



i7AS60A-C03-EVK-S1



i7ASX-C03-EVK-S0

i7ASxxA-C03-EVK-S1; i7ASX-C03-EVK-S0

Evaluation Kit Manual for high-power i7A non-isolated DC-DC modules

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1. Introduction

This evaluation kit has been designed to provide an easy way to characterize the product performance and its features. It is intended to aid customers and determine the product suitability for the target application. The evaluation board incorporates the required external components to demonstrate the complete product functionality. It also includes other components (e.g., test points) to facilitate a successful end user experience. Not all these external components are required if the product features are not needed. Details of the external components, schematics, and PCB layout are provided in this documentation for reference only. Final design and qualification need to be verified at customer's end system level.

2. Ordering Information

TDK-Lambda offers a wide variety of non-isolated dc-dc power modules in the i7AS series. Not every product is currently available in an evaluation kit. The table below includes description and ratings which should help in selecting the most applicable evaluation kit.

Evaluation Kit Part Number	Non-Isolated DC-DC Module (Included and Mounted on the Evaluation Board)					
	DC-DC Module Part Number	Type	I/P Range	O/P Range	O/P Current (max)	O/P Power (Max)
i7AS60A-C03-EVK-S1	i7A4W060A033V-0C3-R	Buck	18 – 60 V	3.6* – 24** V	60 A	720 W
i7AS80A-C03-EVK-S1	i7A24080A033V-0C3-R	Buck	18 – 32 V	3.6* – 18 V	80 A	1000 W
i7ASX-C03-EVK-S0	No Module Installed	The evaluation board can also be used for the RGB and RGC Series.				

* The installed power module can be adjusted to 3.3V. The standard EV kit configuration supports operation down to 3.6V. Contact technical support if lower voltage is needed.

** The installed power module can be adjusted to 28V. When trimming above 24V, the potentiometer should be removed and replaced by a fixed resistor



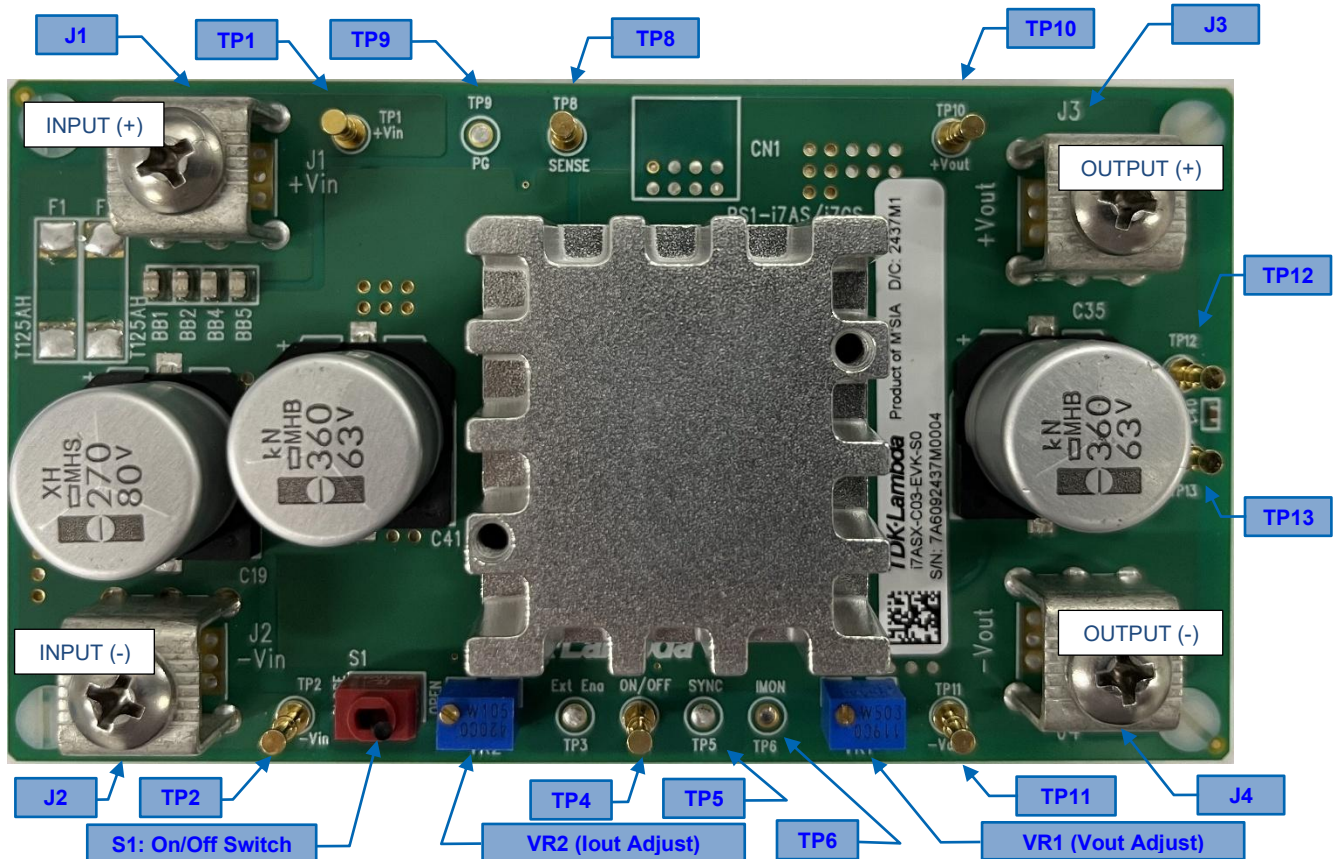
IMPORTANT INFORMATION

- Observe proper safety and laboratory procedures when testing electronic products. This list serves as general guide only and not a substitute for common sense and best practices.
- Before applying power, double check and ensure all connections to the evaluation board interface are correct (e.g., Input source polarity connections, etc....).
- This evaluation board is not populated with an input fuse. An input fuse can be populated in PCB location F1 and F2. Check the product specifications for the input fuse ratings and the evaluation board schematics included this manual. Make sure the existing jumper connections (BB1, BB2, BB4, BB5) are removed when adding the fuse.
- Although highly efficient, these high-power density modules can dissipate significant amounts of power, especially at heavy load. Care should be taken to ensure adequate cooling is provided and the modules are operated within the thermal specifications outlined in the product data sheets. Heat sink and base plated versions of the i7X family are available for use in demanding environments.
- This evaluation kit is designed for general laboratory use. It is not intended for installation in end customer product or equipment.
- Please check the pertinent product (DC-DC Module) datasheets and specifications for complete information.

