ISL73849MEVAL1Z

2-Phase ISL73849M Board

Description

The ISL73849MEVAL1Z evaluation board benchmarks the performance of the ISL73849M dual-phase buck controller. The evaluation board is optimized for a 4.5V to 15V input operation to generate a 50A max, 1V output. Input and output connections, test points, and jumper settings on the board provide customers an easy-to-use evaluation platform for point-of-load power applications.

Features

- Power-good LED indicator
- On-board 50A transient load current generator
- Integrated LDO (VCC)
- External clock synchronization (SYNC-I and SYNC-O)
- Load-line droop regulation
- Differential remote VOUT sensing

Specifications

- Buck power supply input (PVIN): 4.5V to 15V
- Analog supply input (VDD): 4.75V to 13.2V
- Preset output voltage: 1V
- Preset switching frequency: 500kHz
- Maximum dual-phase output current: 50A
- Maximum single-phase output current: 25A
- Preset droop regulation

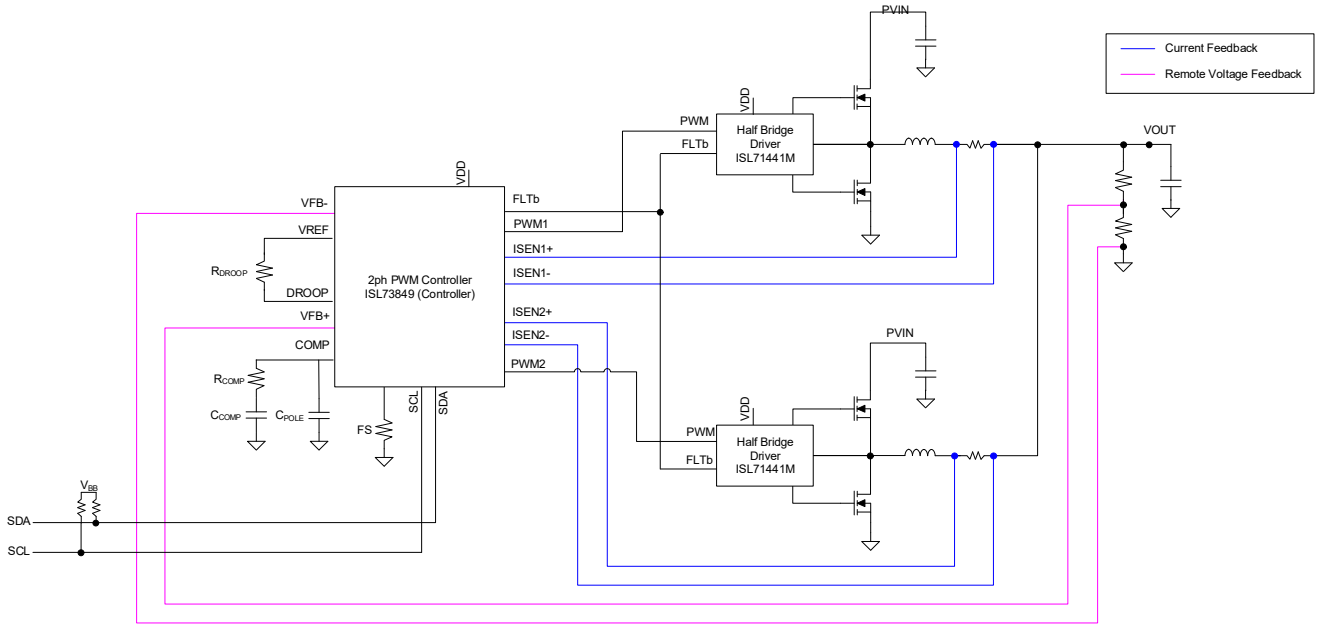

Figure 1. Block Diagram

Contents

1. Functional Description

The ISL73849M is a dual-phase PWM Controller that interfaces with the ISL71441M GaN half-bridge drivers to control the ISL70020SEH GaN FETs for point-of-load buck regulation in low-voltage, high-current applications such as FPGA core rails. The ISL73849M controller operates its two phases at 180° phase shift. Each phase delivers 25A RMS for a total 50A solution.

1.1 Operating Range

The ISL73849MEVAL1Z evaluation board requires two supply rails to operate properly. One for the ISL73849M controller's analog supply input, the two ISL71441M GaN half-bridge drivers, and the load transient generator circuits (VDD). The other rail is for the on-board buck power supply input (PVIN).

