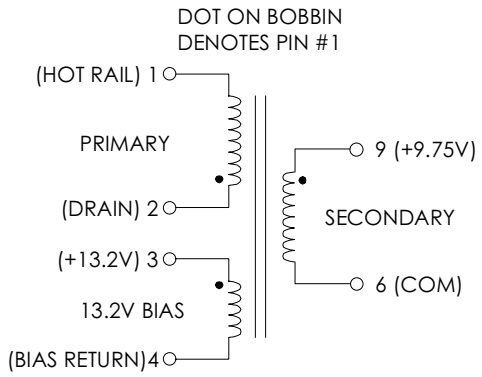
TABLE 1: ELECTRICAL SPECIFICATIONS AT 25 °C

SWITCHING TRANSFORMER DESIGNED FOR USE WITH POWER INTEGRATIONS TOP221Y. REFER TO APPLICATION CIRCUIT OF FIGURE 3.

PARAMETER	SPEC LIMITS MIN.	TYP.	MAX.	UNITS
PRIMARY INDUCTANCE (2-1) VOLTAGE = 0.250Vrms FREQUENCY = 100 KHZ	3.4	4.0	4.6	mHY
TURN RATIO'S: SEC (9-6) : PRIMARY (2-1) BIAS (3-4) : PRIMARY (2-1)	-------- --------	1:12.167 1: 9.125	-------- --------	± 3% ± 3%
PRI LEAKAGE IND. (SEC SHORTED) VOLTAGE = 0.250Vrms FREQUENCY = 100 KHZ	--------	--------	160	µHY
HIPOT: PRIMARY & BIAS TO SECONDARY PRIMARY TO BIAS	3000 600	-------- --------	-------- --------	Vrms Vrms
APP CIRCUIT PARAMETERS: (1) AC LINE VOLTAGE 47/400 Hz OUTPUT VOLTAGE OUTPUT CURRENT CONTINUOUS OUTPUT CURRENT PEAK LINE REGULATION (85 TO 265Vac) LOAD REGULATION 20-100% RIPPLE	 85 -------- 20 -------- -------- -------- --------	 -------- 9.75 -------- -------- 0.50 0.50 50.0	 265 -------- 500 550 -------- -------- --------	 Vac Vdc mA mA ±% ±% ±mV

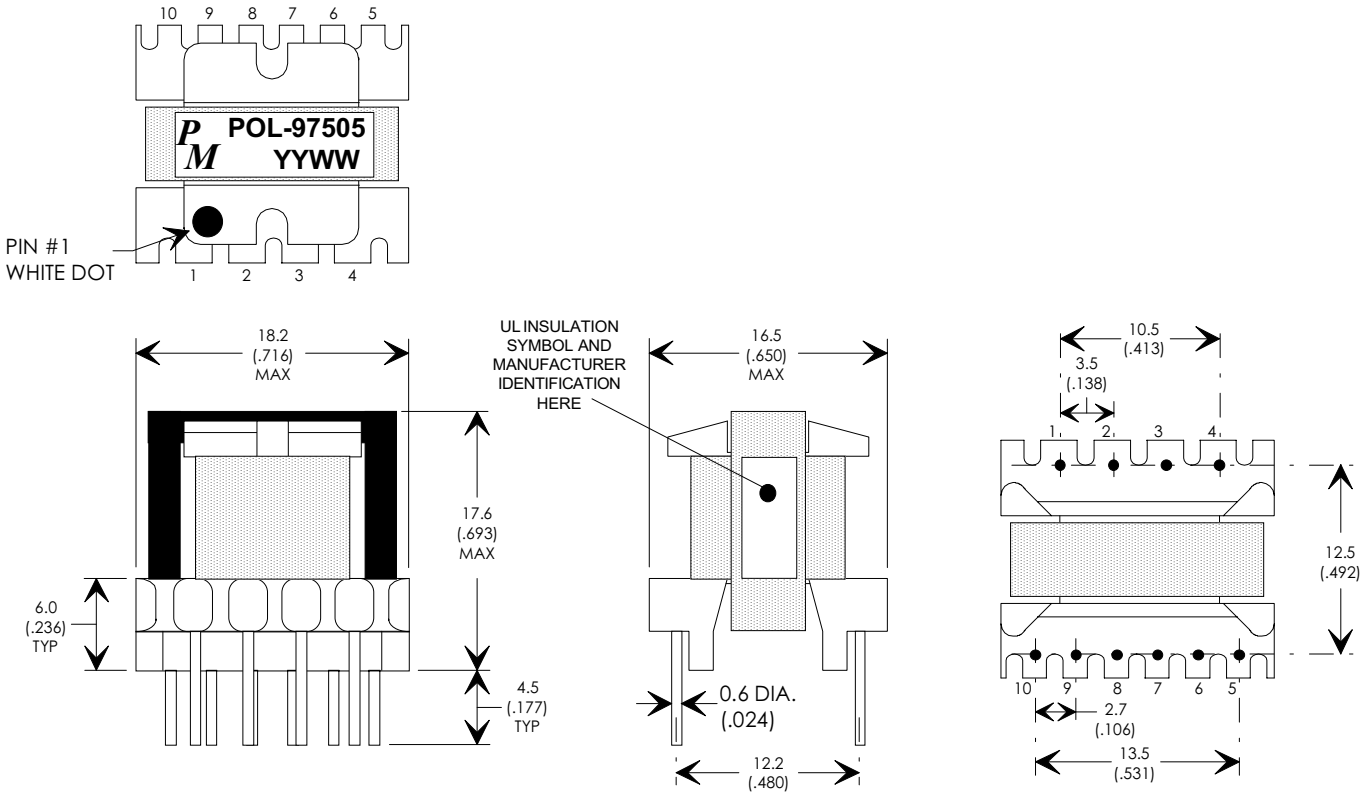
(1) REFER TO PRECICION OPTO-COUPLED APPLICATION CIRCUIT OF FIGURE 3. FIGURE 4. SHOWS A LOWER COST BIAS REGULATED CIRCUIT WHICH WILL HAVE 10% LINE LOAD REGULATION TYPICAL.

