

NCP1234

Fixed Frequency Current Mode Controller for Flyback Converters

The NCP1234 is a new fixed-frequency current-mode controller featuring Dynamic Self-Supply (DSS). This device is pin-to-pin compatible with the previous NCP12xx families.

The DSS function greatly simplifies the design of the auxiliary supply and the V_{CC} capacitor by activating the internal startup current source to supply the controller during transients.

Due to frequency foldback, the controller exhibits excellent efficiency in light load condition while still achieving very low standby power consumption. Internal frequency jittering, ramp compensation, and a versatile latch input make this controller an excellent candidate for converters where components cost is the key constraints.

It features a timer-based fault detection that ensures the detection of overload independently of an auxiliary winding, and an adjustable compensation to help keep the maximum power independent of the input voltage.

Finally, due to a careful design, the precision of critical parameters is well controlled over the entire temperature range (-40°C to $+125^{\circ}\text{C}$).

Features

- Fixed-Frequency Current-Mode Operation with Built-In Ramp Compensation
- 65 kHz or 100 kHz Oscillator Frequency version
- Frequency Foldback then Skip Mode for Maximized Performance in Light Load and Standby Conditions
- Timer-Based Overload Protection with Latched (option A) or Auto-Recovery (option B) Operation
- High-voltage Current Source with Dynamic Self-Supply, Simplifying the Design of the V_{CC} Capacitor
- Frequency Modulation for Softened EMI Signature, including during Frequency Foldback mode
- Adjustable Overpower Compensation
- Latch-off Input for Severe Fault Conditions, Allowing Direct Connection of an NTC for Overtemperature Protection (OTP)
- V_{CC} Operation up to 28 V, with Overvoltage Detection
- ± 500 mA Peak Source/Sink Current Drive Capability
- 4.0 ms Soft-Start
- Internal Thermal Shutdown
- Pin-to-Pin Compatible with the Existing NCP12xx Series
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant



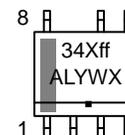
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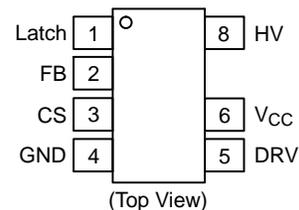
SOIC-7
CASE 751U

MARKING DIAGRAM



34Xff = Specific Device Code
X = A or B
ff = 65 or 100
A = Assembly Location
L = Wafer Lot
Y = Year
W = Work Week
▪ = Pb-Free Package

PIN CONNECTIONS



ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 32 of this data sheet.

Typical Applications

- AC-DC Adapters for Notebooks, LCD, and Printers
- Offline Battery Chargers
- Consumer Electronic Power Supplies
- Auxiliary/Housekeeping Power Supplies

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TYPICAL APPLICATION EXAMPLE

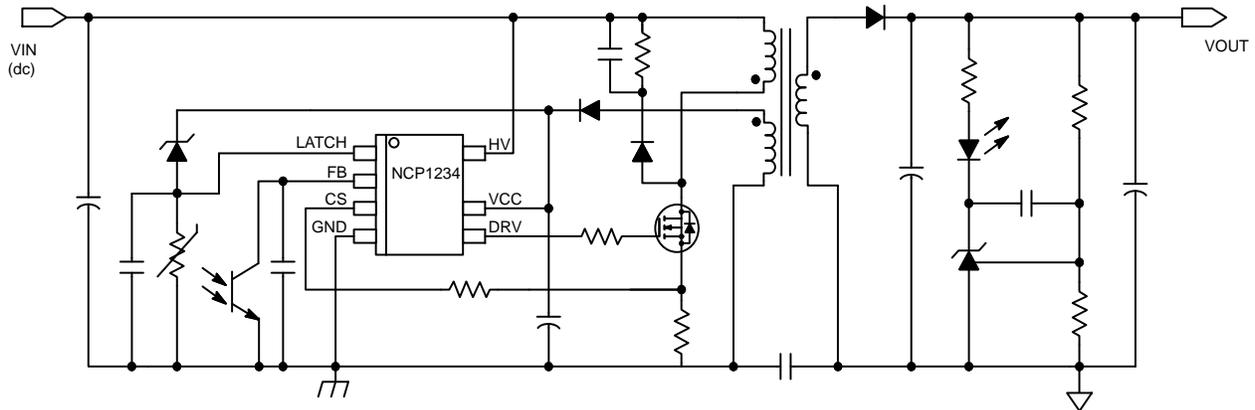


Figure 1. Flyback Converter Application Using the NCP1234

PIN FUNCTION DESCRIPTION

Pin No	Pin Name	Function	Pin Description
1	LATCH	Latch-Off Input	Pull the pin up or down to latch-off the controller. An internal current source allows the direct connection of an NTC for over temperature detection
2	FB	Feedback	An optocoupler collector to ground controls the output regulation.
3	CS	Current Sense	This Input senses the Primary Current for current-mode operation, and Offers an overpower compensation adjustment.
4	GND		IC Ground
5	DRV	Drive output	Drives external MOSFET
6	V _{CC}	V _{CC} input	This supply pin accepts up to 28 Vdc, with overvoltage detection
8	HV	High-voltage pin	Connects to the bulk capacitor or the rectified AC line to perform the functions of Start-up Current Source and Dynamic Self-Supply