The PVIN can go from 4.5V to 15V. The VDD rail accepts an input range of 4.75V to 13.2V. The VDD voltage is limited to a maximum of 13.2V because of the ISL71441M GaN drivers. The buck regulator circuit is preset for a 0.976V output voltage and a switching frequency of 500kHz. The output voltage can be brought up to 0.99V by programming the controllers reference voltage to 0.6V using PMBus. This converter is capable of providing 50A of output current.

1.2 PMBus GUI Installation

1. Run the ISL73849_Cust_Installer_vx.x.xx.
2. Accept the Agreement.
3. Click **Next** to default to the recommended destination location for the install.
4. Click **Next** to default to the recommended application shortcut install name and location.
5. Click **Install**.
6. Click **Finish** to launch the application. The GUI opens (Figure 2).

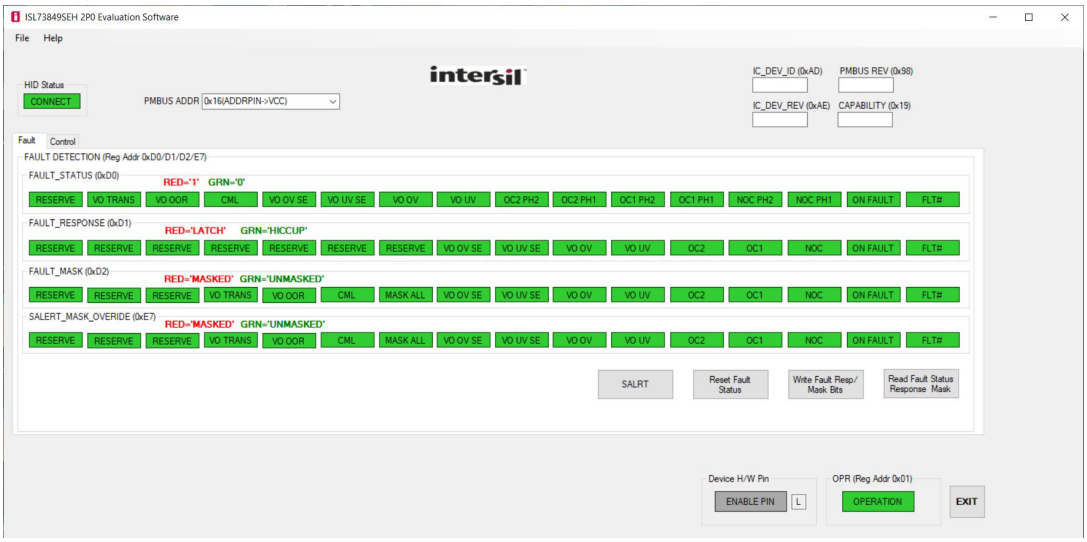

Figure 2. ISL73849 Evaluation Software Main Page

7. Close the GUI.

1.3 Quick-Start Guide

1. Ensure JP1, JP4, and JP5 are connected to position 2-3.
2. Ensure JP2 is removed.
3. Ensure JP7, JP9, and JP6 are connected.
4. Flip all the switches up on SW1.

