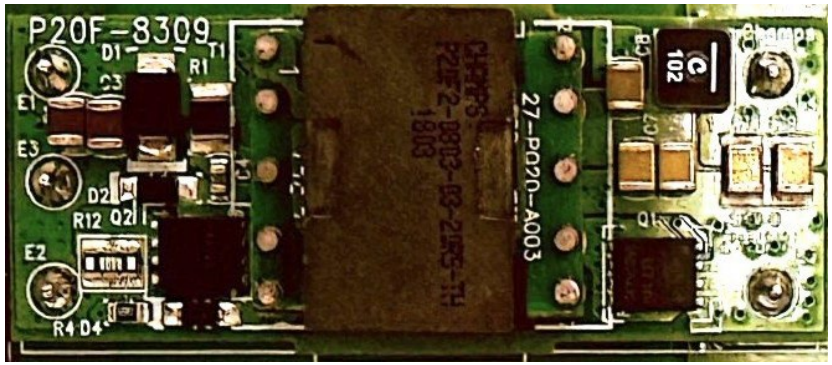
P20F Series DC-DC Power Module & Base-Board
Isolated Boundary Mode Flyback Converter



DC-DC Main Module Features:

- Wide Input Voltage Range (36V – 72 Volts)
- Up to 72W Isolated output power
- 92% efficiency Typical, 94.5% Peak
- Quasi-Resonant Boundary Mode at Load
- Positive Logic On/Off control option
- Low output ripple and noise
- RoHS compliant
- Temperature Range –40°C to +85°C
- Flyback Topology Boundary Mode

Description

- Champs-Tech Main Module contains the planar transformer and incorporated power components to complete a high efficiency, robust, low component count and low-cost DC-DC converter. It is intended to be supplied with a companion Base-Board in order to facilitate evaluation. Additional filtering and protection circuit and components may be added.

- Champs-Tech will build the module for any customer in any mechanical configuration that works best for the customer – embedded or discrete – open or encapsulated.

- Champs-Tech will supply the planar transformer.

- Champs-Tech will configure any possible options:

1. Input Voltage Range.
2. Output Voltage – Single or Multiple.
3. Output Power.
4. Discrete planar turns ratios and size.

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- The heart of the circuit is the LT3748 IC and extreme “low-leakage” inductance planar magnetics which maximizes the power capability of an external MOSFET switch while ensuring optimum efficiency. The output voltage is sampled from the reflected flyback waveform at the Vds node and is programmed with 1 resistor, so it doesn’t require an opto-isolator for regulation.

- The converter offers features based on the LT3748 function and features inherent to the IC:
- positive logic (Remote on/off), over current, over temperature & under voltage protection.

Under Voltage Lock Out (UVLO):

Additional features of the LT3748 and circuit provide input under voltage lockout. The unit will shut down when the input voltage drops below the threshold programmed.

Modules provide voltage isolation from input to output of up to 2250Vdc & can operate over the ambient Temperature Range from -40°C to +85°C.

Over Current Protection:

The output short-circuit and overcurrent protection consists of a current sense resistor on the primary side that will limit the output current [reflected] within the rated or specified range.

Over Voltage Protection:

The over-voltage protection consists of a Zener diode that will limit the output voltage within the rated or specified range.

Remote On/Off:

The 20F1 series allows the user to switch the module on and off electronically with the remote on/off feature. All models are available in “positive logic” versions. The converter turns on if the Remote On/Off pin is high (greater than 5 Volts) or open circuit.

Summary Performance Characteristics

Champs PN	Input Voltage	Output Voltage	Output Current	Output Power	Efficiency %	Mode	Dimension (mm)
P20F1-0803-03-20R5	36-72 Vin	12 Vout	5.0 A	60 W	87.0 – 94.5	BM	22.86 x 58.42 x 12

Notes:

1. Contact factory for additional options and complete ordering part numbers.
2. All specifications are at nominal line voltage and full load, +25 °C. Unless otherwise noted.
3. See detailed specifications below for maximum conditions.
4. There is no warranty implied or otherwise. Additionally, it is not appropriate to assume terms or other conditions that are not expressly addressed and confirmed by written agreement with Champs-Tech prior to use and evaluation. Such terms include matters such as warranties, product liability, intellectual property, or any other possible term or condition that is not explicitly addressed prior to use.

