FAIRCHILD SEMICONDUCTOR®

Fairchild Power Switch (FPS™)

Fairchild's Offering

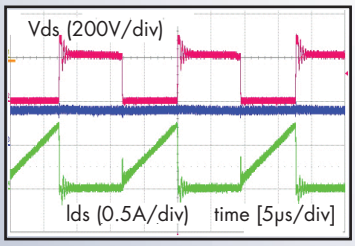
Fairchild's FPS products cover a wide range of power supply applications—from small battery chargers to large televisions, over 200W. These highly integrated FPS devices combine the functionality of a fully avalanche rugged SenseFET, a current mode pulse width modulation (PWM) IC and various protection functions, simplifying design and improving system reliability. Fairchild's FPS products provide the highest levels of efficiency to meet the standards as specified by the California Energy Commission (CEC), EU Code of Conduct and Group for Energy Efficient Appliances (GEEA).

Green FPS™ e-Series™

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

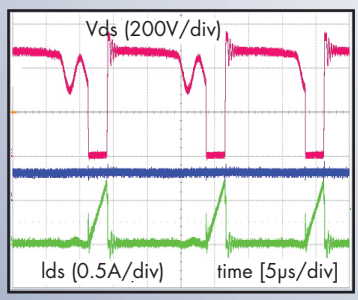
Features & Benefits

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



FSQ0365RN

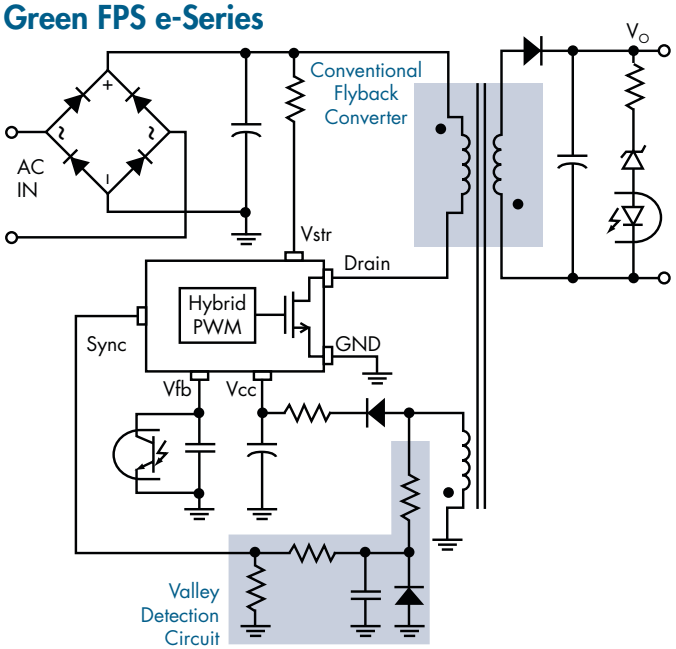
- V_{IN} = 120V_{DC},
- P_O = 18W
- CCM operation (fixed frequency, 55kHz)



FSQ0365RN

- V_{IN} = 375V_{DC},
- P_O = 18W
- DCM operation (quasi-resonant switching, 55kHz < f_s < 66kHz)

High Efficiency Power Supply Designs with Green FPS e-Series



The Hybrid PWM controller allows use of conventional transformer and power stage design of the flyback converter.

With the addition of the valley detection circuit (three resistors, one capacitor and one diode), the conventional flyback converter is changed into a valley-switching flyback converter.

