VIPER27

Off-line high voltage converters

Features

- 800 V avalanche rugged power section
- PWM operation with frequency jittering for low EMI
- Operating frequency:
  - 60 kHz for L type
  - 115 kHz for H type
- Standby power < 50 mW at 265 Vac
- Limiting current with adjustable set point
- Adjustable and accurate overvoltage protection
- On-board soft-start
- Safe auto-restart after a fault condition
- Hysteretic thermal shutdown

Application

- Auxiliary power supply for consumer and home equipments
- ATX auxiliary power supply
- Low / medium power AC-DC adapters
- SMPS for set-top boxes, DVD players and recorders, white goods

SO16 narrow DIP-7

Description

The device is an off-line converter with an 800 V rugged power section, a PWM control, two levels of over-current protection, overvoltage and overload protections, hysteretic thermal protection, soft-start and safe auto-restart after any fault condition removal. Burst mode operation and device very low consumption help to meet the standby energy saving regulations.

Advance frequency jittering reduces EMI filter cost. Brown-out function protects the switch mode power supply when the rectified input voltage level is below the normal minimum level specified for the system. The high voltage start-up circuit is embedded in the device.

Figure 1. Typical topology

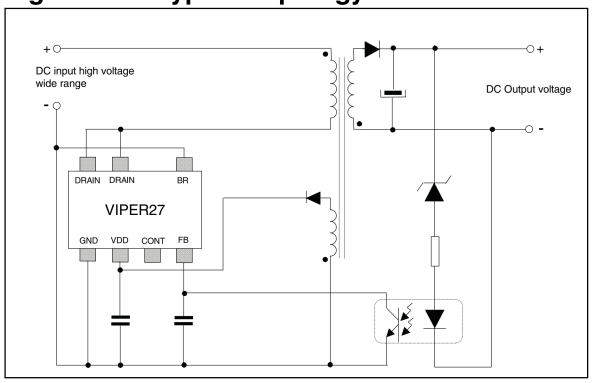
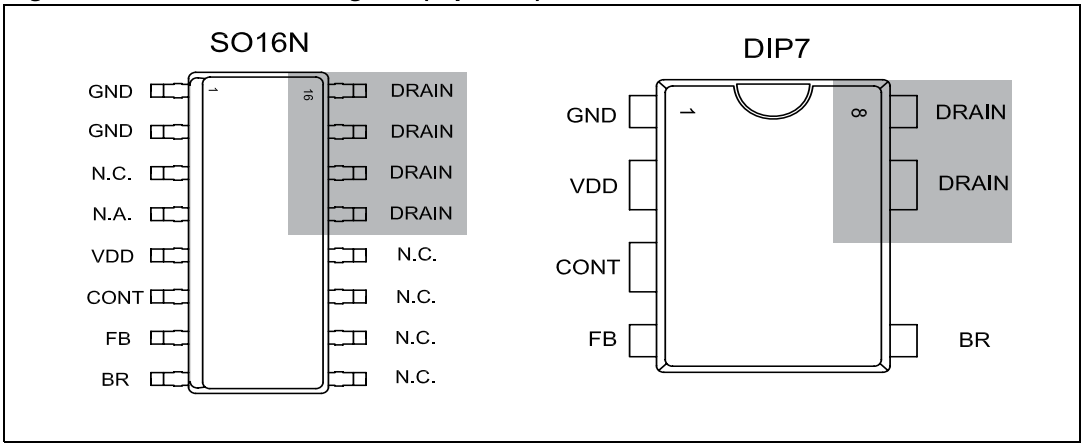


Table 1. Device summary

Order codes	Package	Packaging
VIPER27LN / VIPER27HN	DIP-7	Tube
VIPER27HD / VIPER27LD	SO16 narrow	
VIPER27HDTR / VIPER27LDTR		Tape and reel

3 Pin settings

Figure 3. Connection diagram (top view)



Note: The copper area for heat dissipation has to be designed under the DRAIN pins.

Table 3. Pin description

Pin n.		Name	Function
DIP7	SO16N		
1	1...2	GND	This pin represents the device ground and the source of the power section.
-	4	N.A.	Not available for user. It can be connected to GND (pins 1-2) or left not connected.
2	5	VDD	Supply voltage of the control section. This pin also provides the charging current of the external capacitor during start-up time.
3	6	CONT	Control pin. The following functions can be selected: 1. current limit set point adjustment. The internal set default value of the cycle-by-cycle current limit can be reduced by connecting to ground an external resistor. 2. output voltage monitoring. A voltage exceeding V_{OVP} threshold (see *Table 8 on page 7*) shuts the IC down reducing the device consumption. This function is strobed and digitally filtered for high noise immunity.
4	7	FB	Control input for duty cycle control. Internal current generator provides bias current for loop regulation. A voltage below the threshold V_{FBbm} activates the burst-mode operation. A level close to the threshold V_{FBlin} means that we are approaching the cycle-by-cycle over-current set point.
5	8	BR	Brownout protection input with hysteresis. A voltage below the threshold V_{BRth} shuts down (not latch) the device and lowers the power consumption. Device operation restarts as the voltage exceeds the threshold $V_{BRth} + V_{BRhyst}$. It can be connected to ground when not used.
7,8	13...16	DRAIN	High voltage drain pin. The built-in high voltage switched start-up bias current is drawn from this pin too. Pins connected to the metal frame to facilitate heat dissipation.