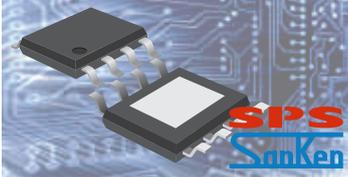


Light Load High Efficiency, 31V Buck Regulator

NR11xK Series, Light Load High Efficiency,
Buck Regulator IC



Description

The NR11xK series of buck regulator integrate high-side power MOSFETs. Increased efficiency at light loads allows the device to be used in the energy-saving applications. With the current mode control, ultra low ESR capacitors such as ceramic capacitors can be used. The ICs have protection functions such as Over-Current Protection (OCP), Under-Voltage Lockout (UVLO) and Thermal Shutdown (TSD). An adjustable Soft-Start by an external capacitor prevents the excessive inrush current at turn-on. The ICs integrate phase compensation circuit which reduces the number of external components and simplifies the design of customer application. The ON/OFF pin (EN Pin) turns the regulator on or off and helps to achieve low power consumption requirements. The NR11xK series is available in an 8-pin HSOP8 package with an exposed thermal pad on the back side.

Electrical Characteristics

- 4A output current
- Operating input range $V_{IN} = 8V \sim 31V$
- Output adjustable $V_O = 0.8V \sim 24V$
- Fixed 350kHz frequency

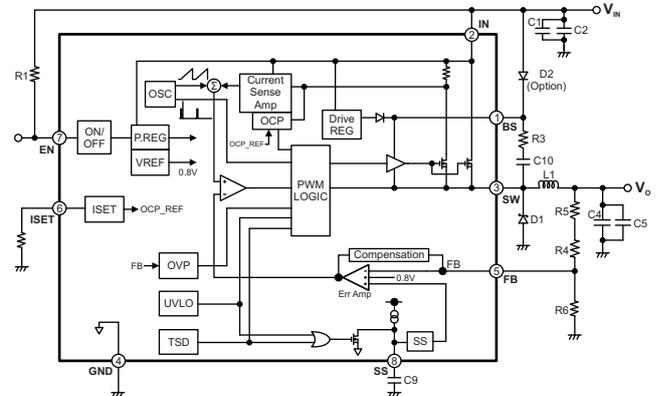
Features & Benefits

- Up to 94% Efficiency
Up to 77% Efficiency at $I_O = 20mA$ Light Load
- Current mode PWM control
- Stable with low ESR ceramic output capacitors
- Built-in protection functions
Adjustable Over-Current Protection (OCP)
Thermal Shutdown (TSD)
Under-Voltage Lockout (UVLO)
- Built-in phase compensation
- Adjustable Soft-Start with an external capacitor
- ON/OFF pin

Package

Thermally enhanced
HSOP-8

Schematic Diagram



Pin Functions

| Pin No. | Symbol | Description |
|---------|--------|----------------------------|
| 1 | BS | High-side boost input |
| 2 | IN | Input voltage |
| 3 | SW | Switching output |
| 4 | GND | Ground |
| 5 | FB | Feedback input |
| 6 | ISET | OCP setting |
| 7 | EN | ON / OFF pin (active high) |
| 8 | SS | Soft-Start |

Device Selection

| Device | f_{SW} | V_{IN} | V_{OUT} | I_O |
|--------|----------|--------------------------|----------------------------|-------|
| NR110K | 350 kHz | 8 to 31 V ⁽¹⁾ | 0.8 to 24 V ⁽²⁾ | 4 A |
| NR117K | | | | 2 A |

⁽¹⁾ The minimum voltage shall be either 8V or $V_O + 3V$, whichever is higher.

⁽²⁾ The I/O limited by the minimum on-time (T_{ONMIN}).

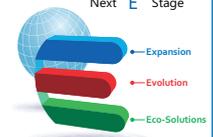
Target Applications

- LCD TV / Blu-Ray / Set top box.
- Home appliance.
- Green Electronic products (like smart meters, etc.)
- Other power supply.

Technical Support

Contact local sales representative or a SPS field application engineer for technical support.

Power Electronics for
Next "E" Stage



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