10	100	AR	AR	AR	AR	AR	DIP-8
FSBH0170A	700	11	0.8	13	15	100	AR	AR	AR	AR	AR	DIP-8
FSBH0270A	700	7.2	1	16	20	100	AR	AR	AR	AR	AR	DIP-8
FSBH0370	700	4.75	1.2	19	25	100	AR	AR	AR	AR	AR	DIP-8
FSFM261	700	2.7	1.5	25	33.5	66	AR	AR	AR	–	AR	DIP-8
FSL127H	700	7.2	0.61	16	20	100	AR	AR	Latch	AR	Latch	DIP-8

Note: AR=Auto Restart

The FSFRxxxx family of highly integrated Green FPS™ products increases power efficiency and system reliability while reducing 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 family 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 SIP-9 package.

Features & Benefits

Ease of Design

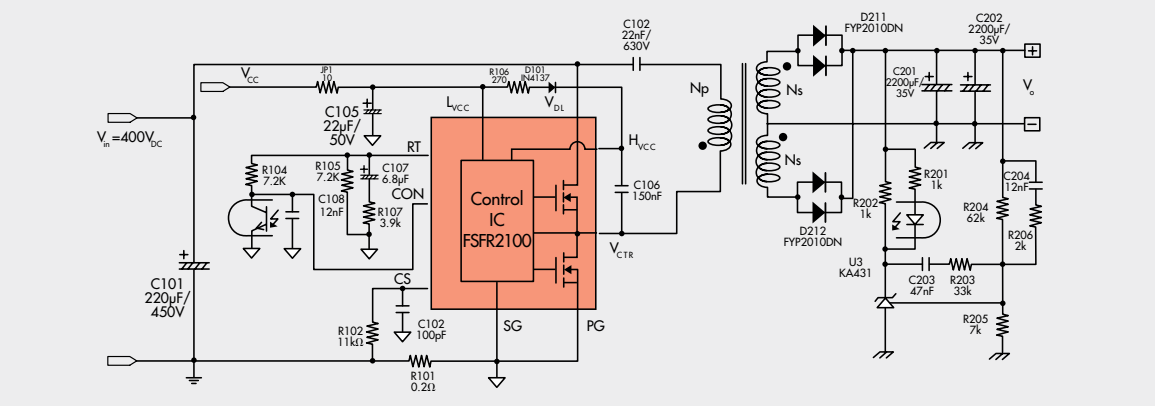
- Highly integrated up to 450W half-bridge resonant power switch
- Integrates PFM controller, high voltage gate driver circuit, two fast recovery MOSFETs (FRFET)
- No heatsink needed for normal power supplies up to 180W
- Minimum component count on primary-side

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

LLC Resonant (VF) Half-Bridge Converters							
Product Number	P_out		MOSFET		LVcc UVLO*	Auto-Restart**	Package
	Without Heatsink (W)	With Heatsink (W)	BV_{DS} (V)	$R_{DS(ON)}$ (Ω)			
FSFR2100	200	450	600	0.38	High	Most	SIP-9
FSFR1800	120	260	500	0.95	High	Most	SIP-9
FSFR1700(L)	100	200	500	1.25	High,	Most	SIP-9
FSFR1600	80	160	500	1.55	High	Most	SIP-9
FAN7621	Up to 600		External		High	Most	DIP-16, SOP
FAN7621B	Up to 600		External		Low	Most	DIP-16, SOP
FAN7621S	Up to 600		External		Low	Always	SOP-16

Notes:

*LVcc UVLO		Min (V)	Typical (V)	Max (V)
High	*Turn-on at:*	*13*	*14.5*	*16*
	Turn-off at:	*10.2*	*11.3*	*12.4*
Low	*Turn-on at:*	*11.2*	*12.5*	*13.8*
	Turn-off at:	*8.9*	*10.0*	*11.1(for a 12V external bias)*

** Auto-Restart

Most = OLP, OCP & OVP auto-restart if IC is self biased (from a transformer winding, typical without PFC) except AOCP & TSD latch off. If IC is externally biased, all protections latch off.

Always = all protections auto-restart always, including with an external 12V bias

All = all protections auto-restart if self-biased; all latch off if externally biased

Part Number Suffix

U = UniFET **S** = Low UVLO thresholds + all protection is auto-restart "Always," for use with 12V external bias

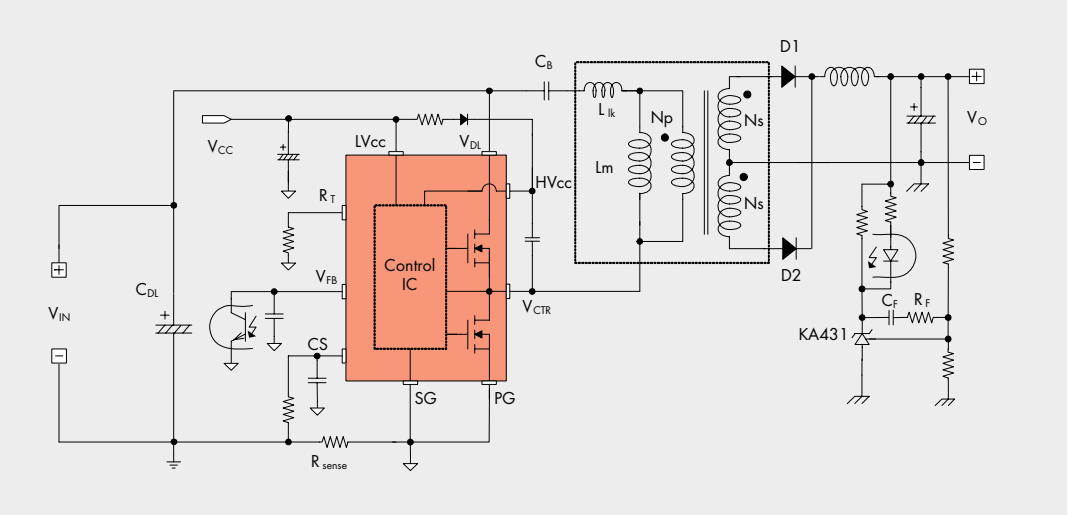
L = lead forming (some leads offset)

FSFA2100 FPS™ for Asymmetric Half-Bridge & Active-Clamp Topologies

An integrated PWM controller and SuperFET™ MOSFET, the FSFA2100 is specifically designed for Zero-Voltage-Switching (ZVS) half-bridge converters requiring minimal external components. The internal controller includes an oscillator, under-voltage lock out, leading-edge blanking (LEB), optimized high-side and low-side gate driver, internal soft-start, temperature-compensated precise current sources for loop compensation and self-protection circuitry.

Features & Benefits

- Better than LLC for low output voltages(< 12V) due to lower output-current ripple
- Duty cycle control for complementary (D/1-D) power switches (50% D limit)
- Internal MOSFET with Fast-Recovery body diode (t_{rr})<160ns
- High efficiency through zero voltage switching (ZVS): typ. Eff=93~94% for V_O=24V
- Internal soft-start (15ms) & optimized dead time (200ns)
- Pulse-by-Pulse current limit
- Burst mode operation for low standby power consumption
- Various protection functions: Over Load Protection (OLP), Over Voltage Protection (OVP), Abnormal Over Current Protection (AOCP), Internal Thermal Shutdown (TSD)
- –40 to 130°C ambient operation



Typical Application Circuit for an Asymmetric PWM Half-Bridge Converter

Asymmetric Half-Bridge Converter

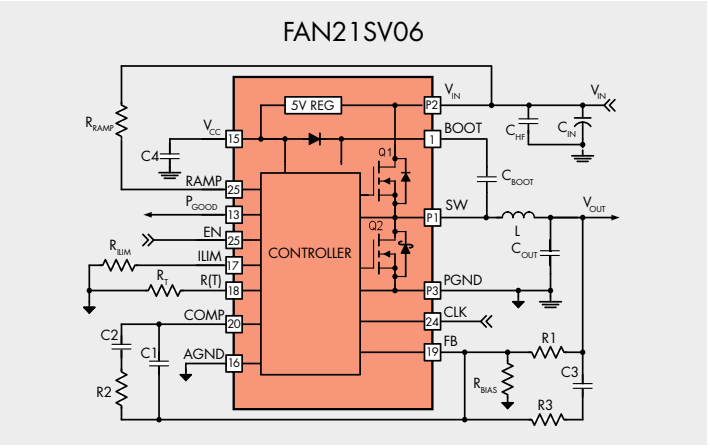
Product Number	P_out		MOSFET		Auto- Restart***	Package
	Without H/S (W)	With H/S (W)	BV_{DS} (V)	$R_{DS(ON)}$ (Ω)		
FSFA2100	200	450	600	0.38	Always	9-SIP

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 (FAN21SV06 TinyBuck™ Controller)

All-in-one TinyBuck regulator containing a controller, driver and fully optimized MOSFETs

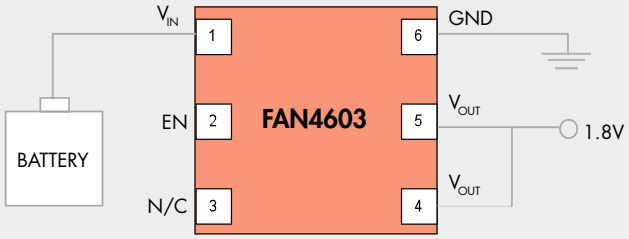
- Up to 94% efficiency
- Wide input range: 6.5V to 24V
- Up to 6A continuous current at 85°C
- Output voltage from 0.8V to 90% V_{IN}
- External synchronization
- Internal 5V regulator with single supply operation
- Ultra-compact MLP 5mm x 6mm package



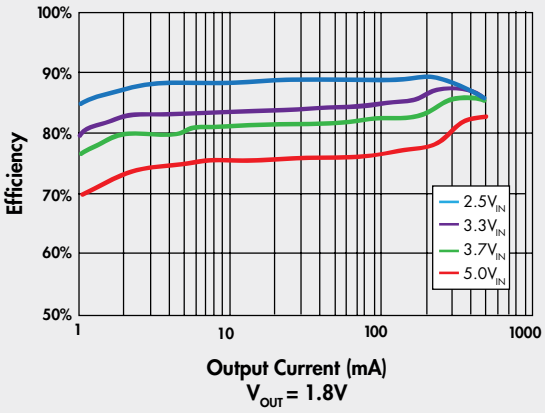
Fully Integrated Synchronous Buck Regulator Featuring External Synchronization and Internal 5V Regulator

Features & Benefits (FAN4603)

- Solder and play converter - no passive components required
- 2.3V to 5.5V input voltage range
- 600mA output current
- V_{OUT} = 1.0V, 1.2V, 1.3V, 1.5V, 1.8V
- Up to 91% efficiency
- UVLO, TSD, and SCP protection
- 3.0 x 4.5, 10-lead 0.5mm pitch LGA package



Typical Application Circuit



Synchronous Buck Regulators

Product Number	V_{IN} (V)	V_{OUT} (V)	Output Current (mA)	Output Type	Switching Frequency (MHz)	Max. Efficiency (%)	Package
FAN5358	2.7-5.5	1.0-1.80	500	Fixed	2	92	SC70-6
FAN5362	2.7-5.5	1.8-3.6	500	Fixed	3	96	WL-CSP 6-Bump, UMLP
FAN4603	2.3-5.5	1.0-1.82	600	Fixed	6	92	MLP 4x2.5
FAN5350	2.7-5.5	1.82	600	Fixed	3	94	WL-CSP 5-Bump, MLP 3x3
FAN5361	2.3-5.5	1.0-1.82	600	Fixed	6	92	WL-CSP 6-Bump, UMLP 2x2
FAN5355	2.7-5.5	0.75-1.975	800 / 1000	Adj..	3	94	WL-CSP 12-Bump, MLP 3x3
FAN5365	2.3-5.5	0.75-1.975	800 / 1000	Adj..	6	91	WL-CSP 9-Bump
FAN2001	2.5-5.5	0.8-V_{IN}	1000	Adj.	1.3	95	MLP 3x3
FAN2002	2.5-5.5	0.8-V_{IN}	1000	Adj.	1.3	95	MLP 3x3
FAN5353	2.7-5.5	0.8-0.9V_{IN}	3000	Adj.	3	93	MLP 3x3.5
FAN5354	2.7-5.5	0.8-0.9V_{IN}	3000	Adj.	3	93	MLP 3x3.5

TinyBuck™ Controllers with Integrated Drivers and MOSFETs

Product Number	Output Current (A)	Power Input		PWM V_{OUT}		Voltage Supply (V)	Frequency (kHz)	Efficiency (%)	External Sync	Package
		Min. (V)	Max. (V)	Min. (V)	Max. (V)					
FAN2103	3	3	24	0.8	80% of V_{IN}	Adj.	600	95	No	MLP 5x6
FAN21SV04	4	6.5	24	0.8	80% of V_{IN}	Adj.	600	95	No	MLP 5x6
FAN2106	6	3	24	0.8	80% of V_{IN}	Adj.	600	95	No	MLP 5x6
FAN21SV06	6	6.5	24	0.8	80% of V_{IN}	Adj.	600	95	Yes	MLP 5x6
FAN2108	8	3	24	0.8	80% of V_{IN}	Adj.	600	95	No	MLP 5x6
FAN2110	10	3	24	0.8	80% of V_{IN}	Adj.	600	95	N0	MLP 5x6

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
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

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 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.	QSOP-28 TSSOP-28

Synchronous and Asynchronous Boost Regulators

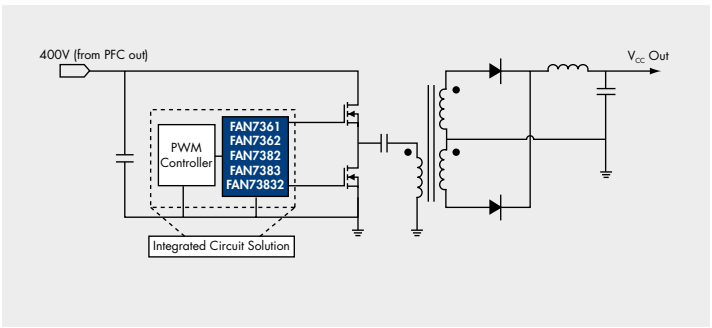
Product Number	Type	V_{IN} (V)	V_{OUT} (V)	Output Current (mA)	Switching Frequency (MHz)	Max. Efficiency (%)	Package
FAN4860	Synchronous	2.3-4.5	5V, Fixed	300	3	92	WL-CSP 6 Bump, UMLP 2x2
FAN4855	Synchronous	1.6-4.5	3-5, Adj.	500	0.43	95	MSOP-8
FAN5331	Asynchronous	2.7-5.5	<20, Adj.	50	1.6	88	SOT-23
FAN5333B	Asynchronous	1.8-5.5	<30, Adj.	75	1.6	80	SOT-23

HIGH VOLTAGE GATE DRIVERS (HVICs)

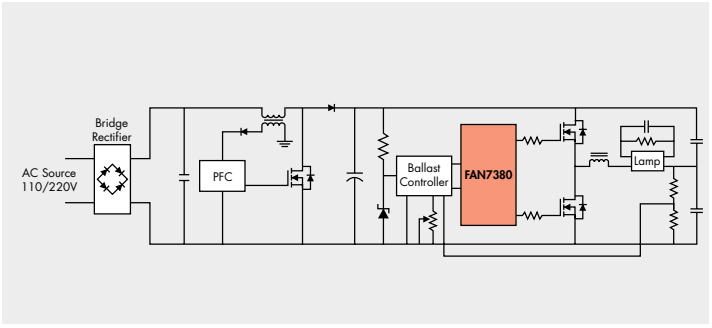
Fairchild's high voltage gate drivers (HVICs) improve system reliability by utilizing an innovative common-mode dv/dt noise cancelling circuit that provides excellent noise immunity. With a voltage capability up to 600V and a very fast switching speed (dv/dt=50V/ns (Max.), these drivers are optimal for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

Features & Benefits

- Better noise immunity (due to noise cancelling 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

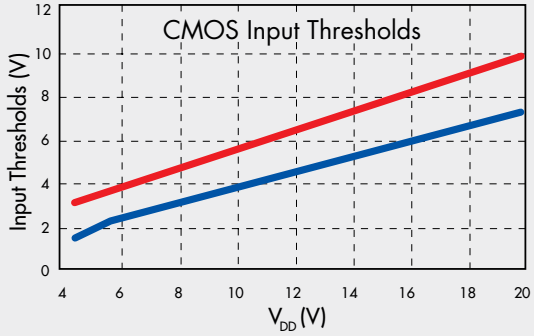
High Voltage Gate Drivers (HVICs)

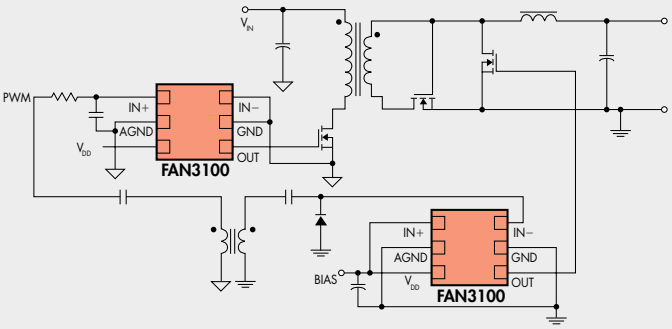
Product Number	Circuit		Offset Voltage	Output Current (mA)		Delay Time (nS)		Shut-down	Dead Time Control	Quiescent Current (µA)		dv/dt (V/ns)	V_B (V)	Package
	Type	Input to Output	(V)	Source	Sink	t_{ON}	t_{OFF}			I_{QBS}	I_{QCC}			
FAN7888	3 Phase	6 to 6	200	350	650	130	150	No	Fixed	50	160	50	-9.8	SOP-20
FAN7380	Half-bridge	2 to 2	600	90	180	135	130	No	Fixed	45	70	50	-9.8	SOP-8
FAN7361	High side	1 to 1	600	250	500	120	90	No	No	50	30	50	-9.8	SOP-8
FAN7362	High side	1 to 1	600	250	500	120	90	No	No	50	30	50	-9.8	SOP-8
FAN7384	Half-bridge	2 to 2	600	250	500	180	170	Yes	Fixed	50	600	50	-9.8	SOP-14
FAN7382	Half-bridge	2 to 2	600	350	650	170	200	No	No	45	70	50	-9.8	SOP-8, DIP-8
FAN7383	Half-bridge	1 to 2	600	350	650	500	170	Yes	Variable	35	650	50	-9.8	SOP-14
FAN73832	Half-bridge	1 to 2	600	350	650	580	180	Yes	Variable	35	300	50	-9.8	SOP-8, DIP-8
FAN7385	2 Channel high side	2 to 2	600	350	650	110	110	No	No	50	28	50	-9.8	SOP-14
FAN7388	3 Phase	6 to 6	600	350	650	130	150	No	Fixed	50	160	50	-9.8	SOP-20
FAN7387	Self oscillation	1 to 2	600	350	650	170	200	Yes	Variable	50	220	50	-9.8	SOP-8, DIP-8
FAN73833	Half-bridge	2 to 2	600	350	650	150	140	No	Fixed	35	80	50	-9.8	SOP-8
FAN73932	Half-bridge	1 to 2	600	2000	2000	280	270	Yes	Fixed	60	100	50	-9.8	SOP-8
FAN7392	High & low side	2 to 2	600	3000	3000	120	95	Yes	No	125	180	50	-9.8	DIP-14
FAN7371	High side	1 to 1	600	4000	4000	150	150	No	No	60	25	50	-9.8	SOP-8
FAN7390	High & low side	2 to 2	600	4500	4500	140	140	No	No	45	75	50	-9.8	SOP-8, DIP-8, SOP-14

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 1A, 2A, 4A and 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.

