

## High Performance *ActivePSR™* Primary Switching Regulator

### FEATURES

- Ultra Low Standby Power < 30mW
- Patented Primary Side Regulation Technology
- Suitable Operation Frequency up to 85kHz
- Proprietary Fast Startup Circuit
- Integrated Line and Primary Inductance Compensation
- Integrated Programmable Output Cord Resistance Compensation
- Line Under-Voltage, Output Over-Voltage, Output Short-Circuit and Over-Temperature Protection
- Complies with all Global Energy Efficiency and CEC Average Efficiency Standards
- Adjustable Power from 2W to 6.3W
- Minimum External Components
- SOP-8 Package

### APPLICATIONS

- Chargers for Cell Phones, PDAs, MP3, Portable Media Players, DSCs, and Other Portable Devices and Appliances
- RCC Adapter Replacements
- Linear Adapter Replacements
- Standby and Auxiliary Supplies

### GENERAL DESCRIPTION

The ACT336 belongs to the high performance patented *ActivePSR™* Family of Universal-input AC/DC off-line controllers for battery charger and adapter applications. It is designed for flyback topology working in discontinuous conduction mode (DCM). The ACT336 meets all of the global energy efficiency regulations (CEC, European Blue Angel, and US Energy Star standards) while using very few external components.

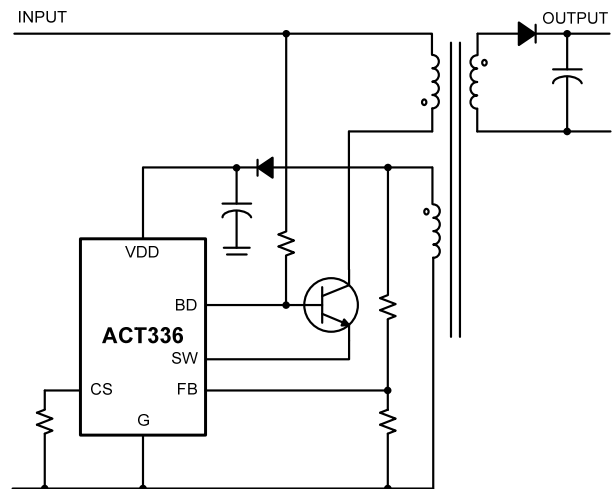
The ACT336 ensures safe operation with complete protection against all fault conditions. Built-in protection circuitry is provided for output short-circuit, output over-voltage, line under-voltage, and

over temperature conditions.

The ACT336 *ActivePSR™* is optimized for high performance, cost-sensitive applications, and utilizes Active-Semi's proprietary primary-side feedback architecture to provide accurate constant voltage, constant current (CV/CC) regulation without the need of an opto-coupler or reference device. Integrated line and primary inductance compensation circuitry provides accurate constant current operation despite wide variations in line voltage and primary inductance. Integrated output cord resistance compensation further enhances output accuracy. The ACT336 achieves excellent regulation and transient response, yet requires less than 30mW of standby power.

The ACT336 is optimized for compact size 2W to 6.3W charger applications. It is available in space-saving 8 pin SOP-8 package.

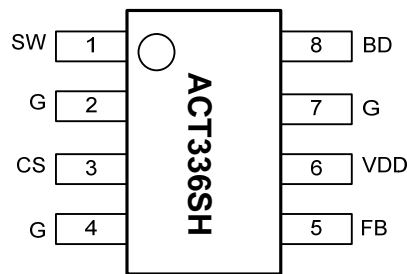
**Figure 1:**  
**Simplified Application Circuit**



