



Application Brief

Off-line isolated power supply 3 W 5 V reference design

Extremely low standby power consumption based on CoolSET™ current mode controller

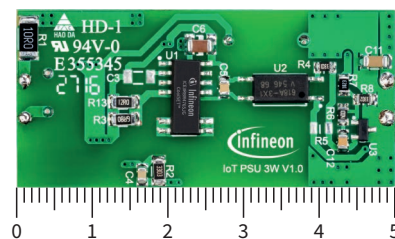
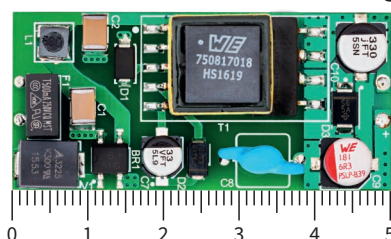
The fast growing market around the Internet of Things (IoT) covers a wide range of applications. All of them have one thing in common, namely the ability to collect and exchange data with each other. The microcontrollers, sensors, actuators, etc. embedded in each of the devices stay connected to the network at all times. They are supplied by an efficient low-power low-standby power supply for which the Infineon CoolSET™ family of integrated off-line power supply ICs is ideally suited.

In this reference design, the Infineon CoolSET™ ICE3RBR4765JG is used as a current-mode flyback controller. It has a built-in 650 V CoolMOS™. This application operates in Discontinuous Conduction Mode (DCM), running at 65 kHz switching frequency. The output is single 5 V 600 mA. Active burst mode operation provides extremely low standby power consumption, < 13 mW over the input voltage range 180–265 V AC. Low EMI is achieved by built-in frequency jitter and soft start operation.

Target applications

- > Applications related to the Internet of Things (IoT)
 - Standby power supply
 - Power supply for microcontrollers
 - Power supply for standalone sensors operating on a wired/wireless interface bus
- > USB-power supply embedded in a wall plug
- > Intelligent wall plug switched by wireless (with relay)
- > Metering application
- > General applications with small form factor in the power range 1 W to 3 W

Top and bottom side of the reference design



Key features

Power conversion with solid performance and more

- > Input voltage range 180–265 V AC
- > Efficiency > 75 percent
- > Conducted EMI compliant with EN55022 class B
- > Stand-by power < 13 mW
- > V_{out} ripple (peak-to-peak) < 100 mV
- > Small form factor (board dimension): 50 mm x 23.5 mm x 14 mm (L x W x H)
- > Auto-restart protection modes
 - V_{cc} over/undervoltage
 - IC overtemperature
 - Overload
 - Open loop