5. Connect the ISLUSBPMBADAPT3ZA to the J2 connector as shown in Figure 3.

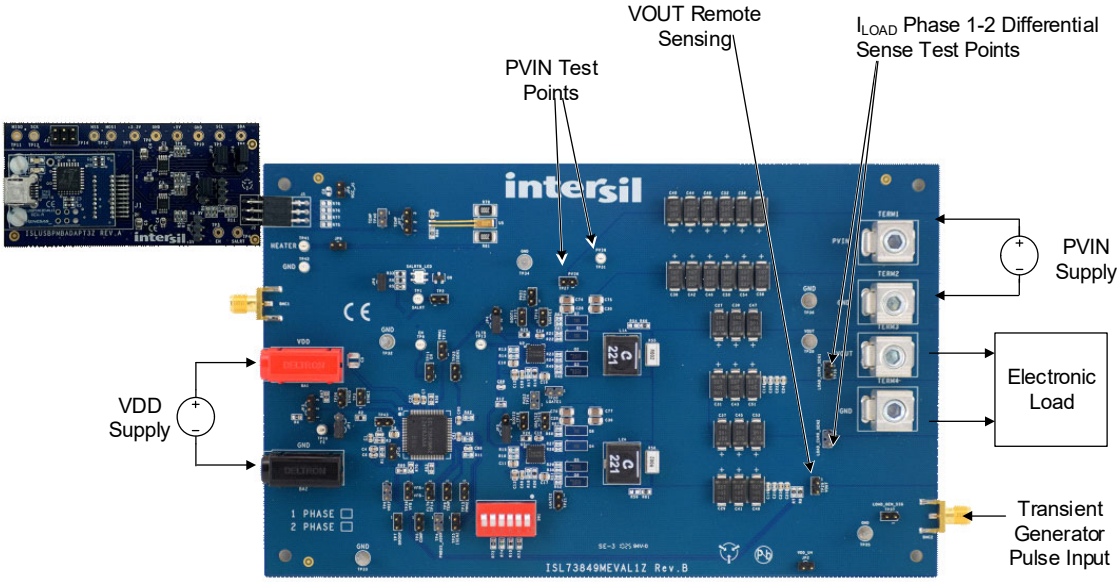

Figure 3. ISL73849MEVAL1Z Board Setup

6. Connect the provided USB to the computer and the ISLUSBPMBADAPT3ZA.
7. Apply a 4.5V to 15V voltage to PVIN metal banana plug connectors as shown in Figure 3.
8. Apply a 4.75V to 13.2V voltage to the VDD banana connectors as shown in Figure 3.
9. If required, a resistor or electronic load can be connected to the VOUT metal banana plug connectors as shown in Figure 3. If using an electronic load, add 4W sense lines on the TP29 test jumper.
10. Enable the ISL73849M with the Device H/W Pin (**ENABLE PIN** button) on the GUI as shown in Figure 4. The board is enabled and is immediately disabled with the PMBus OPERATION bit.