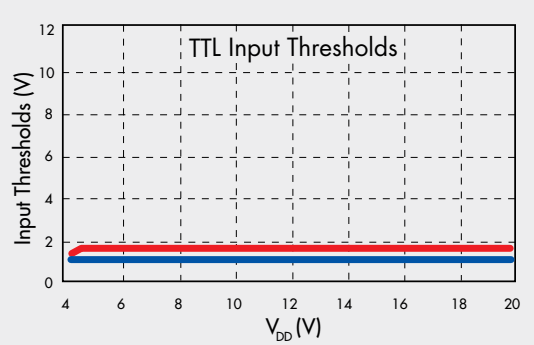
Features & Benefits

- Package options: industry's smallest packages (2mm x 2mm and 3mm 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°C to 125°C ambient temperature range





Forward Converter with Hybrid Synchronous Rectifier



Low-Side Gate Drivers

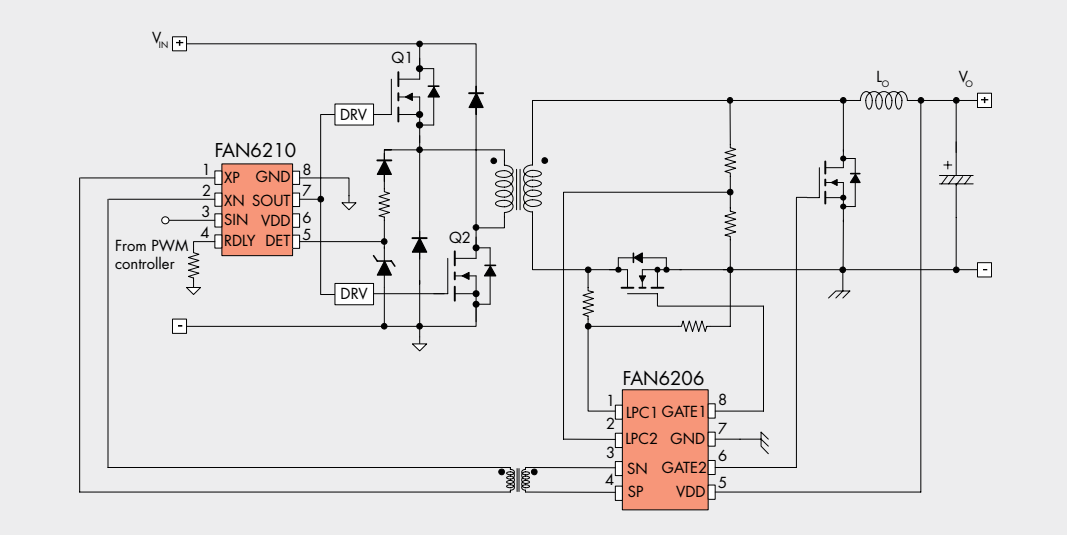
Product Number	Type	Gate Drive[1] [2] (Sink/Source) (A)	Input Thresholds	Logic	Package
FAN3100	Single 2A	+2.5/-1.8	CMOS, TTL	Single channel of two-input/one-output	SOT-23-5, MLP-6
FAN3111	Single 1A	+1.1/-0.9	CMOS/External	Single channel (dual input or single non-inverting input	SOT-23-5
FAN3226	Dual 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	+9.7/-7.1	CMOS, TTL	Single inverting channel + enable	SOIC-8, MLP-8
FAN3122[2]	Single 9A	+9.7/-7.1	CMOS, TTL	Single non-inverting channel + enable	SOIC-8, MLP-8
FAN3268	Dual 2A	+2.4/-1.6	TTL	Dual channels, non-inverting and inverting, + dual enables	SOIC-8

Note[1] Typical currents with V_{DD} = 12V and OUT at 6V
Note[2] External = the input thresholds are referenced to an external voltage for use with controllers that operate from a lower supply voltage than the driver

Fairchild offers a complete power efficiency improvement solution with the primary-side synchronous rectifier (SR) trigger controller, FAN6210, and the dual-channel SR controller on the secondary side to save power loss respectively. The FAN6210 can be used with any PWM controller that can drive a dual-forward converter. It provides drive signals for the primary-side power switch and also the SR drive signal for the secondary side FAN6206 through a pulse transformer. This solution provides a simple control method and improved power system reliability.

Features & Benefits

- Improves efficiency 1.5%~3% vs Schottky diode solution with SRs FDP5800 (60V, 4.7mΩ) or FDP8896 (30V, 6mΩ)
- Power system reliability improvement
- Simple control method
- Reduces component count



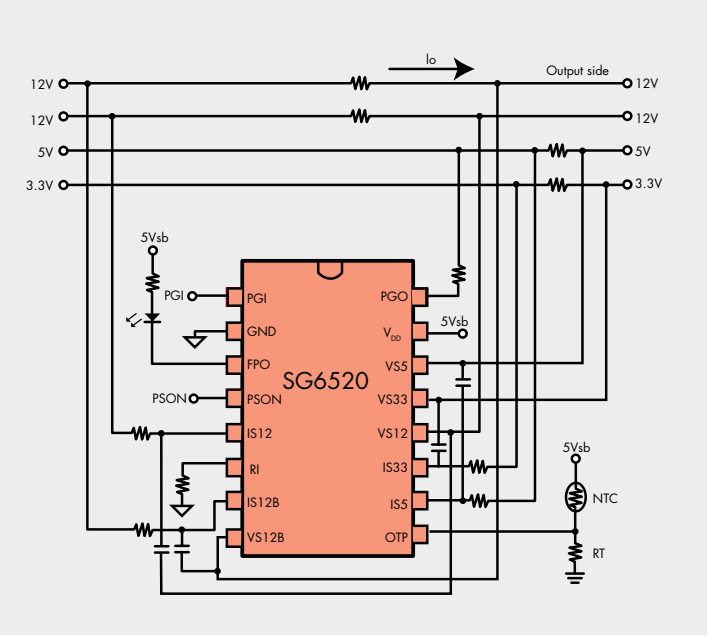
Typical Application

Synchronous Rectifier Controller and Driver						
Product Number	Description	Delay time for PWM and SR signal	Gate Outputs	Green Mode	V_{DD} OVP (V)	Package
FAN6210	Primary-side synchronous rectifier (SR) signal trigger for dual forward converter	Adj.	1 for gate driver transformer	Yes	25	SOP-8
FAN6206	Highly integrated dual-channel synchronous rectification controller for dual-forward converter	Adj.	2 for freewheeling and rectifying	Yes	21	SOP-8

Fairchild's family of supervisors is designed to provide 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 Max. (V)	PG Inputs	Remote	Over-voltage Protection	Over-current Protection	Under Voltage Protection	Package
SG6516	4	16	1	Yes	Yes	No	Yes	DIP-14, SOP-14
SG6520	4	16	1	Yes	Yes	Yes	Yes	DIP-16, SOP-16
SG6105A*	4.5	16	1	Yes	Yes	No	Yes	DIP-20

Note[*] 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

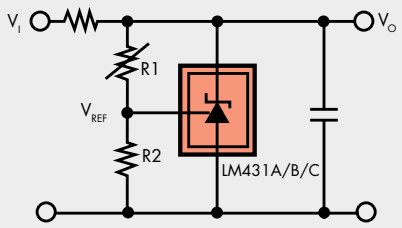
Linear Regulators (LDOs)

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)				
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

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
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
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
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
FAN2560	Single	1.3/1.5	–	–	0.35	0.07	5.5	WL-CSP
FAN2564	Single	1.2/1.3/1.5/1.8/2.0/2.5/2.8	–	–	0.3	0.1	4.5	WL-CSP 4 Bump, UMLP 2x2

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



Shunt Regulator

Shunt Regulators

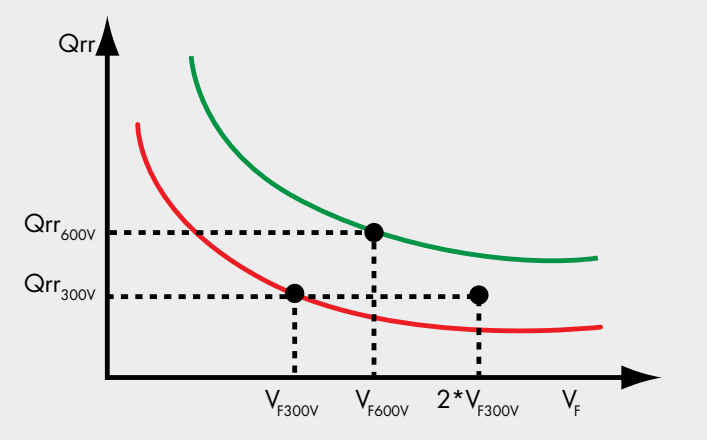
Product Number	Description	Preset Output Voltage (V)	Adj. Output Voltage Min. (V)	Adj. Output Voltage Max. (V)	Tolerance (%)	Max. Current (mA)	Package
LM431A	Adj.	2.5	2.5	37	2	100	SOIC, TO-92R
LM431B	Adj.	2.5	2.5	37	1	100	SOIC, TO-92R
LM431C	Adj.	2.5	2.5	37	0.50	100	SOIC, TO-92R

Deuxpeed®

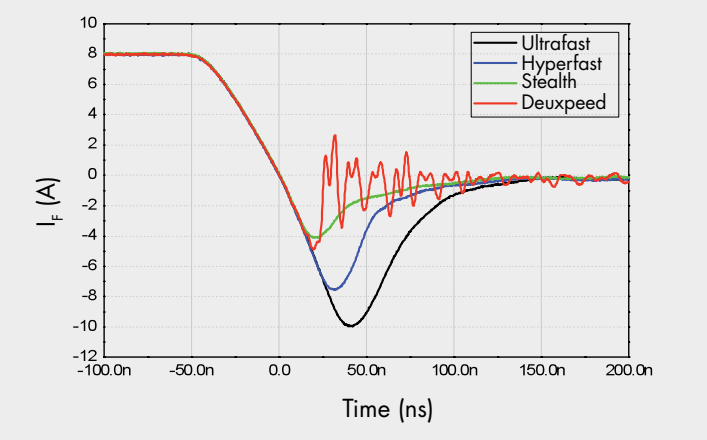
The Deuxpeed® is a high performance diode composed of two 300V dice in series and silicon nitride passivated ion-implanted epitaxial planar construction. This device is intended for use as boost diode in continuous mode power factor correctors and hard switching conditions and internal ceramic insulated package allow flexible heatsinking on common or separate heatsink power factor correction and hard switching conditions. The internal ceramic insulated package allows flexible heatsinking on common or separate heatsink.

Features & Benefits

- High speed switching, t_{rr} < 25ns at rating current
- High reverse voltage and high reliability
- Max forward voltage, VF < 3.6V @25oC
- Insulated voltage, 2500V DC



Q_{RR} and V_FTrade off



Q_{RR} Comparisons
V_{DD}=480V, I_F=8A, di/dt=200A/ μ s, T_j=150°C

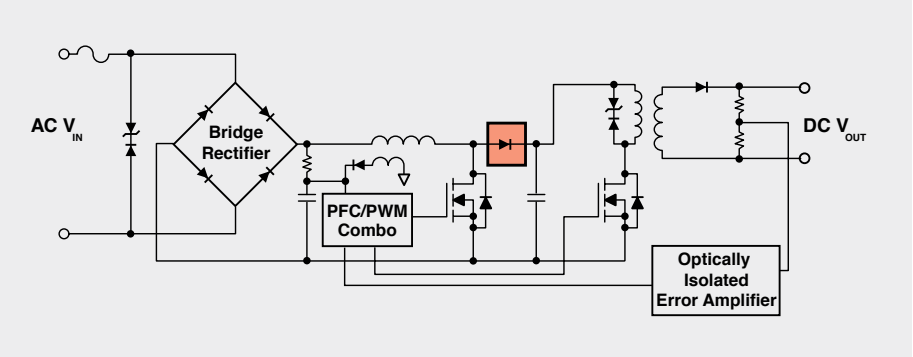
Rectifiers - Deuxpeed

Product Number	V_{RRM} (V)	$I_{F(AV)}$ (A)	I_{FSM} (A)	V_{FM1} Max. (V)	T_{RR} Max. (ns)	Package
FFP08D60L2	600	8	80	3.6	25	TO-220

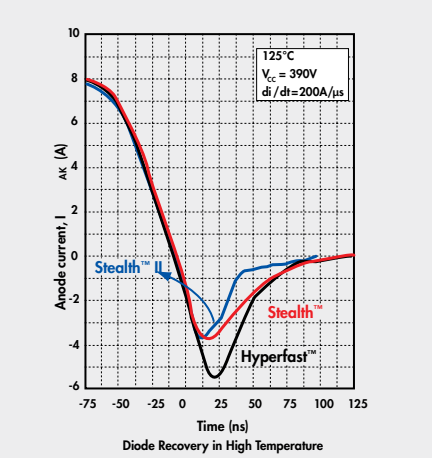
Fairchild's latest family of rectifiers (Stealth™ II and Hyperfast II) features fast reverse recovery and soft recovery characteristics that enable reduced MOSFET switching losses and EMI in continuous-conduction mode (CCM) power factor correction (PFC) designs.

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

Part Number	V_{RRM} (V)	$I_{F(AV)}$ (A)	I_{FSM} (A)	V_F Max. (V)	t_{rr} (typ) (ns)	Package
FFD04H60S	600	4	40	2.1	19	TO-252(DPAK)
FFP08H60S	600	8	60	2.1	35	TO-220
FFPF08H60S	600	8	60	2.1	35	TO-220F
FFA60UA60DN	600	30	180	2.2	90	TO-3PN
FFAF60UA60DN	600	30	180	2.2	90	TO-3PF
FFPF30UA60S	600	30	180	2.2	90	TO-220F
FFH15S60S	600	15	150	2.6	21	TO-247
FFH30S60S	600	30	300	2.6	25	TO-247
FFP08S60S	600	8	80	2.6	19	TO-220
FFP15S60S	600	15	150	2.6	21	TO-220
FFP30S60S	600	30	300	2.6	25	TO-220
FFPF04S60S	600	4	40	2.6	18	TO-220F
FFPF08S60S	600	8	80	2.6	19	TO-220F
FFPF15S60S	600	15	150	2.6	21	TO-220F
FFP08S60SN	600	8	60	3.4	13	TO-220
FFPF08S60SN	600	8	60	3.4	13	TO-220F
FFP08D60L2	600	8	80	3.6	13	TO-220
RHRP8120	1200	8	100	3.2	55	TO-220AC
ISL9R8120P2	1200	8	100	3.3	25	TO-220AC
RHRG75120	1200	75	500	3.2	85	TO-247

DrMOS Products 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

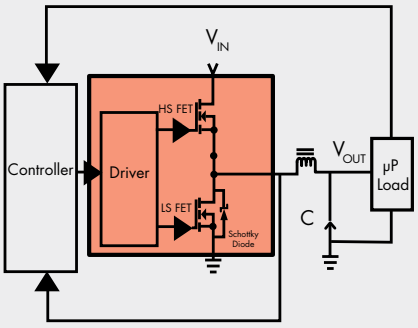
- Higher efficiency than conventional discrete solutions under high, medium and light load conditions
- Average power losses across the full operating range are reduced by 14% when compared to discrete solutions

Critical Space Savings

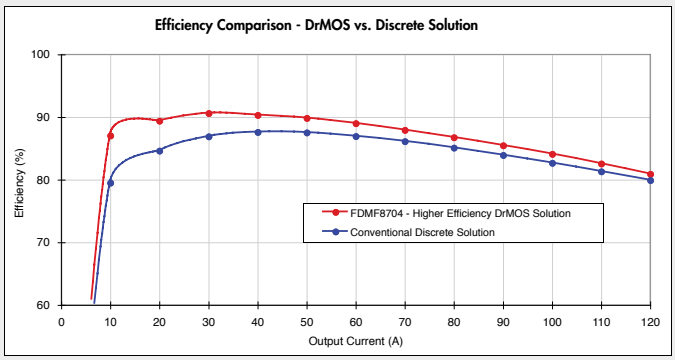
- Replaces two MOSFETs, one diode (Schottky or bootstrap) and one driver IC
- Reduces 33% of component count compared to conventional discrete solutions
- Saves 73% of valuable board space

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.



