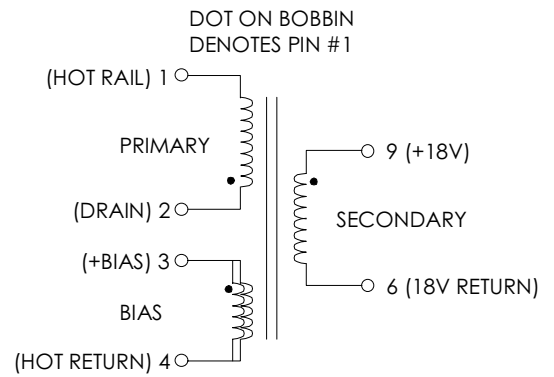


**TABLE 1: ELECTRICAL SPECIFICATIONS AT 25 °C**

SWITCHING TRANSFORMER DESIGNED FOR USE WITH POWER INTEGRATIONS TOP-221Y REFER TO APPLICATION CIRCUIT OF FIGURE 3.

PARAMETER	SPEC LIMITS			UNITS
	MIN.	TYP.	MAX.	
PRIMARY INDUCTANCE (2-1) FREQ. = 100 KHZ @ 0.250Vrms	3200	3500	3800	μHY
TURNRATIO'S: SECONDARY (9-6) : PRIMARY (2-1) BIAS (3-4) : PRIMARY (2-1)	—	1: 9.33 1: 11.2	—	± 4% ± 4%
PRI LEAKAGE IND. (9-6 SHORTED) FREQ. = 100 KHZ @ 0.250Vrms	—	—	150.0	μHY
HIPOT: PRIMARY TO SECONDARY BIAS TO SECONDARY	3000 3000	— —	— —	Vrms Vrms
APP CIRCUIT PARAMETERS: (1) INPUT OUTPUT VOLTAGE OUTPUT CURRENT CONTINUOUS OUTPUT CURRENT PEAK BIAS OUTPUT VOLTAGE BIAS LINE REGULATION (85 TO 265Vac) LOAD REGULATION 10-100% RIPPLE	85 — 20 — 10 — — — —	— 18 — 15 — 0.30 0.20 50.0	265 — 200 220 200 — — —	Vac Vdc mA mA Vdc mA ±% ±% ±mV

