

**AP4460A****Step-up DC-DC Converter with Power Path for Single Solar Cell****1. General Description**

The AP4460A is a synchronous step-up DC-DC converter that can be operated by a single solar cell. It has a power management function which supplies power to an external system, charges super capacitors, or supplies power from the super capacitor to the system. The DC-DC converter is a hysteric comparator type and composed of an ultra-low power start-up circuit which starts from only 0.35 V. Because the power consumption is extremely low, the AP4460A can operate from the input power of around 50 μ W generated by a solar panel under indoor lighting. The input voltage of the DC-DC converter, i.e. output voltage of the solar cell is controlled by external resistors for the reference voltage of the IC. The best power efficiency can be obtained by adjusting this input level setting according to the characteristics of a connected solar cell. The AP4460A has a Power-Path Control switches for supplying power to the external system and charging a super capacitor. When the output voltage of DC-DC converter reaches a target voltage, the IC starts to charge a compact capacitor. After charging up to the target voltage of a compact capacitor, then the IC starts to supply power to the external system. Supplying power to the external system via capacitor makes it possible to operate high load external system even with a low input power. If the input power is surplus, the extra power is stored gradually in a super capacitor. The super capacitor automatically supplies power to the external system, if the power supply input is low. The AP4460A is suitable for sensor nodes of energy harvesting equipment.

2. Features

- Start-up Voltage 0.35V
- Operating Temperature Range -30 ~ 85°C
- Input Voltage from 0.14V
- DC-DC Output Voltage 2.5 ~ 4.0V (\pm 5%)
- Step up DC-DC Converter with Hysteric Comparator Control
- Synchronous Rectification by High-side Zero-cross Detection
- Input Voltage Control Function
- Power Path Function with Automatic Control
- Battery Compatible Mode
- Power Generation Monitoring Function
- Efficiency 80% (When 0.5V and 1mA Input, 3V output)
- Package 24-pin QFN
- Applications
 - Power Supply Systems by Single Solar Cell
 - Portable Electronics
 - Sensor Nodes
 - Wearable Devices

■ Block Diagram



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