NCP1250

Current-Mode PWM Controller for Off-line Power Supplies

The NCP1250 is a highly integrated PWM controller capable of delivering a rugged and high performance offline power supply in a tiny TSOP−6 or PDIP−8 package. With a supply range up to 28 V, the controller hosts a jittered 65 kHz or 100 kHz switching circuitry operated in peak current mode control. When the power on the secondary side starts to decrease, the controller automatically folds back its switching frequency down to a minimum level of 26 kHz. As the power further goes down, the part enters skip cycle while limiting the peak current.

Over Power Protection (OPP) is a difficult exercise especially when no−load standby requirements drive the converter specifications. The ON proprietary integrated OPP lets you harness the maximum delivered power without affecting your standby performance simply via two external resistors. An Over Voltage Protection input is also combined on the same pin and protects the whole circuitry in case of optocoupler failure or adverse open loop operation.

Finally, a timer−based short−circuit protection offers the best protection scheme, letting you precisely select the protection trip point irrespective of a loose coupling between the auxiliary and the power windings.

Features

- Fixed−Frequency 65 or 100 kHz Current−Mode Control Operation
- Internal and Adjustable Over Power Protection (OPP) Circuit
- Frequency Foldback Down to 26 kHz and Skip−Cycle in Light Load Conditions
- Internal Ramp Compensation
- Internal Fixed 4 ms Soft−Start
- 100 ms Timer−Based Auto−Recovery Short−Circuit Protection
- Frequency Jittering in Normal and Frequency Foldback Modes
- Option for Auto−Recovery or Latched Short−Circuit Protection
- OVP Input for Improved Robustness
- Up to 28 V V_{CC} Operation
- +300 mA/−500 mA Source/Sink Drive Capability
- Less than 100 mW Standby Power at High Line
- EPS 2.0 Compliant
- These are Pb−Free Devices

Typical Applications

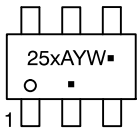
- ac−dc Converters for TVs, Set−top Boxes and Printers
- Offline Adapters for Notebooks and Netbooks

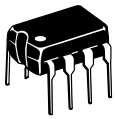
ON Semiconductor®

www.onsemi.com

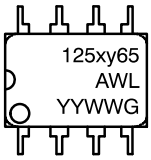
MARKING DIAGRAMS

TSOP−6 (SOT23−6) SN SUFFIX CASE 318G





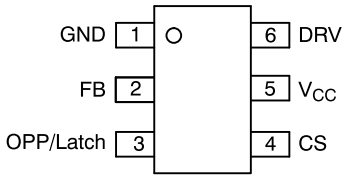
PDIP−8 SUFFIX P Case 626



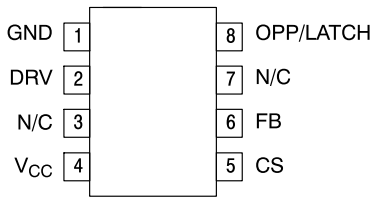
25x	=	Specific Device Code
x	=	A, 2, C, D, 0, 1
y	=	A or B
A	=	Assembly Location
WL	=	Wafer Lot
Y, YY	=	Year
W, WW	=	Work Week
G or ▪	=	Pb−Free Package

(Note: Microdot may be in either location)

PIN CONNECTIONS



TSOP−6
(Top View)



PDIP−8
(Top View)

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 3 of this data sheet.