Typical Buck Converter Application Circuit



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

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

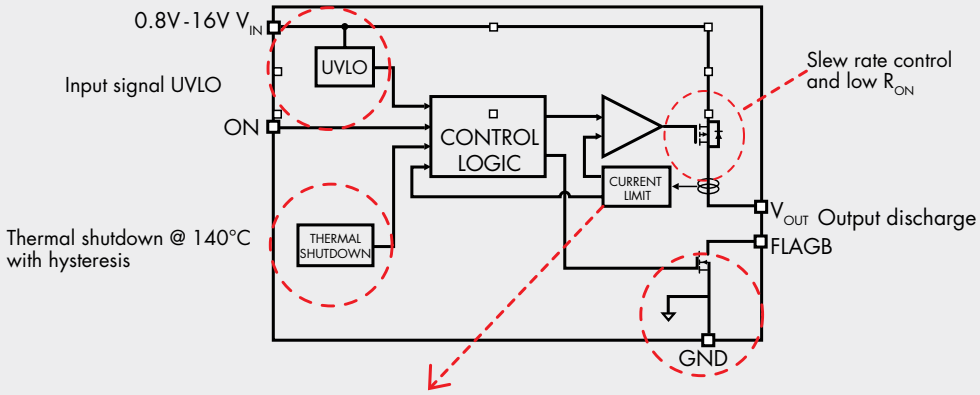
FET Plus Driver Multi-Chip Modules (DrMOS)

Product Number	Description	V_{IN} Range Typ. (V)	V_{OUT} Range Typ. (V)	I_{OUT} Max. (A)	Frequency (MHz)	Package (mm)
FDMF8704	High efficiency/frequency DrMOS module	7 - 20	0.8 - 3.2	32	1	MLP 8x8
FDMF8704V	High efficiency/frequency DrMOS module with VR	7 - 20	0.8 - 3.2	32	1	MLP 8x8
FDMF6704	Ultra-compact, high efficiency DrMOS module with Tri-state PWM input	8 - 16	0.8 - 3.2	35	1	MLP 6x6
FDMF6704A	Ultra-compact, high efficiency DrMOS Module	8 - 16	0.8 - 3.2	30	1	MLP 6x6
FDMF6704V	Ultra-compact, high efficiency DrMOS module with VR	8 - 16	0.8 - 3.2	35	1	MLP 6x6
FDMF6730	Optimized for Ultra Mobile PC power stage (UMPC) systems with Internal 5V regulator	6 - 16	1.5-5	10	1	MLP 6x6

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 (0.8V to 16V)
- 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 and leakage currents to conserve critical battery life
- Options for reverse current blocking capability and power good function



Integrated current limit protection and reverse current blocking with fast response time. Auto restart/shutdown modes reduce parasitic power consumption.

Error status flag for all fault conditions (I_limit, UVLO, Thermal) and power good.

IntelliMAX™ Load Switches

Product Number	Family	V_{IN} Range (V)	R_{ON} Typ. (mΩ)	Current Limit Minimum (mA)	Package
FPF10x	Slew rate control	1.2 - 5.5	20/50	N/A	CSP/MLP 2x2
FPF101x	Slew rate, ultra-low voltage	0.8 - 1.8	17/34	N/A	CSP/MLP 2x2
FPF110x	Slew rate control	1 - 4.0	35	N/A	CSP 1x1
FPF200x	Current limit	1.8 - 5.5	700	50, 100	SC70-6
FPF202x	Current limit, ultra-low leakage	1.6 - 5.5	225	100	CSP
FPF210x	Current limit	1.8 - 5.5	125	200, 400	SOT23-5
FPF212x	Current limit	1.8 - 5.5	125	150 -1500 (Adj.)	SOT23-5
FPF216x/FPF219x	Current limit	1.8 - 5.5	120/55	150 - 1500 (Adj.)	MLP 2x2/CSP
FPF217x	Current limit	1.8 - 5.5	125	200	MLP 3x3
FPF220x	Current limit, high precision	1.8 - 5.5	140	500	MLP 2x2
FPF221x	Current limit, high precision	1.8 - 5.5	250	100 - 250 (Adj.)	MLP 2x2
FPF222x	Current limit, high precision	1.8 - 5.5	140	250 - 650 (Adj.)	MLP 2x2
FPF230x	Dual, current limit	1.8 - 5.5	125	1100 -1500 (Adj.)	SO8/MLP 3x3
FPF231x	Dual, current limit	1.8 - 5.5	125	400 - 600 (Adj.)	MLP 3x3

INTEGRATED MOSFET MODULES

Fairchild's integrated MOSFET module family enables 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

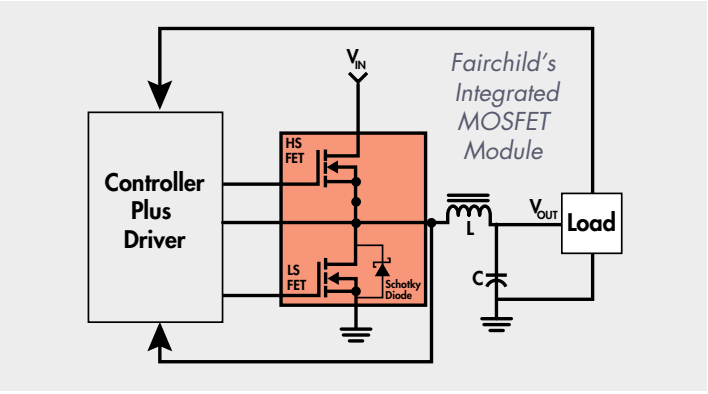
- Optimized matching and sizing of high and low side MOSFETs for better efficiency in Buck converters
- Integrated Schottky diode for improved low side MOSFET performance

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

Dual 30V Power33 Package

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 (mΩ)	LS (mΩ)	HS (mΩ)	LS (mΩ)	HS (mΩ)	LS (mΩ)
FDMC8200	30	±20	18	20	9.5	32	13.5	3.1	7

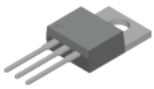
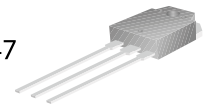
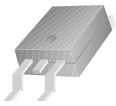
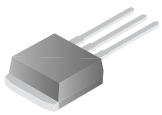
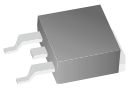
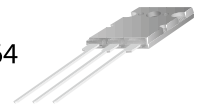
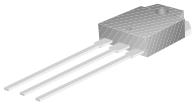
Dual 30V Power56 Package

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 (mΩ)	LS (mΩ)	HS (mΩ)	LS (mΩ)	HS (mΩ)	LS (mΩ)
FDMS7700S	30	±20	30	7.5	2.4	12	2.9	9.3	48
FDMS7600AS	30	±20	30	7.5	2.8	12	3.3	9.3	37
FDMS7602S	30	±20	30	7.5	5	12	6.8	9.3	16
FDMS9620S	30	±20	16	21.5	13	29.5	17	5	9

Fairchild offers an array of switching solutions for each application.

Fairchild Switching Technologies - High Voltage		
High Voltage MOSFET Technologies	**Voltage Range (V)**	**Applications**
UniFET™, FRFET®, UniFET™ Ultrafast FRFET, UniFET™ II,	60 - 650	PFC, server/telecom power, televisions, ATX power, and industrial power
SuperFET™	600 and 650	
SuperFET™ FRFET	500 and 600	
SupreMOS®	600	
High Voltage IGBT Technologies	**Voltage Range (V)**	**Applications**
Planar	300 and 1200	Drives, UPS, photovoltaic, inductive heating
NPT trench IGBT	1000 and 1200	
SMPS IGBT	600 and 1200	
Field Stop (FS) IGBT	600, 650, 1200	
Standard IGBT modules (EMP7)	600	
Field Stop Trench IGBT	1200	

High Voltage Packages (>200V)

TO-220 	TO-220F 	TO-247 	TO-251 (I-PAK) 
TO-252 (D-PAK) 	TO-262 (I^2-PAK) 	TO-263 (D^2-PAK) 	TO-264 
TO-3P 	TO-3PN 	TO-92 	TO-92L 

IGBTs

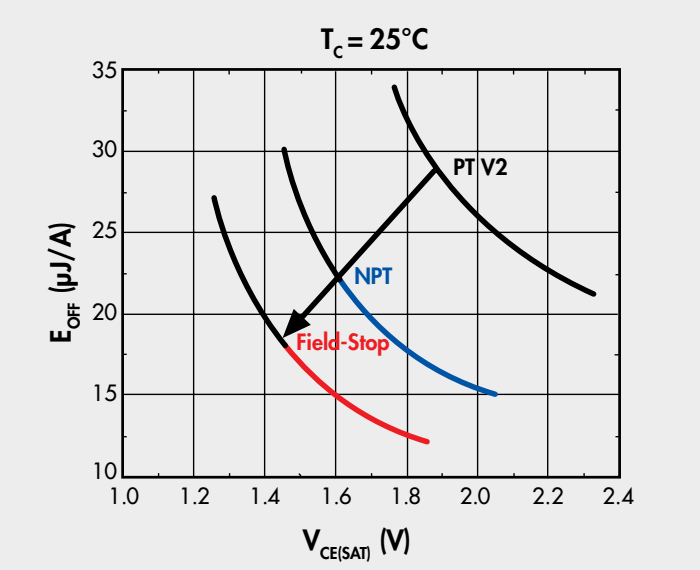
Fairchild's IGBTs are optimized for Switch Mode Power Supply designs offering better V_{SAT} and E_{OFF}. Additionally, this control smoothes the switching waveforms for less EMI. IGBTs are manufactured using an optimized design process which offers better control and repeatability of the top side structure, thereby providing tighter specifications.

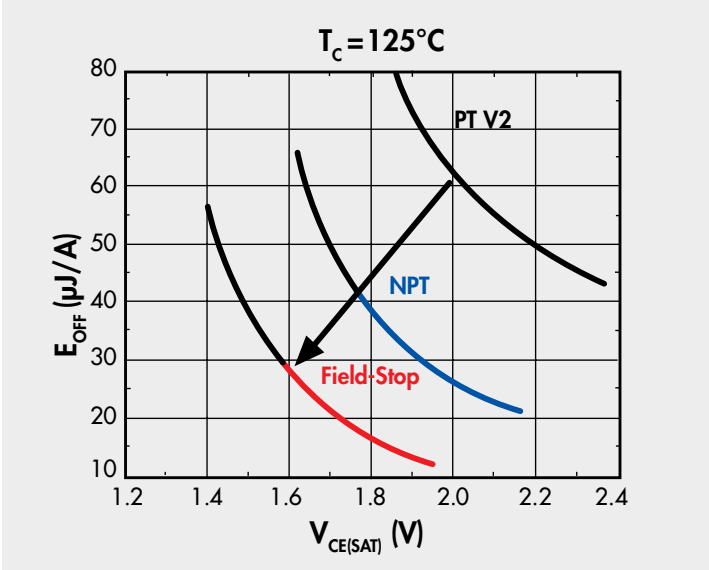
IGBTs vs. MOSFETs

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





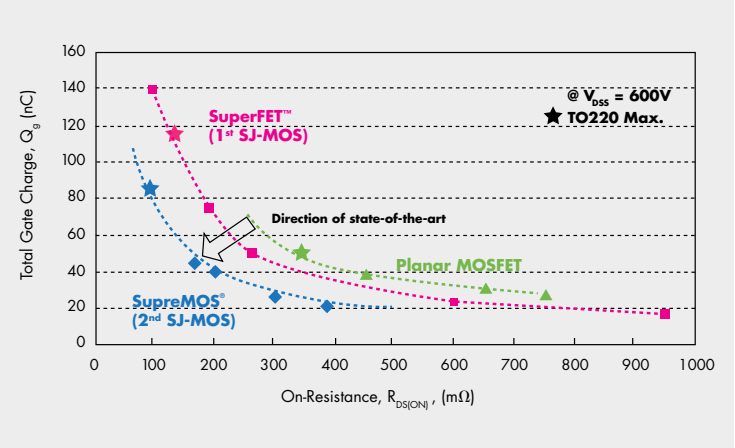
600V IGBT Trade-off Curve(E_{OFF} vs. $V_{CE(SAT)}$)

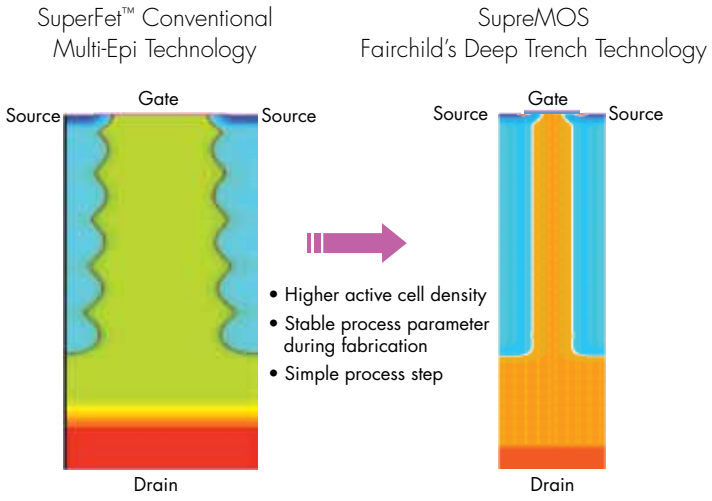
IGBTs

Product Number	BV_{CES} Min. (V)	I_C (A)	$V_{CE(SAT)}$ Typ. (V)	t_f Typ. (ns)	Built-in Diode	Package
FGH50N3	300	75	1.30	12	–	TO-247
FGPF50N33BT	330	160	1.60	202	–	TO-220F
FGPF4633	330	300	1.55	341	–	TO-220F
FGA90N33AT	330	330	1.60	180	–	TO-3P
FGA90N33ATD	330	330	1.60	180	–	TO-3P
FGA180N33AT	330	450	1.68	180	–	TO-3P
FGA180N33ATD	330	450	1.68	180	–	TO-3P
FGD3N60LSD	600	3	1.20	600	–	TO-252(DPAK)
FGP5N60LS	600	5	1.70	150	–	TO-220
HGTP7N60C3D	600	7	1.60	140	Yes	TO-220
HGTP7N60A4	600	14	1.90	45	–	TO-220
FGH20N60UFD	600	20	1.80	32	–	TO-247
FGP20N60UFD	600	20	1.80	32	–	TO-220
FGH20N60SFD	600	20	2.20	24	–	TO-247
HGTG12N60A4	600	23	2.00	18	–	TO-247
HGTG12N60A4D	600	23	2.00	18	Yes	TO-247
HGTP12N60A4D	600	23	2.00	18	Yes	TO-220
FGH40N60UF	600	40	1.80	30	–	TO-247
FGH40N60UFD	600	40	1.80	30	–	TO-247
FGH80N60FD	600	40	1.80	50	–	TO-247
FGH80N60FD2	600	40	1.80	50	–	TO-247
HGTP20N60A4	600	40	1.80	32	–	TO-220
HGTG20N60A4	600	40	2.00	32	–	TO-247
HGTG20N60A4D	600	40	2.00	73	Yes	TO-247
FGH40N60SF	600	40	2.30	27	–	TO-247
FGH40N60SFD	600	40	2.30	27	–	TO-247
FGI40N60SF	600	40	2.30	27	–	TO-262
HGTG30N60A4	600	60	1.80	38	–	TO-247
HGTG30N60A4D	600	60	1.80	38	Yes	TO-247
FGA60N60UFD	600	60	1.90	40	–	TO-3PN
FGH60N60UFD	600	60	1.90	40	–	TO-247
FGH60N60SF	600	60	2.30	31	–	TO-247
FGH60N60SFD	600	60	2.30	31	–	TO-247
FGH75N60UF	600	75	1.90	30	–	TO-247
FGH40N65UFD	650	40	1.80	30	–	TO-247
FGA50N100BNTD	1000	50	1.50	130	Yes	TO-3P
FGL60N100BNTD	1000	60	2.50	130	Yes	TO-264
FGA15N120FTD	1200	15	1.60	255	–	TO-3PN
FGA20S120M	1200	20	1.55	320	–	TO-3PN
FGA20N120FTD	1200	20	1.60	217	–	TO-3PN
FGA25N120FTD	1200	25	1.60	215	–	TO-3PN
FGH25N120FTDS	1200	25	1.60	102	–	TO-247
FGH25N120FTDS	1200	25	1.60	136	–	TO-247
FGA30N120FTD	1200	30	1.60	259	–	TO-3PN
FGA30N120FTD	1200	30	1.60	364	–	TO-3PN
FGH30N120FTD	1200	30	1.60	364	–	TO-247
FGL35N120FTD	1200	35	1.68	146	–	TO-264

SupreMOS®

The SupreMOS MOSFET, Fairchild's latest generation of high voltage super-junction MOSFETs, employs a deep trench filling process that differentiates it from preceding multi-epi based technologies. By utilizing this advanced technology and precise process control, SupreMOS provides world class $R_{specific\ on\ resistance}$, superior switching performance and ruggedness.





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 SupreMOS, SuperFET, UniFET™ and FRFET® MOSFETs. Fairchild's extensive packaging solutions offer 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 allow high frequency switching

UniFET™					
Product Number	BV_{DSS} Min. (V)	$R_{DS(ON)}$ Max. (Ω) @ V_{GS}=10V	Q_g Typ. (nC) @V_{GS}=10V	I_D (A)	Package
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
FDPF16N50T	500	0.38	32	16	TO-220F
FDA16N50	500	0.38	32	16.5	TO-3P
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)
FDD6N50F	500	1.15	15	5.5	TO-252 (DPAK)
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
FDA15N65	650	0.44	48.5	16	TO-3PN

SuperFET™					
Product Number	BV_{DSS} Min. (V)	$R_{DS(ON)}$ Max. (Ω) @ V_{GS}=10V	Q_g 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
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)
FCPF16N60	600	0.26	50	16	TO-220F
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)
FCP11N60	600	0.38	40	11	TO-220
FCP11N60F	600	0.38	40	11	TO-220
FCPF11N60	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
FCD5N60	600	0.95	16	4.6	TO-252 (DPAK)
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	Q_g Typ. (nC) @ V_{GS}=10V	I_D (A)	P_D (W)	t_{rr} Typ. (ns)	Package
FDPF5N50FT	500	1.55	11	5.0	28	65	TO-220F
FDD6N50F	500	1.15	15	5.5	89	75	TO-252 (DPAK)
FQPF9N50CF	500	0.85	28	9.0	44	100	TO-220F
FQPF10N50CF	500	0.61	43	10.0	48	50	TO-220F
FQPF11N50CF	500	0.55	43	11.0	48	90	TO-220F
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
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)

SupreMOS®

Product Number	B_{VDSS} Min. (V)	$R_{DS(ON)}$ Max (Ω) @ V_{GS}=10V	Q_g Typ. (nC) @V_{GS}=5V	ID (A)	Package
FCA16N60N	600	0.199	40.2	16	TO-3PN
FCA22N60N	600	0.165	45	22	TO-3PN
FCP11N60N	600	0.299	27.4	10.8	TO-220
FCP13N60N	600	0.258	30.4	13	TO-220
FCP16N60N	600	0.199	40.2	16	TO-220
FCP22N60N	600	0.165	45	22	TO-220
FCP9N60N	600	0.385	22	9	TO-220
FCPF11N60NT	600	0.299	27.4	10.8	TO-220F
FCPF13N60NT	600	0.258	39.5	13	TO-220F
FCPF16N60NT	600	0.199	40.2	16	TO-220F
FCPF22N60NT	600	0.165	45	22	TO-220F
FCPF9N60NT	600	0.385	29	9	TO-220F