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 ≥6.2mm 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.

FIGURE 2: PHYSICAL DIMENSIONS mm (INCHES)



REV.	DESCRIPTION OF CHANGES	BY
04/23/98	UPDATED TO ALLOW EITHER BIAS OR OPTO-COUPLER FEEDBACK	TO
07/30/99	UPDATE TO UL CLASS (B) 130 INSULATION SYSTEM	MD

EE16/EI16, 10-PIN VERTICAL

Premier Magnetics Inc.

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: POL-97505	REVISION: 07/30/99
DRAWN BY: TOM O'NEIL	REF: TOP221Y
SCALE: NONE	SHEET: 1 OF 7

PRECISION OPTO-COUPLED CIRCUIT APPLICATION NOTES

Premier Magnetics POL-97505 Switch Mode Transformer was designed for use with Power Integrations, Inc. TOP221Y 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%. Premiers POL-97505 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.

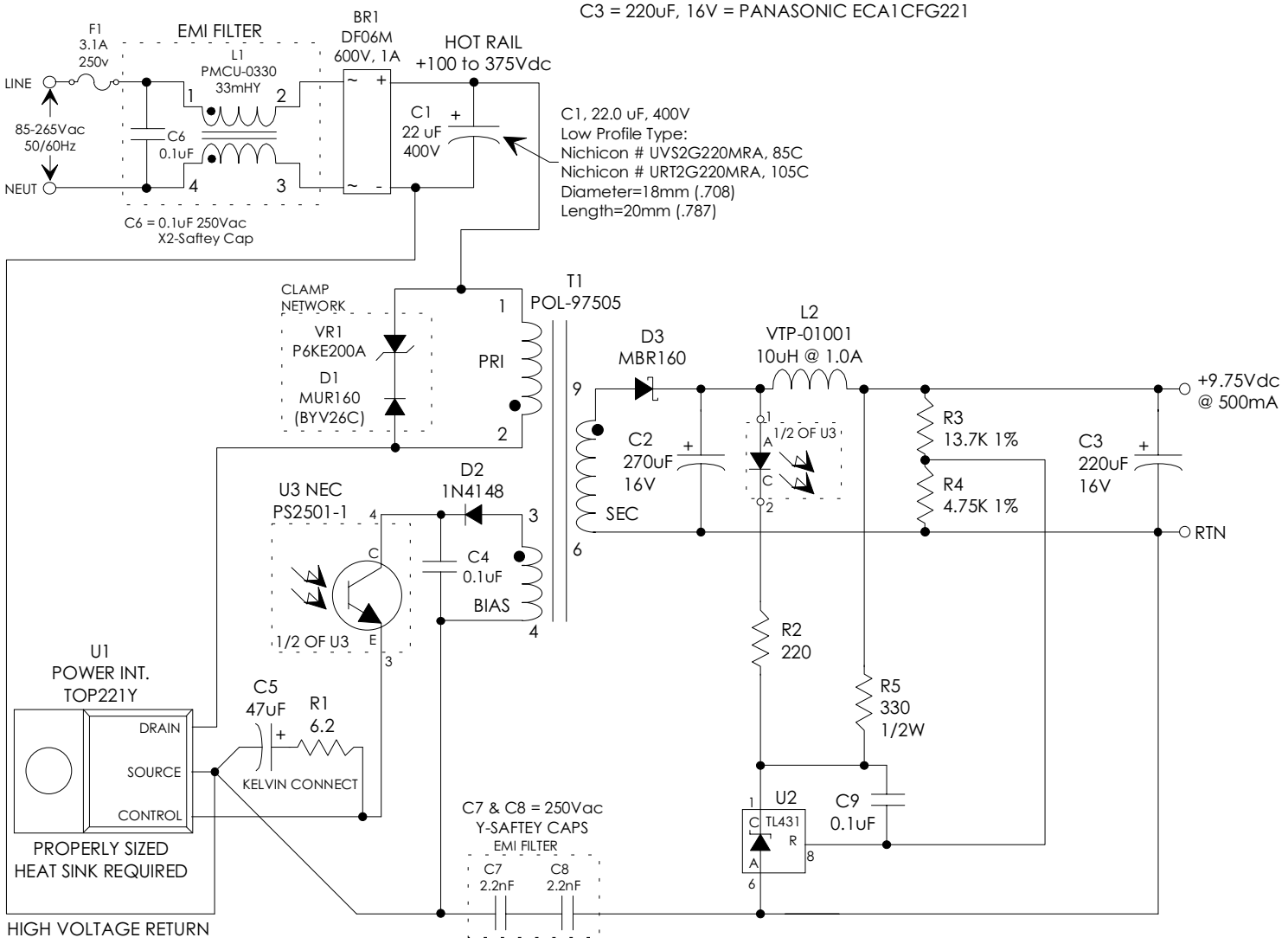
Below is a universal input high precision 4.8 watt application circuit utilizing Power Integrations TOP221Y switching regulator in the flyback buck-boost configuration. The component values listed are intended for reference purposes only.