FUNCTIONAL SPECIFICATIONS 12 Vout

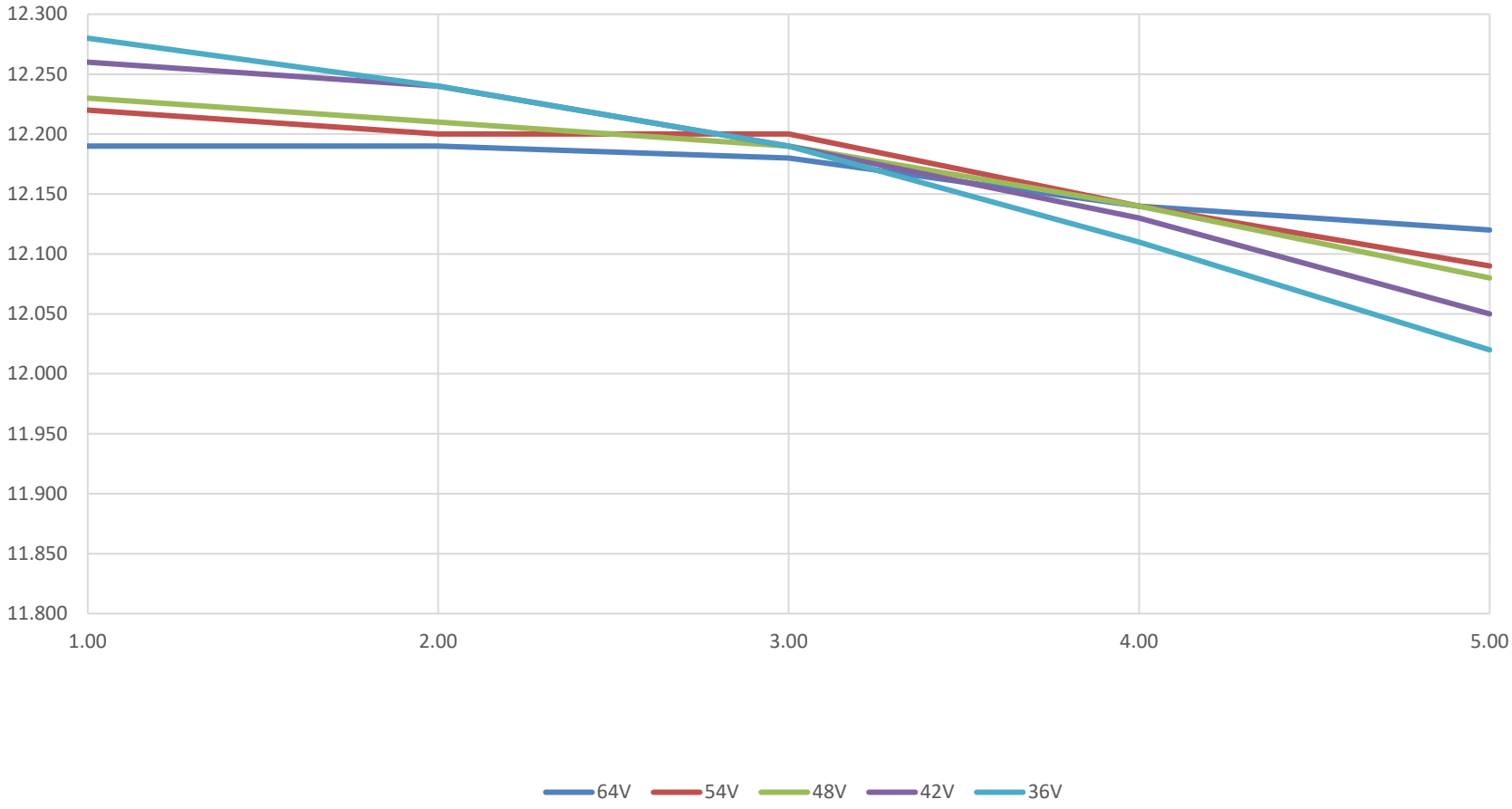
ABSOLUTE MAX RATINGS	Conditions	Minimum	Nominal	Maximum	Units
Operating Input Voltage Range	Derated Power Operation over Input Voltage Range	36	48	72	Vdc
Isolation Voltage	Input to Output tested 100 ms, IEC/EN/UL 60950-1,			2250	Vdc
On/Off Remote Control	Power on or off, referred to -Vin	0		15	Vdc
Output Power		0		72	W
Output Current	Current Limit, no damage, short circuit protected	0		6.0	A
Storage Temperature Range	Vin = Zero (no power)	-55		+130	C
INPUT	**Conditions**	**Minimum**	**Nominal**	**Maximum**	**Units**
Start-Up Threshold	Rising Input Voltage		35		Vdc
Under-voltage Shutdown	Falling Input Voltage		34.5		Vdc

