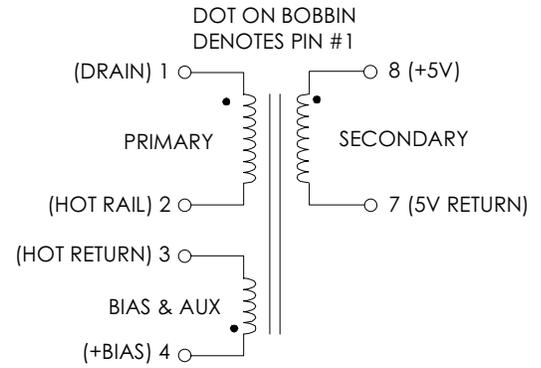


**TABLE 1: ELECTRICAL SPECIFICATIONS AT 25 °C**

SWITCHING TRANSFORMER DESIGNED FOR USE WITH POWER INTEGRATIONS PWR-TOP209PFI REFER TO APPLICATION CIRCUIT OF FIGURE 3.

PARAMETER	SPEC LIMITS			UNITS
	MIN.	TYP.	MAX.	
PRIMARY INDUCTANCE (1-2) FREQ. = 100 KHZ @ 0.250Vrms	9.00	10.00	11.00	mHY
TURN RATIO'S: SECONDARY (8-7) : PRIMARY (1-2) BIAS (4-3) : PRIMARY (1-2)	----- -----	1:23.43 1: 8.63	----- -----	± 3% ± 3%
PRI LEAKAGE IND. (8-7 SHORTED) FREQ. = 100 KHZ @ 0.250Vrms	-----	-----	250.0	μHY
HIPOT: PRIMARY & BIAS TO SECONDARY PRIMARY TO BIAS	3000 600	----- -----	----- -----	Vrms Vrms
APP CIRCUIT PARAMETERS: (1) DC HOT RAIL VOLTAGE SEC OUTPUT VOLTAGE @ 10-50mA BIAS OUTPUT & AUXILIARY (2) AUX OUTPUT CURRENT LINE REGULATION (85 TO 265Vac) LOAD REGULATION 10-100% RIPPLE	98 ----- ----- 10 ----- ----- -----	----- 5.0 15.0 ----- 1.00 3.00 100.0	375 ----- ----- 120 ----- ----- -----	Vdc Vdc Vdc mA ±% ±% ±mV