the power franchise™

Product Portfolio

Products	Drain Voltage Max. (V)	Static Drain-Source On-Resistance Max. (Ω)	Peak Current Limit (A)	Output Power Max. (W)		Switching Frequency (kHz)	Protections				Package
				@ 85-265Vac	@ 230Vac		Over Current	Over Load	Over Voltage	Thermal Shutdown	
FSQ100	650	22	0.55	8	13	67	No	Auto Restart	No	Auto Restart	DIP
FSQ311	650	19	0.6	8	10	55.6	Auto Restart	Auto Restart	Auto Restart	Auto Restart	DIP, LSOP
FSQ321	650	19	0.6	10	12	89.3	Auto Restart	Auto Restart	Auto Restart	Auto Restart	DIP, LSOP
FSQ0165RN	650	10	0.9	13	15	55.6	Auto Restart	Auto Restart	Auto Restart	Auto Restart	DIP, LSOP
FSQ0265RN	650	6	1.2	16	20	55.6	Auto Restart	Auto Restart	Auto Restart	Auto Restart	DIP, LSOP
FSQ0365RN	650	4.5	1.5	19	25	55.6	Auto Restart	Auto Restart	Auto Restart	Auto Restart	DIP, LSOP
FSQ510	700	32	0.32	5	7	89.3	No	Auto Restart	No	Auto Restart	DIP, LSOP
FSQ0170RNA	700	11	0.8	13	20	100	No	Auto Restart	Auto Restart	Auto Restart	DIP
FSQ0270RNA	700	7.2	0.9	16	24	100	No	Auto Restart	Auto Restart	Auto Restart	DIP
FSQ0370RNA	700	4.75	1.1	19	27	100	No	Auto Restart	Auto Restart	Auto Restart	DIP
FSDM0465RE	650	2.6	1.8	48	56	67	Auto Restart	Auto Restart	Auto Restart	Auto Restart	TO-220F
FSDM0565RE	650	2.2	2.3	60	70	67	Auto Restart	Auto Restart	Auto Restart	Auto Restart	I²-PAK-6L, TO-220F
FSDM07652RE	650	1.6	2.5	70	80	67	Auto Restart	Auto Restart	Auto Restart	Auto Restart	TO-220F
FSDM1265RB	650	0.9	3.2	90	110	67	Auto Restart	Auto Restart	Auto Restart	Auto Restart	TO-220F
KA5H0280R	800	7	1.2	20	24	100	Auto Restart	Auto Restart	Auto Restart	Auto Restart	TO-220F
KA5H0380R	800	5	2.2	32	40	100	Auto Restart	Auto Restart	Auto Restart	Auto Restart	TO-220F
KA5L0380R	800	5	2.2	32	40	50	Auto Restart	Auto Restart	Auto Restart	Auto Restart	TO-220F
KA5M0280R	800	7	1.2	20	24	67	Auto Restart	Auto Restart	Auto Restart	Auto Restart	TO-220F
KA5M0380R	800	5	2.2	32	40	67	Auto Restart	Auto Restart	Auto Restart	Auto Restart	TO-220F
FS7M0680	800	2	4	64	80	67	Latch	Latch	Latch	Latch	TO-3P
FS7M0880	800	1.5	5	88	104	67	Latch	Latch	Latch	Latch	TO-3P
FSCQ0565RT	650	2.2	3.5	56	64	QRC	Latch	Auto Restart	Auto Restart	Latch	TO-220F
FSCQ0765RT	650	1.6	5	85	100	QRC	Latch	Auto Restart	Auto Restart	Latch	TO-220F
FSCQ0965RT	650	1.2	6	110	130	QRC	Latch	Auto Restart	Auto Restart	Latch	TO-220F
FSCQ1265RT	650	0.9	7	140	170	QRC	Latch	Auto Restart	Auto Restart	Latch	TO-220F
FSCQ1465RT	650	0.8	8	160	190	QRC	Latch	Auto Restart	Auto Restart	Latch	TO-220F
FSCQ1565RT	650	0.7	8	170	210	QRC	Latch	Auto Restart	Auto Restart	Latch	TO-220F
FSCQ1565RP	650	0.7	11.5	210	250	QRC	Latch	Auto Restart	Auto Restart	Latch	TO-3P
FS6S1265RE	650	0.9	8	128	152	Synchronization	Auto Restart	Auto Restart	Auto Restart	Auto Restart	TO-3P
FS6S1565RB	650	0.65	9.7	160	192	Synchronization	Auto Restart	Auto Restart	Auto Restart	Auto Restart	TO-3P
FS8S0765RCB	650	1.6	4	70	90	Synchronization	Auto Restart	Auto Restart	Auto Restart	Auto Restart	TO-220
FS8S0965RCB	650	1.2	6	96	116	Synchronization	Auto Restart	Auto Restart	Auto Restart	Auto Restart	TO-220
FS6X0420RJ	200	1.2	1.4	14 (36~72V_{DC})		300	No	Auto Restart	Auto Restart	Auto Restart	D²-PAK-6L
FS6X0720RJ	200	0.51	2.7	26 (36~72V_{DC})		300	No	Auto Restart	Auto Restart	Auto Restart	D²-PAK-6L
FS6X1220RJ	200	0.3	3.2	36 (36~72V_{DC})		300	No	Auto Restart	Auto Restart	Auto Restart	D²-PAK-6L

Green FPS e-Series products that are based on the valley switching technique are indicated in red.