## ORDERING INFORMATION

PART NUMBER	TEMPERATURE RANGE	PACKAGE	PINS	PACKING METHOD	TOP MARK
ACT336SH-T	-40°C to 85°C	SOP-8	8	TAPE & REEL	ACT336SH

## PIN CONFIGURATION

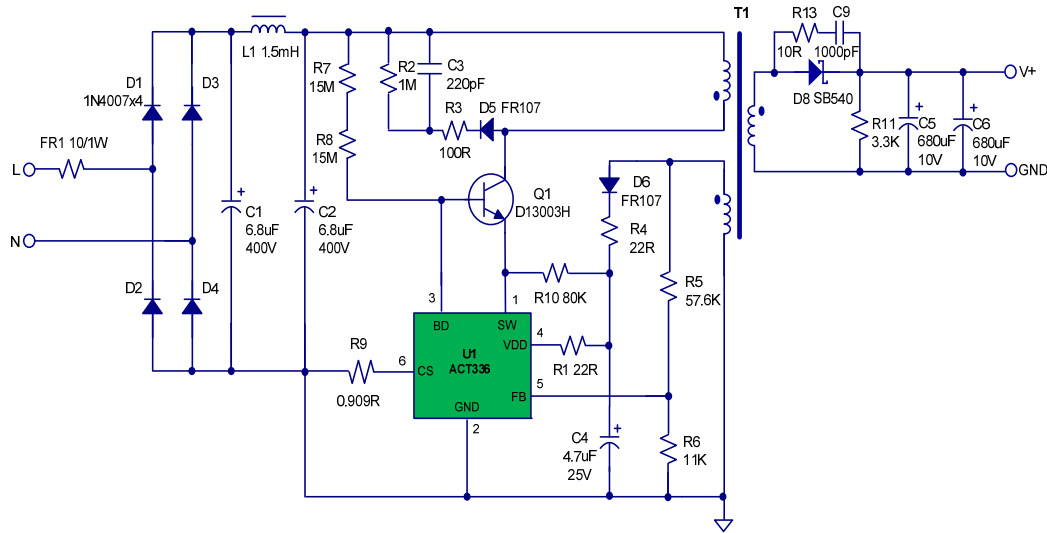


SOP-8  
ACT336SH

## PIN DESCRIPTIONS

PIN	NAME	DESCRIPTION
SOP-8		
1	SW	Switch Drive. Switch node for the external NPN transistor. Connect this pin to the external power NPN's emitter. This pin also supplies current to VDD during startup.
2,4,7	G	Ground(2,4 and 7 pin must be connected together).
8	BD	Base Drive. Base driver for the external NPN transistor.
6	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.
3	CS	Current Sense Pin. Connect an external resistor ( $R_{CS}$ ) between this pin and ground to set peak current limit for the primary switch. The peak current limit is set by $(0.396V \times 0.9) / R_{CS}$ . For more detailed information, see Application Information.

**Figure 6:**  
**Universal VAC Input, 5V/1.2A Output Charger**



**Table 1:**  
**ACT336 Bill of Materials**

Item	Reference	Description	QTY	Manufacturer
1	C1,C2	Capacitor, Electrolytic, 6.8uF/400V, 10x12mm	2	Koshin
2	C3	Capacitor, Ceramic,220pF/500V,1206,SMD	1	POE
3	C4	Capacitor, Ceramic,4.7uF/35V,1206,SMD	1	POE
4	C5,C6	Capacitor, Electrolytic, 680uF/10V, 8x12mm	2	G-Luxon
5	C9	Capacitor, Ceramic,1000pF/50V, 0805, SMD	1	POE
6	D1-D4	Diode,Rectifier,1000V/1A,1N4007, DO-41	4	Good-Ark
7	D5,D6	Diode,Ultra Fast, FR107,1000V/1.0A, DO-41	2	Good-Ark
8	D8	Diode, schottky, 40V/5A, SB540, DO-15	1	Good-Ark
9	L1	Axial Inductor, 1.5mH, 0410,Dip	1	Amode Tech
10	Q1	Transistor, HFE 20-25, NPN,13003,TO-220	1	Huawei
11	FR1	Wire Round Resistor,1W,10 ohm,KNP, 5%	1	TY-OHM
12	R2	Chip Resistor, 1.0M ohm, 1206, 5%	1	TY-OHM
13	R3	Chip Resistor, 100 ohm, 0805, 5%	1	TY-OHM
14	R1,R4	Chip Resistor, 22 ohm, 0805, 5%	2	TY-OHM
15	R5	Chip Resistor, 57.6K ohm, 0805,1%	1	TY-OHM
16	R6	Chip Resistor, 11K ohm, 0805, 1%	1	TY-OHM
17	R7,R8	Chip Resistor, 15M ohm, 1206, 5%	2	TY-OHM
18	R9	Chip Resistor, 0.909ohm, 1206,1%	1	TY-OHM
19	R10	Chip Resistor, 80K ohm, 0805, 5%	1	TY-OHM
20	R11	Chip Resistor, 3.3K ohm, 0805, 5%	1	TY-OHM
21	R13	Chip Resistor, 10 ohm, 0805, 5%	1	TY-OHM
22	T1	Transformer, Lp=1.5mH, EE16	1	
23	U1	IC, ACT336,SOP-8	1	Active-Semi