

ActivePSRTM Quasi-Resonant PWM Controller

FEATURES

- Patented Primary Side Regulation Technology
- Quasi-Resonant Operation
- Adjustable up to 120kHz Switching Frequency
- +/-5% Output Voltage Regulation
- Constant Power Operation Mode for Fast Start-up and Motor Drive Applications
- Integrated Line and Primary Inductance Compensation
- Built-in Soft-Start Circuit
- Line Under-Voltage, Thermal, Output Over-voltage, Output Short Protections
- Current Sense Resistor Short Protection
- Transformer Short Winding Protection
- Less than 100mW Standby Power
- Complies with Global Energy Efficiency and CEC Average Efficiency Standards
- Tiny SOT23-6 Packages

APPLICATIONS

- AC/DC Adaptors/Chargers for E-Shaver, Motor Driver, ADSL, Network Power, Cell Phone
- Big Capacitive Load Application

GENERAL DESCRIPTION

The ACT412 is a high performance peak current mode PWM controller which applies *ActivePSRTM* and *ActiveQRTM* technology. ACT412 achieves accurate voltage regulation without the need of an opto-coupler or reference device.

The ACT412 is designed to achieve less than 100mW Standby Power. By applying frequency fold back and *ActiveQRTM* technology, ACT412 exceeds the latest ES2.0 efficiency standard.

ACT412 integrates comprehensive protection. In case of over temperature, over voltage, short winding, short current sense resistor, open loop and overload conditions, it would enter auto restart

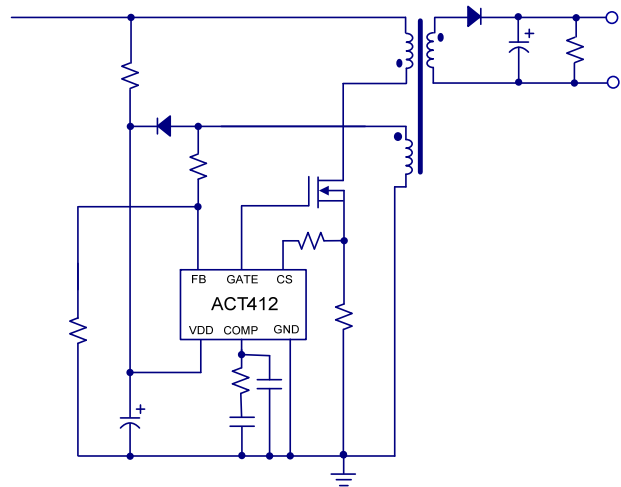
mode including cycle-by-cycle current limiting.

ACT412 is to achieve no overshoot and very short rise time even with big capacitive load (10000 μ F) with the built-in fast and soft start process, .

The Quasi-Resonant (QR) operation mode can effectively improve efficiency, reduce the EMI noise and further reduce the components in input filter.

ACT412 is idea for application up to 36 Watt.

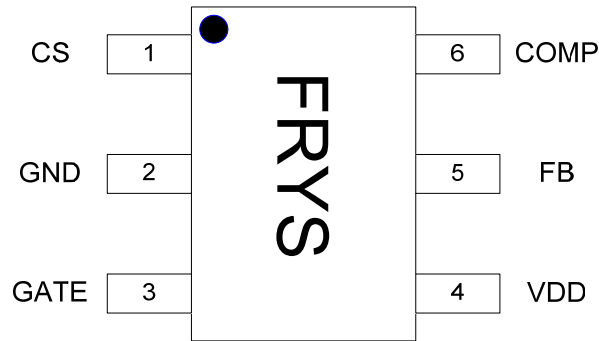
Figure 1:
Simplified Application Circuit



ORDERING INFORMATION

PART NUMBER	TEMPERATURE RANGE	PACKAGE	PINS	PACKING METHOD	TOP MARK
ACT412US-T	-40°C to 85°C	SOT23-6	6	TUBE & REEL	FRYS

PIN CONFIGURATION



SOT23-6
ACT412US

PIN DESCRIPTIONS

PIN	NAME	DESCRIPTION
1	CS	Current Sense Pin. Connect an external resistor (R_{CS}) between this pin and ground to set peak current limit for the primary switch.
2	GND	Ground.
3	GATE	Gate Drive. Gate driver for the external MOSFET transistor.
4	VDD	Power Supply. This pin provides bias power for the IC during startup and steady state operation.
5	FB	Feedback Pin. Connect this pin to a resistor divider network from the auxiliary winding.
6	COMP	Compensation Pin.