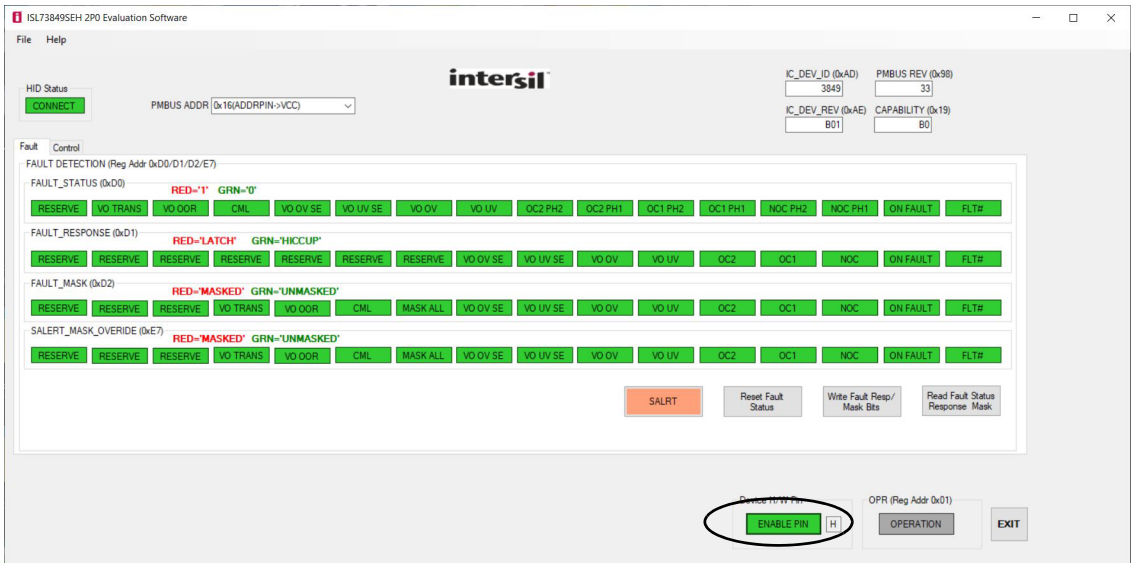

Figure 4. Click the ENBLE PIN Button

11. Program the PWM Controller VREF to 0.6V by clicking **Write VREF** as shown in Figure 5.

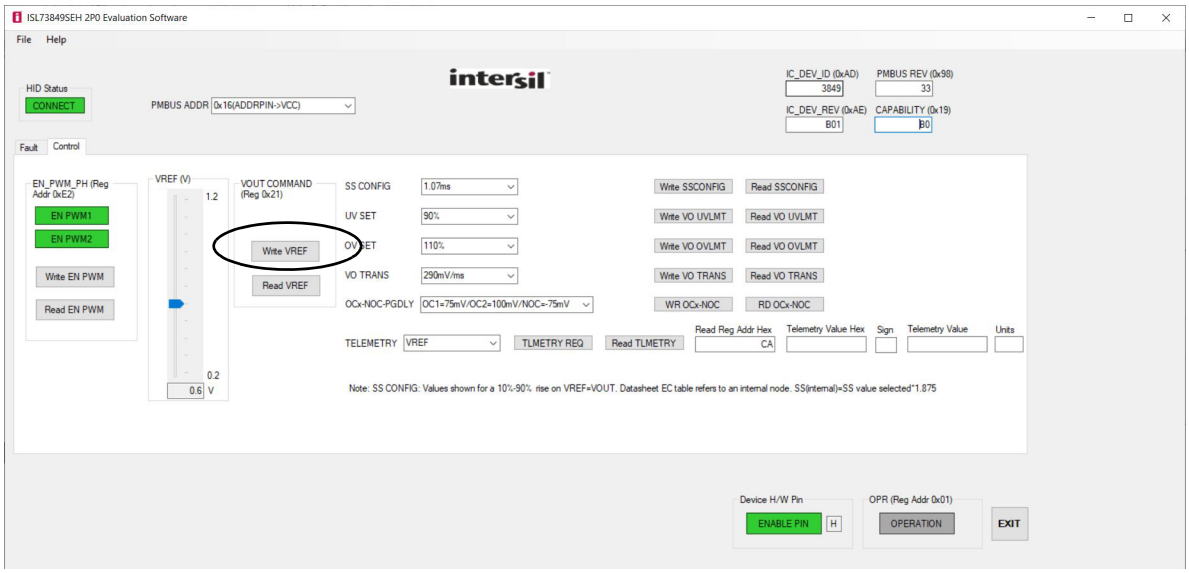

Figure 5. Change the VREF

12. Enable power-up with the **OPERATION** button as shown in Figure 6.

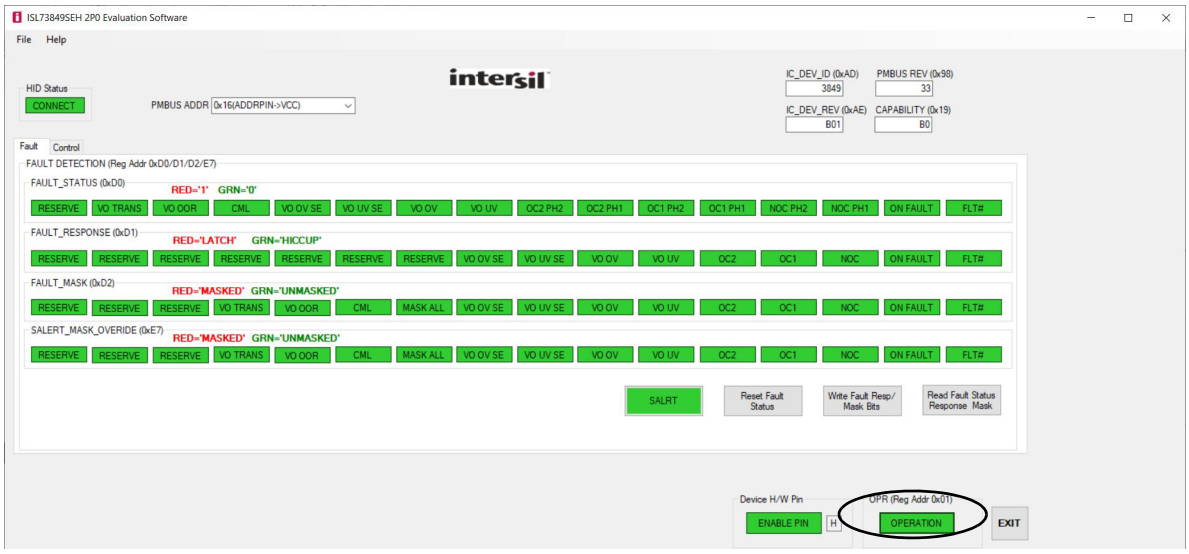

Figure 6. Click the OPERATION button

1.4 On-Board Load Transient Generator

The ISL73849MEVAL1Z includes an on-board transient load generator that uses a single ISL70040SEH GaN FET driver to drive two ISL70020SEH N-Channel GaN FET load switches. The load is composed of 6x 200mΩ resistors on each phase. The transient load generator simulates a 50A load step on the 1V rail when the FETs are turned on. For smaller load steps, remove some of the load resistors.

To use the on-board transient generator, short JP2 to power up the ISL71040M with the VDD supply. Connect the pulse generator or function generator to the TRAN_IN BNC1 connector. Renesas recommends using the transient load generator in low duty cycle to prevent thermal failure of the resistors. Based on the bandwidth of the converter, a load transient of 500µs is sufficiently long enough to see the converter transient response. Keep the period of the transient load low (for example, for 1% duty cycle use 50ms). A 0V to 5V logic signal is sufficient to drive the ISL70040SEH. To monitor or trigger off of the pulse generator signal, use the TP37 test jumper.

1.5 Droop Regulation

The ISL73849MEVAL1Z is configured to minimize peak-to-peak transient response excursions by using a 604Ω resistor connected between the VREF and DROOP pins (R_1). If droop regulation is not required, short out the DROOP resistors with JP10. For more information about the droop regulation, refer to the *ISL73849M Datasheet*.