3. General Features

- Screw Terminals for secured input and output connections
- Toggle switch for Remote ON/OFF
- Test points / Scope probe hook-ups for ease of measurement
- Trim Potentiometer for adjusting the output voltage setting
- Component PCB pad provisions for: Input fuse, additional input and output capacitance*, output header connector for optional features and signals.

* Note the output capacitor value may need to be adjusted to meet transient response or ripple requirements of the final application. Refer to product data sheet for a range of acceptable values.



Test Point	Description	Test Point	Description
TP1	Vin (+)	TP8	SENSE +
TP2	Vin (-) / GND	TP9	PGOOD / OCP Adjust
TP3	Not Populated	TP10	Vout (+)
TP4	ON / OFF	TP11	Vout (-) / GND
TP5	SYNC (Frequency Synchronization)	TP12	Vout (+) - for Output Ripple Measurement
TP6	I_MON (Output Current Monitor)	TP13	Vout (-) / GND – for Output Ripple Measurement

* Note: Depending on the model series (e.g., i7A), not all Test Points (TP) are applicable. Please double check the individual product series datasheets for the features that it supports.

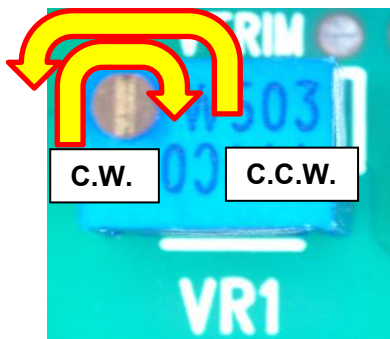
Screw Terminal	Description	Screw Terminal	Description
J1	Vin (+)	J3	Vout (+)
J2	Vin (-) / GND	J4	Vout (-) / GND

4. Turn-on / Turn-off Module by Switch



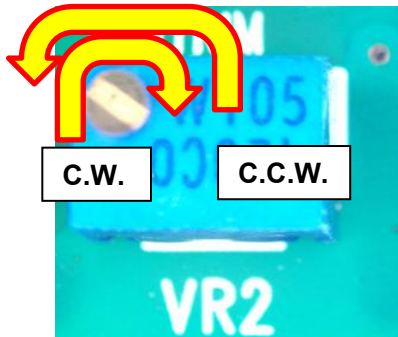
Change position of toggle switch "S1" to "CLOSE" turns-on the power supply unit.

5. Change Output Voltage



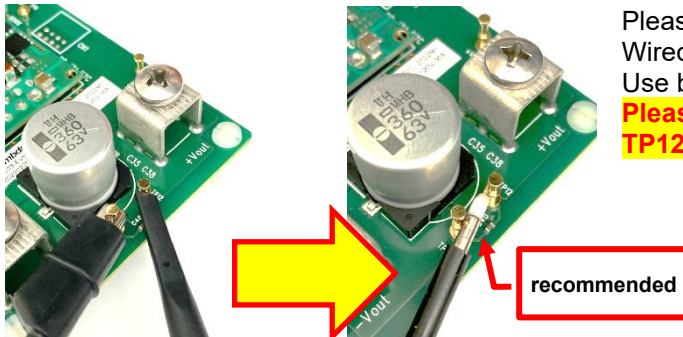
Turn screw on trimmer pot "VR1" to change the output voltage.
Turn clockwise to decrease output voltage.
Turn counter-clockwise to increase output voltage.

6. Adjust Output Current Limit



Turn screw on trimmer pot "VR2" to adjust the output over-current limit.
Turn clockwise to increase output current limit.
Turn counter-clockwise to decrease output current limit.

