

- ◆ Synchronous, Bootstrap Nch-Nch Drive
- ◆ Input Voltage Range : 2.5V ~ 25.0V
- ◆ Switching Frequency : 300kHz (±15%)
- ◆ PWM/PFM Manual Switching Control
- ◆ Overcurrent Protection Circuit Built-In
- ◆ High Efficiency : 93% (TYP.)
- ◆ TSSOP-16 Package
- ◆ Ceramic Capacitor Compatible

■ Applications

- PDAs
- Mobile Phones
- Note book computers
- Portable Audio Systems
- Various Multi-function Power Supplies

■ General Description

XC9213 series is Nch-Nch drive, synchronous, step-down DC/DC controller ICs with a built-in bootstrap driver circuit. Output will be stable no matter which load capacitors, including a low ESR capacitor, are used.

Resistance (RSENSE) of about 100mΩ will be required as a current sense. The phase compensation is also run when a low ESR capacitor is used. In addition, the circuit is double protected by the ways of limiting the current while detecting overshoot current and making output shutdown at any given timing by a protection time setting capacitor (CPRO).

The output voltage can be set freely within a range of 1.0V~15.0V with 1.0V (accuracy ±1.5%) of internal reference voltage by using externally connected resistors (RFB1, 2). Synchronous rectification PWM control can be switched to non-synchronous 30mV current limit PFM/PWM automatic switchable control (= voltage between RSENSE pins) by using the MODE pin.

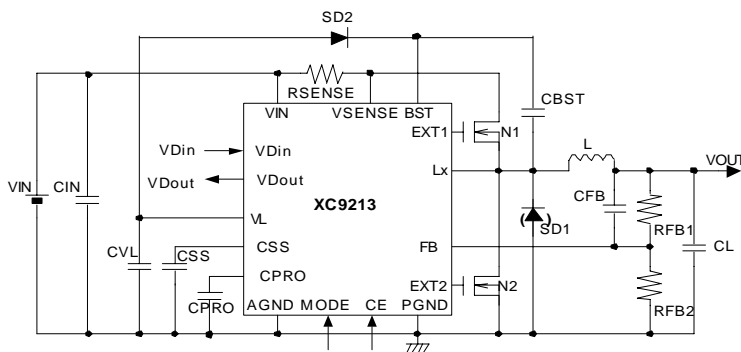
The series has a built-in voltage detector for monitoring a selected voltage by external resistors.

During stand-by (CE pin = low) all circuits are shutdown to reduce current consumption to as low as 3.0μA or less.

■ Features

- Input Voltage Range** : 2.4V ~ 25.0V
- Output Voltage Range** : 1.0V ~ 15.0V externally set
Reference voltage : 1.0V (±1.5%)
- Oscillation Frequency** : 300kHz (±15%)
- Output Current** : More than 5A (VIN=5.0V, VOUT=3.3V)
- Control** : PWM/PFM manual-switching control.
- Current Limiter, Protection** : Current limit operates at voltage sense 150mV.
Shutdown time can be adjusted by CPRO.
- High Efficiency** : 93% (TYP., PWM mode @ VIN=5.0V, VOUT = 3.3V, 1A)
- Detect Voltage Function** : Detects 1.0V / Open-drain output
- Stand-by Current** : ISTB = 3.0μA (MAX.)
- Load Capacitor** : Low ESR (ceramic, etc.) capacitor compatible
- Package** : TSSOP-16

■ Typical Application Circuit



■ Pin Assignment

PIN NUMBER	PIN NAME	FUNCTION
1	VIN	Input Voltage
2	VSENSE	Voltage Sense
3	VL	Local Power Supply
4	CE	Chip Enable
5	AGND	Analog Ground
6	MODE	PWM / PFM Switch
7	CPRO	Protection Time Setting Capacitor Connection
8	CSS	Soft-start Capacitor Connection
9	VDIN	Voltage Detector Input (1.0V)
10	FB	Output Voltage Setting Resistor Connection
11	VDOUT	Voltage Detector Output (Open-Drain)
12	PGND	Power Ground
13	EXT2	Low Side Nch Driver Transistor
14	LX	Coil Connection
15	EXT1	High Side Nch Driver Transistor
16	BST	Bootstrap