POWER MOSFETs <250V

Fairchild's <250V 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

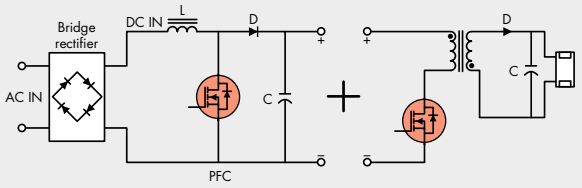
- High performance trench technology for extremely low $R_{DS(ON)}$ and gate charge
- RoHS compliant
- State-of-the-art packaging provides low thermal resistance

NEW

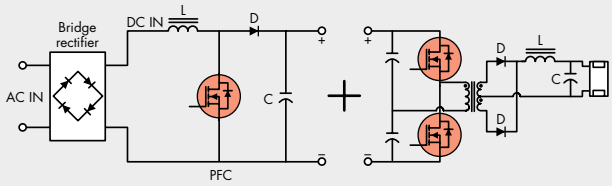
Dual Cool™ — *Back* / *Front* — 3.3 x 3.3

Low Voltage Packages (< 250V)

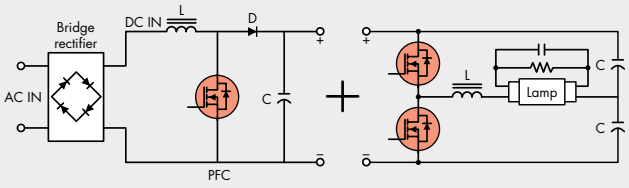
Power33 Dual — 3 x 3 x 0.8	Power56 Dual — 5 x 6 x 0.8	Power33 — 3 x 3 x 0.8	Power56 — 5 x 6 x 0.8
MLP 8 Lead Dual — 3 x 1.9 x 0.8	MicroFET™ 2 x 2 x 0.8 — *SIngle* / *Dual*	SC70-6 — 2 x 2 x 1.0	MicroFET™ 2 x 1.6 x 0.8 — *SIngle* / *Dual*
SC-89 — 1.6 x 1.6 x 0.78	SO-8 — 5 x 6 x 1.75	SOT-23 — 2.9 x 2.4 x 1.3	SSOT-6 — 3 x 3 1.1
TSSOP-8 — 3.1 x 6.6 x 1.0	WL-CSP 4 bump — 1 x 1	WL-CSP 6 bump — 1 x 1.5 x 0.65	WL-CSP 12 bump — 2 x 1.5
	Thickness range from 0.4 to 0.65		



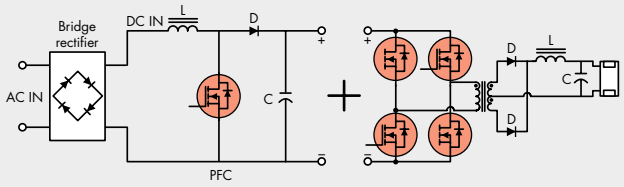
Flyback Converter



Half-Bridge Converter



Electronic Ballast



Full-Bridge Converter

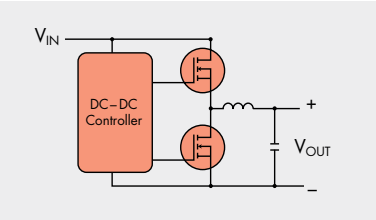
55V - 220V MOSFET in MLP 3x3

Product Number	V_{DS} (V)	V_{GS} (V)	$R_{DS(ON)}$ Max. (mΩ)		Q_G (nC)	Q_{GD} (nC)	I_D (A)
			@ 10V	@ 4.5V			
FDMC5614	-60	±20	100	135	15.3	2.7	5.7
FDMC2523P	-150	±20	1500	–	6.2	3.3	1.5
FDMC86102	100	±20	24	38	13	3.6	7
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 5x6

Product Number	V_{DS} (V)	V_{GS} (V)	$R_{DS(ON)}$ Max. (mΩ)		Q_G (nC)	Q_{GD} (nC)	I_D (A)
			@ 10V	@ 4.5V			
FDMS5672	60	±20	11.5	16.5	32	8.3	10.6
FDMS5352	60	±20	6.7	8.2	48	17	13.6
FDMS3500	75	±20	14.5	16.3	34	11.6	9.2
FDMS3572	80	±20	16.5	24	28	8	8.8
FDMS86101	100	±20	8	13.5	39	10.8	13
FDMS3662	100	±20	14.8	–	54	15	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

30V - 250V MOSFETs in TO-220, D²PAK, I²PAK, TO-3PN						
Product Number	V_{DS} (V)	V_{GS} (V)	$R_{DS(ON)}$ Max. (mΩ) @10V	Q_g (nC)	Q_{gd} (nC)	Package
FDD050N03B	30	±16	5	33	4.6	DPAK
FDB024N06	60	±20	2.4	174	50	D²PAK
FDB029N06	60	±20	3.1	116	35	D²PAK
FDB039N06	60	±20	3.9	102	32	D²PAK
FDI030N06	60	±20	3.2	116	35	I²PAK
FDI040N06	60	±20	4	102	32	I²PAK
FDP025N06	60	±20	2.5	174	50	TO-220
FDP030N06	60	±20	3.2	116	35	TO-220
FDP040N06	60	±20	4	102	32	TO-220
FDA032N08	75	±20	3.2	169	47	TO-3PN
FDB031N08	75	±20	3.1	169	47	D²PAK
FDB088N08	75	±20	8.8	91	28	D²PAK
FDP032N08	75	±20	3.2	169	47	TO-220
FDP047N08	75	±20	4.7	117	32	TO-220
FDB047N10	100	±20	4.7	160	36	D²PAK
FDB120N10	100	±20	12	66	20	D²PAK
FDB150N10	100	±20	15	53	15	D²PAK
FDI150N10	100	±20	16	53	15	I²PAK
FDP047N10	100	±20	4.7	160	36	TO-220
FDP054N10	100	±20	5.5	156	48	TO-220
FDP090N10	100	±20	9	89	22	TO-220
FDP100N10	100	±20	10	76	20	TO-220
FDP120N10	100	±20	12	66	20	TO-220
FDP150N10	100	±20	15	53	15	TO-220
FDPF3860T	100	±20	38.2	23	8	TO-220
FDPF3860T	100	±20	38.2	23	8	TO-220
FDPF680N10T	100	±20	68	13	4	TO-220
FDB2614	200	±30	22.9	76	18	D²PAK
FDP2614	200	±30	22.9	76	18	TO-220
FDP2710	250	±30	36.3	78	18	TO-220
FDPF2710T	250	±30	36.3	78	18	TO-220F
FDB2710	250	±30	36.3	78	18	D²PAK



Synchronous Buck for DC–DC Applications

20, 25, and 30V MOSFET in Power33 Package (3mm x 3mm)

Product Number	Configuration	V_{DS} (V)	V_{GS} (V)	$R_{DS(ON)}$ Max. (mΩ) @ 4.5V	Q_g Typ. (nC) @ 4.5V	Q_{gd} Typ. (nC)	I_D (A)
FDMC8554	Single	20	±20	6.4	24	10	14
FDMC7570S	Single	25	±20	3.3	22.2	5.0	21.5
FDMC7660S	Single	30	±20	3.0	21.0	5.0	18.0
FDMC7660	Single	30	±20	3.3	24.0	5.6	18.0
FDMC7664	Single	30	±20	5.5	25.0	6.0	18.8
FDMC7672	Single	30	±20	7.0	18.0	4.0	16.9
FDMC7672S	SyncFET™	30	±20	7.1	14.0	4.0	12.4
FDMC7680	Single	30	±20	9.5	14.0	4.0	14.8
FDMC7692	Single	30	±20	11.5	10.0	3.0	13.3
FDMC7692S	SyncFET™	30	±20	13.6	8.0	2.0	10.4
FDMC8882	Single	30	±20	22.5	7.0	2.8	8.3
FDMC6679AZ	Single, P-Channel	-30	-20	18.0	37.0	17.0	8.5

40V MOSFET in Power33 Package (3mm x 3mm)

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

25 and 30V MOSFETs in Power56 Dual Cool Package (5mm x 6mm)

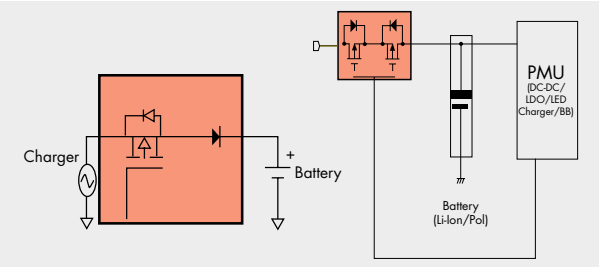
Product Number	Configuration	V_{DS} (V)	V_{GS} (V)	$R_{DS(ON)}$ Max. (mΩ)	$R_{DS(ON)}$ Max. (mV)	Q_g Typ. (nC)	Q_{gd} Typ. (nC)
				@ 10V	@ 4.5V	@ 4.5V	
FDMS7650DC	Single	30	±20	0.99	1.55	63	34

40V MOSFET in Power56 Package (5mm x 6mm)

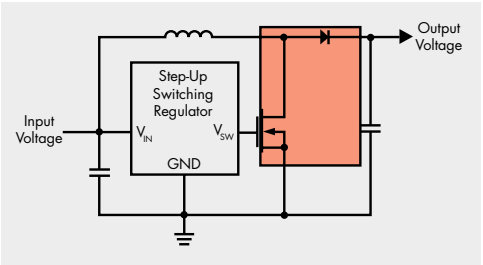
Product Number	Configuration	V_{DS} (V)	V_{GS} (V)	$R_{DS(ON)}$ Max. (mΩ)		Q_g Typ. (nC)		Q_{gd} Typ. (nC)	I_D (A)
				@ 10V	@ 4.5V	@ 10V	@ 5V		
FDMS8460	Single	40	20	2.2	3.3	78	36	10	25

25V and 30V MOSFETs in Power56 Package (5mm x 6mm)

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		
FDMS7556S	SyncFET™	25	±20	1.3	1.8	95	43	9.1	30
FDMS7558S	SyncFET	25	±20	1.5	2.0	78	35	6.6	28
FDMS7560S	SyncFET	25	±20	1.8	2.4	64	29	5.9	25
FDMS7570S	SyncFET	25	±20	2.3	3.2	47	22	4.9	21
FDMS7572S	SyncFET	25	±20	3.3	4.7	33	15	4.0	18
FDMS7650	Single	30	±20	1.0	1.6	149	63	13	36
FDMS7656AS	SyncFET	30	±20	1.8	1.9	95	43	9.1	30
FDMS7660AS	SyncFET	30	±20	2.4	2.6	64	29	5.9	25
FDMS7670AS	SyncFET	30	±20	3.0	3.2	47	22	4.9	21
FDMS7672AS	SyncFET	30	±20	4.0	4.5	33	15	4	18
FDMS0312S	SyncFET	30	±20	4.4	5.8	33	15	4	18
FDMS7578	Single	25	±20	5.8	8.0	18	8	1.7	17
FDMS7580	Single	25	±20	7.5	11.1	14	6.5	1.6	15
FDMS7692	Single	30	±20	7.5	13.0	15	7	1.9	13
FDMS7692A	Single	30	±20	8.0	14.0	15	7	1.9	13



Charger Application MOSFET Used as a Current Source



Typical Boost Application

MicroFET

WL-CSP

Charging Switches with Integrated Schottky Diodes

Product Number	V_{DS} (V)	I_D (A)	$R_{DS(ON)}$ Max. (Ω) @ V_{GS} =					Q_g		Schottky Diode		P_D (W)
			10V	4.5V	2.5V	1.8V	1.5V	(nC)	@ V_{GS} (V)	V_F (V)	@ I_F (A)	
FDFMA2P029Z	-20	3.1	–	0.095	0.141	–	–	7	4.5	0.37	0.5	1.4
FDFMA2P857	-20	2.2	–	0.12	0.16	0.24	–	4	4.5	0.4	0.1	1.4
FDFMA2P853	-20	2.2	–	0.12	0.16	0.24	–	4	4.5	0.46	0.5	1.4
FDFMA2P853T	-20	3	–	0.12	0.16	0.24	–	4	4.5	0.46	0.5	1.4
FDFMA2P859T	-20	3	–	0.12	0.16	0.24	–	4	4.5	0.41	0.1	1.4

20V MOSFETS in WL-CSP (1.0mm x 1.5mm)

Product Number	Polarity	BV_{DSS} Min. (V)	Config.	$R_{DS(ON)}$ Max. (Ω) @ V_{GS} =					Q_g Typ. (nC) @V_{GS}=5V	I_D (A)	P_D (W)
				10V	4.5V	2.5V	1.8V	1.5V			
FDZ191P	P	-20	Single	–	0.085	0.123	–	0.2	9	3	1.5
FDZ391P	P	-20	Single	–	0.085	0.123	–	0.2	9	3	1.5
FDZ197PZ	P	-20	Single	–	0.064	0.071	0.079	0.095	18	3.8	1.9
FDZ371PZ	P	-20	Single	–	0.075	0.09	0.11	0.15	12	3.7	1.7

Note: See specific device data sheet for full $Q_{g(TOT)}$ test conditions

20V MOSFETs in MicroFET Package (2mm x 2mm)

Product Number	Polarity	BV_{DSS} Min. (V)	Config.	$R_{DS(ON)}$ Max. (Ω) @ V_{GS} =					Q_g Typ. (nC) @V_{GS}=5V	I_D (A)	P_D (W)
				10V	4.5V	2.5V	1.8V	1.5V			
FDMA291P	P	-20	Single	–	0.042	0.058	0.0968	–	10	6.6	2.4
FDMA410NZ	N	20	Single	–	0.023	0.029	0.036	0.05	10	9.5	2.4
FDMA420NZ	N	20	Single	–	0.03	0.04	–	–	8.8	5.7	2.4
FDMA430NZ	N	30	Single	–	0.04	0.05	–	–	7.3	5	2.4
FDMA510PZ	P	-20	Single	–	0.03	0.037	0.05	0.09	19	7.8	2.4
FDMA520PZ	P	-20	Single	–	0.03	0.053	–	–	14	7.3	2.4
FDMA530PZ	P	-30	Single	0.035	0.065	–	–	–	16	6.8	2.4
FDMA1023PZ	P	-20	Dual	–	0.072	0.095	0.13	0.195	8.6	3.7	1.5
FDMA1024NZ	N	-20	Dual	–	0.054	0.066	0.082	0.114	5.2	5	1.4
FDMA1025P	P	-20	Dual	–	0.155	0.22	–	–	3.4	3.1	1.4
FDMA1027P	P	-20	Dual	–	0.12	0.16	0.24	–	4	2.2	1.4
FDMA1028NZ	N	20	Dual	–	0.037	0.05	–	–	4	3.7	1.4
FDMA1029PZ	P	-20	Dual	–	0.06	0.088	–	–	7	3.1	1.4
FDMA2002NZ	N	30	Dual	–	0.123	0.163	–	–	2.4	2.9	1.5

Note: See specific device data sheet for full $Q_{g(TOT)}$ test conditions

20V and 30V MOSFETs in MicroFET Package (3mm x 1.9mm)

Product Number	Polarity	BV_{DSS} Min. (V)	Config.	$R_{DS(ON)}$ Max. (Ω) @ V_{GS} =					Q_g Typ. (nC) @V_{GS}=5V	I_D (A)	P_D (W)
				10V	4.5V	2.5V	1.8V	1.5V			
FDMB3800N	N	30	Dual	0.04	0.051	–	–	–	4	4.8	1.6
FDMB668P	P	-20	Single	–	0.035	0.05	0.07	–	42	6.1	1.9

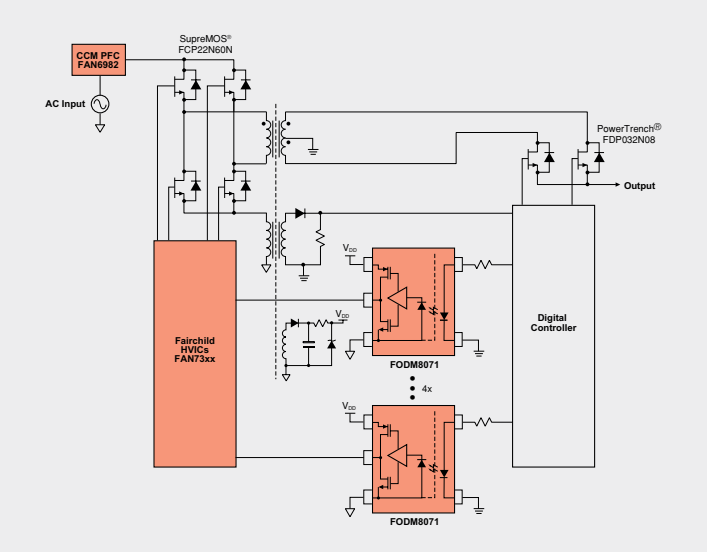
Note: See specific device data sheet for full $Q_{g(TOT)}$ test conditions

High Speed Optocoupler

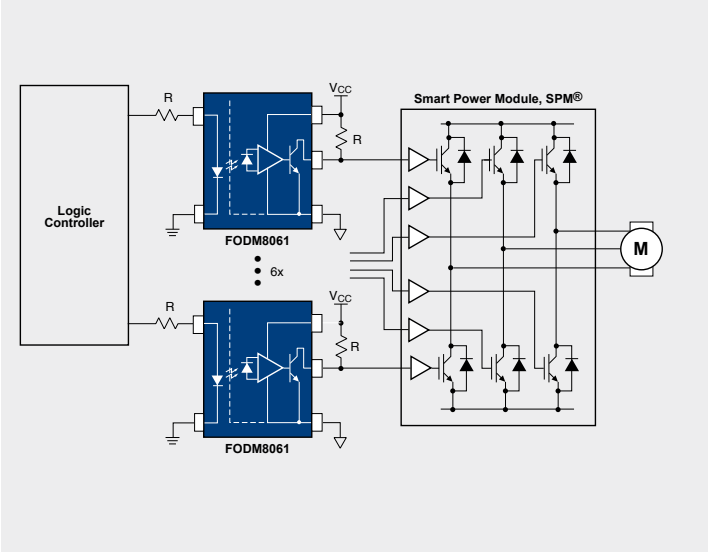
3.3V/5V high-speed logic gate optocouplers work with high-side or low-side gate drivers to provide isolation within the power solutions. These products utilize Fairchild's patented coplanar packaging technology, Optoplanar®, and are optimized to achieve excellent noise immunity, characterized by high common mode transient immunity and power supply rejection specifications, allowing these devices to operate in noisy industrial environments.