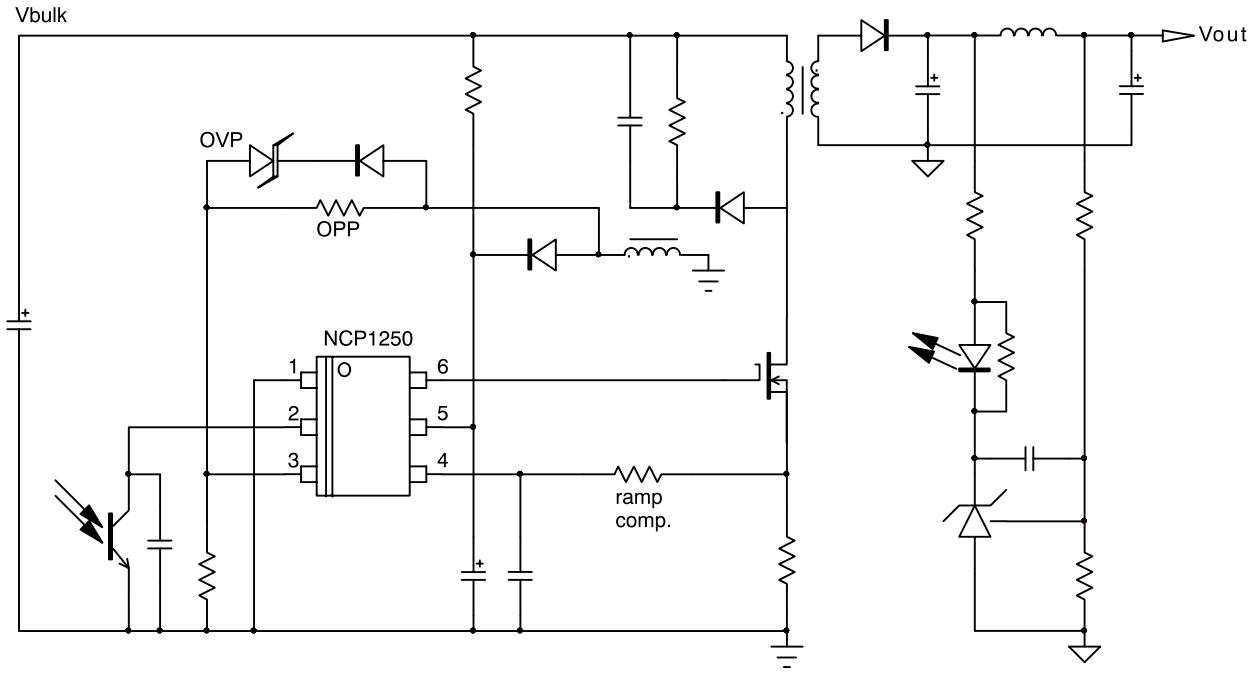


Figure 1. Typical Application Example (TSOP−6)

PIN DESCRIPTION

Pin N°		Pin Name	Function	Pin Description
PDIP−8	TSSOP−6			
1	1	GND	−	The controller ground.
6	2	FB	Feedback pin	Hooking an optocoupler collector to this pin will allow regulation.
8	3	OPP/OVP	Adjust the Over Power Protection Latches off the part	A resistive divider from the auxiliary winding to this pin sets the OPP compensation level. When brought above 3 V, the part is fully latched off.
5	4	CS	Current sense + ramp compensation	This pin monitors the primary peak current but also offers a means to introduce ramp compensation.
4	5	V_{CC}	Supplies the controller	This pin is connected to an external auxiliary voltage and supplies the controller.
2	6	DRV	Driver output	The driver's output to an external MOSFET gate.

OPTIONS

Controller	Frequency	OCP Latched	OCP Auto−Recovery
NCP1250ASN65T1G	65 kHz	Yes	No
NCP1250BSN65T1G	65 kHz	No	Yes
NCP1250ASN100T1G	100 kHz	Yes	No
NCP1250BSN100T1G	100 kHz	No	Yes
NCP1250BP65G	65 kHz	No	Yes

ORDERING INFORMATION

Device	Package Marking	OCP Protection	Switching Frequency	Package	Shipping†
NCP1250ASN65T1G	25A	Latch	65 kHz	TSOP−6 (Pb−Free)	3000 / Tape & Reel
NCP1250BSN65T1G	252	Autorecovery	65 kHz		
NCP1250ASN100T1G	25C	Latch	100 kHz		
NCP1250BSN100T1G	25D	Autorecovery	100 kHz		
NCP1250BP65G	1250B65	Autorecovery	65 kHz	PDIP−8 (Pb−Free)	50 Units / Rail