Vin	Vin Main	Iin	Vout Main	Iout	Pout [Main]	Pin - Pout	Efficiency
	63.90	0.221	12.180	1.000	12.18	1.83	87.07%
	63.90	0.421	12.190	2.000	24.38	2.40	91.11%
64	63.90	0.614	12.180	3.000	36.54	2.60	93.43%
	63.90	0.808	12.140	4.000	48.56	3.03	94.20%
	63.90	1.012	12.120	5.000	60.60	4.05	93.82%
	53.90	0.257	12.210	1.000	12.21	1.51	89.15%
	53.90	0.492	12.200	2.000	24.40	2.03	92.39%
54	53.90	0.725	12.200	3.000	36.60	2.39	93.96%
	53.90	0.956	12.140	4.000	48.56	2.90	94.47%
	53.80	1.191	12.090	5.000	60.45	3.71	94.33%
	47.90	0.296	12.230	1.000	12.23	1.85	87.43%
	47.90	0.551	12.210	2.000	24.42	1.90	92.88%
48	47.90	0.813	12.190	3.000	36.57	2.33	94.12%
	47.90	1.074	12.140	4.000	48.56	2.87	94.55%
	47.80	1.339	12.080	5.000	60.40	3.74	94.31%
	41.90	0.329	12.260	1.000	12.26	1.40	89.89%
	41.90	0.627	12.240	2.000	24.48	1.70	93.63%
42	41.90	0.926	12.190	3.000	36.57	2.18	94.49%
	41.90	1.227	12.130	4.000	48.52	2.90	94.52%
	41.70	1.531	12.050	5.000	60.25	3.87	94.15%
	35.90	0.385	12.280	1.000	12.28	1.44	89.64%
	36.00	0.729	12.240	2.000	24.48	1.61	93.95%
36	35.90	1.081	12.190	3.000	36.57	2.21	94.31%
	35.90	1.432	12.110	4.000	48.44	2.98	94.41%
	35.70	1.788	12.020	5.000	60.10	4.10	93.85%