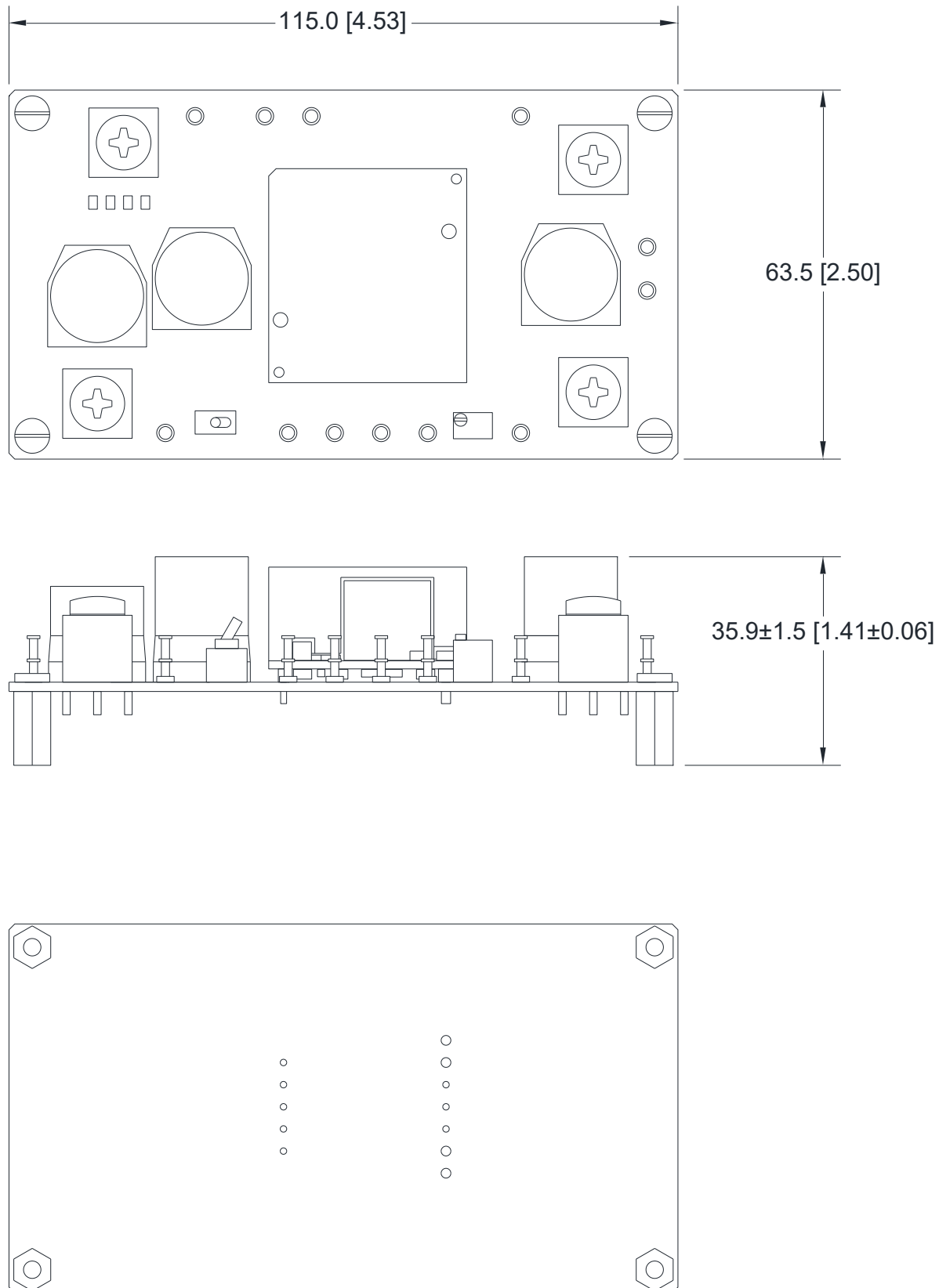
7. Capture Output Ripple/Noise Waveform



Please use TP12 and TP13 to measure output ripple/spike.
Wired GND clip may pick up higher spike noise.
Use bare probe to minimize spike noise.

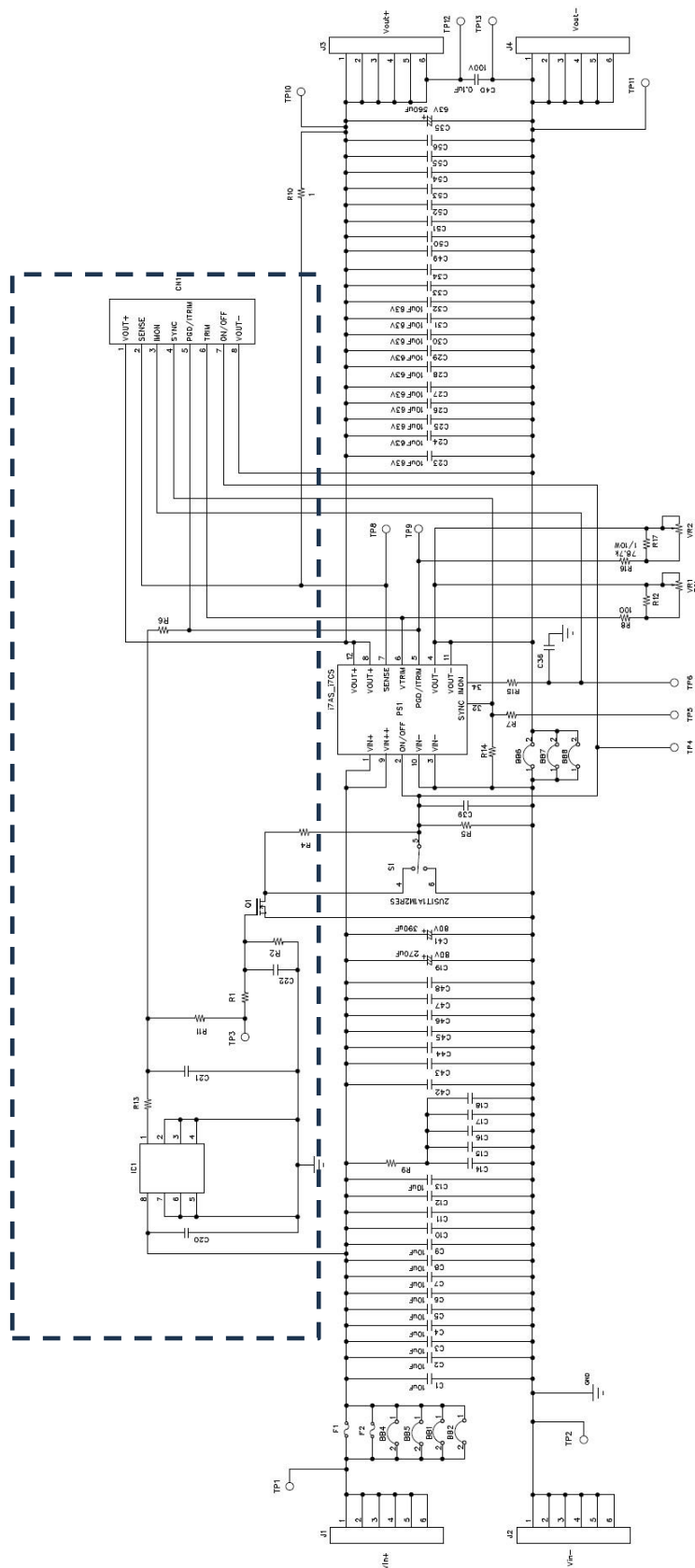
**Please ensure proper polarity when connecting.
TP12 is Vout (+) / TP13 is GND.**