Features & Benefits

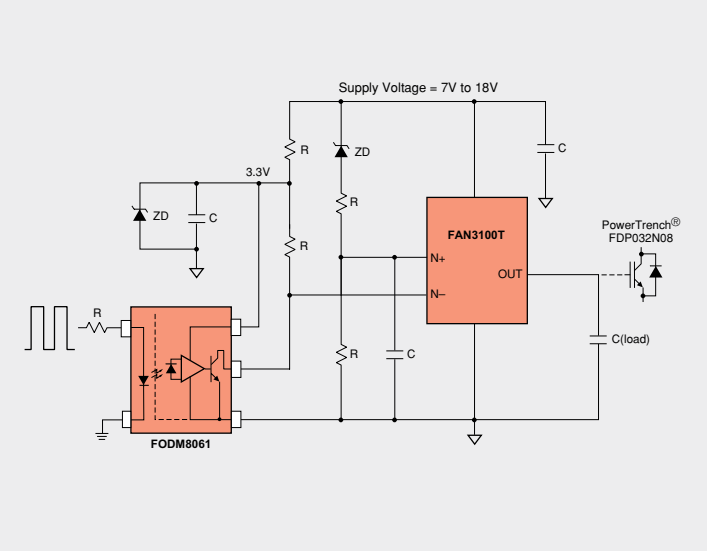
- High bandwidth up to 25Mbps and 6ns pulse width distortion
- Dual supply voltages, 3.3V and 5V, enabling CMOS compatibility and level translation capability
- Electrical characteristics guaranteed beyond the full industrial temperature range (-40°C to +110°C)
- UL1577 (3,750 VACRMS for 1 min) and IEC60747-5-2 certification for increased reliability



Optically Isolating Digital Control

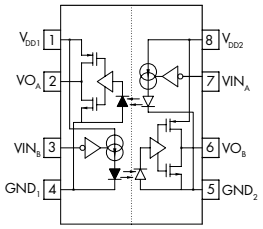
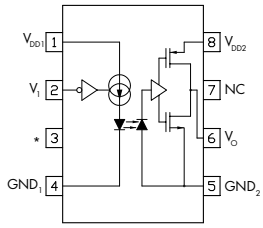
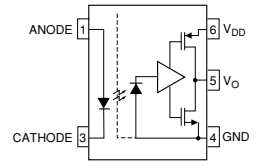
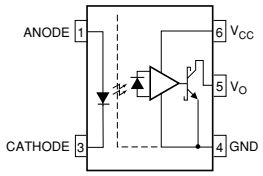
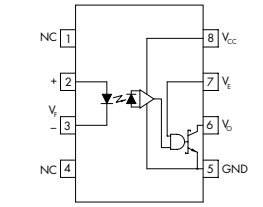


High-Speed Optocoupler drives Intelligent Power Module to prevent catastrophic failure of the motor drive, and meet safety regulatory standards



High-Speed Optocoupler drives the Low-Side Gate Driver for IGBT Control

Low Voltage (3.3V/5V), High Performance

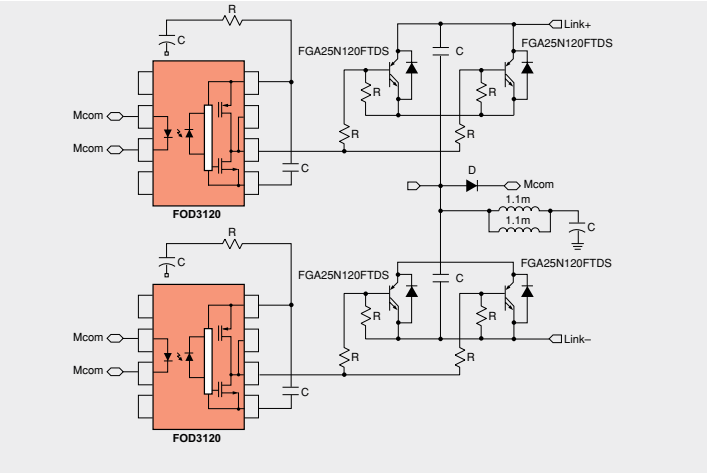
Product Number	Pin Connections	Data Rate (Mbps)	I_{FT} Max. (mA)	V_{OL} Max. (V)	I_{CCL} Max. (mA)	t_{PLH}/t_{PHL} Max. (ns)	PWD Max. (ns)	CMR Typ. (kV/µs)	V_{ISO} AC_{RMS} (V)	T_{OPR} (°C)	Package
FOD8012		15	–	1.0	8.5	60	15	40	3750	–40 to +110	SOIC-8
FOD8001		25	–	1.0	9	40	6	40	3750	-40 to +105	SOIC-8
FODM8071		20	5	0.6	4.8	55	20	40	3750	-40 to +110	MFP-5 (SO5)
FODM8061		10	5	0.6	8.5	85	25	40	3750	-40 to +110	MFP-5 (SO5)
FOD060L		10	5	0.6	10	90	25	50	3750	-40 to +85	SOIC-8
FOD260L		10	5	0.6	10	90	25	50	5000	-40 to +85	DIP-8

Gate Drive Optocoupler

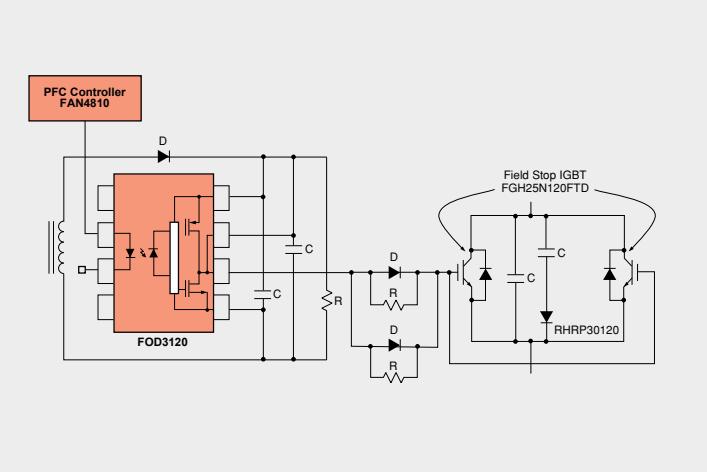
These IGBT/MOSFET gate drive optocouplers complement Fairchild's strong, well-established offering in the discrete power IGBT/MOSFET line of products. Fairchild now offers customers one-stop shopping from the logic control portion of the circuit to the isolated gate driver to the power IGBT/MOSFET. This combined solution converts the mW to kW providing electrical isolation between the primary and secondary circuits.

Features & Benefits

- Wide operating voltage range of 15V to 30V
- High output current capability up to 2.5A
- 5kV isolation voltage rating with >8mm creepage and clearance distance -1414V (peak) working voltage (UIORM)
- High common mode transient immunity up to 35kV/us min.

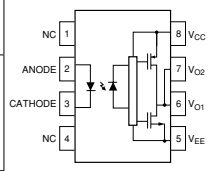


Optically Isolating the Inverter Output within the UPS



Optically Isolating the PFC Controller and the IGBTs

Gate Drivers

Product Number	Pin Connections	I_{OH} Min. (A)	I_{OL} Min. (A)	V_{CC} Max. (V)	I_{CC} Max. (mA)	t_{PLH} / t_{PHL} Max. (ns)	PWD Max. (ns)	V_{UVLO+} Max. (V)	V_{UVLO-} Max. (V)	CMR (kV/µs) @ Vcm Min. (V)	V_{ISO} AC_{RMS} (V)	T_{OPR} (°C)
FOD3120	 *DIP-8*	1.0 @ V_O=V_{CC} -3.0V, 2.0 @ V_O=V_{CC} -6V	1.0 @ V_O=V_{EE} +3V, 2.0 @ V_O=V_{EE} +6V	30	3.8	400	100	11.5 ~13.5	10.0 ~12.0	35 @ 2000	5000	-40 to 100
FOD3150		0.2 @ V_O=V_{CC} -0.75V, 1.0 @ V_O=V_{CC} -4V	0.2 @ V_O=V_{EE} +0.75V, 1.0 @ V_O=V_{EE} +4V	30	5.0	500	300	11.0 ~13.5	9.5 ~12.0	20 @ 2000	5000	-40 to 100
FOD3184		3.0 @ V_O=V_{CC} -3V	3.0 @ V_O=V_{EE} +3V	30	4.0	200	50	11.5 ~13.5	10.0 ~12.0	35 @ 2000	5000	-40 to 100

Snubberless TRIAC Drive Optocouplers

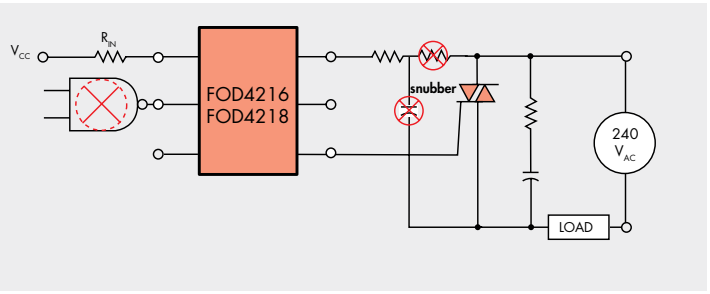
The optocouplers feature a built-in active dv/dt clamp providing best-in-class noise immunity (dv/dt) of 10,000V/µs, which is superior to the average dv/dt rating (1,500V/µs) of monolithic TRIAC drivers. This superior performance eliminates the RC snubber network required for lower dv/dt-rated monolithic opto TRIAC drivers.

Features

- Integrated zero-cross inhibit circuit prevents switching near the peak of the AC mains
- Random phase drivers switch at any AC mains voltage level
- Reduce bill of materials (BOM)
- Ideal for noisy industrial environments

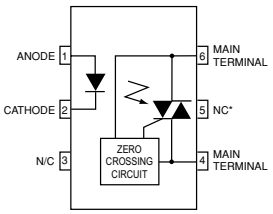
Applications

- Solid state relays
- AC motor controls
- Lighting ballasts



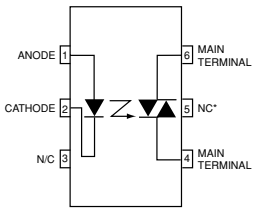
Hot-line Switching Application Circuit

Zero Crossing Triac Driver Optocouplers

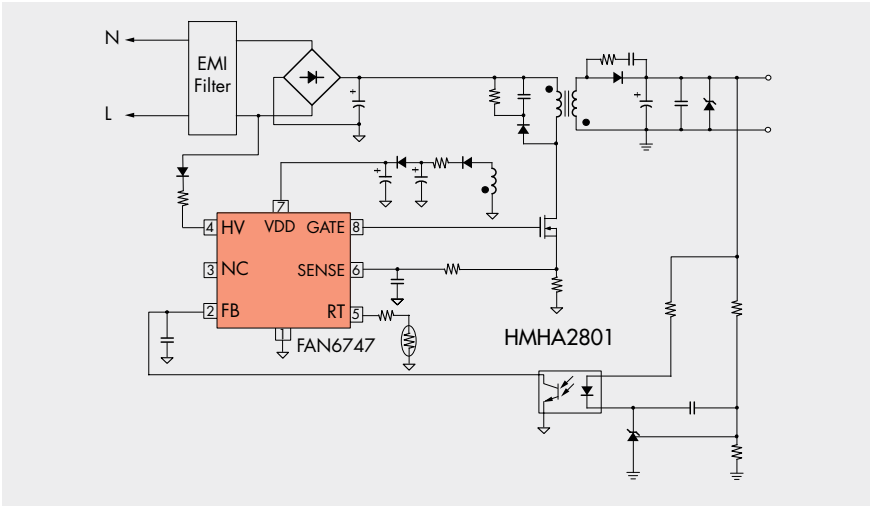
Product Number	Pin Connections	V_{DRM} Min. (V)	I_{FT} Max. (mA)	V_{TM} Max. (V)	dv/dt Min. (V/µs)	I_H Typ. (µA)	V_{INH} Max. (V)	I_{DRM} Max. (nA)	V_{ISO} AC_{RMS} (V)	T_{OPR} (°C)
FOD410		600	2	3	10000	200	25	100	5000	-55 to +100
FOD4116		600	1.3	3	10000	200	25	100	5000	-55 to +100
FOD4108		800	2	3	10000	200	25	100	5000	-55 to +100
FOD4118		800	1.3	3	10000	200	25	100	5000	-55 to +100

DIP-6

Random Phase Triac Driver Optocouplers

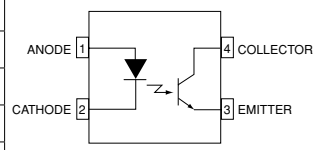
Product Number	Pin Connections	V_{DRM} Min. (V)	I_{FT} Max. (mA)	V_{TM} Max. (V)	dv/dt Min. (V/µs)	I_H Typ. (µA)	I_{DRM} Max. (nA)	V_{ISO} AC_{RMS} (V)	T_{OPR} (°C)
FOD420		600	2	3	10000	200	100	5000	-55 to +100
FOD4216		600	1.3	3	10000	200	100	5000	-55 to +100
FOD4208		800	2	3	10000	200	100	5000	-55 to +100
FOD4218		800	1.3	3	10000	200	100	5000	-55 to +100

DIP-6



Isolating Feedback Loop to Highly Integrated Green-Mode PWM Controller

Phototransistor Output-DC Sensing Input

Product Number	Pin Connections	Package	CTR (%)		BV_{CEO} Min. (V)	BV_{ECO} Min. (V)	t_{ON} Typ. (µs)	t_{OFF} Typ. (µs)	V_{ISO} AC_{RMS} (V)	T_{OPR} (°C)
			Min.	Max.						
FODM8801**		Half-pitch MFP	50	600	75	7	3	12	3750	-40 to +125
HMHA2801*		Half-pitch MFP	80	600	80	7	–	–	3750	-55 to +100
HMHA281		Half-pitch MFP	50	600	80	7	–	–	3750	-55 to +100
FODM121*		Full-pitch MFP	50	600	80	7	–	–	3750	-40 to +110
FODM124		Full-pitch MFP	100	1200	80	7	–	–	3750	-40 to +110
FODM2701*		Full-pitch MFP	50	300	40	7	–	–	3750	-40 to +110
FOD817*		DIP	50	600	70	6	–	–	5000	-55 to +110

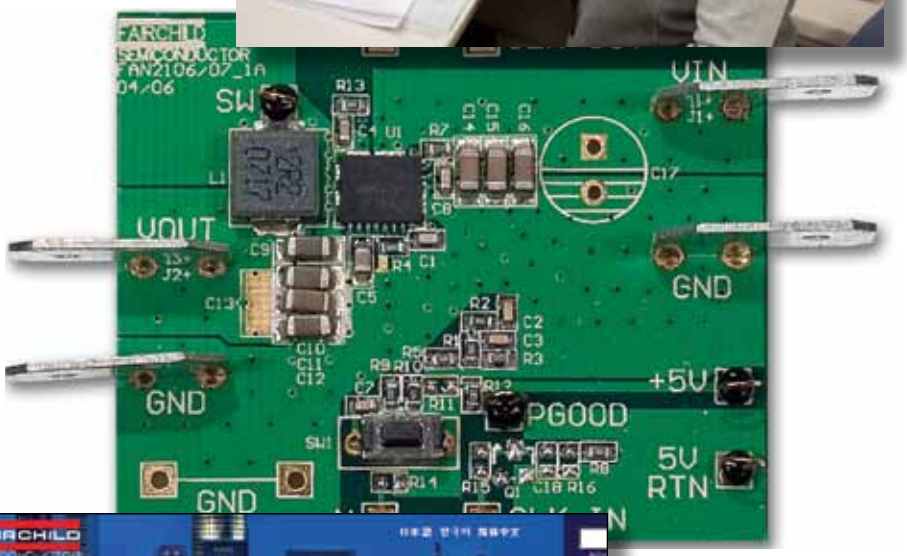
** CTR option available ** In development*

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:

Engineering Connections—Here you will find our latest videos, online seminars and podcasts to help you with your designs. We also invite you to join a conversation on any of our popular blogs.

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 resources are available 24/7 in the Design Center found on our website. The Design Center includes application notes, evaluation boards, online design tools and other resources.



The FEB167 Evaluation Board (FAN2106)

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.

