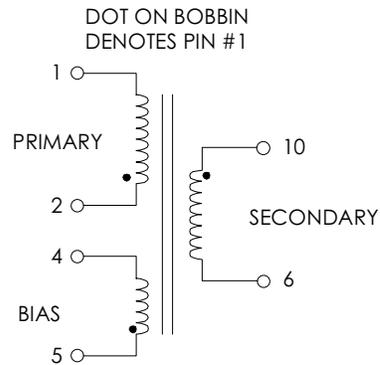


**TABLE 1: ELECTRICAL SPECIFICATIONS AT 25 °C**

SWITCHING TRANSFORMER DESIGNED FOR USE WITH POWER INTEGRATIONS  
PWR-TOP210PFI REFER TO APPLICATION CIRCUIT OF FIGURE 3.

PARAMETER	SPEC LIMITS			UNITS
	MIN.	TYP.	MAX.	
PRIMARY INDUCTANCE (2-1) VOLTAGE = 0.250Vrms FREQUENCY = 100 KHZ	3.40	4.00	4.60	mHY
TURN RATIO'S: SECONDARY (8-5) : PRIMARY (2-1) BIAS (4-3) : PRIMARY (2-1)	—	1:11.17 1:26.80	—	± 4% ± 4%
PRI LEAKAGE IND. (8-5 SHORTED) VOLTAGE = 0.250Vrms FREQUENCY = 100 KHZ	—	83.0	100.0	μHY
HIPOT: PRIMARY TO SECONDARY BIAS TO SECONDARY	3000 3000	— —	— —	Vrms Vrms
APP CIRCUIT PARAMETERS: (1) AC LINE VOLTAGE 47/400 Hz OUTPUT VOLTAGE NOMINAL OUTPUT CURRENT CONTINUOUS (2) OUTPUT CURRENT PEAK LINE REGULATION (102 TO 318Vac) LOAD REGULATION 10-100% RIPPLE	85 20 — — — — —	— 15.0 — 3.00 6.00 20.0	265 200 280 — — —	Vac Vdc mA mA ±% ±% ±mV