8. Mechanical Outline - i7ASxxA-C03-EVK-S1 *



9. Schematic

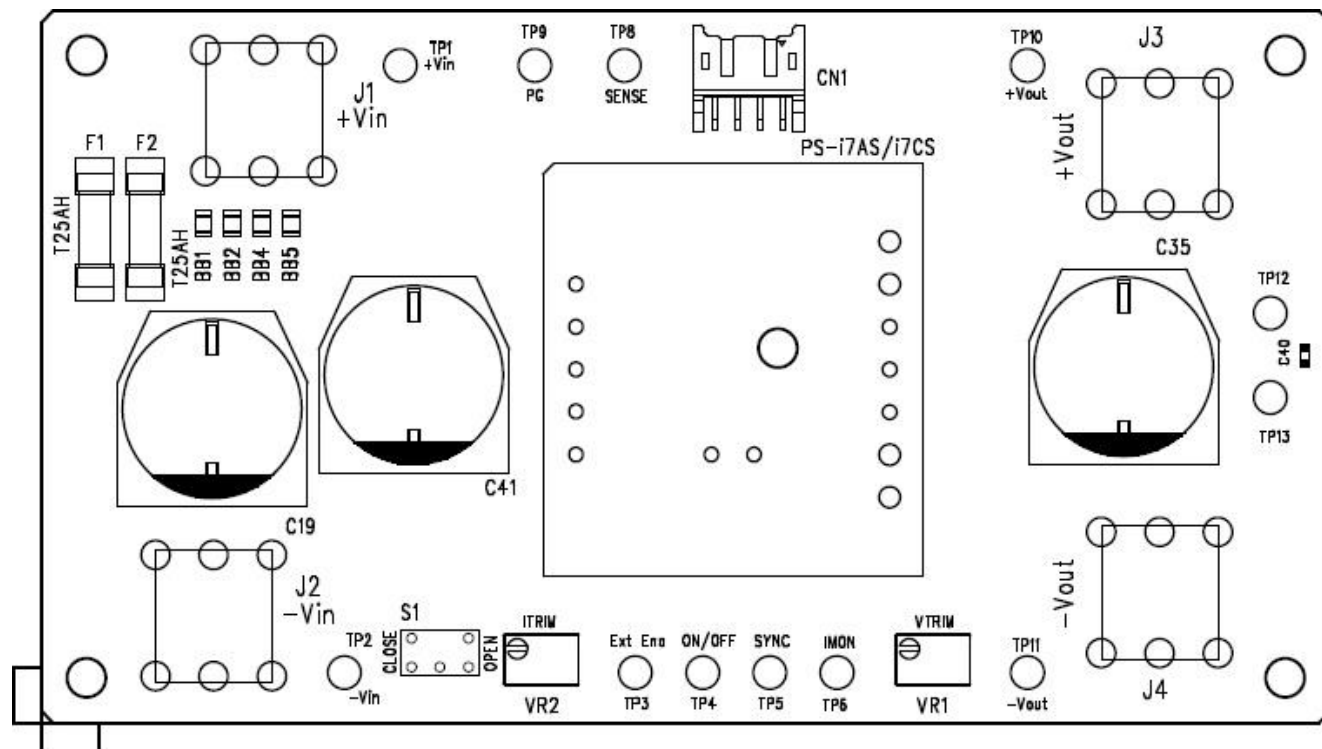
Optional circuit to support product specific features and functions. Contact Technical Support (TLA.PowerSolutions@tdk.com) for more information.



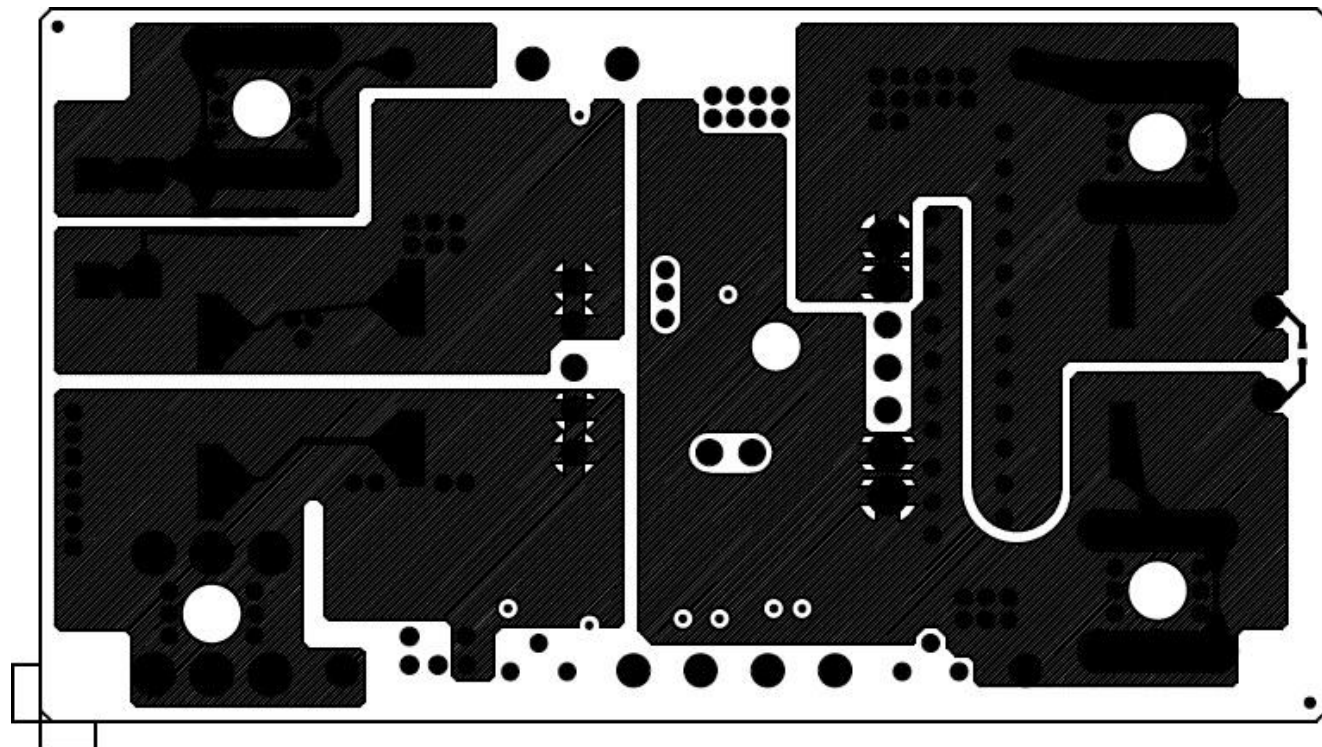
General Schematic: Check the accompanying parts list that pertains to the actual Evaluation Kit part number to see which circuit codes/components are used.