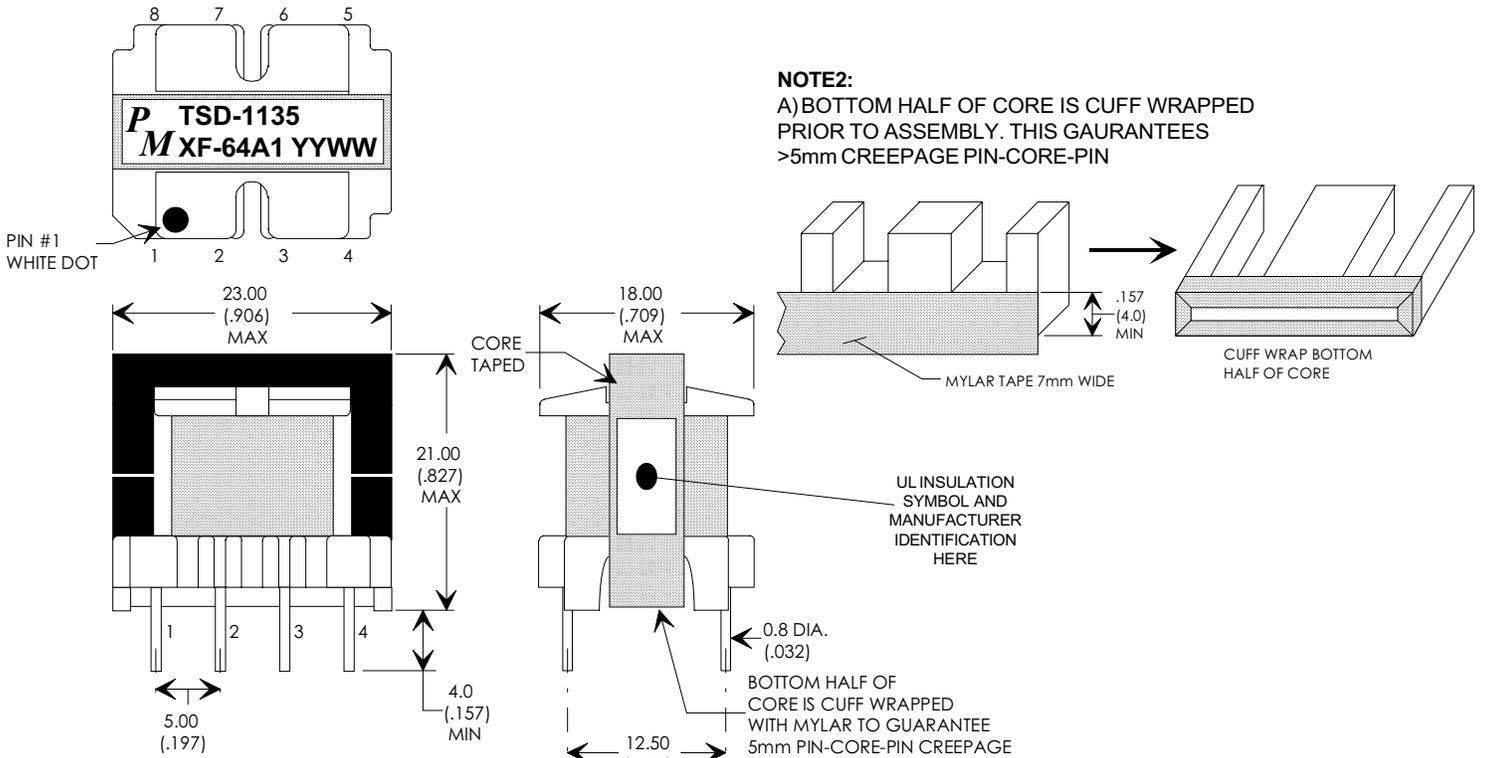
**FIGURE 1: SCHEMATIC DIAGRAM**



**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) THE BIAS OUTPUT IS ALSO USED AS A PRIMARY SIDE AUX. POWER SOURCE

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



**NOTE2:**  
 A) BOTTOM HALF OF CORE IS CUFF WRAPPED PRIOR TO ASSEMBLY. THIS GAURANTEES >5mm CREEPAGE PIN-CORE-PIN

REV.	DESCRIPTION OF CHANGES	BY
12/17/97	ORIGINAL RELEASE, REPLACED TSD-1017	TO
12/18/97	CORRECTED PIN-OUT	TO
06/09/98	CHANGED MARKING, NO OTHER CHANGES	TO
08/10/99	UPDATED TO UL CLAS (B) 130 INSULATION SYSTEM	MD

EI22/19/6, 8-PIN VERTICAL BOBBIN



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-1135	REVISION: 08/10/99
DRAWN BY: TOM O'NEIL	REF: XF-000064-00
SCALE: NONE	SHEET: 1 OF 6

## APPLICATION NOTES

Premier Magnetic's TSD-1135 Switch Mode Transformer was designed for use with Power Integrations, Inc. PWR-TOP209PFI 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-1135 transformer has been optimized to provide maximum power throughput.

The PWR-TOP209 from Power Integrations, Inc. is a self contained 70KHz three terminal voltage controlled PWM switching regulators. This part contains all necessary functions for an off-line switched mode control DC power source. This switching regulator provides a very simple solution for 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, 2.0 watt application circuit utilizing Power Integrations PWR-TOP209 switching regulator in the flyback buck-boost configuration. This circuit provides an IEC950 isolated +5Vdc at 10-50mA continuous and a non isolated +15Vdc @ 120mA, the non-isolated output is also utilized for feedback control. 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-0220 22mHy EMI/RFI CMC

T1 = TSD-1135 MAIN SWITCHING TRANSFORMER

ALUMINUM ELECTROLYTIC FILTER CAPACITOR RATINGS:

+5V OUTPUT: C4 ≥10V, Ripple Rated ≥ 25mA @ 70KHz @ Max. Op. Temp.

C2 & C4 = 47uF, 10V = Nichicon URT1A470MCH 5mm x 9mmL

+15V Bias & Aux OUTPUT: C3 ≥25V, Ripple rated ≥125mA @ 70KHz

C2 & C4 = 47uF, 25V = Nichicon URT1E470MCH 6.3mm x 9mmL

