TOP252-262
TOPSwitch™-HX Family

Enhanced EcoSmart™, Integrated Off-Line Switcher with Advanced Feature Set and Extended Power Range

Product Highlights

Lower System Cost, Higher Design Flexibility

- Multi-mode operation maximizes efficiency at all loads
- New eSIP-7F and eSIP-7C packages
  - Low thermal impedance junction-to-case (2 °C per watt)
  - Low height is ideal for adapters where space is limited
  - Simple mounting using a clip to aid low cost manufacturing
  - Horizontal eSIP-7F package ideal for ultra low height adapter and monitor applications
  - Extended package creepage distance from DRAIN pin to adjacent pin and to heat sink
- No heat sink required up to 35 W using P, G and M packages with universal input voltage and up to 48 W at 230 VAC
- Output overvoltage protection (OVP) is user programmable for latching/non-latching shutdown with fast AC reset
  - Allows both primary and secondary sensing
- Line undervoltage (UV) detection prevents turn-off glitches
- Line overvoltage (OV) shutdown extends line surge limit
- Accurate programmable current limit
- Optimized line feed-forward for line ripple rejection
- 132 kHz frequency (254Y-258Y and all E/L packages) reduces transformer and power supply size
  - Half frequency option for video applications
- Frequency jittering reduces EMI filter cost

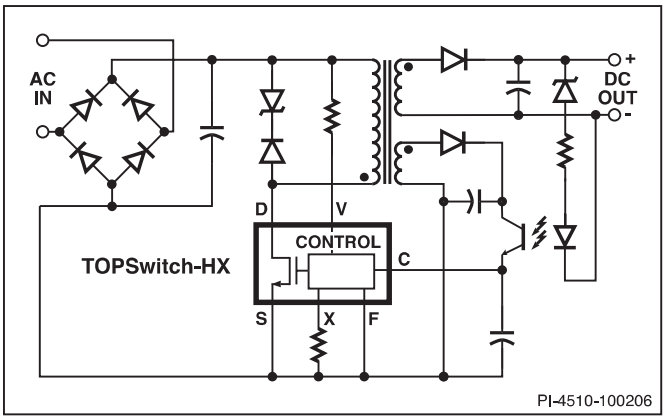

Figure 1. Typical Flyback Application.

- Heat sink is connected to SOURCE for low EMI
- Improved auto-restart delivers <3% of maximum power in short circuit and open loop fault conditions
- Accurate hysteretic thermal shutdown function automatically recovers without requiring a reset
- Fully integrated soft-start for minimum start-up stress
- Extended creepage between DRAIN and all other pins improves field reliability

Output Power Table

Product[5]	230 VAC ±15%[4]			85-265 VAC		
	Adapter[1]	Open Frame[2]	Peak[3]	Adapter[1]	Open Frame[2]	Peak[3]
TOP252PN/GN	9 W	15 W	21 W	6 W	10 W	13 W
TOP252MN			21 W			13 W
TOP253PN/GN	15 W	25 W	38 W	9 W	15 W	25 W
TOP253MN			43 W			29 W
TOP254PN/GN	16 W	28 W	47 W	11 W	20 W	30 W
TOP254MN			62 W			40 W
TOP255PN/GN	19 W	30 W	54 W	13 W	22 W	35 W
TOP255MN			81 W			52 W
TOP256PN/GN	21 W	34 W	63 W	15 W	26 W	40 W
TOP256MN			98 W			64 W
TOP257PN/GN	25 W	41 W	70 W	19 W	30 W	45 W
TOP257MN			119 W			78 W
TOP258PN/GN	29 W	48 W	77 W	22 W	35 W	50 W
TOP258MN			140 W			92 W