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SIMPLIFIED INTERNAL BLOCK SCHEMATIC

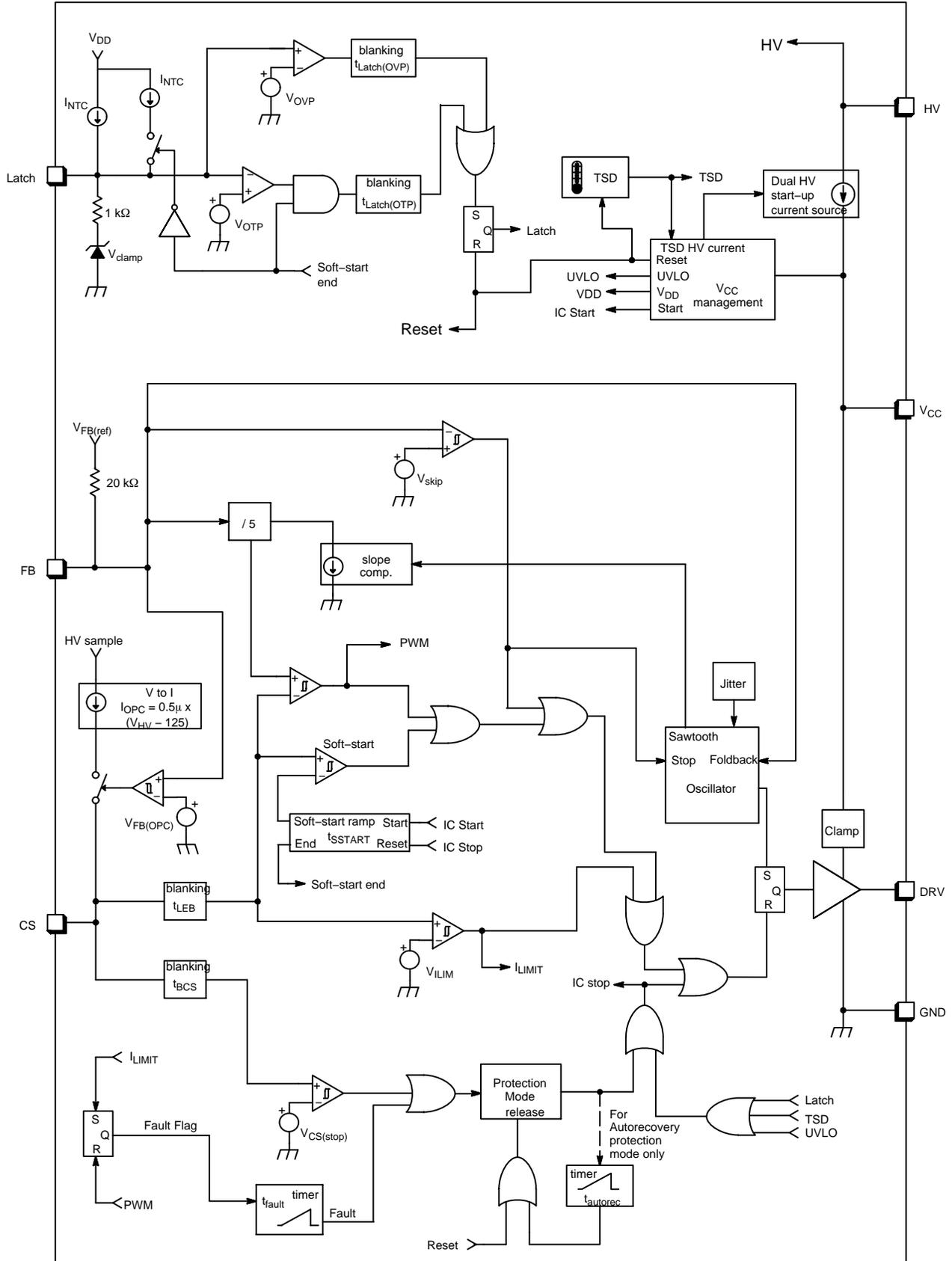


Figure 2. Simplified Internal Block Schematic