10. PCB Layout

Top Parts

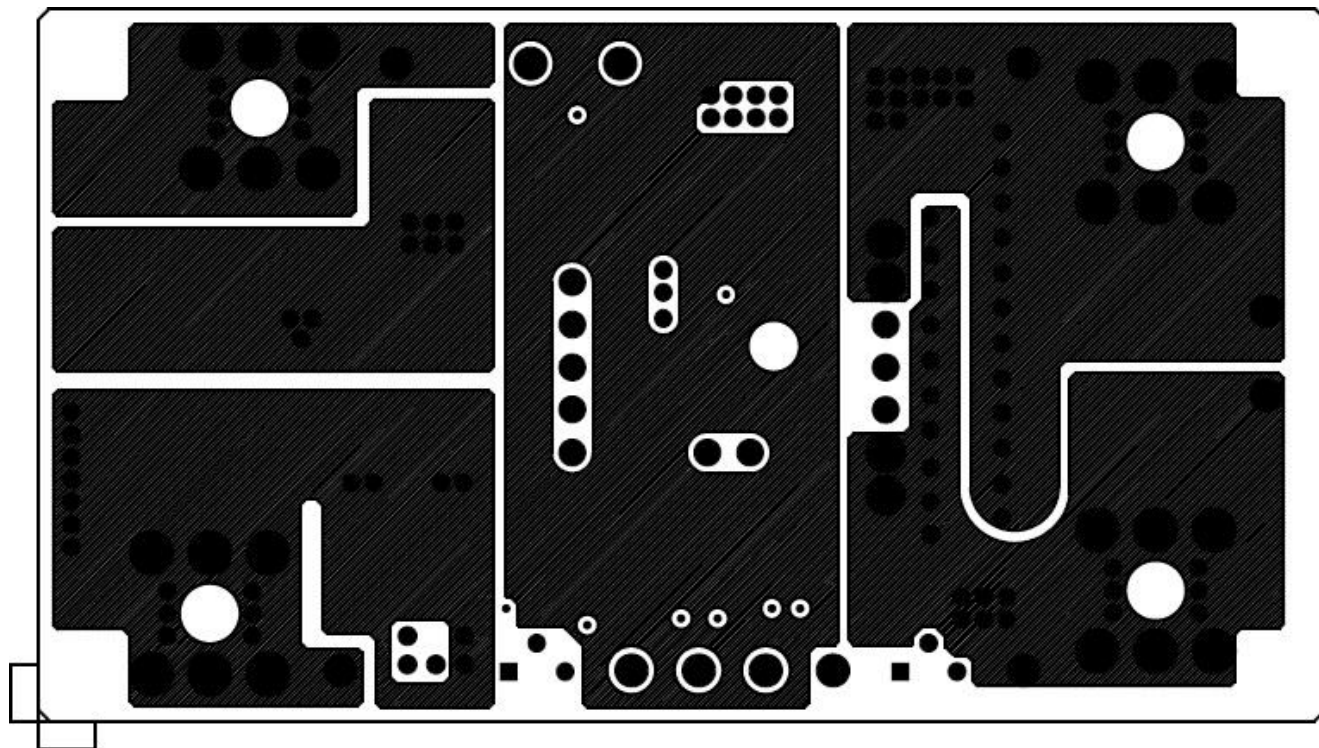


Top Layer

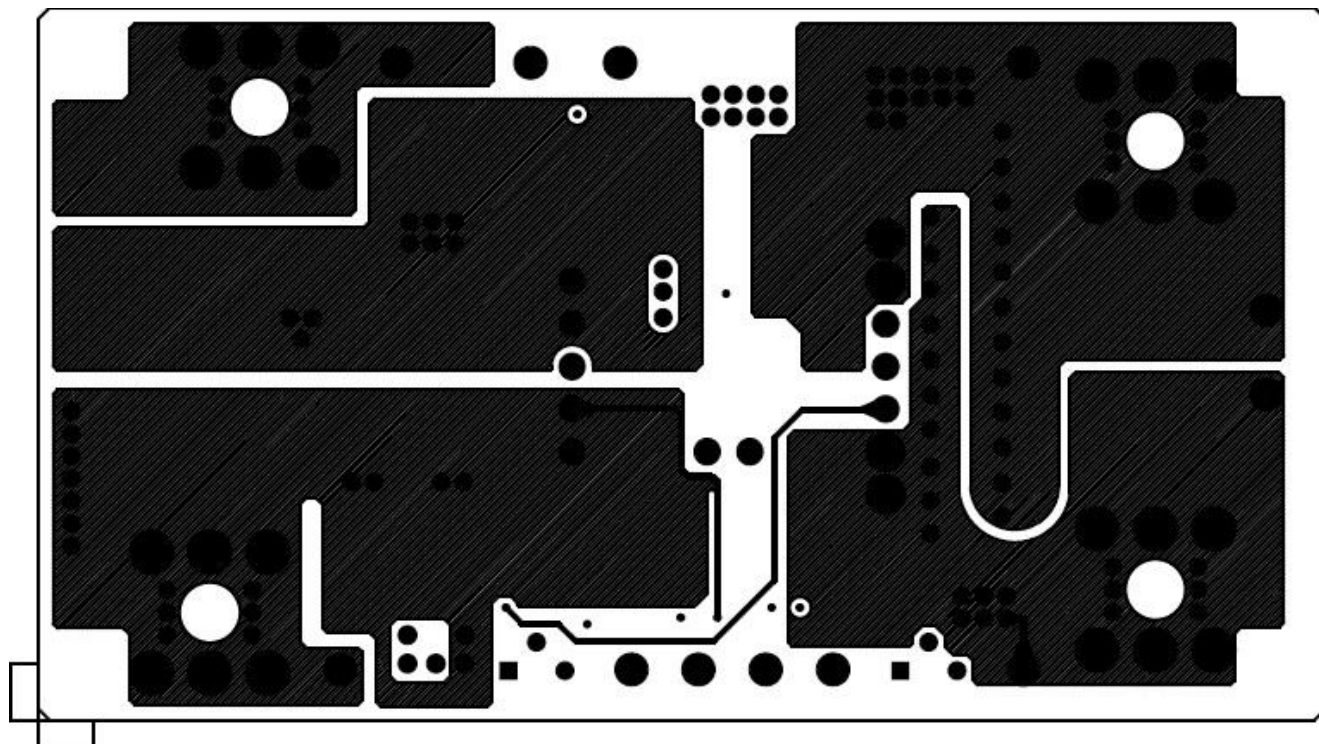


PCB Layout (continued)