FIGURE 3: TYPICAL APPLICATION CIRCUIT

PREMIER MAGNETICS PART NUMBERS:
(REQUEST DATA SHEETS BY PART#)
L1 = PMCU-0330 33mHy EMI/RFI CMC
T1 = POL-97504 MAIN SWITCHING TRANSFORMER
L2 = VTP-01001 10uHy, 1.0Amp INDUCTOR

ALUMINUM ELECTROLYTIC FILTER CAPACITOR RATINGS:

+9.75V OUTPUT: C2 ≥16V, Ripple Rated ≥ 550mA @ 100KHz @ Max. Op. Temp.
PANASONIC FA SERIES: LOW IMPEDANCE LONG LIFE RADIAL SERIES
C2 = 270uF, 16V = PANASONIC EEUFA1C271
C3 = 220uF, 16V = PANASONIC ECA1CFG221



Premier Magnetics Inc.	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: POL-97505 — REVISION: 07/30/99
		DRAWN BY: TOM O'NEIL — REF: TOP221Y
		SCALE: NONE — SHEET: 2 OF 7

LOW COST BIAS REGULATED CIRCUIT APPLICATION NOTES

Premier Magnetics POL-97505 Switch Mode Transformer was designed for use with Power Integrations, Inc. TOP221Y 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%. Premiers POL-97505 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.