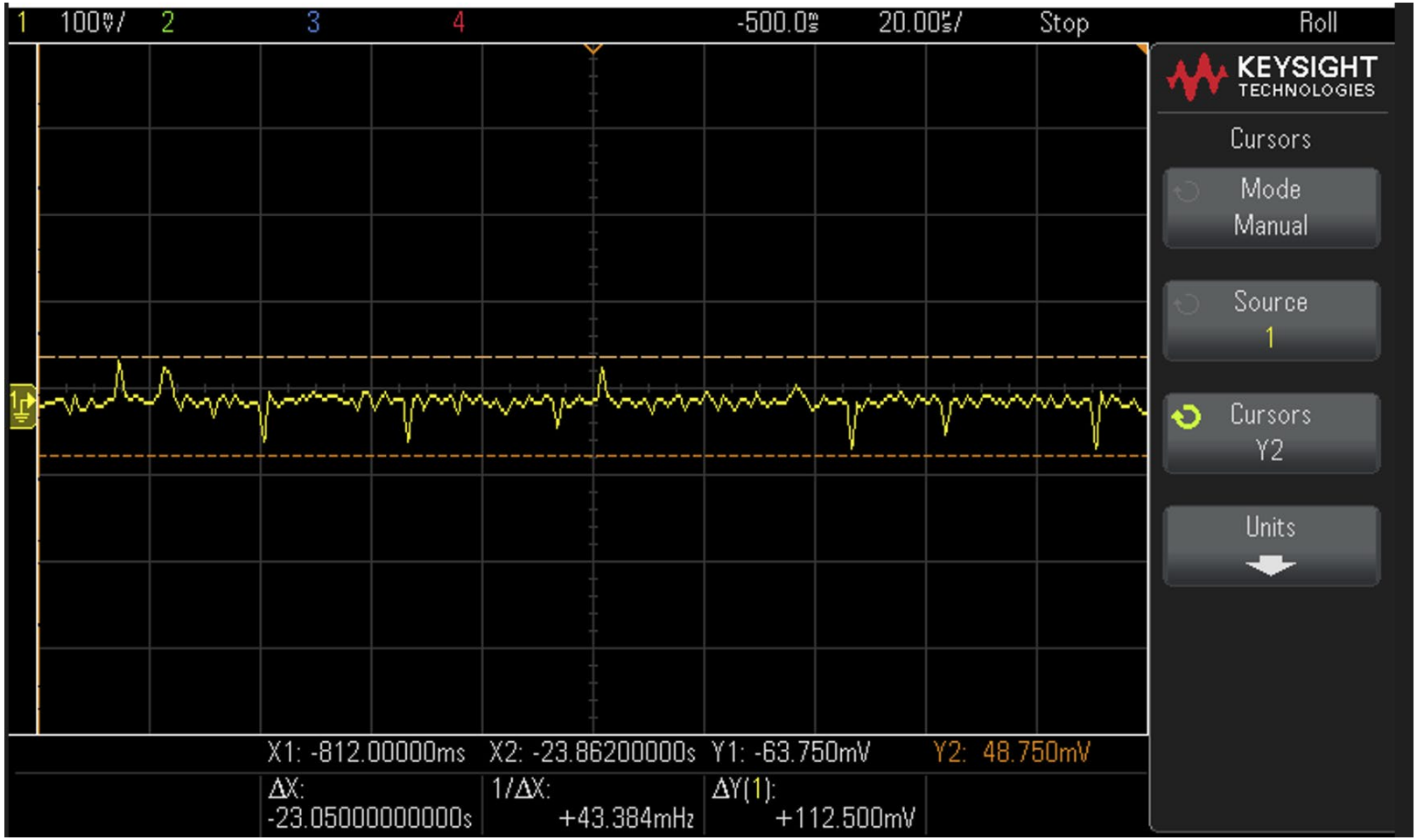
Efficiency 12Vout -- Notes:

1. The efficiency and regulation performance data reported are for the Main Module as implemented in this Reference Design. Please make sure that the product has been evaluated and confirmed against your specifications when it is utilized in any fashion in your product.