Layer 2

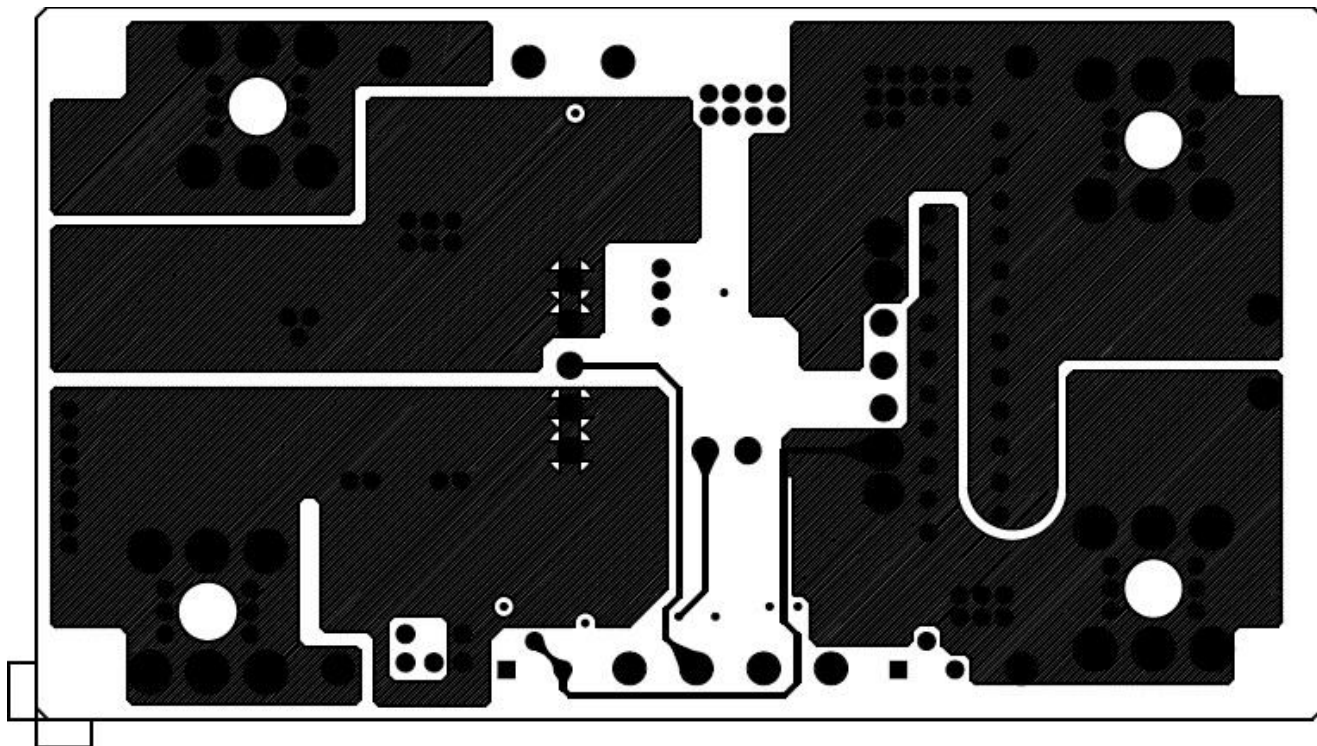


Layer 3

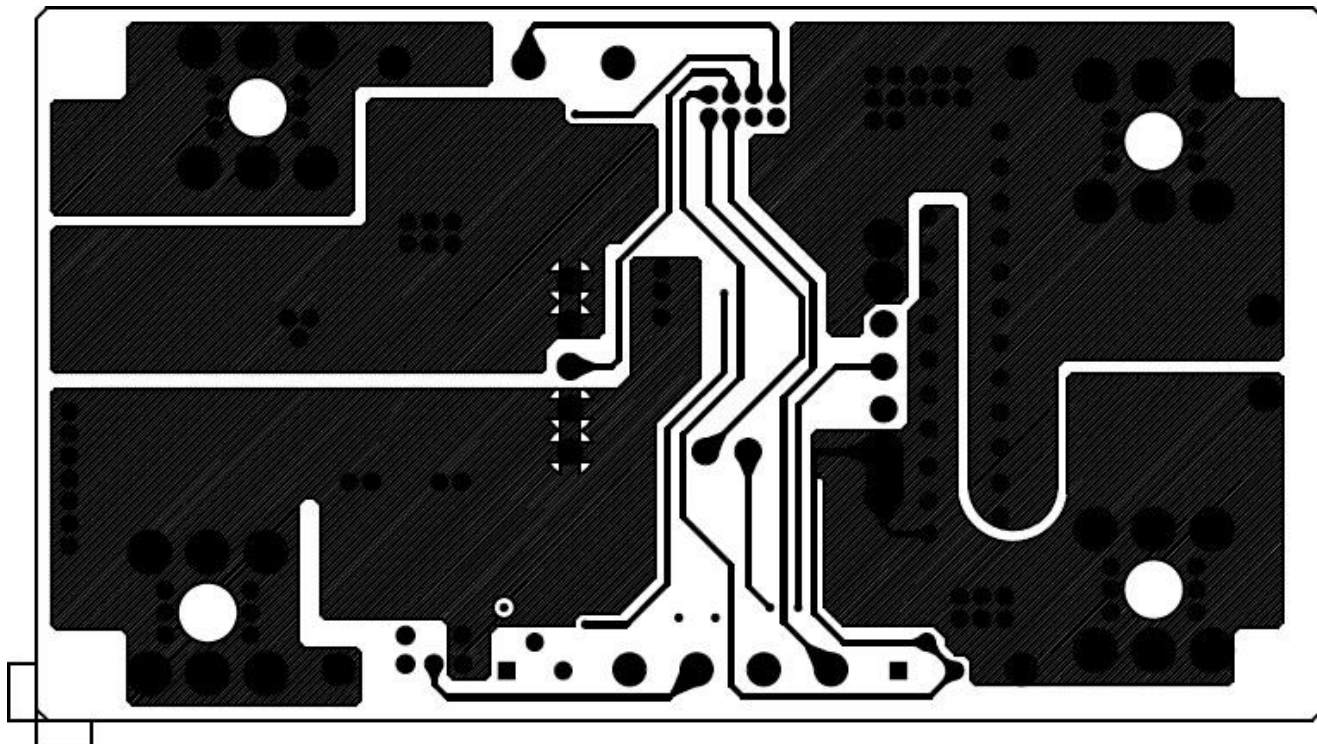


PCB Layout (continued)