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

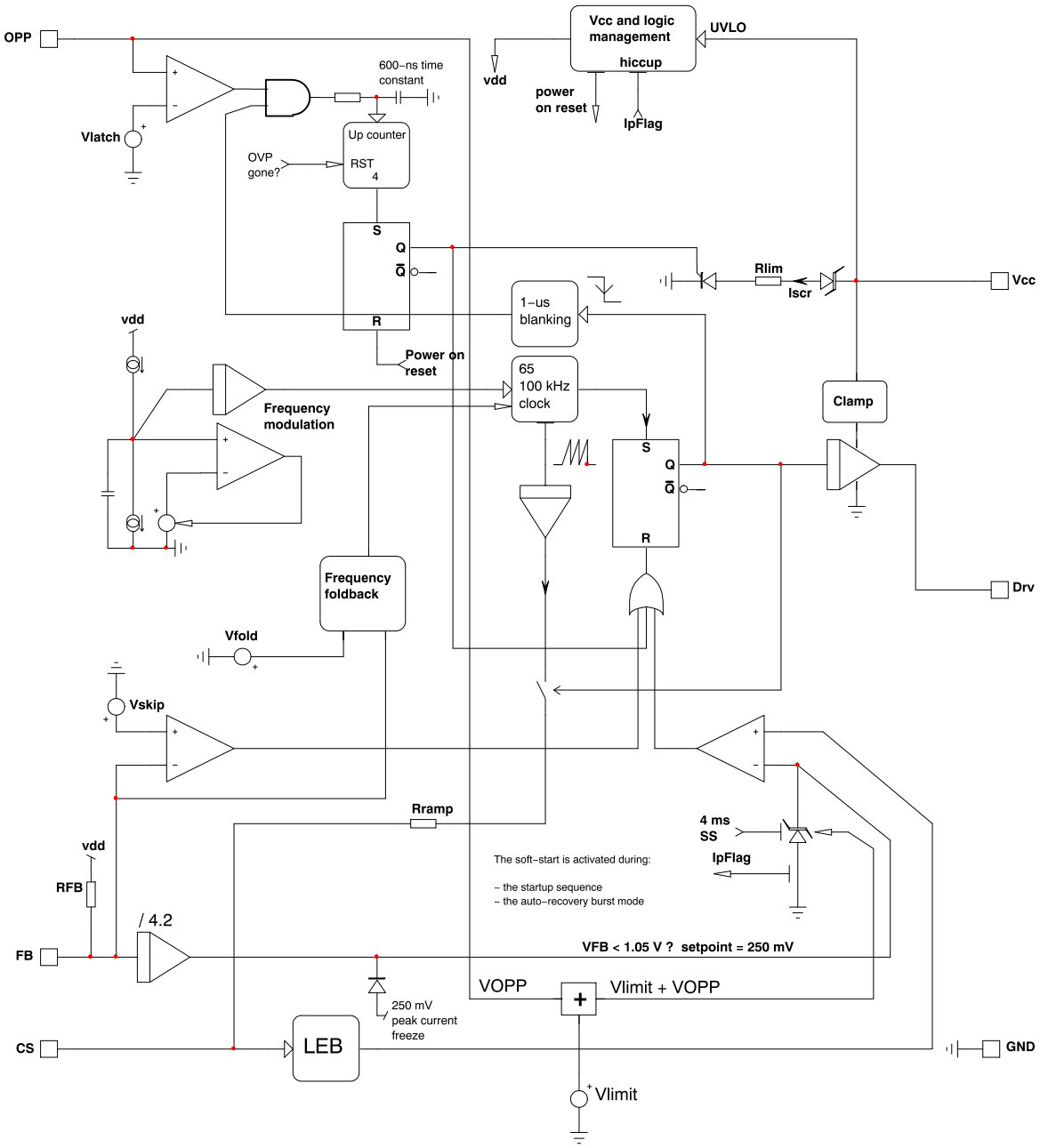


Figure 2. Internal Circuit Architecture