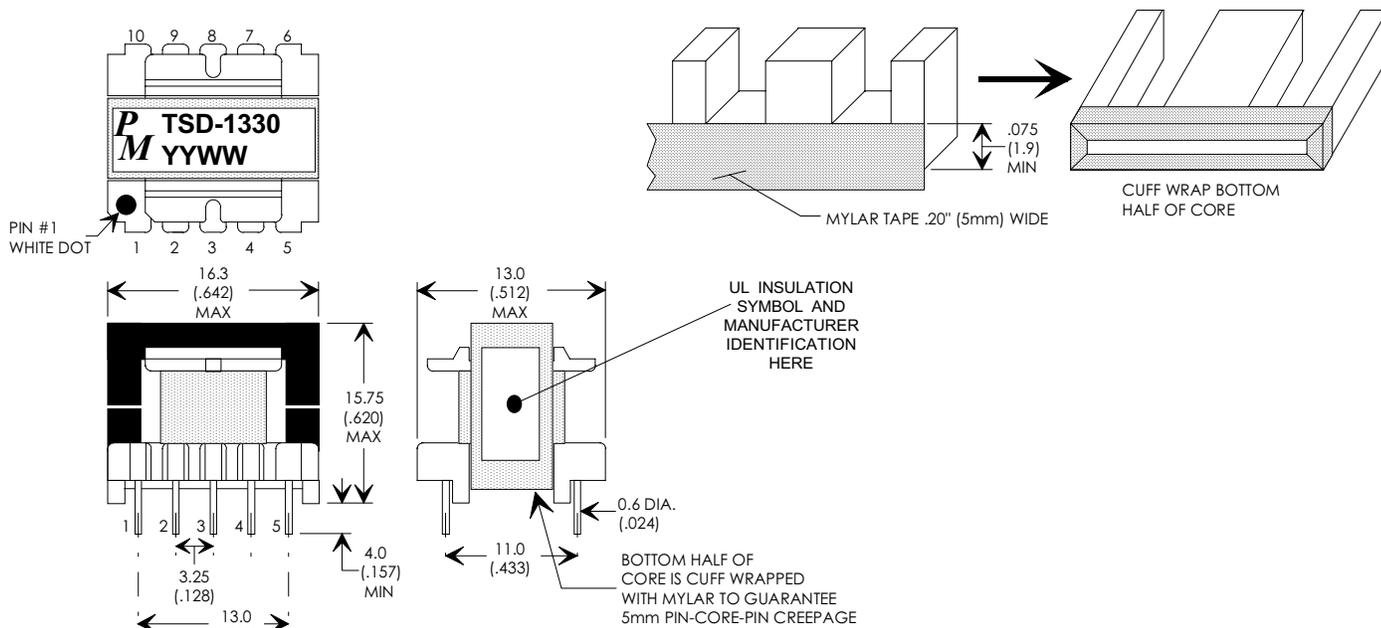
**FIGURE 1: SCHEMATIC DIAGRAM**



**NOTE1:**  
**REINFORCED INSULATION SYSTEM, UL1950, IEC950, CSA-950:**  
A) ALL MATERIALS MEET "UL", "CSA" & "IEC" REQUIREMENTS  
B) TRIPLE BASIC INSULATED SECONDARY.  
C) DESIGNED TO MEET ≥5.0mm CREEPAGE REQUIREMENTS.  
D) VARNISH FINISHED ASSEMBLY.  
E) UL CLASS (B) 130 INSULATION SYSTEM PM130-R1, PM130-H1, PM130-H1A (UL FILE #E177139) OR ANY UL AUTHORIZED CLASS (B) INSULATION SYSTEM.

(1) REFER TO APPLICATION CIRCUIT OF FIGURE 3.  
(2) WITH R3 OPTIONAL CLAMP RESISTOR IN PLACE

**FIGURE 2: PHYSICAL DIMENSIONS mm (INCHES)**



REV.	DESCRIPTION OF CHANGES	BY
02/03/99	UPDATE RELEASE CORRECT SCHEMATIC ON FIGURE 3	PP
09/17/99	UPDATE TO UL CLASS (B) 130 INSULATION SYSTEM	MD

EE16/EI16, 10-PIN VERTICAL



UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MM  
DIMENSIONAL TOLERANCES ARE:  
DECIMALS ANGLES  
.X ± .25 ±0° 30'  
.XX ± .15  
DO NOT SCALE DRAWING

TRANSFORMER CONTROL DRAWING	
PREMIER P/N: TSD-1330	REVISION: 09/17/99
ENGR: PETER PHAM	REF: PWR-TOP210PFI
SCALE: NONE	SHEET: 1 OF 6

## APPLICATION NOTES

Premier Magnetic's TSD-1330 Switch Mode Transformer was designed for use with Power Integrations, Inc. PWR-TOP210PFI three terminal off-line PWM switching regulator in the Flyback Buck-Boost circuit configuration. This conversion topology can provide isolated multiple outputs with efficiencies up to 90%. Premier'S TSD-1330 transformer has been optimized to provide maximum power throughput.

The PWR-TOPXXX series from Power Integrations, Inc. are self contained 100KHz three terminal voltage controlled PWM switching regulators. This series contains all necessary functions for an off-line switched mode control DC power source. These switching regulators provide a very simple solution to off-line designs. The inductors and transformer used with the PWR-TOPXXX are critical to the performance of the circuit. They define the overall efficiency, output power and overall physical size.

Below is a universal input, 3 watt application circuit utilizing Power Integrations PWR-TOP210 switching regulator in the flyback buck-boost configuration. This circuit provides +15Vdc at 200mA continuous and is capable of 300mA peak for short periods of time. This circuit represents the lowest cost implementation and utilizes the bias winding for feedback control. As such the line & load regulation are worse than that which could be achieved by utilizing an opto-coupler to sense the actual outputs. The component values listed are intended for reference purposes only. Resistor R1 may be adjusted up to 100 Ohms and down to 10 Ohms. As R1 increases in value the output voltage will increase, and vice-versa, thus allowing some fine adjustment on the initial output voltage. The EMI/RFI capacitors C7 & C8 are shown for reference but may not be needed to meet EMI/RFI emmission specifications. Clamp resistor R3 is recommended to stabilize the circuit during a no load condition.