1.6 Enabling/Disabling

The ISL73849MEVAL1Z is configured by default to enable the ISL73849M with the ISLUSBPMBADAPT3ZA, which has an MCU. The MCU controls the EN pin and PMBus OPERATION bit in conjunction with the ISL73849 GUI Software when first initializing the GUI. This feature allows changing the PMBus registers to non-default values before powering up the converter.

1.7 Remote Sensing

The ISL73849M has differential feedback remote sensing which allows the power stage to be placed near the load while the controller can be placed further away from switching noise. It also allows the controller to compensate for voltage drops between the power stage and the load caused by large load currents flowing through trace or plane resistance.

The ISL73849MEVAL1Z has two 0Ω resistors (R7 and R8) on the feedback sense traces which run to the output VOUT and GND planes. R7 can be replaced with a 10-100Ω injection resistor for gain/phase measurements. If powering an off-board load is required, remove R7 and R8 and wire out the FB+ and FB- sense lines to the load for improved output regulation.

2. Board Design

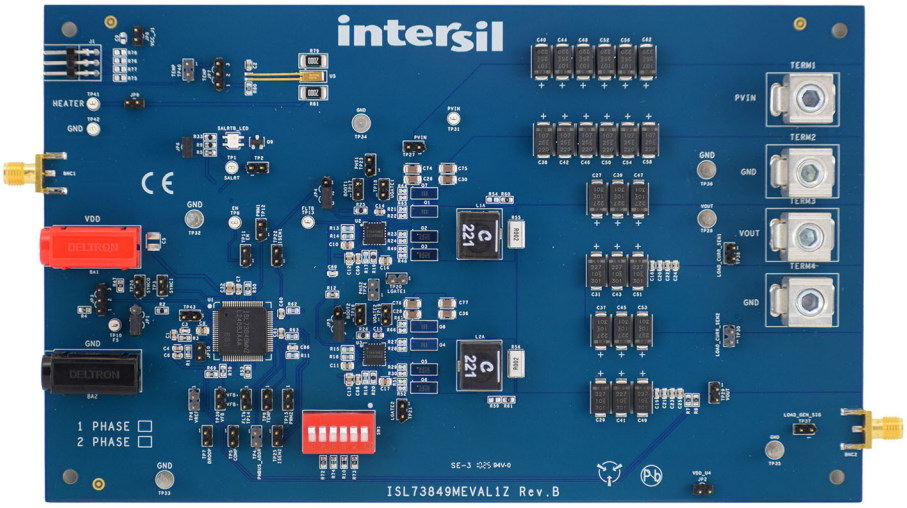

Figure 7. ISL73849MEVAL1Z Evaluation Board (Top)

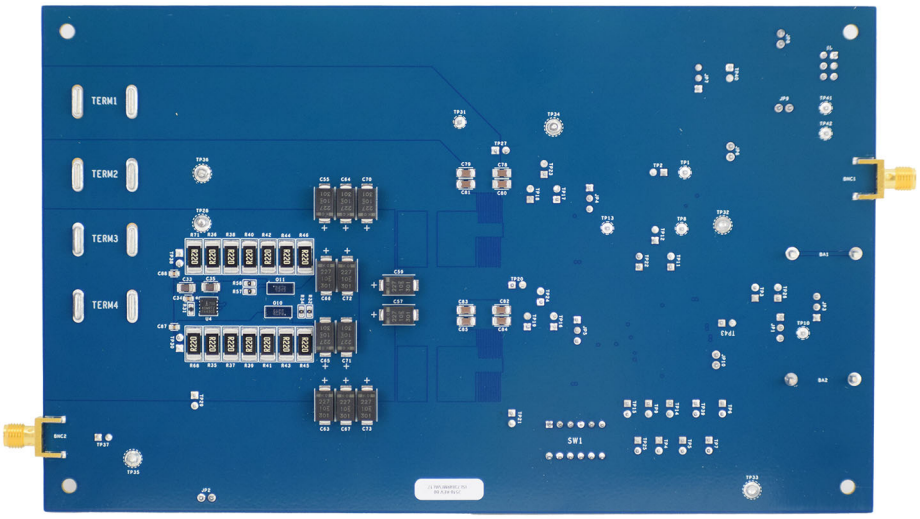

Figure 8. ISL73849MEVAL1Z Evaluation Board (Bottom)