Layer 4

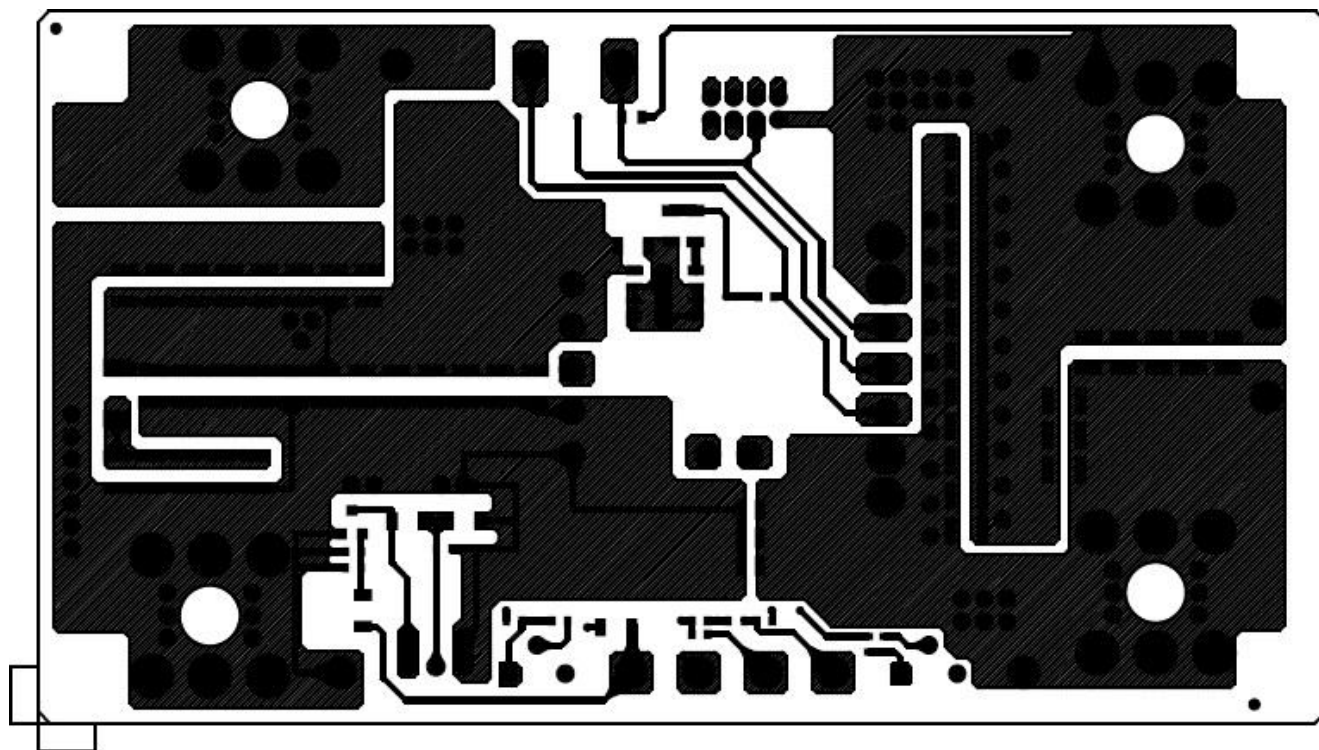


Layer 5

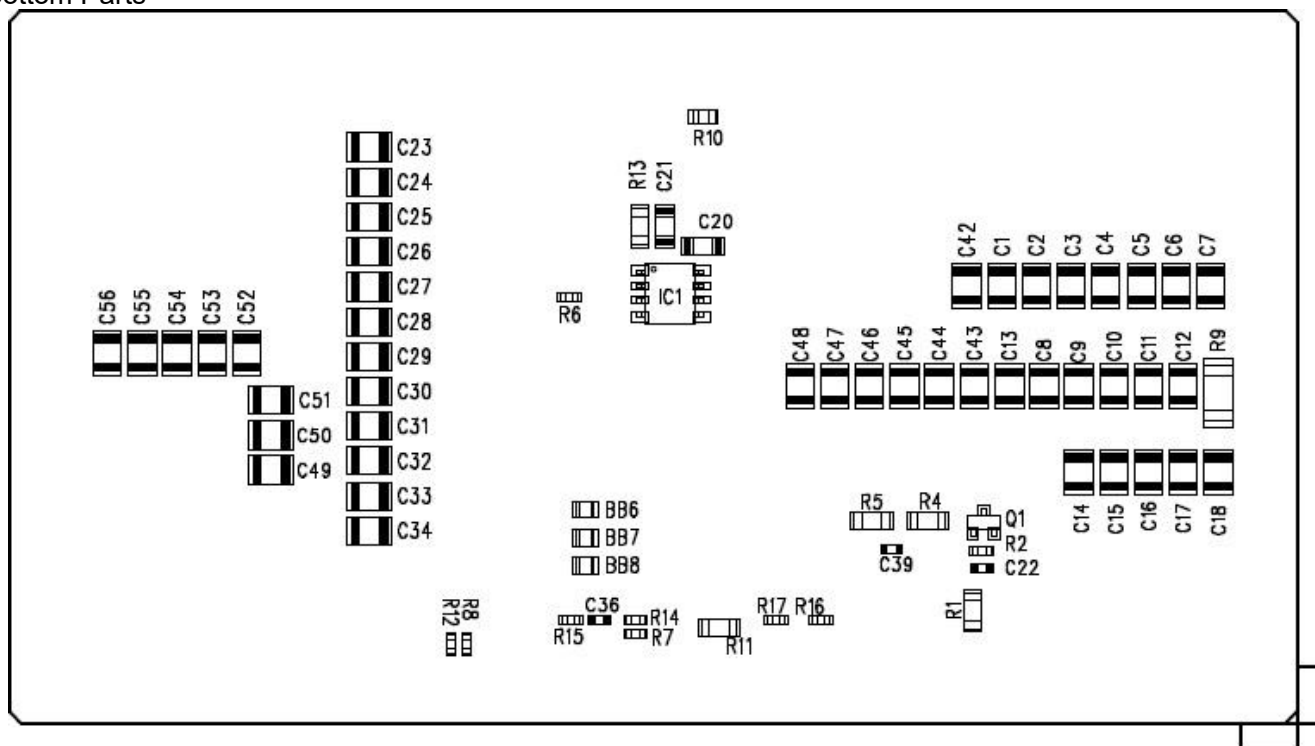


PCB Layout (continued)

Bottom Layer



Bottom Parts



11. Parts List: i7ASxxA-C03-EVK-S1

Evaluation Kit Part Number		i7ASX-C03-EVK-S0		i7AS60A-C03-EVK-S1	
Schematic Circuit Code	Part Type	Manufacturer (Mfr)	Mfr Part No.	Manufacturer (Mfr)	Mfr Part No.
PS1	DC-DC Module	OMIT		TDK Lambda	i7A4W060A033V-OC3-R
Q1	Transistor	OMIT		OMIT	
C1-C7	Capacitor	TDK	C3225X7R1N106MT	TDK	C3225X7R1N106MT
C8-C9	Capacitor	TDK	C3225X7R1N106MT	TDK	C3225X7R1N106MT
C10-C12	Capacitor	OMIT		OMIT	
C13	Capacitor	TDK	C3225X7R1N106MT	TDK	C3225X7R1N106MT
C14-C18	Capacitor	OMIT		OMIT	
C19	Capacitor	NI-CHEMI	EMHS800ARA271MLH0S	NI-CHEMI	EMHS800ARA271MLH0S
C20-C22	Capacitor	OMIT		OMIT	
C23-C27	Capacitor	MURATA	GRM32ER71J106MA12L	MURATA	GRM32ER71J106MA12L
C28-C32	Capacitor	MURATA	GRM32ER71J106MA12L	MURATA	GRM32ER71J106MA12L
C33-C34	Capacitor	OMIT		OMIT	
C35	Capacitor	NI-CHEMI	EMHB630ARA561MLN0S	NI-CHEMI	EMHB630ARA561MLN0S
C36	Capacitor	OMIT		OMIT	
C37-C38	Capacitor	OMIT		OMIT	
C39	Capacitor	OMIT		OMIT	
C40	Capacitor	TDK	C1608X7S2A104KT	TDK	C1608X7S2A104KT
C41	Capacitor	NI-CHEMI	EMHB800ARA391MLN0S	NI-CHEMI	EMHB800ARA391MLN0S
C42-C48	Capacitor	OMIT		OMIT	
C49-C56	Capacitor	OMIT		OMIT	
F1-F2	OMIT				