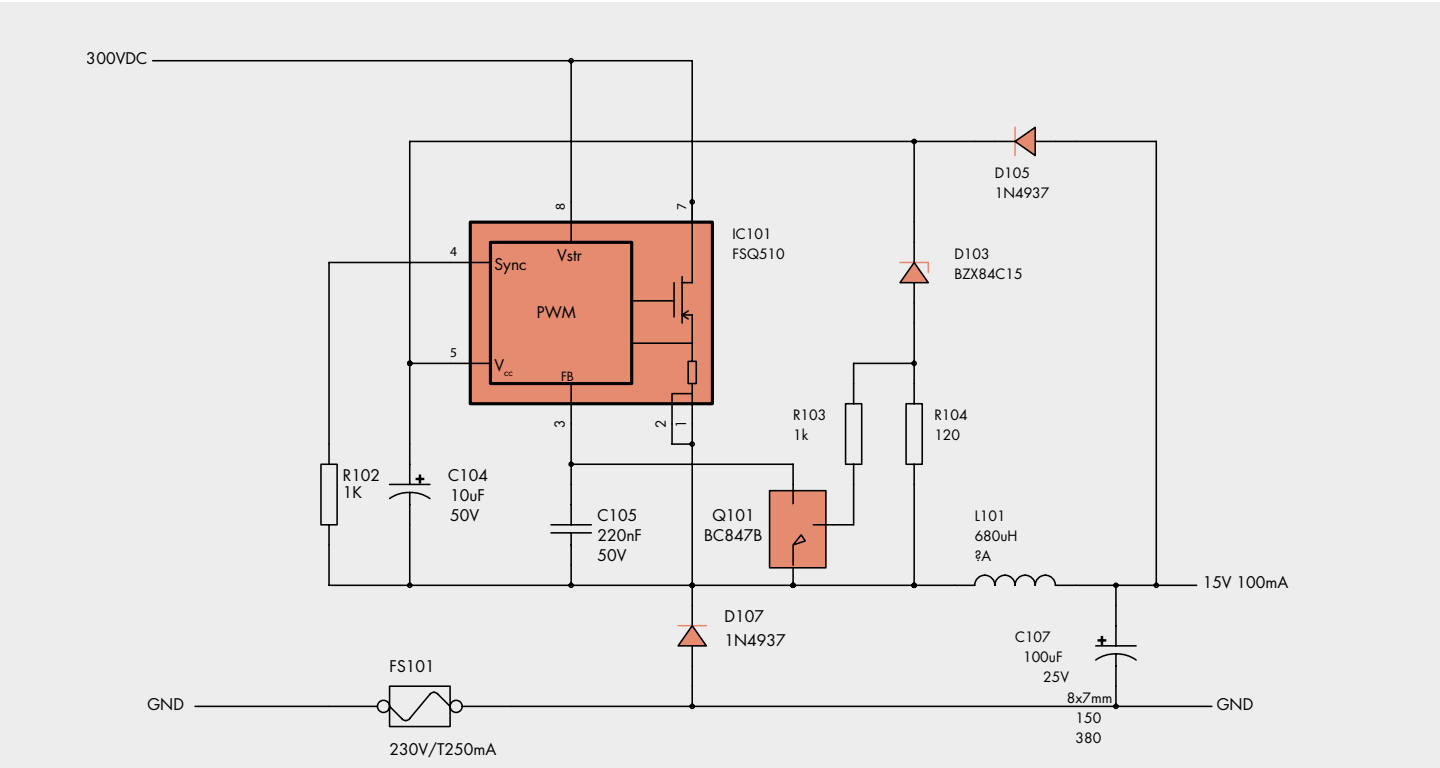
Online Design Tools – FETBench™

1.5W Single Output Buck using FSQ510 Fairchild Power Switch

Typical Applications: Small home or factory automation systems, auxiliary power supplies 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



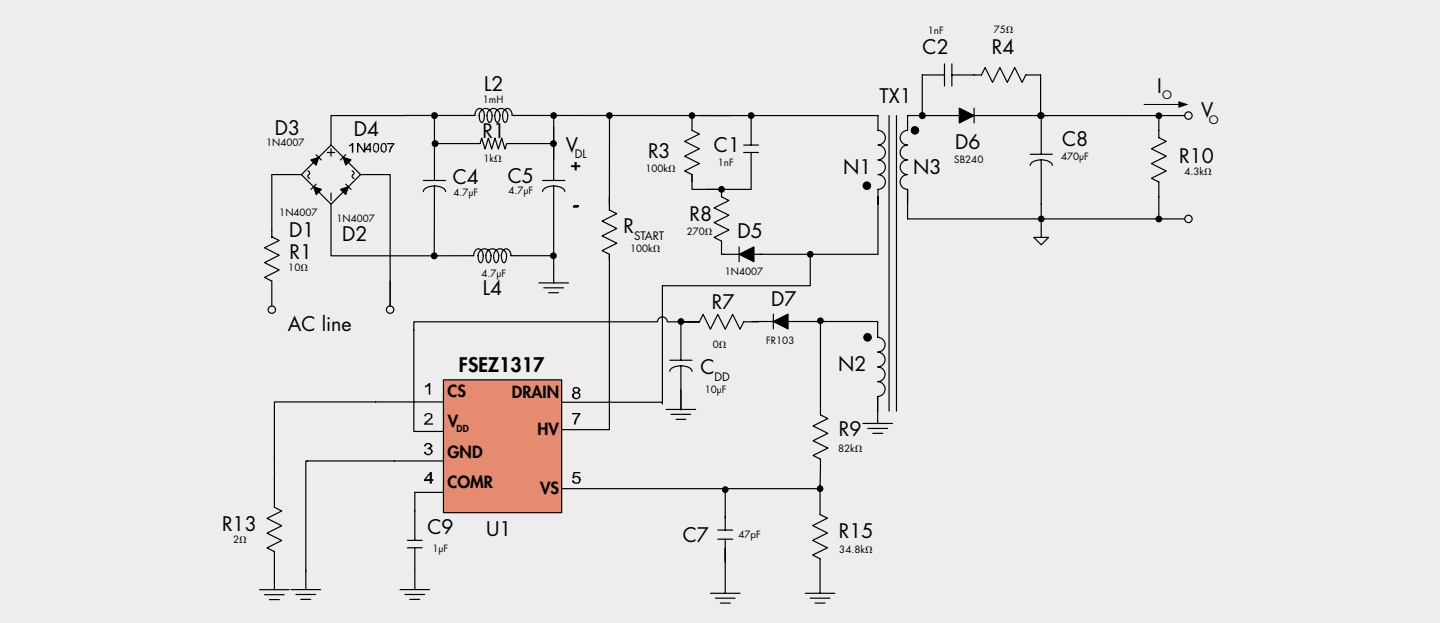
Product Number	Description
FSQ510	Green-mode Fairchild Power Switch (FPS™) (320mA/700V)
BZX84C15	Zener diode (15V/0.35W)
1N4937	Fast recovery diode (1A/600V)
BC847B	General purpose transistor (50V/100mA)

3.5W Charger Using FSEZ1317 Primary Side Control PWM Controller (5V Out)

Typical Applications: Cell Phone Charger

This condensed 50kHz flyback converter uses a primary side regulation controller that controls the output voltage and current precisely with the information in the primary side of the power supply only, removing the output current sensing loss and also eliminating all secondary-feedback circuitry.

- 82% average efficiency at 115 V_{AC}, 78% at 230V_{AC}
- <30mW standby power consumption at all line voltages
- Lowest part count & BOM cost



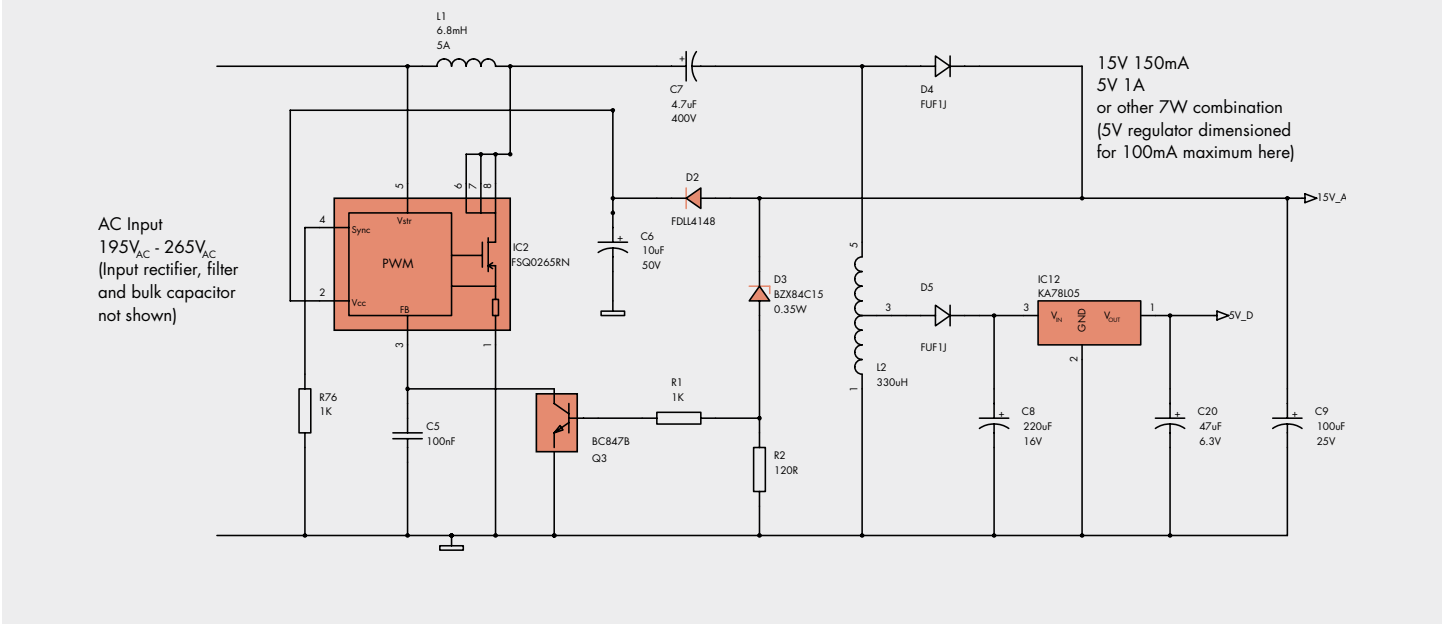
Product Number	Description
FSEZ1307	Integrated primary-side regulation PWM controller with MOSFET
1N4007	Diode (1A/200V)

7W Dual Output SEPIC using FSQ0265 Fairchild Power Switch

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

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



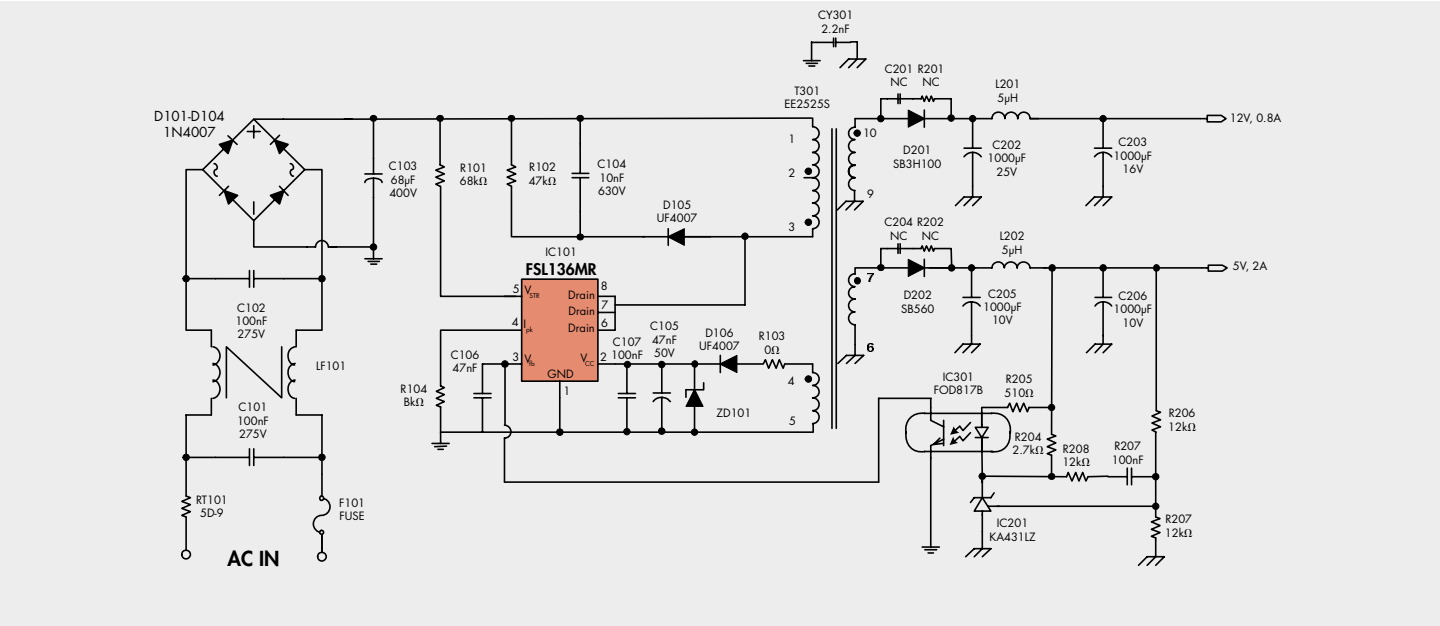
Product Number	Description
FSQ0265RN	Green-mode Fairchild Power Switch (FPS™) (1.2A/600V)
KA78L05	Voltage regulator (5V/100mA)
FDLL4148	General purpose diode (200mA/100V)
BZX84C15	Zener diode (15V/0.35W)
BC847B	General purpose transistor (50V/100mA)

20W Consumer Adapter (5V, 1.5A/11V, 1.1A)

Typical Applications: Set-top box, DVD players and home appliances

67 kHz flyback solution uses the highly integrated FSL136 Green-mode FPS™. This controller reduces total component count, design size, and weight by integrating high-voltage power switching regulators that combine an avalanche-rugged SenseFET with a current-mode PWM control block.

- >83% average efficiency at 115 V_{AC}, 84.5% at 230 V_{AC}
- <50mW standby power consumption at any input voltage



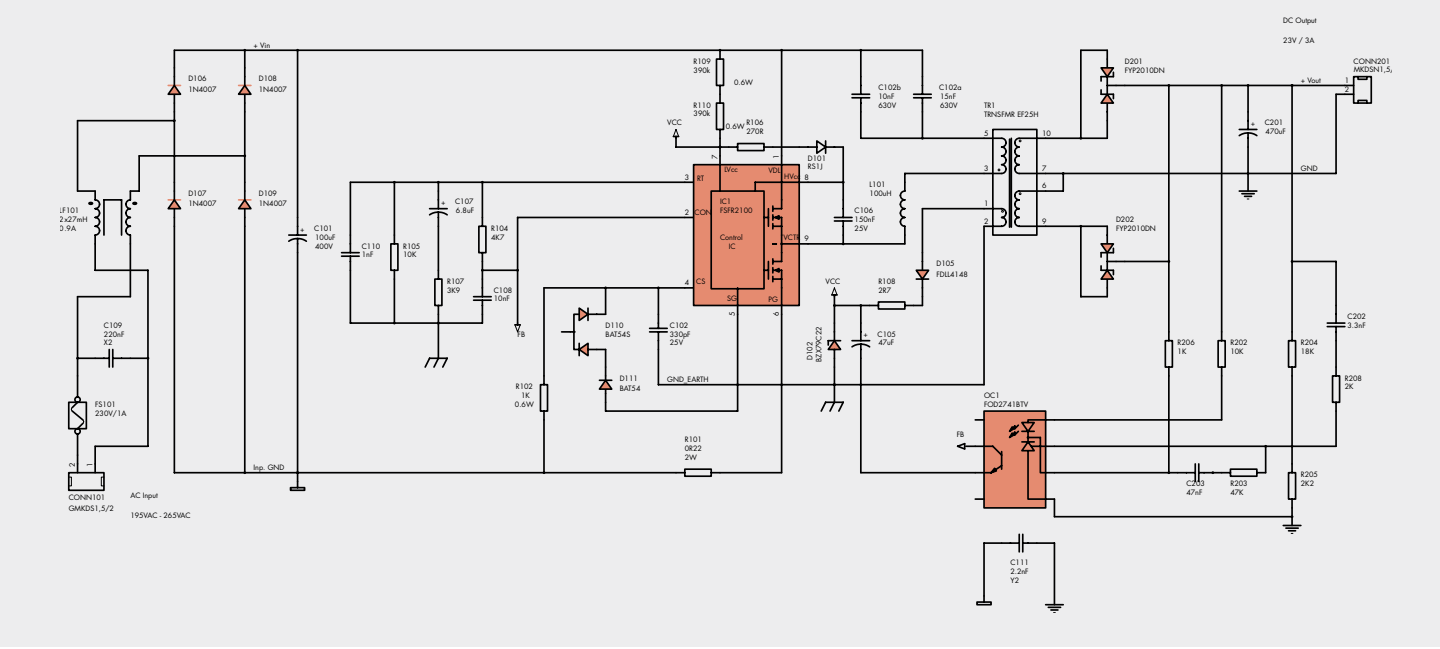
Product Number	Description
FSL136MR	Green-mode Fairchild Power Switch (FPS™)
FOD817B	DIP-4 phototransistor output optocoupler
KA431LZ	Adjustable/ 2.5V, 0.5% tolerance shunt regulator
1N4007	Diode (1A/1000V)

70W Output LLC Resonant Converter Power Supply using FSFR2100

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

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



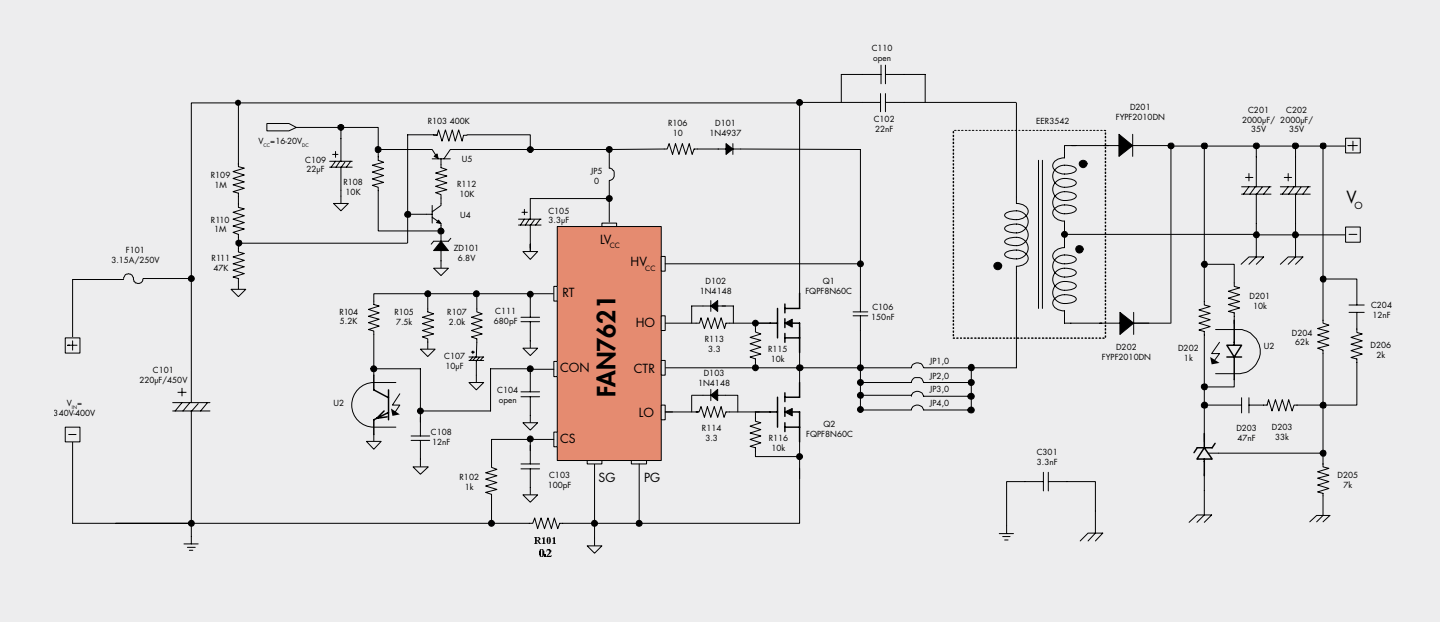
Product Number	Description
FSFR2100	LLC resonant regulator
FOD2741BTV	Optically isolated amplifier (1%)
FYP2010DN	Dual power Schottky diode (20A/100V)
RS1J	Fast recovery rectifier (1A/600V)
1N4007	General purpose rectifier (1A/1000V)
BAT54S	Dual Schottky diode (300mA/30V)
BAT54	Single Schottky diode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

200W LLC Resonant Half-Bridge Converter Using the FAN7621 (340-400V_{DC} to 24V_{DC})

Typical Applications: Telecom power supplies, LCD TVs, servers

The LLC resonant topology is characterized by softly commutated switches as well as the power being processed in a sinusoidal manner. These characteristics allow for reduced switching loss, and therefore higher efficiency, as well as a reduction in the EMI signature. The FAN7621 evaluation board illustrates these characteristics in a 200W converter. The FAN7621 controller allows the designer to optimize the FET selection for the particular application.

