

iW1692 Product Brief

Low-Power Off-line Digital PWM Controller

iWatt

1.0 Features

- Primary-side feedback eliminates opto-isolators and simplifies design
- Multi-mode operation for highest overall efficiency
- Built-in cable drop compensation
- Very tight output voltage regulation
- No external loop compensation components required
- Complies with CEC/EPA/IEC no load power consumption and average efficiency regulations
- Built-in output constant-current control with primary-side feedback
- Low start-up current (10 μ A typical)
- Built-in soft start
- Built-in short circuit protection
- AC line under/overvoltage and output overvoltage protection
- 40 kHz PWM switching frequency
- PFM operation at light load
- Built-in I_{SENSE} pin short protection
- Space-saving SOT-23 package

2.0 Description

The iW1692 is a high performance AC/DC power supply controller which uses digital control technology to build peak current mode PWM flyback power supplies. The device provides high efficiency along with a number of key built-in protection features while minimizing the external component count and bill of material cost. The iW1692 removes the need for secondary feedback circuitry while achieving excellent line and load regulation. It also eliminates the need for loop compensation components while maintaining stability over all operating conditions. Pulse-by-pulse waveform analysis allows for a loop response that is much faster than traditional solutions, resulting in improved dynamic load response. The built-in power limit function enables optimized transformer design in universal off-line applications and allows for a wide input voltage range.

The low start-up power and PFM operation at light load ensure that the iW1692 is ideal for applications targeting the newest regulatory standards for standby power.

3.0 Applications

- Low power AC/DC adapter/chargers for cell phones, PDAs, digital still cameras
- Standby supplies for televisions, DVDs, set-top boxes and other consumer electronics

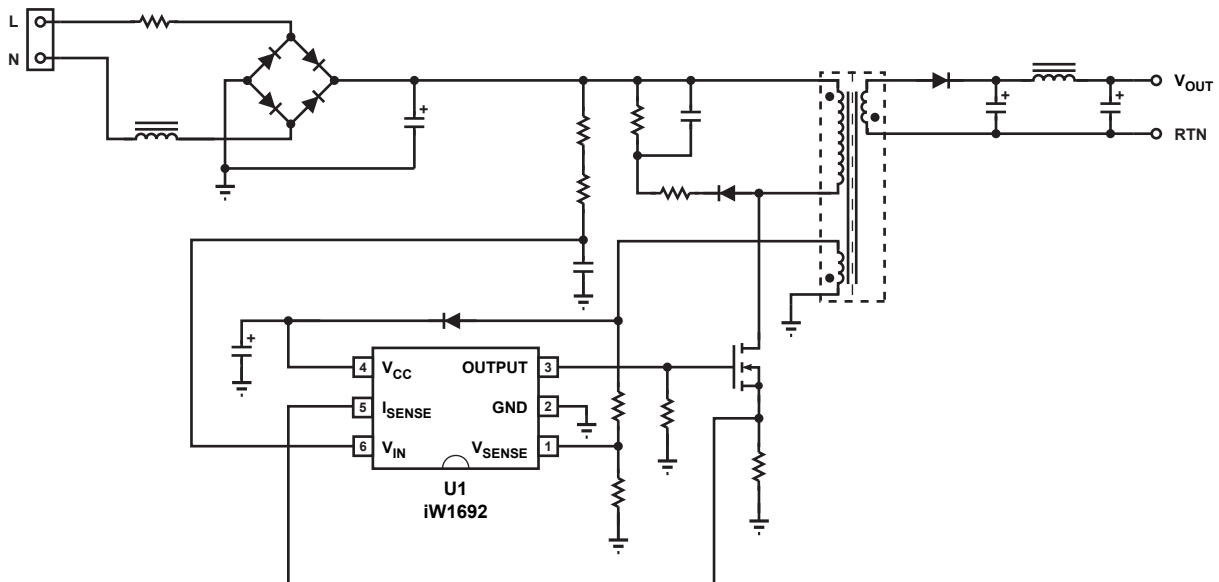


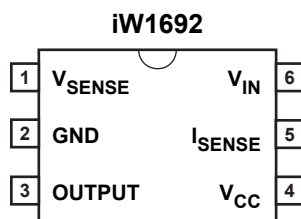
Figure 2.0.1 iW1692 Typical Application Circuit

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4.0 Pinout Description



Pin #	Name	Type	Pin Description
1	V _{SENSE}	Input	Voltage sense input from the auxiliary winding.
2	GND	Ground	Ground connection.
3	OUTPUT	Output	Gate drive output for the external power MOSFET switch.
4	V _{CC}	Input	Supply voltage.
5	I _{SENSE}	Input	Primary current sense. Used for cycle-by-cycle peak current control and limit.
6	V _{IN}	Input	Senses average rectified input voltage.

5.0 Absolute Maximum Ratings

Absolute maximum ratings are the parametric values or ranges which can cause permanent damage if exceeded. For maximum safe operating conditions, refer to Electrical Characteristics in Section 6.0.