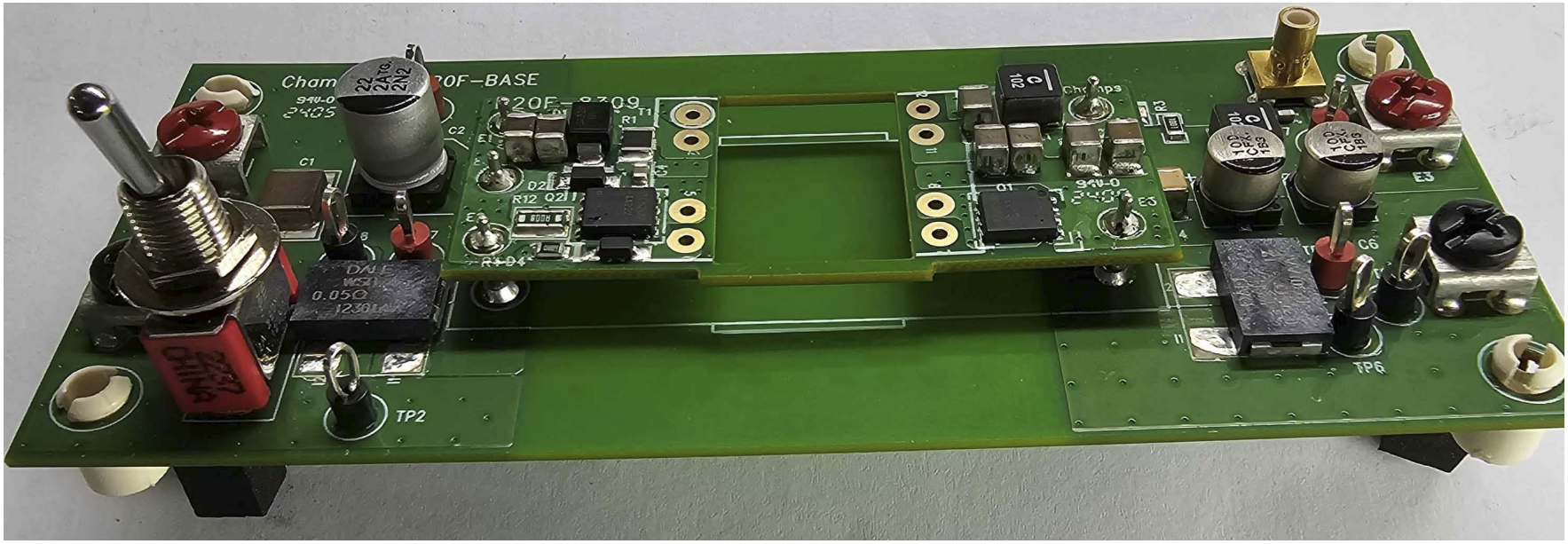
Regulation- 12Vout – 12 - 60Watt



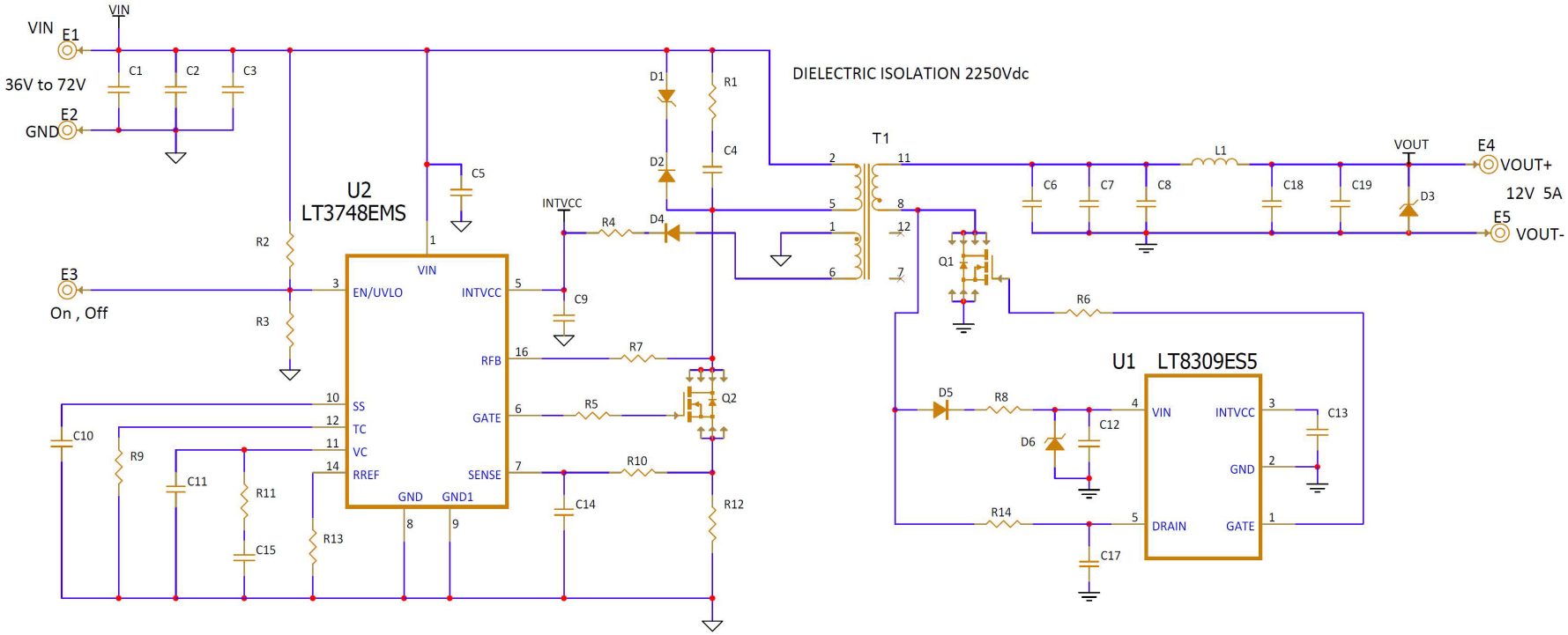
Vin=36V, Iout = 5A, Ta=+25°C | 12V Output Voltage Ripple