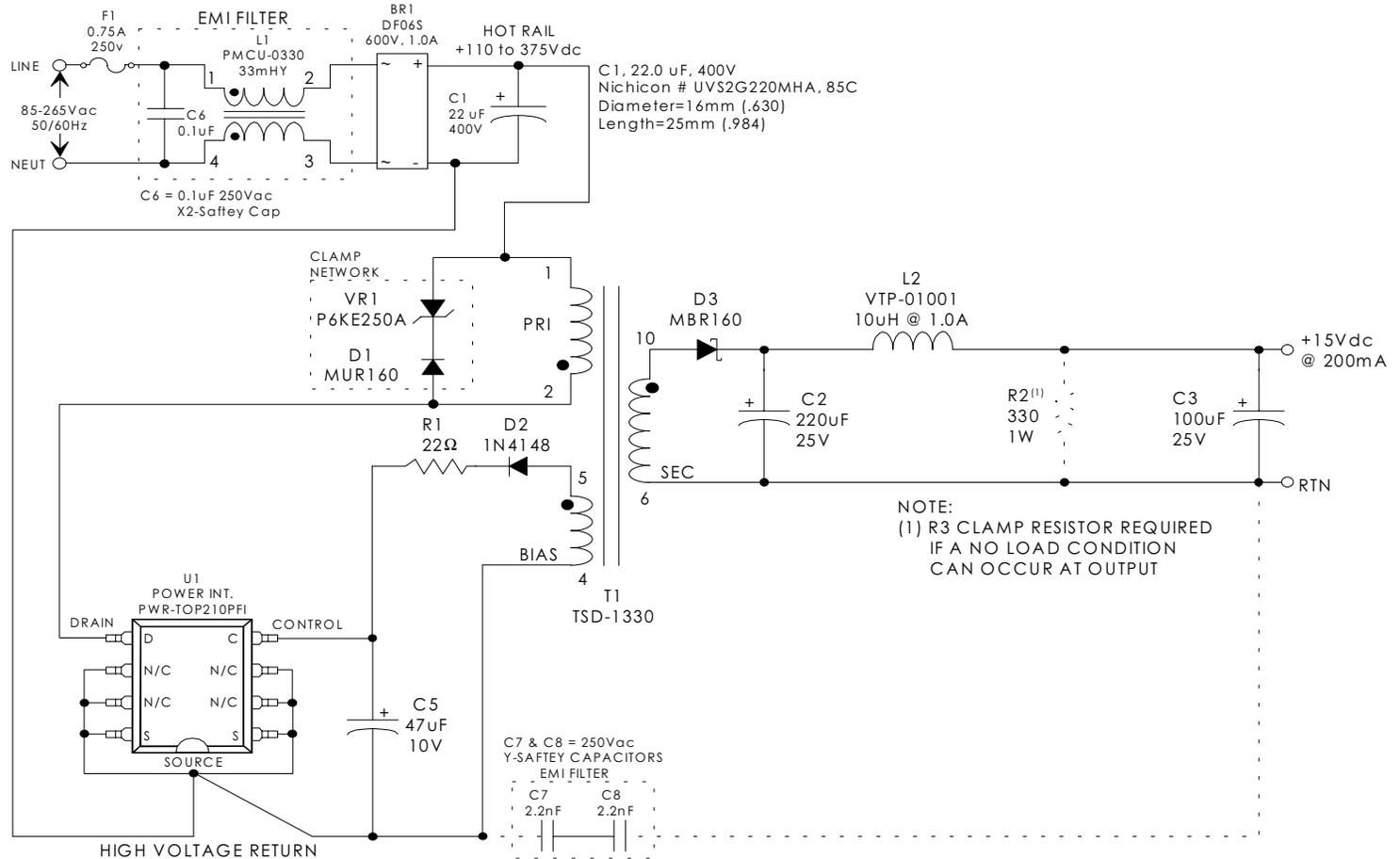
**FIGURE 3: TYPICAL APPLICATION CIRCUIT**

PREMIER MAGNETICS PART NUMBERS:  
(REQUEST DATA SHEETS BY PART#)

L1 = PMCU-0330 33mHy EMI/RFI CMC  
T1 = TSD-1330 MAIN SWITCHING TRANSFORMER  
L2 = VTP-01001 10uHy, 1.0Amp INDUCTOR

ALUMINUM ELECTROLYTIC FILTER CAPACITOR RATINGS:

+15V OUTPUT: C2 ≥25V, Ripple Rated ≥ 250mA @ 100KHz @ Max. Op. Temp.  
PANASONIC FA SERIES: LOW IMPEDANCE LONG LIFE RADIAL SERIES  
C2 = 220uF, 25V = PANASONIC ECA1EFG221  
C3 = 100uF, 25V = PANASONIC ECA1EFG101



**Premier  
Magnetics Inc.**  
"INNOVATORS IN MAGNETICS TECHNOLOGY"

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MM  
DIMENSIONAL TOLERANCES ARE:  
DECIMALS ANGLES  
.X ± .25 ±0° 30'  
.XX ± .15  
DO NOT SCALE DRAWING

### TRANSFORMER CONTROL DRAWING

PREMIER P/N: TSD-1330	REVISION: 09/17/99
ENGR: PETER PHAM	REF: PWR-TOP210PFI
SCALE: NONE	SHEET: 2 OF 6