Parameter	Symbol	Value	Units
DC supply voltage range (pin 4, I _{CC} = 20mA max)	V _{CC}	-0.3 to 18	V
DC supply current at V _{CC} pin	I _{CC}	20	mA
Output (pin 3)		-0.3 to 18	V
V _{SENSE} input (pin 1, I _{Vsense} ≤ 10 mA)		-0.7 to 4.0	V
I _{SENSE} input (pin 5)		-0.3 to 4.0	V
V _{IN} input (pin 6)		-0.3 to 18	V
Power dissipation at T _A ≤ 25°C	P _D	400	mW
Maximum junction temperature	T _{J(MAX)}	125	°C
Storage temperature	T _{STG}	-65 to 150	°C
Lead temperature during IR reflow for ≤ 15 seconds	T _{LEAD}	260	°C
Thermal resistance junction-to-ambient	θ _{JA}	240	°C/W
ESD rating per JEDEC JESD22-A114 (HBM)		2,000	V
Latch-Up test per JEDEC 78		±100	mA

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13.0 Physical Dimensions

6-Lead Small Outline Transistor Package

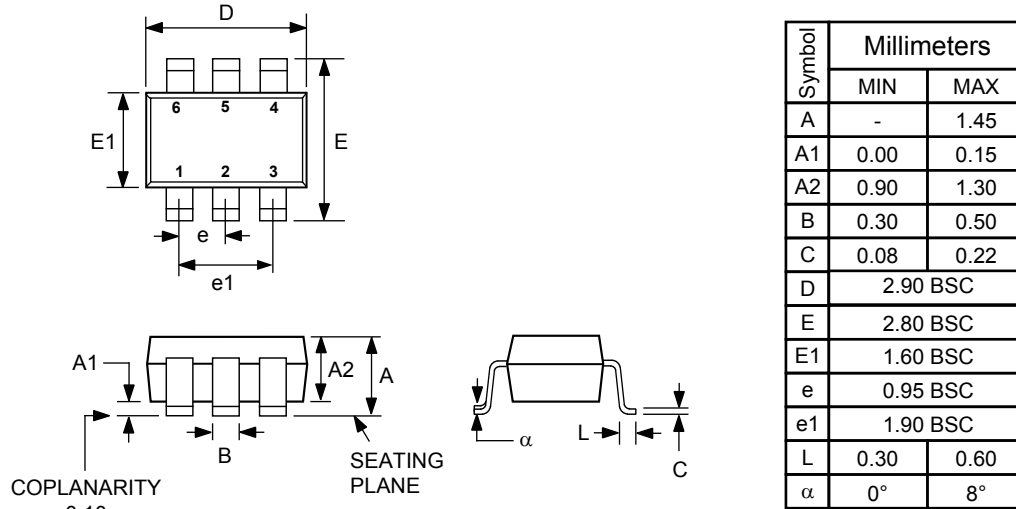


Figure 13.0.1. Physical dimensions, 6-lead SOT-23 package

Compliant to JEDEC Standard MO-178AB

Controlling dimensions are in millimeters

This package is RoHS compliant and Halide free.

Soldering Temperature Resistance:

- [a] Package is IPC/JEDEC Std 020D Moisture Sensitivity Level 1
- [b] Package exceeds JEDEC Std No. 22-A111 for Solder Immersion Resistance; packages can withstand 10 s immersion < 270°C

Dimension D does not include mold flash, protrusions or gate burrs. Mold flash, protrusions or gate burrs shall not exceed 0.25 mm per side. D and E1 dimensions are determined at datum H.

The package top may be smaller than the package bottom. Dimensions D and E1 are determined at the outermost extremes of the plastic body exclusive of mold flash, tie bar burrs and interlead flash, but including any mismatch between top and bottom of the plastic body. D and E1 dimensions are determined at datum H.

14.0 Ordering Information

Part Number	Mark	Option	Package	Description
iW1692-00	Gxxx	Cable Drop Compensation, 0 mV	SOT23-6L	Tape & Reel ¹
iW1692-30	Fxxx	Cable Drop Compensation, 300 mV	SOT23-6L	Tape & Reel ¹

Note 1: Tape & Reel quantity for SOT23 is 3,000/Reel.

Note 2: In the mark column, “xxx” represents the lot ID code. Refer to ILG-0005 device marking specification for more detailed information.

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About iWatt

iWatt Inc. is a fabless semiconductor company that develops intelligent power management ICs for computer, communication, and consumer markets. The company's patented *pulseTrain*[™] technology, the industry's first truly digital approach to power system regulation, is revolutionizing power supply design.

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iWatt semiconductors are typically used in power supplies in which high voltages are present during operation. High-voltage safety precautions should be observed in design and operation to minimize the chance of injury.

Changes List

Date	Rev	Description
9/22	1.0	iW1692 Product Brief created

DELETE before sending to customer