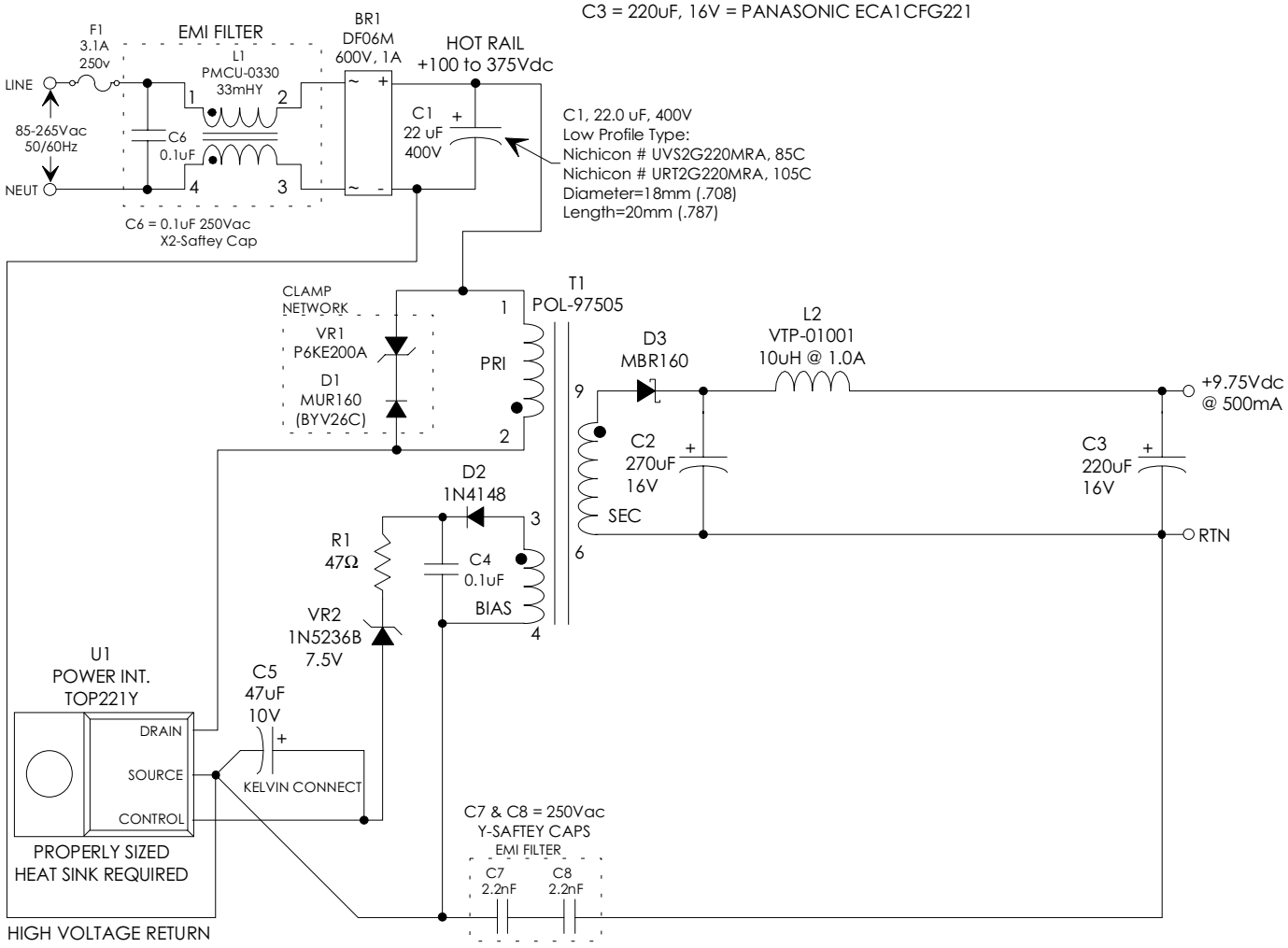
Below is a universal input Dual Output 4.8 watt application circuit utilizing Power Integrations TOP221 switching regulator in the flyback buck-boost configuration. This circuit provide a nominal output of 9.75Vdc at 250mA continuous and capable of 550mA peak for short periods of time. This circuit represents 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 output. Please refer to page 2 of this application note for the high precision opto-coupler version. The component values listed are intended for reference purposes only.

FIGURE 4: TYPICAL APPLICATION CIRCUIT

PREMIER MAGNETICS PART NUMBERS:
(REQUEST DATA SHEETS BY PART#)
L1 = PMCU-0330 33mHy EMI/RFI CMC
T1 = POL-97504 MAIN SWITCHING TRANSFORMER
L2 = VTP-01001 10uHy, 1.0Amp INDUCTOR

ALUMINUM ELECTROLYTIC FILTER CAPACITOR RATINGS:

+9.75V OUTPUT: C2 ≥16V, Ripple Rated ≥ 550mA @ 100KHz @ Max. Op. Temp.
PANASONIC FA SERIES: LOW IMPEDANCE LONG LIFE RADIAL SERIES
C2 = 270uF, 16V = PANASONIC EEUFA1C271
C3 = 220uF, 16V = PANASONIC ECA1CFG221



Premier Magnetics Inc.	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: POL-97505 — REVISION: 07/30/99
		DRAWN BY: TOM O'NEIL — REF: TOP221Y
		SCALE: NONE — SHEET: 3 OF 7