- 95% Efficiency and 30ms holdup at 390VDC in full load
- <350mV PP ripple
- All components <70°C at full load with natural convection



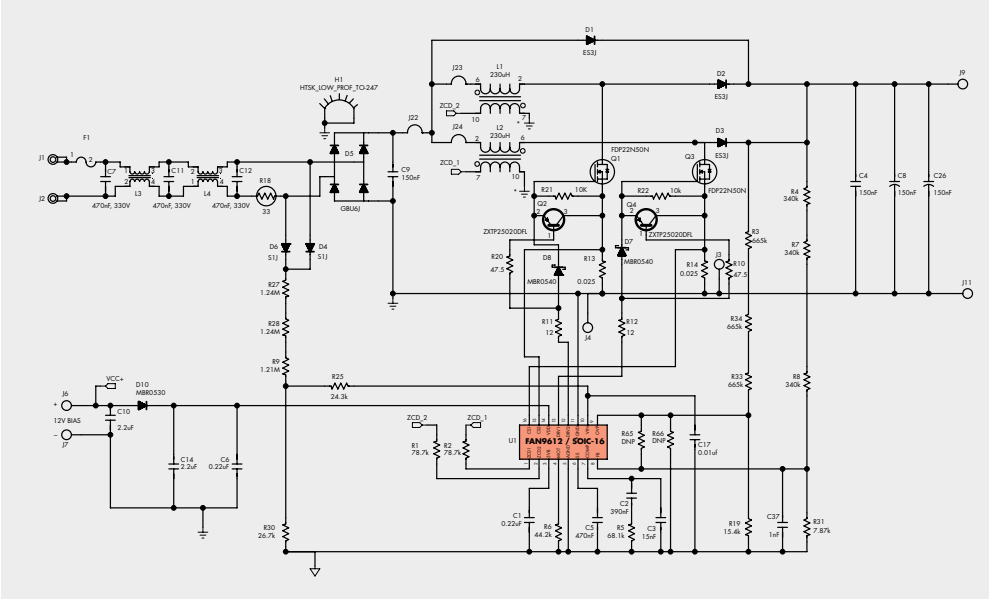
Product Number	Description
FAN7621	PFM controller for half-bridge resonant converters
FOD817B	DIP-4 phototransistor output optocoupler
KA431	Adjustable/2.5V, 2% tolerance shunt regulator
2N3906	PNP transistor
FQPF8N60C	600V/ 11A QFET® MOSFET
1N4937	600V/1.0A fast recovery rectifier
1N4148	100V/0.2A high conductance fast diode
FYPF2010DN	100V/20A Schottky barrier rectifier
1N4736	6.8V 1W Zener diode

300W Interleaved BCM PFC + Asymmetrical Half-Bridge Converter High Efficiency PFC Pre-Regulator

Typical Applications: Power supplies applications such as servers, networking, telecom, and solar micro inverters

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

- Interleaved BCM PFC Stage using FAN9612
  - Zero-Current Switching (no diode reverse recovery losses)
    - Zero-Voltage Switching (ZVS) when $V_{IN} < ½ V_{OUT}$
    - Drops one phase at light load to reduce switching losses
    - Accurate valley detection to minimize C_{OSS} switching losses
    - Low-Cost Boost Stage Diodes without need for SiC Diodes
    - Programmable PFC closed-loop soft-start
    - PFC Power-limit and Current-limit protection per channel
    - PFC Input voltage feed-forward function that
      (a) improves voltage regulation,
      (b) provides constant power limit.
- 85 – 265 V_{AC} Universal Input Voltage Range
- 300-W, 12 V_{DC} Output
- Total Efficiency > 90% at 20%, 50% and 100% Load
- Low-Profile Design with <19 mm Total Height



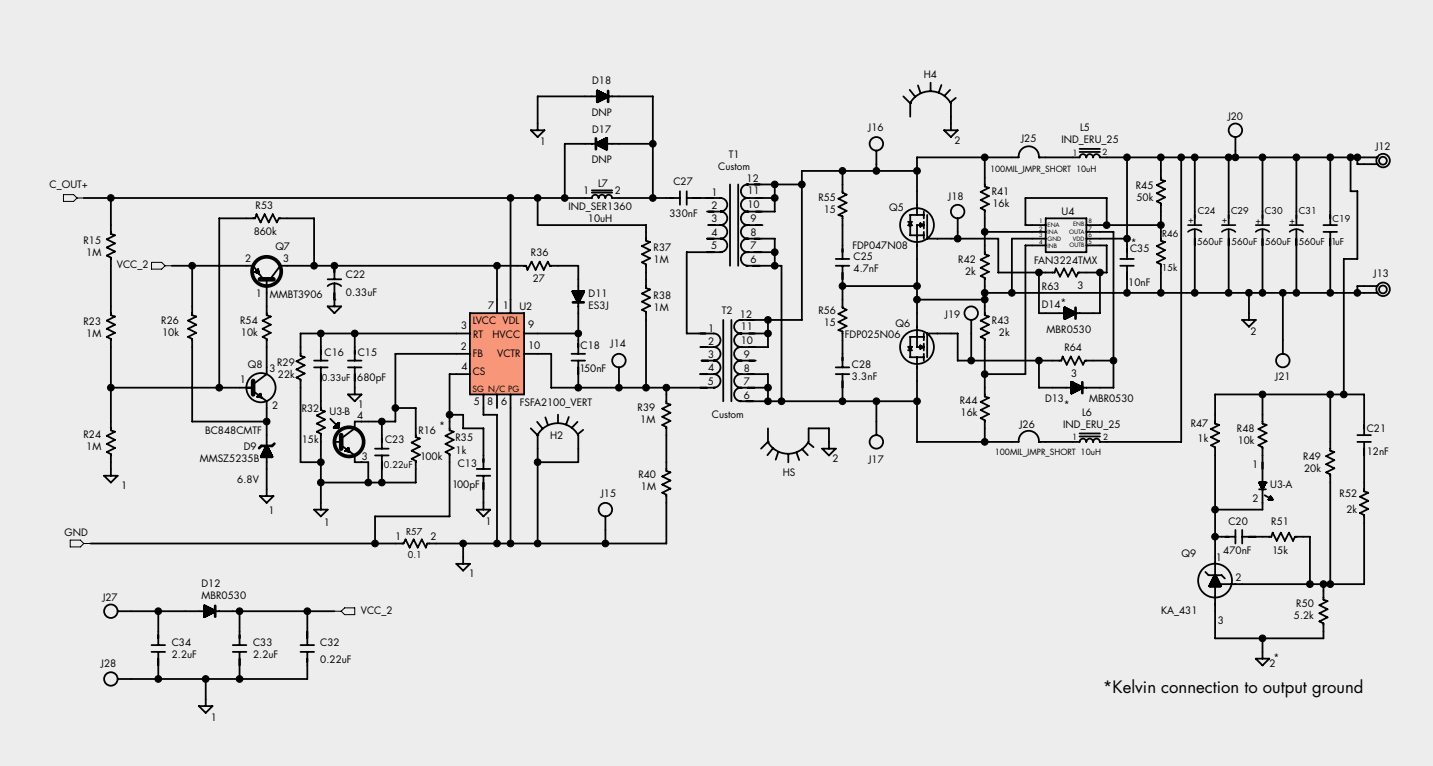
Product Number	Description
ES3J	Diode, 600V, 3A, Ultra-fast recovery
S1J	Diode general purpose 1A, 600V
GBU6J	Diode Bridge, 6A, 1000V
MBR0540	Diode, Schottky,40V, 500mA
MBR0530	Diode Schottky 30V 500mA
FDP22N50N	MOSFET, NCH, UniFET, 500V, 11.5A, 0.18 Ohm
FAN9612	Interleaved, Dual, BMC, PFC Controller

High Efficiency Isolated DC-DC Converter

Typical Applications: Power supply applications such as servers, networking, telecom, and solar micro inverters

- Asymmetrical Half-Bridge PWM Stage using FSFA2100
  - Fixed frequency Zero-Voltage Switching (ZVS)
  - Integrated 600-V SuperFET™ with Fast-Recovery Body Diode
  - Burst-Mode Operation for Low Standby Power Consumption

- Synchronous Rectification with Low-Side Driver FAN3224T
  - Dual Non-Inverting Low-Side Gate Driver
  - 4.5 to 18V Operating Range
  - 5A peak Sink and Source at V_{DD} = 18V



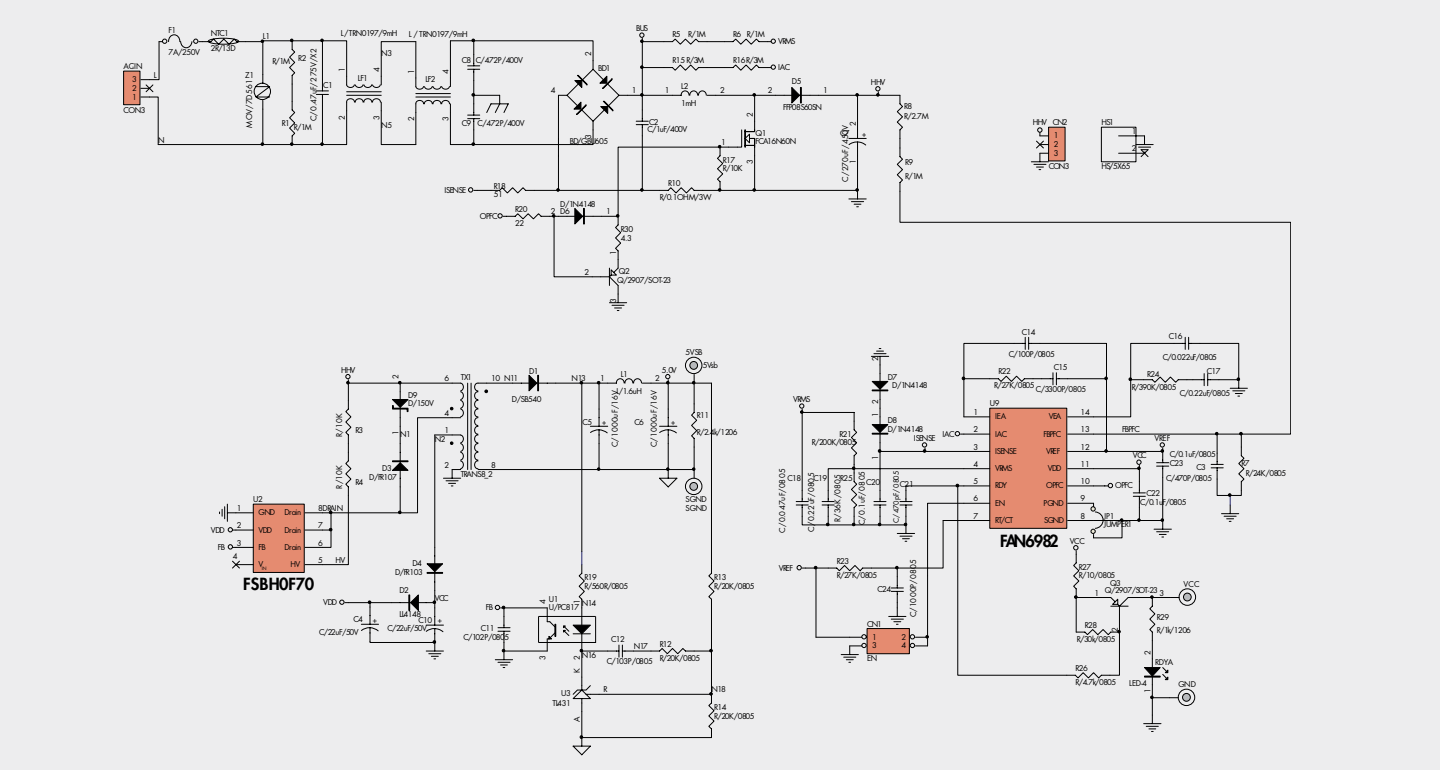
Product Number	Description
ES3J	Diode, 600V, 3A, Ultra-fast recovery
MMSZ5235B	Diode, Zener, 6.8V, 200mA
MBR0530	Diode Schottky 30V 500mA
FDP047N08	MOSFET, NCH,100V, PowerTrench®, 164A, 4.7mOhm
FDP025N06	MOSFET, NCH,100V, PowerTrench®, 164A, 4.7mOhm
MMBT3906	Transistor, PNP, 40V, 200mA
BC848CMTF	Transistor, NPN
FSFA2100	Fairchild Power Switch Integrated, Half-Bridge PWM Controller
FOD817ASD	4-Pin, High Operating Temperature Phototransistor Optocoupler
FAN3224TMX	Dual, 4A High-Speed, Low-Side Gate Driver

350W Single Stage Continuous Conduction Mode (CCM) PFC with $5V_{sb}$ Modules: Universal AC to $387V_{dc}$

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

The FAN6982 includes circuits for the implementation of leading edge, average current, "boost"-type power factor correction. A TriFault Detect™ function helps reduce external componets and provides full protection for feedback loops such as open, short, and over voltage. The over-voltage comparator shuts down the PFC stage in the event of a sudden load decrease.

- 94% full-load efficiency at $115V_{AC}$, 95% at $230V_{AC}$
- < 7% THD at full load, $100V_{AC}$ or $230V_{AC}$



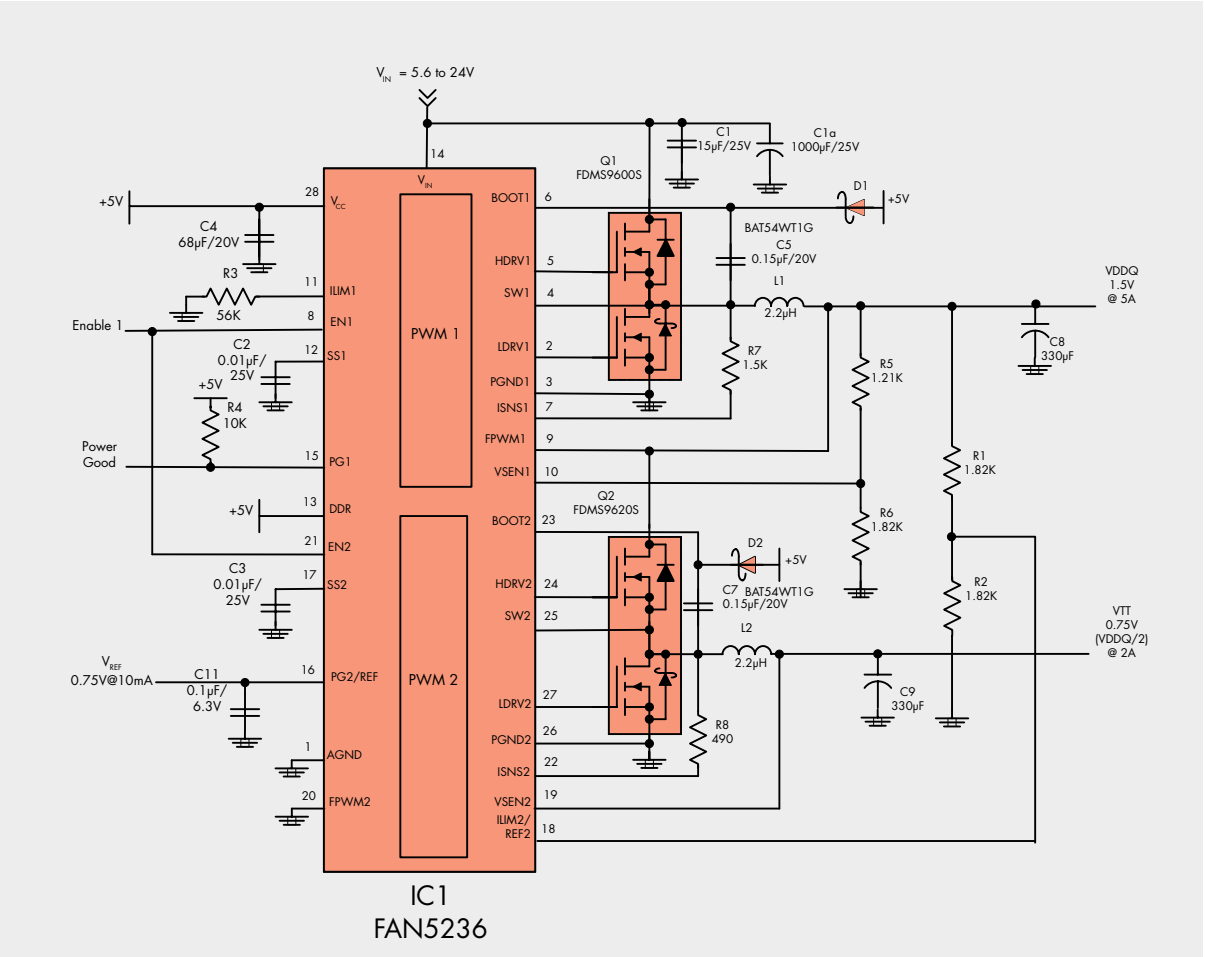
Product Number	Description
FAN6982	CCM PFC controller
FOD817A	DIP-4 phototransistor output optocoupler
FCA16N60N	600V SupreMOS™ MOSFET
MMBT2907A	PNP general purpose amplifier
GBU8J	8A bridge rectifier
FFP08S60SN	8A, 600V Stealth™ II rectifier
SB540	5.0A Schottky barrier rectifier
1N4935	1.0A fast recovery rectifier