2.1 Schematic Diagrams

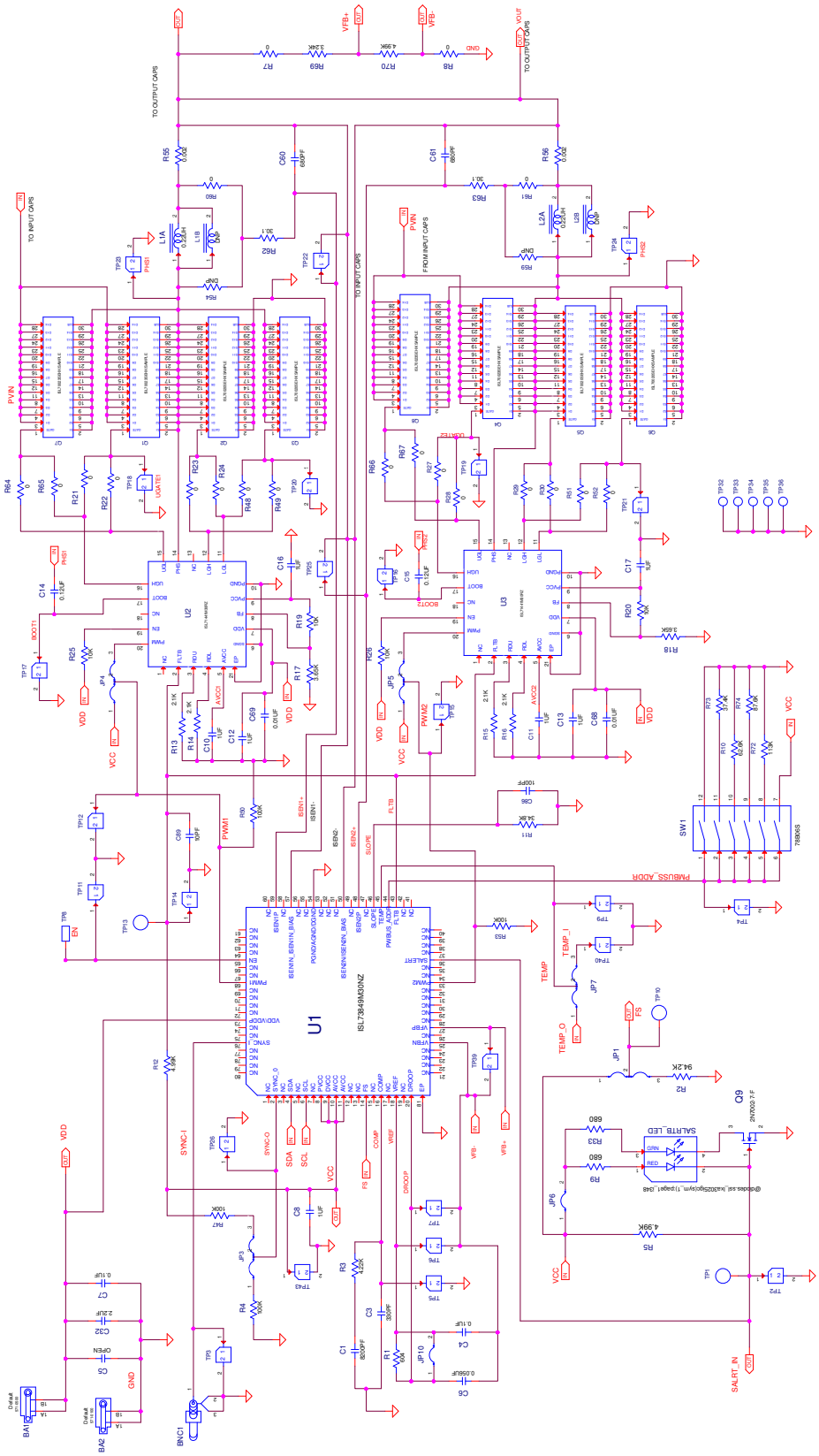

Figure 9. ISL73849MEVAL1Z Schematic - Page 1

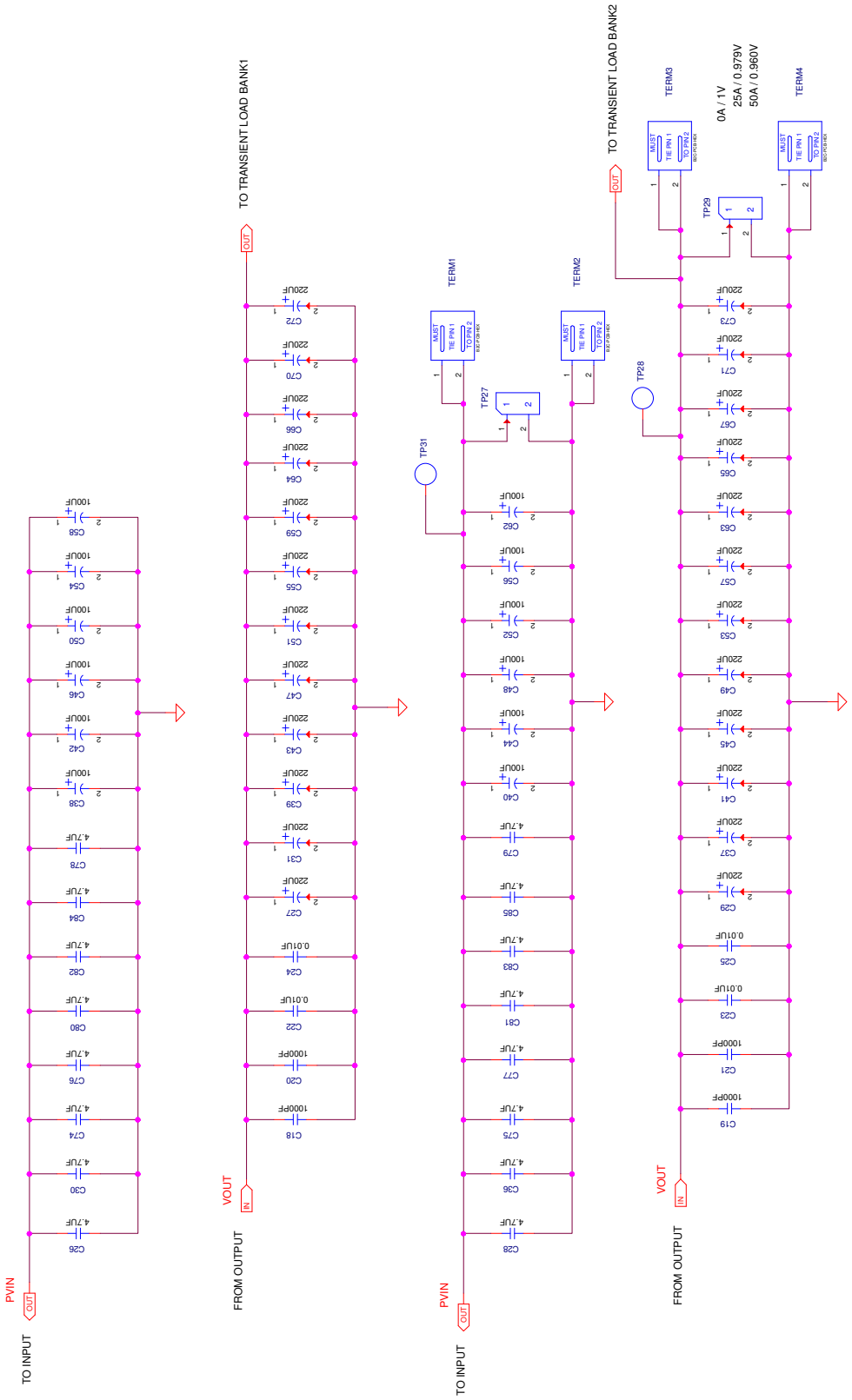

Figure 10. ISL73849MEVAL1Z Schematic (C_{IN} and C_{OUT})