Figure 2:
ACT412, Universal VAC Input, 12V/400mA Output Charger

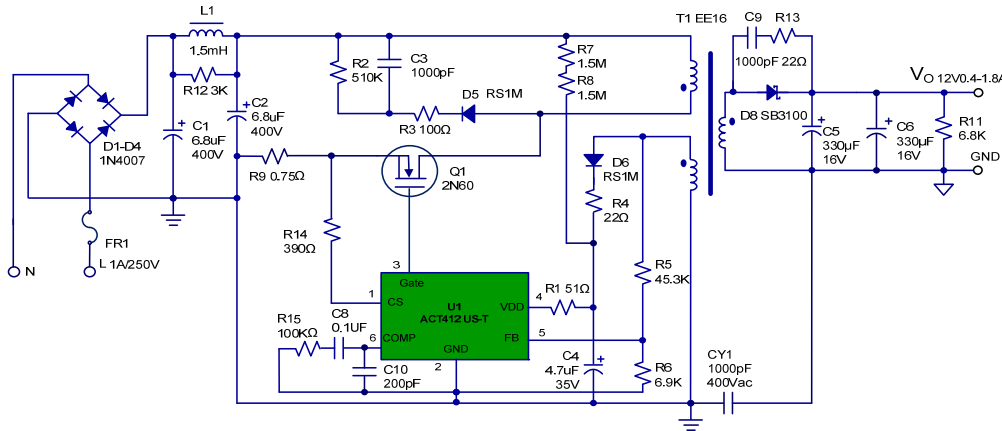


Table 2:
ACT412 Bill of Materials

ITEM	REFERENCE	DESCRIPTION	QTY	MANUFACTURER
1	U1	IC, ACT412,SOT23-6	1	Active-Semi.
2	C1,C2	Capacitor, Electrolytic, 6.8uF/400V, 10x12mm	2	KSC
3	C3	Capacitor, Ceramic, 1000pF/500V, 0805,SMD	1	POE
4	C4	Capacitor, Electrolytic,4.7uF/35V,5x11mm	1	KSC
5	C5,C6	Capacitor, Electrolytic, 330uF/16V, 8x11.5mm	2	KSC
6	C8	Capacitor, Ceramic, 0.1uF/25V, 0805,SMD	1	POE
7	C9	Capacitor, Ceramic, 1000pF/100V, 0805,SMD	1	POE
8	C10	Capacitor, Ceramic, 200pF/50V, 0805,SMD	1	POE
9	CY1	Safety Y1,Capacitor,1000pF/400V,Dip	1	UXT
10	D1-D4	Diode,Rectifier,1000V/1A,1N4007, DO-41	4	Good-Ark
11	D5	Fast Recovery Rectifier, RS1M,1000V/1.0A, RMA	1	PANJIT
12	D6	Fast Recovery Rectifier,RS1D,200V/1.0A,SMA	1	PANJIT
13	D7	NC		
14	D8	Diode, schottky, 100V/3A, SB3100, DO-47	1	Good-Ark
15	L1	Axial Inductor, 1.5mH, 5*7,Dip	1	SoKa
16	L2	Axial Inductor, 0.55*5T, 5*7,Dip	1	SoKa
17	Q1	Mosfet Transistor, 4N60,TO-220	1	Infineon
18	PCB1	PCB, L*W*T=52.2x30x1.6mm,Cem-1,Rev:A	1	Jintong
19	FR1	Fuse,1A/250V	1	TY-OHM
20	R1	Chip Resistor, 51Ω, 0805, 5%	1	TY-OHM
21	R2	Chip Resistor, 510KΩ, 1206, 5%	1	TY-OHM
22	R3	Chip Resistor, 100Ω, 0805, 5%	1	TY-OHM
23	R4,R13	Chip Resistor, 22Ω, 0805, 5%	2	TY-OHM
24	R5	Chip Resistor, 45.3KΩ, 0805,1%	1	TY-OHM
25	R6	Chip Resistor, 6.9KΩ, 0805, 1%	1	TY-OHM
26	R7,R8	Chip Resistor, 1.5MΩ, 0805, 5%	2	TY-OHM
27	R9	Chip Resistor, 0.75Ω, 1206,1%	1	TY-OHM
28	R11	Chip Resistor, 6.8KΩ, 0805, 5%	1	TY-OHM
29	R12	Chip Resistor, 3KΩ, 0805, 5%	1	TY-OHM
30	R14	Chip Resistor, 390Ω, 0805, 5%	1	TY-OHM
31	R15	Chip Resistor, 100KΩ, 0805, 5%	1	TY-OHM
32	T1	Transformer, Lp=0.5mH, EE16	1	