**FIGURE 1: SCHEMATIC DIAGRAM**



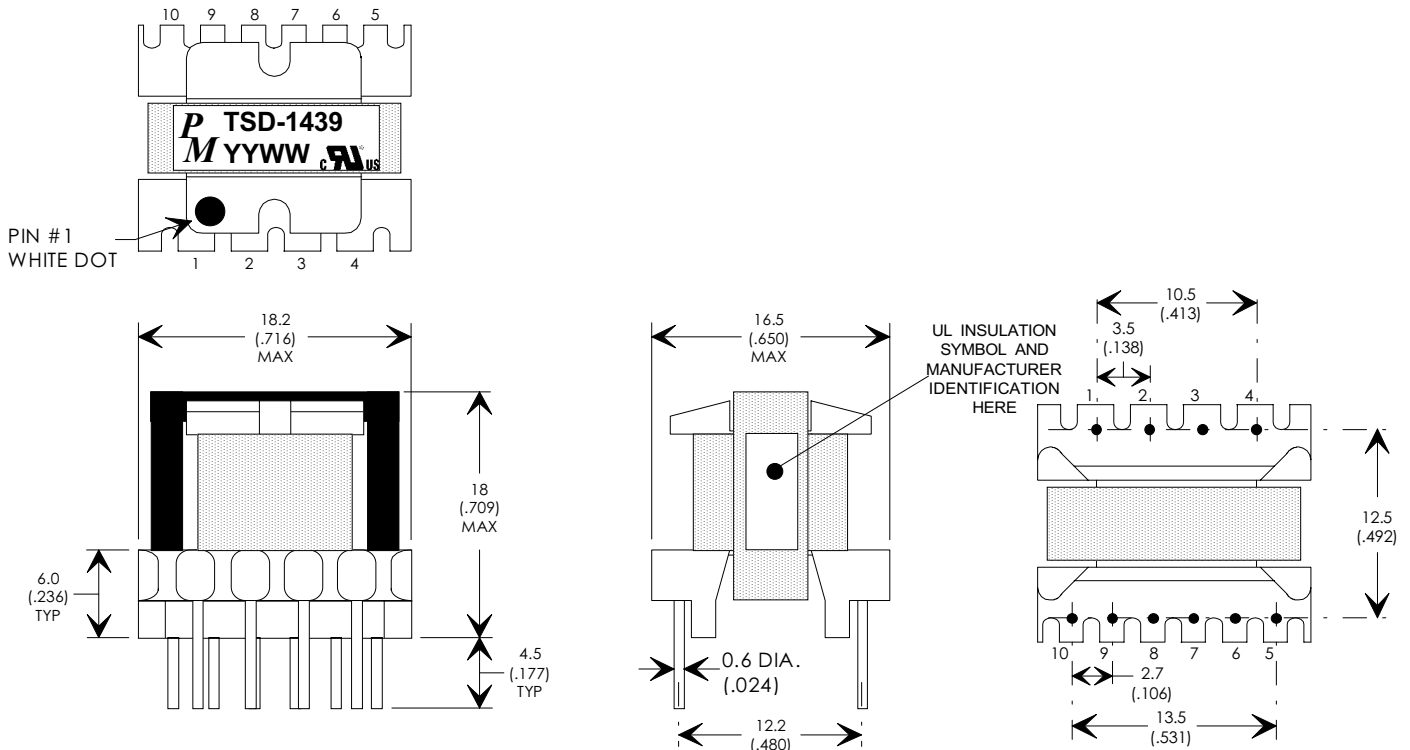
**NOTE1:**

- A) REINFORCED INSULATION SYSTEM, UL1950, IEC950, CSA-950:
- B) ALL MATERIALS MEET "UL", "CSA" & "IEC" REQUIREMENTS
- C) TRIPLE BASIC INSULATED SECONDARY.
- D) VARNISH FINISHED ASSEMBLY.
- E) UL1950 & CSA-950 CERTIFIED: FILE #E162344.
- F) 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.

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



REV.	DESCRIPTION OF CHANGES	BY
06/24/99	ORIGINAL RELEASE	PP
08/05/99	UPDATE TO UL CLASS 130 (B) INSULATION SYSTEM	MD
12/22/99	UPDATED TO UL RECOGNIZED	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

FLYBACK TRANSFORMER CONTROL DRAWING	
PREMIER P/N: TSD-1439	REVISION: 12/22/99
DRAWN BY: PETER PHAM	REF: TOP221Y
SCALE: NONE	SHEET: 1 OF 6

## APPLICATION NOTES

Premier Magnetics' TSD-1439 Switch Mode Transformer was designed for use with Power Integrations, Inc. TOP223 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-1439 transformer has been optimized to provide maximum power throughput.

The 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 high precision 4 watt application circuit utilizing Power Integrations TOP221Y switching regulator in the flyback buck-boost configuration. The component values listed are intended for reference purposes only. Proper thermal management of the TOP221, VR1 & D3 is required for reliable operation. The TOP221Y should be mounted on  $\geq 0.75$  in<sup>2</sup>, 2oz copper clad to provide a proper heat sink starting point for evaluation. As with any flyback circuit the output is not intended to be run under a no load condition. The component values listed are intended for reference purposes only. Careful evaluation by the end user is required and should be based on the actual application & it's associated environmental conditions.

**FIGURE 3: TYPICAL APPLICATION CIRCUIT**

**PREMIER MAGNETICS PART NUMBERS:**

(REQUEST DATA SHEETS BY PART#)

