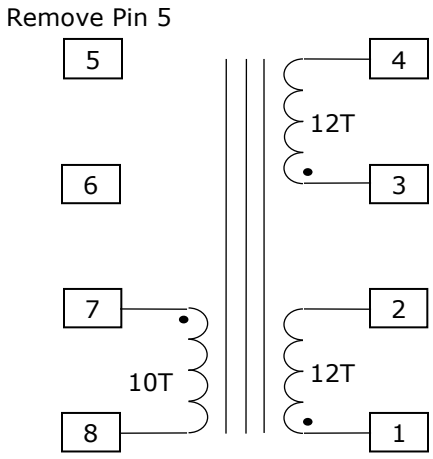
Transformer Fabrication Specification

GaN Drive Transformer for 5V to 12V MAG-1240

Revision History:

Rev	Description	Author	Date
01	First release	Yalcin Haksoz	26-Apr-2019

Schematic:

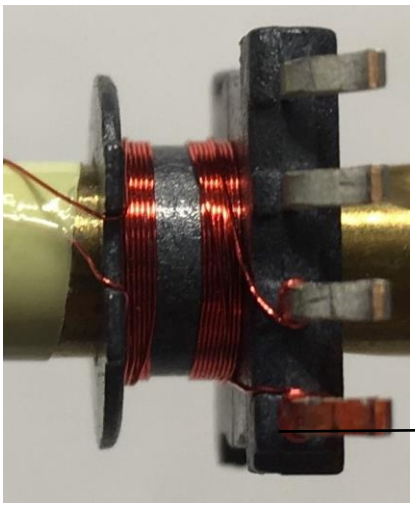
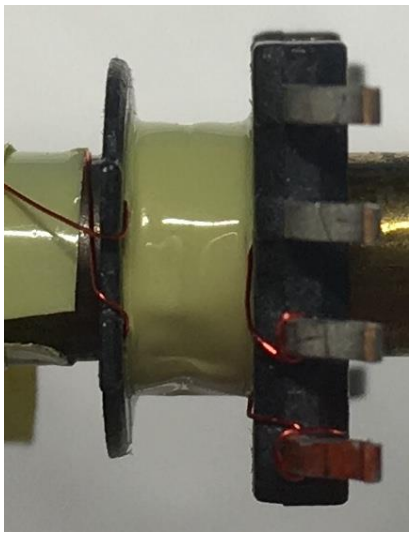


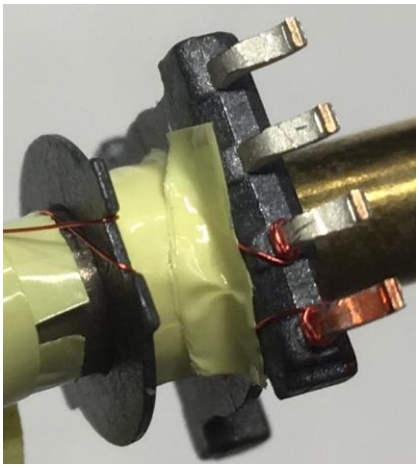
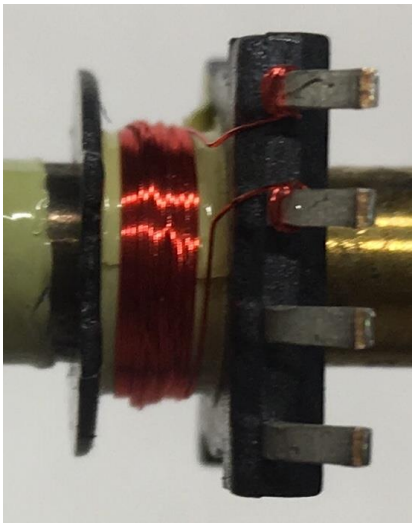
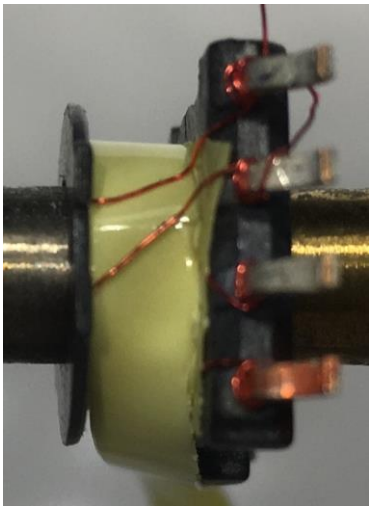
Materials:

