7. Transformer Specifications

7.1. LLC Power Transformer

760895731 from Wurth Elektronik (www.we-online.com) is a LLC transformer orderable from Digikey. A split bobbin is used to incorporate the resonant inductance (leakage inductance) and magnetizing inductance into a single magnetic component.

- Core: ETD44 (A_e=172mm^2)
- Bobbin: 16 pin TH
- Magnetizing Inductance : 475 µH, ±10%
- Leakage Inductance: 100 µH, ±10%

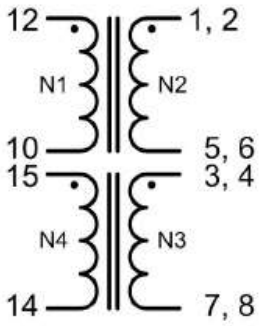

Figure 7. LLC Power Transformer (T1) in the Evaluation Board

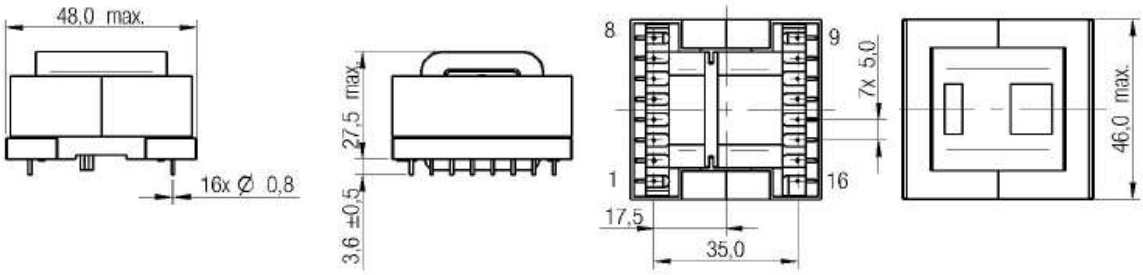

Figure 8. Wurth 760895731 Mechanical Drawing (dimensions in mm)

Table 3. Wurth 760895731 Transformer Electrical Specifications

Properties	Test conditions		Value	Unit	Tol.
Inductance	100 kHz/ 100 mV	L	475	µH	±10%
Turns ratio		n	35 : 2 : 2 : 3		±3%
Saturation current	I∆L/LI < 20%	I_{sat}	5.0	A	typ.
DC Resistance 1	@ 20°C	R_{DC1}	128	mΩ	max.
DC Resistance 2	@ 20°C	R_{DC2}	4.0	mΩ	max.
DC Resistance 3	@ 20°C	R_{DC3}	4.0	mΩ	max.
DC Resistance 4	@ 20°C	R_{DC4}	192	mΩ	max.
Leakage inductance	100 kHz/ 100 mV	L_S	100	µH	±10%
Insulation test voltage	W1,4 => W2,3	U_T	4000	V (AC)	

7.2. Current Sense Transformer

RL-10950 from Renco Electronics (www.rencousa.com) is a custom designed current sense transformer (CT). Most “off-the-shelf” CTs have primary to secondary isolation of <1000 V because they are not intended to operate across the isolation barrier. The RL-10950 is a 1:50 CT, specifically designed with 2500 V primary to secondary isolation which makes it more suitable for applcations such as the FAN7688 where the controller is on the secondary side and current sensing is coming from the primary side.

- Core: EP7 (A_e=9mm^2)
- Bobbin: 16 pin TH
- Magnetizing Inductance : 2.75mH, +40%/-20%

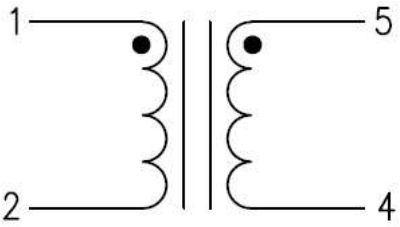

Figure 9. Current Sense Transformer (T2) in the Evaluation Board

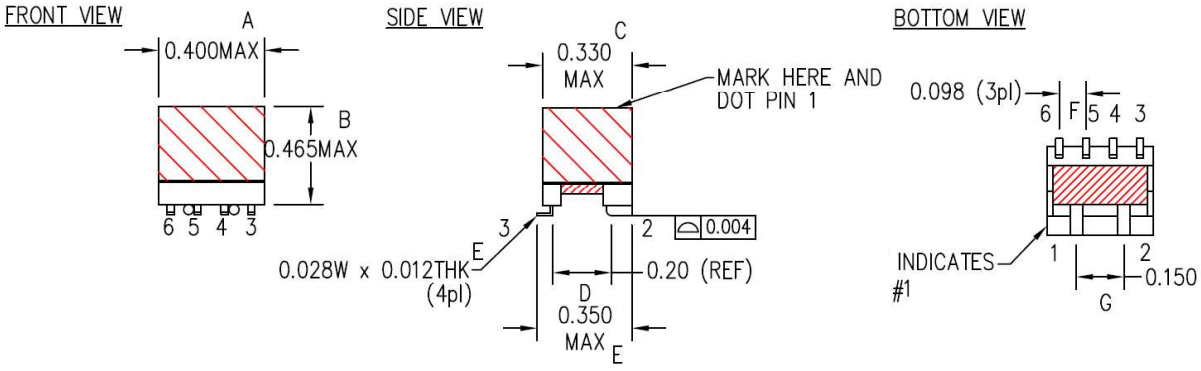

Figure 10. Renco RL-10950 Mechanical Drawing (dimensions in inches)

Table 4. RL-10950 Transformer Electrical Specifications

Parameter	Test Conditions	Ref,	Value	Unit	Tolerance
Inductance	100 kHz, 0,1 V_{AC}	L	2.75	mH	+40% / -20%
Turns Ratio			1:50		
DC Resistance 1	Pins 1-2, @25°C	$R_{DC(1-2)}$	7.5	mΩ	±25%
DC Resistance 2	Pins 5-4, @25°C	$R_{DC(5-4)}$	1.15	Ω	Max.
Isolation	2500 V_{AC} @ 60 Hz for 2s, Pins 1-5		2500	V_{AC}	Min.