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



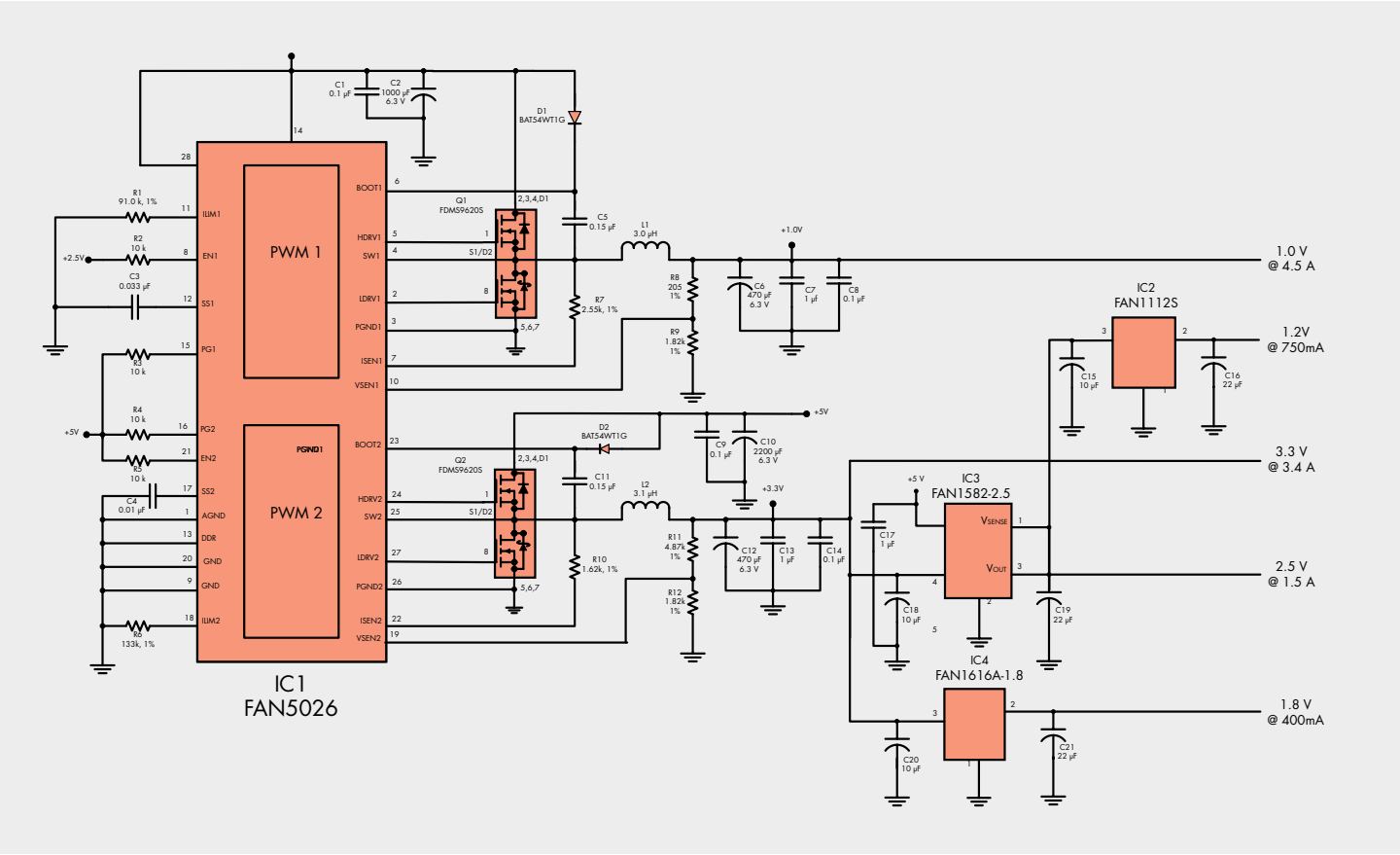
Product Number	Description
FAN5236	Fairchild DDR/dual output PWM controller
FDMS7700S	Fairchild dual high current MOSFETs with integrated SyncFET™
FDMS7600AS	Fairchild dual MOSFETs with integrated SyncFET™

Multi-Output DC-DC Power Supply Solution

Typical Applications: Set-top boxes, DVD players, consumer devices

This circuit supports a wide range of output power supplies balancing system efficiency with low component count and cost. The example below 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 dropout linear regulators for the remaining outputs.

- Wide input voltage range (3V to16V)
- Down to 0.9V and up to 14 amps controller output
- >90% switching regulator overall efficiency
- <10µA standby current



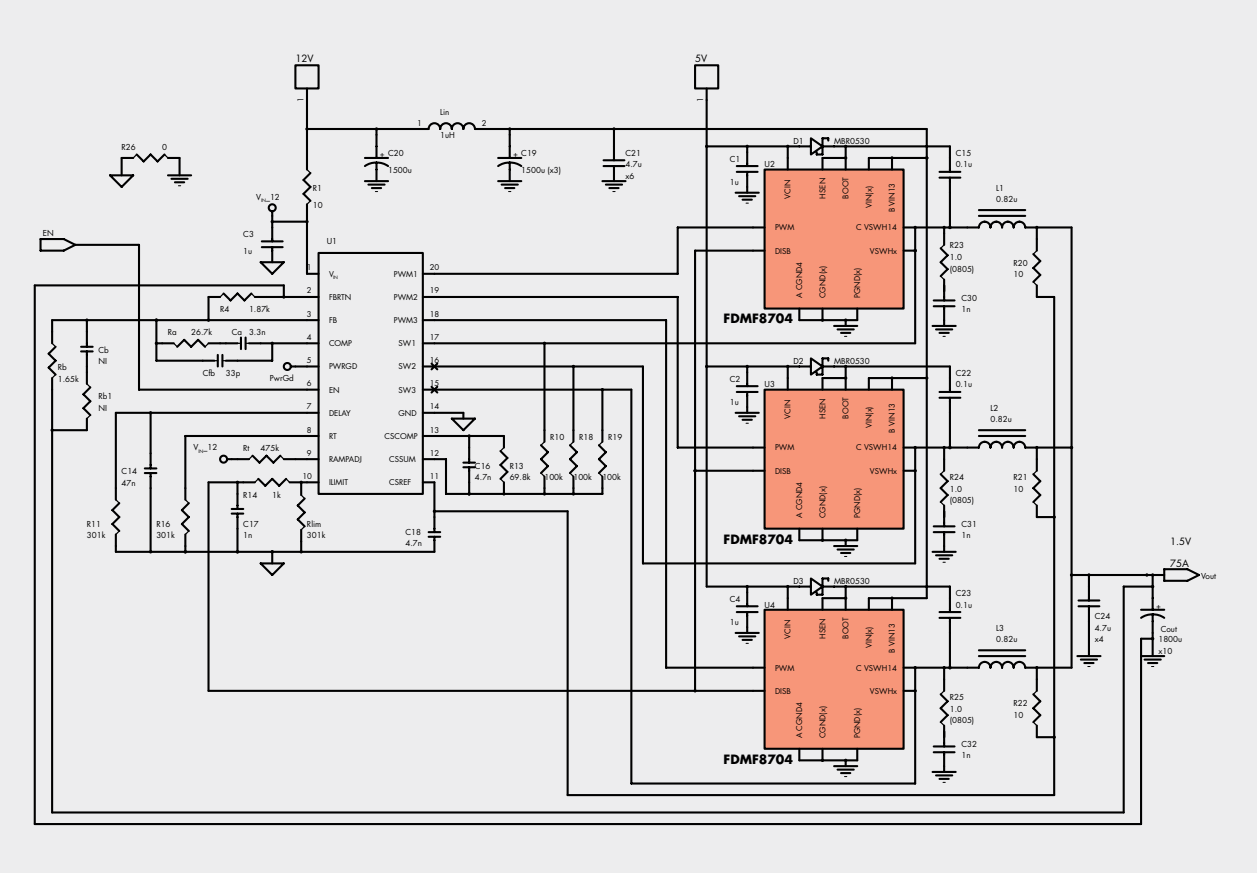
Product Number	Description
FAN5026	Fairchild dual output PWM controller
FDMS7700S	Fairchild dual MOSFETs with integrated SyncFET™
FAN1582-2.5	Fixed 2.5V output 3A LDO
FAN1616A-1.8	Fixed 1.8V output 500mA LDO
BAT54	Dual Schottky diode with common cathode

Multi-Phase High Current DC-DC power supply solution

Typical Applications: Computing desktops, servers, notebooks, blade servers, graphics cards, communication systems

This application demonstrates a high performance, high current multi-phase supply with minimum number of components to deliver up to 90A supply current. It uses the configurable multi-phase 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

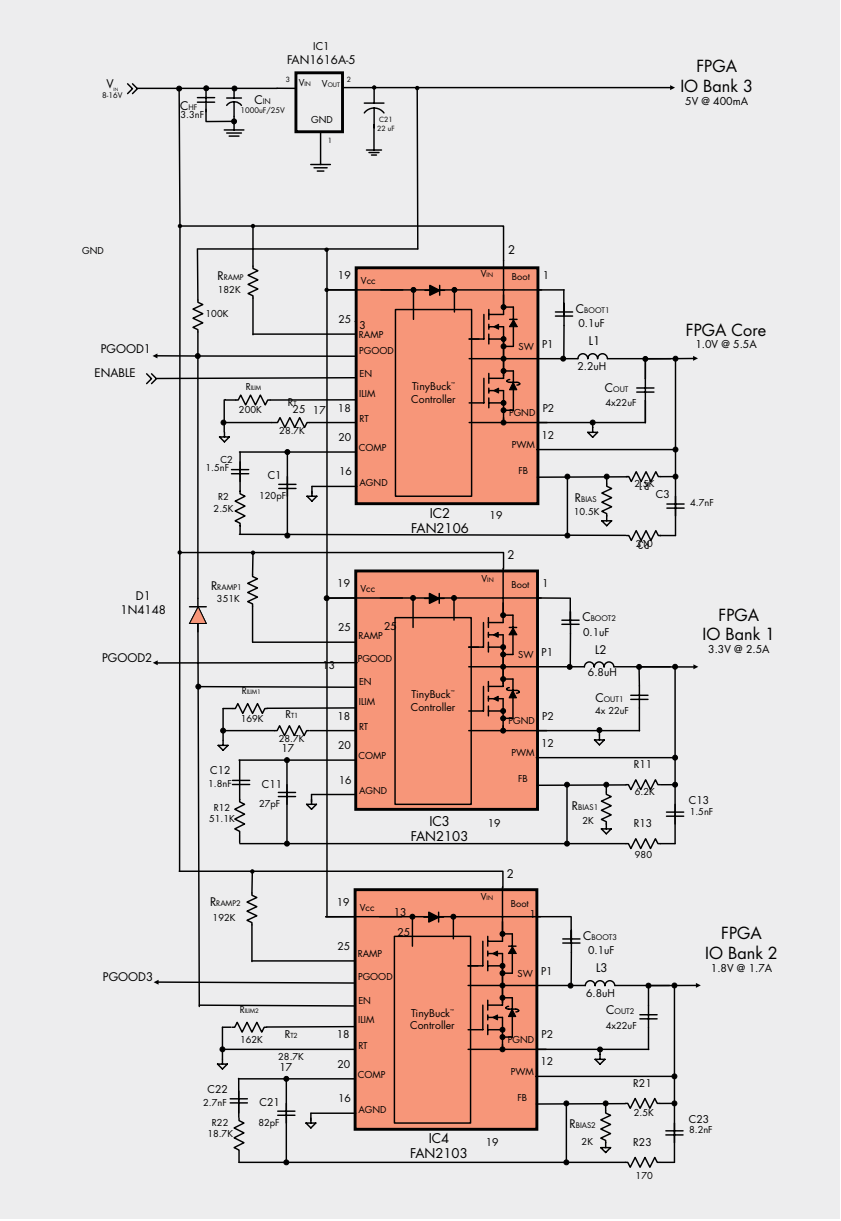


Product Number	Description
FDMF8704	Fairchild FET plus driver multi-chip module

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 a 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

Product Number	Description
FAN2106	TinyBuck 6A integrated Buck regulator
FAN2103	TinyBuck 3A integrated Buck regulator
1N4148	General purpose diode (10mA/100V)

APPLICATION NOTES

Application Notes	
Application Notes	Description
AN-3008	RC Snubber Networks for Thyristor Power Control and Transient Suppression
AN-3012	High Speed Logic Compatible, Half-Pitch Mini-Flat Optocoupler, FODM8061
AN-400A	Low-Power Green-mode PWM Flyback Power Controller without Secondary Feedback
AN-4134	Design Guidelines for Off-line Forward Converters using FPS
AN-4137	Design Guidelines for Off-line Flyback Converters using FPS
AN-4138	Design Considerations for Battery Charger Using Green mode Fairchild Power Switch (FPS™)
AN-4140	Transformer Design Consideration for off-line Flyback Converters Using Fairchild Power Switch (FPS™)
AN-4141	Troubleshooting and Design Tips for Fairchild Power Switch (FPS™) Flyback Applications
AN-4145	Electromagnetic Compatibility for Power Converters
AN-4146	Design Guidelines for Quasi-Resonant Converters Using FSCQ-series Fairchild Power Switch (FPS™)
AN-4150	Design Guidelines for Flyback Converters Using FSQ-series Fairchild Power Switch (FPS™)
AN-4151	Half-bridge LLC Resonant Converter Design Using FSFR-series Fairchild Power Switch (FPS™)
AN-4153	Designing Asymmetric PWM Half-Bridge Converters with a Current Doubler and Synchronous Rectifier using FSFA-series Fairchild Power Switches (FPS™)
AN-558	Introduction to Power MOSFETs and their Applications
AN-6009	Components Calculations and Simulation Tools for FAN6520A
AN-6011	FAN2011 Family Component Calculation and Simulation Tools
AN-6067	Design and Application of Primary-Side Regulation (PSR) PWM Controller
AN-6069	Application Review and Comparative Evaluation of Low-Side Gate Driver
AN-6076	Design and Application Guide of Bootstrap Circuit for High-Voltage Gate-Drive IC
AN-6086	Design Consideration for Interleaved Boundary Conduction Mode PFC Using FAN9612
AN-6300	FAN6300/A/H - Highly Integrated Quasi-Resonant PWM Controller
AN-7010	Choosing Power Switching Devices for SMPS Designs
AN-7531	Implementing A Primary Side Peak-Current-Mode Half-Bridge Converter
AN-8022	TinyCalc™ User's Guide
AN-8023	Negative Voltage Management Using a FAN8303 Buck Regulator
AN-8024	Applying Fairchild Power Switch (FPSTM) FSBH-series to Standby Auxiliary Power Supply
AN-8027	FAN480X PFC+PWM Combination Controller Application
AN-8033	Design Guideline for Primary Side Regulated (PSR) Flyback Converter Using FAN103 and FSEZ13x7
AN-8035	Design Consideration for Boundry Conduction Model Power Factor Correction (PFC) Using FAN7930
AN-9017	Manufacturing Technology of a Small Capacity Inverter Using a Fairchild IGBT
AN-9020	IGBT Basic II
AN-9037	Assembly Guidelines for 8x8 MLP DriverMOS Packaging
AN-9040	Assembly Guidelines for Power33 Packaging
AN-9046	Assembly Guidelines for Power56 Packaging
AN-9047	Assembly Guidelines for MicroFET Packaging
AN-9048	Assembly Guidelines for 6x6 DriverMOS Packaging
AN-9050	FDMF6704 Power Loss Calculation
AN-9067	Analysis of MOSFET Failure Modes in LLC Resonant Converter
AN-9068	Gate Resistor Design Guidelines for SupreMOS®

ADDITIONAL RESOURCES

For additional information, design tools, data sheets, reference designs and a complete listing of all Fairchild power management products, please visit: ***www.fairchildsemi.com/powersupply***

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PRODUCTS & SAMPLES | APPLICATIONS | DESIGN SUPPORT | COMPANY

POWER MANAGEMENT

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

Off-Line and Isolated DC-DC
- AC-DC Linear Regulators
- Flyback & Forward PWM Controllers
- Flyback & Forward PWM Controllers with Integrated MOSFET
- LLC Resonant & Asymmetric Half Bridge PWM Controllers
- LLC Resonant & Asymmetric Half Bridge PWM Controllers with Integrated MOSFETs
- Primary-Side Regulation CV/CC Controllers
- Primary-Side Regulation CV/CC Controllers with Integrated MOSFET
- Standard PWM Controllers
- Supervisory/Monitor ICs
- Synchronous Rectifier Controllers

Non-Isolated DC-DC
- Charge-pump Converters
- DrMOS FET plus Driver Multi-Chip Modules
- Step-down Controllers (External Switch)
- Step-down Regulators, Non-Synchronous (Integrated Switch)
- Step-down Regulators, Synchronous (Integrated Switch)
- Step-up Regulators (Integrated Switch)

MOSFET and IGBT Gate Drivers
- 3-Phase Drivers
- Half-Bridge Drivers
- High- & Low-Side Drivers
- High-Side Drivers
- Low-Side Drivers
- Synchronous Rectifier Drivers

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

Motion Control
- BLDC/PMSM Controller
- Motion-SPM™ (Smart Power Modules)
- PFC SPM® (Smart Power Modules)

Diodes & Rectifiers
- Bridge Rectifiers
- Circuit Protection & Transient Voltage Suppressors (TVS)
- Diacs
- Rectifiers
- Schottky Diodes & Rectifiers
- Small Signal Diodes
- Zener Diodes

IGBTs
- Discrete IGBTs
- Ignition IGBTs

MOSFETs
- Discrete MOSFETs
- Level-Shifted Load Switches
- MOSFET/Schottky Combos

Transistors
- BJTs
- Darlingtons
- Digital/Bias-Resistor Transistors
- JFETs
- RF Transistors
- Small Signal Transistors

Advanced Load Switches
- Advanced Current Limited Load Switches
- Slew Rate Controlled Load Switches

Battery Management
- Battery Charger ICs
- Current Sensing

Ground Fault Interrupt (GFI) Controllers

SIGNAL PATH ICs

Amplifiers & Comparators
- Comparators
- Current Sensing
- Operational Amplifiers

Audio Amplifiers
- Audio Headphone Amplifiers
- Audio Subsystems

Battery Protection ICs

Interface
- LVDS
- Serializers/Deserializers (µSerDes™)
- USB Transceivers

Signal Conditioning
- Video Filter Drivers
- Video Switch Matrix/Multiplexers

Signaling, Sensing & Timing

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

OPTOELECTRONICS

High Performance Optocouplers
- Low Voltage, High Performance
- High Speed Logic Gate
- High Performance Transistor
- IGBT/MOSFET Gate Driver
- Specific Function

Infrared
- Emitting Diodes
- Photo Sensors
- Reflective Sensors
- Optical Interrupt Switches

Phototransistor Optocouplers
- Isolated Error Amplifier
- Phototransistor Output - DC Sensing Input
- Phototransistor Output - AC Sensing Input
- Photo Darlington Output

Solid State Relay Optocouplers
- Solid State Relay

TRIAC Driver Optocouplers
- Random Phase TRIAC Driver
- Zero Crossing TRIAC Driver

LIGHTING ICs
- Fluorescent Lamp ICs
- HID ICs
- LED Lighting ICs
- Portable LED Drivers

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

AUTOMOTIVE PRODUCTS
- Automotive Power Modules

Discrete Power
- Ignition IGBTs
- IGBTs
- N-Channel MOSFETs
- P-Channel MOSFETs
- Rectifiers

Automotive High Voltage Gate Drivers (HVICs)

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