Product[5]	230 VAC ±15%		85-265 VAC	
	Adapter[1]	Open Frame[2]	Adapter[1]	Open Frame[2]
TOP252EN/EG	10 W	21 W	6 W	13 W
TOP253EN/EG	21 W	43 W	13 W	29 W
TOP254EN/YN/EG	30 W	62 W	20 W	43 W
TOP255EN/YN/EG	40 W	81 W	26 W	57 W
TOP255LN	40 W	81 W	26 W	57 W
TOP256EN/YN/EG	60 W	119 W	40 W	86 W
TOP256LN	60 W	88 W	40 W	64 W
TOP257EN/YN/EG	85 W	157 W	55 W	119 W
TOP257LN	85 W	105 W	55 W	78 W
TOP258EN/YN/EG	105 W	195 W	70 W	148 W
TOP258LN	105 W	122 W	70 W	92 W
TOP259EN/YN/EG	128 W	238 W	80 W	171 W
TOP259LN	128 W	162 W	80 W	120 W
TOP260EN/YN/EG	147 W	275 W	93 W	200 W
TOP260LN	147 W	190 W	93 W	140 W
TOP261EN/YN/EG	177 W	333 W	118 W	254 W
TOP261LN	177 W	244 W	118 W	177 W
TOP262EN[6]	177 W	333 W	118 W	254 W
TOP262LN[6]	177 W	244 W	118 W	177 W

Table 1. Output Power Table. (for notes see page 2).

EcoSmart™– Energy Efficient

- Energy efficient over entire load range
- No-load consumption
  - Less than 200 mW at 230 VAC
- Standby power for 1 W input
  - >600 mW output at 110 VAC input
  - >500 mW output at 265 VAC input

Description

TOPSwitch-HX cost effectively incorporates a 700 V power MOSFET, high voltage switched current source, PWM control, oscillator, thermal shutdown circuit, fault protection and other control circuitry onto a monolithic device.

Notes for Table 1:

1. Minimum continuous power in a typical non-ventilated enclosed adapter measured at +50 °C ambient. Use of an external heat sink will increase power capability.
2. Minimum continuous power in an open frame design at +50 °C ambient.
3. Peak power capability in any design at +50 °C ambient.
4. 230 VAC or 110/115 VAC with doubler.
5. Packages: P: DIP-8C, G: SMD-8C, M: SDIP-10C, Y: TO-220-7C, E: eSIP-7C, L: eSIP-7F. See part ordering information.
6. TOP261 and TOP262 have the same current limit set point. In some applications TOP262 may run cooler than TOP261 due to a lower $R_{DS(ON)}$ for the larger device.

Y Package Option for TOP259-261

In order to improve noise-immunity on large TOPSwitch-HX Y package parts, the F pin has been removed (TOP259-261YN are fixed at 66 kHz switching frequency) and replaced with a SIGNAL GROUND (G) pin. This pin acts as a low noise path for the C pin capacitor and the X pin resistor. It is only required for the TOP259-261YN package parts.

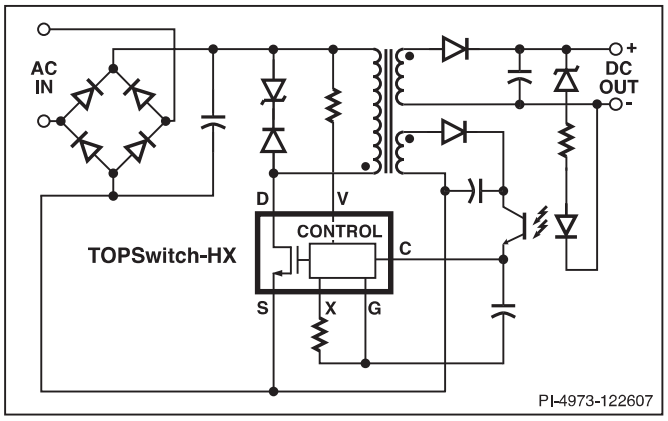

Figure 2. Typical Flyback Application TOP259YN, TOP260YN and TOP261YN.