P20F Base-Board & Module



P20F Series Main Board Schematic 12V 60W

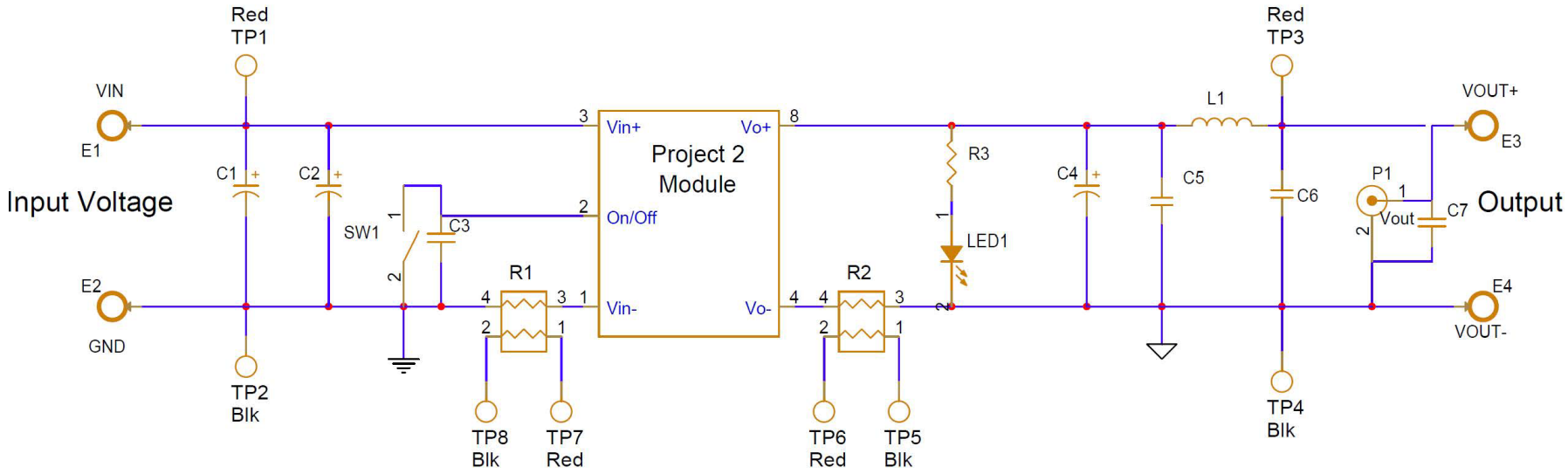


1. T1 | P20F2-0803-20R5-TH | 36-72Vin | 12Vout 60W

Notes:

1. Components and circuit shown are representative of the Reference Design. Consult Champs-Tech for values and complete data sheet as pertains this or any application under consideration for use.

P20F Series Base-Board Schematic



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