BB1-BB2	Copper Pin	ROWLEY SPRING	ZP00185_01	ROWLEY SPRING	ZP00185_01
BB3	Copper Pin	OMIT		OMIT	
BB4-BB5	Copper Pin	ROWLEY SPRING	ZP00185_01	ROWLEY SPRING	ZP00185_01
BB6-BB8	Copper Pin	ROWLEY SPRING	ZP00185_01	ROWLEY SPRING	ZP00185_01
IC1	OMIT				
VR1	Resistor, Variable	BOURNS	3266W-1-503LF	BOURNS	3266W-1-503LF
VR2	Resistor, Variable	BOURNS	3266W-1-105LF	BOURNS	3266W-1-105LF
L1	OMIT				
R1-R7	OMIT				
R8	Resistor	KOA	RK73H1JTTD1000F	KOA	RK73H1JTTD1000F
R9	OMIT				
R10	Resistor	KOA	RK73H1JTTD1R00F	KOA	RK73H1JTTD1R00F
R11-R15	OMIT				
R16	Resistor	KOA	RK73H1JTTD7872F	KOA	RK73H1JTTD7872F
R17	OMIT				
CN1	OMIT				
S1	Switch	LIGHT COUNTRY	2US1T1A1M2RES	LIGHT COUNTRY	2US1T1A1M2RES
J1-J4	Screws & Terminals	KEYSTONE	8196	KEYSTONE	8196
TP1	Test Point: Vin(+)	MAC8	WT-2-2	MAC8	WT-2-2
TP2	Test Point: Vin(-)	MAC8	WT-2-2	MAC8	WT-2-2
TP3	OMIT				
TP4	Test Point: On/Off	MAC8	WT-2-2	MAC8	WT-2-2
TP5	OMIT				
TP6	OMIT				
TP8	Test Point: SENSE+	MAC8	WT-2-2	MAC8	WT-2-2
TP9	OMIT				
TP10	Test Point: Vout(+)	MAC8	WT-2-2	MAC8	WT-2-2
TP11	Test Point: Vout(-)	MAC8	WT-2-2	MAC8	WT-2-2
TP12	Test Point: Vout(+)	MAC8	WT-2-2	MAC8	WT-2-2
TP13	Test Point: Vout(-)	MAC8	WT-2-2	MAC8	WT-2-2
SCR1-SCR4	Screws for Standoffs	KEYSTONE	9427	KEYSTONE	9427
SO1-SO4	Standoffs	KEYSTONE	1902C	KEYSTONE	1902C