L1 = PMCU-0220 22mH EMI/RFI CMC

T1 = TSD-1439 MAIN SWITCHING TRANSFORMER

L2 = VTP-01001 10uH, 1.0Amp INDUCTOR

**ALUMINUM ELECTROLYTIC FILTER CAPACITOR RATINGS:**

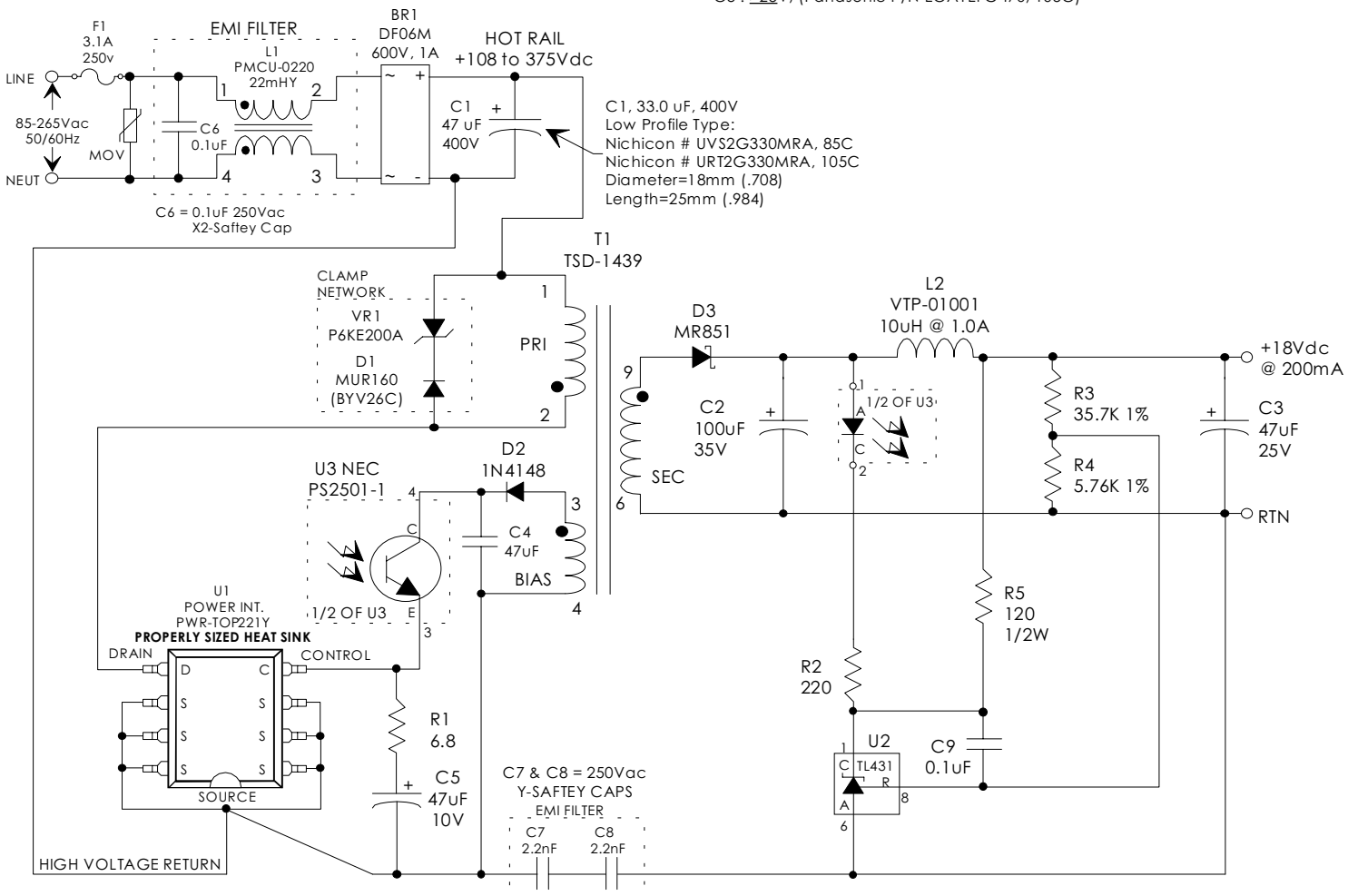
C1 :  $\geq 400V$ , Ripple Rated  $\geq 125mA$  @ 120Hz @ Max. Operating Temp.

(Nichicon P/N URT2G330MRA, 105C)

C2 :  $\geq 35V$ , Ripple Rated  $\geq 267mA$  @ 100KHz @ Max. Op. Temp.

(Panasonic P/N ECA1VFG101, 105C)

C3 :  $\geq 25V$ , (Panasonic P/N ECA1EFG470, 105C)



PREMIER P/N: TSD-1439	REVISION: 12/22/99
DRAWN BY: PETER PHAM	REF: TOP221Y
SCALE: NONE	SHEET: 2 OF 6