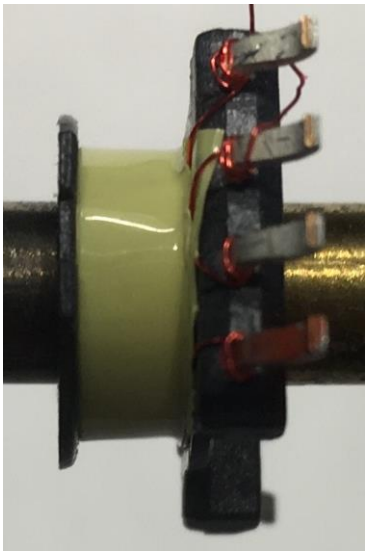
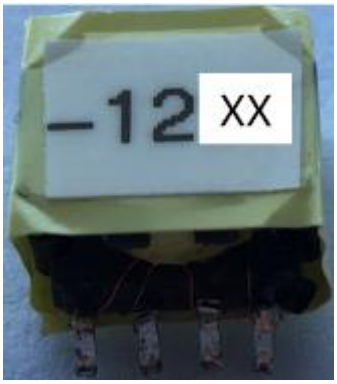
Item	Description	Mfg	Part Number	Qty
1	Core (Ungapped): ER9.5/5	TDK or Ferroxcube	B65523J0000R087 ER9.5/2.5/5-3C94-S	1 pair
2	Bobbin 8 pin SM Pin 5 is removed	TDK or Ferroxcube	B65527B1008T001 CPVS-ER9.5-1S-8P-Z	1
3	40 AWG Copper Magnet Wire	-	-	-
4	Polyester film tape 4mm wide with acrylic pressure sensitive adhesive.	3M	1318-1	-
5	Polyester film tape 8mm wide with acrylic pressure sensitive adhesive.	3M	1318-1	-

Winding Construction:

Note: The transformer is designed not to have crossed wires at the terminations. Please choose winding direction accordingly.

Winding Number	Start Pin	# Turns	Finish Pin	Wire
Secondary 1 Secondary 2	St 1 St 3	12 t	Fin 2 Fin 4	40 AWG Magnet Wire
Ensure not less than 1mm is left between two windings. Secure ends of Secondary 2 at the top side. They will be terminated later.				
Tape		2 t		Polyester film tape 4mm wide
Minimum 2 overlapping turns required.				

Tape				
Place small pieces of tape where turns that belong to different windings are likely to come close.				
Primary	St 7	10 t	Fin 8	40 AWG Magnet Wire
Wind the primary in the center of the bobbin leaving equal spacing at the edges.				
Tape		2 t		Polyester film tape 4mm wide
Wind 2 overlapping turns on the primary winding. Terminate Secondary 2 to pins 3 and 4. Ensure wires do not cross.				

Tape		2 t		Polyester film tape 4mm wide
Wind 2 overlapping turns. Terminate all wires at the pins such that: • The wires are wrapped around the pins two turns. • Excess wires are trimmed. • All wires are soldered at the pins.				
Final assembly and Test				
Assemble the cores using appropriate ferrite glue. Wrap 1.5 turns 8mm tape around the core. Tape overlaps at the bottom of the transformer. Test the item as specified below. Label the item with the part number "-1240" after successful pass.				

Testing:

Symbol	Parameter	Conditions	Min	Nominal	Max	Unit
L_P	Primary inductance across pins 7-8	100kHz, 1Vrms	-20%	TBA	+25%	µH
L_{LK}	Primary leakage inductance across pins 7-8 with pins 1-2-3-4 shorted	100 kHz, 0.1Vpp			TBA	µH
Hi-Pot	Pins 3-4 to pins 1-2	5mA, 1 second	1500 Vac or 2200 Vdc			V
	Pins 3-4 to pins 7-8	5mA, 1 second	1500 Vac or 2200 Vdc			V
	Pins 1-2 to pins 7-8	5mA, 1 second	1500 Vac or 2200 Vdc			V