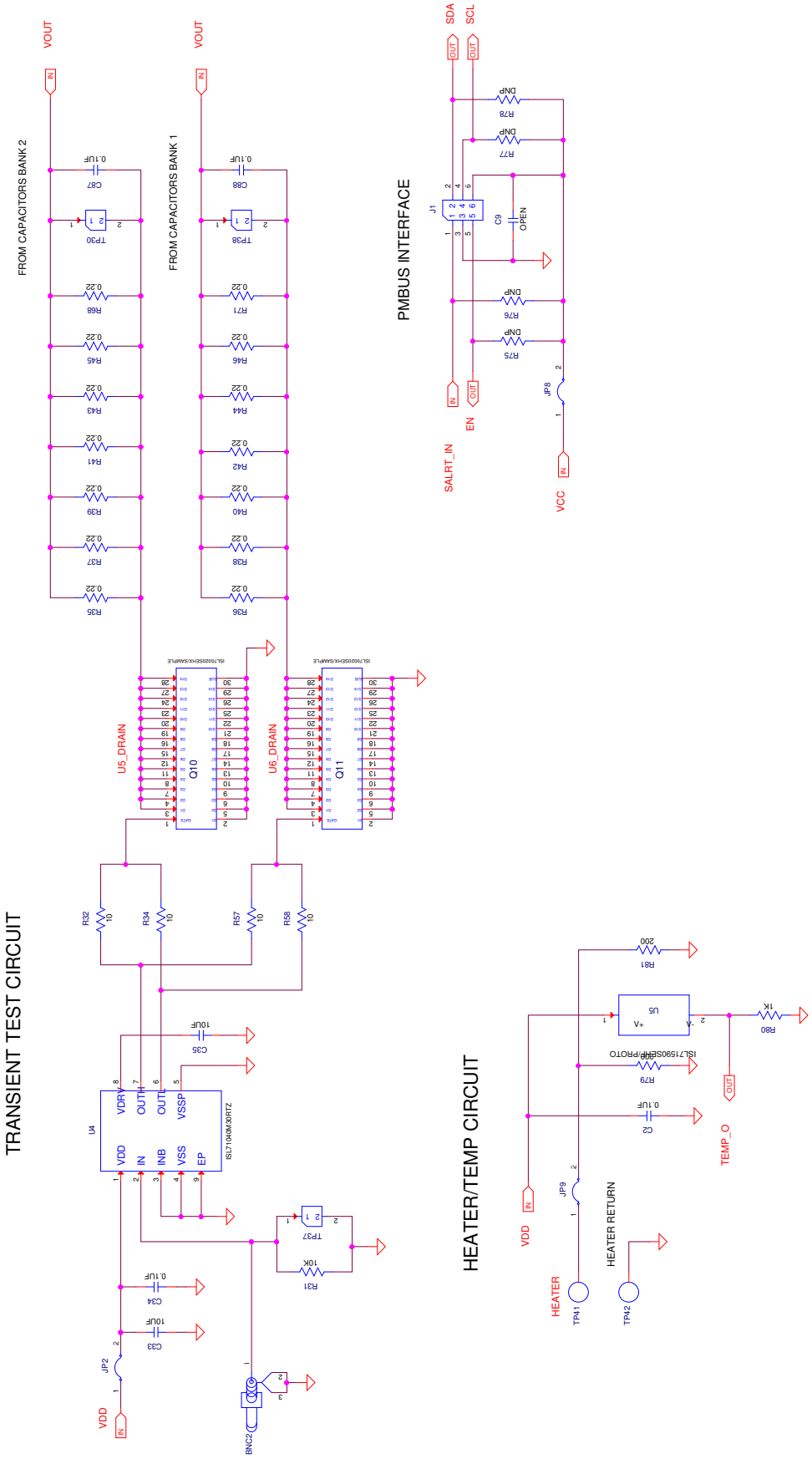

Figure 11. ISL73849MEVAL1Z Schematic (Transient Test Circuits)

2.2 Bill of Materials

Qty	Ref Des	Description	Manufacturer	Part Number
1	PCB	PWB-PCB, ISL73849MEVAL1Z, REVB, ROHS	-	ISL73849MEVAL1ZREVBPCB
1	BA1	CONN-PLUG, TH, 4mm INSUL.SOCKET, RED, R/A, ROHS	Deltron	571-0500
1	BA2	CONN-PLUG, TH, 4mm INSUL.SOCKET, BLK, R/A, ROHS	Deltron	571-0100
2	BNC1, BNC2	CONN-RF, SMA JACK, 50Ω, 18GHz, TAB-END LAUNCH, ROHS	Amphenol	132357-11
1	C1	CAP, SMD, 0603, 8200pF, 50V, 5%, X7R, ROHS	Vishay	VJ0603Y822JXACW1BC-T
2	C14, C15	CAP, SMD, 0603, 0.12µF, 50V, 10%, X7R, ROHS	Kemet	C0603C124K5RAC7867-T
4	C18-C21	CAP, SMD, 0603, 1000pF, 25V, 10%, C0G/NP0, ROHS	AVX	KGM15ACG1E102KT-T
6	C2, C4, C7, C34, C87, C88	CAP, SMD, 0603, 0.1µF, 25V, 10%, X7R, ROHS	Kemet	C0603X104K3RAC7867-T
6	C22-C25, C68, C69	CAP, SMD, 0603, 0.01µF, 25V, 10%, X7R, ROHS	Kemet	C0603C103K3RAC7411-T
16	C26, C28, C30, C36, C74-C85	CAP, SMD, 1206, 4.7µF, 25V, 10%, X7R, ROHS	TDK	C3216X7R1E475K160AE-T
24	C27, C29, C31, C37, C39, C41, C43, C45, C47, C49, C51, C53, C55, C57C59, C63-C67, C70-C73	CAP-TANT, SMD, 7.3×4.3×2.8, 220µF, 10V, 20%, ROHS	Kemet	T530D227M010ATE006-T
1	C3	CAP, SMD, 0603, 330pF, 25V, 5%, C0G/NP0, ROHS	Kemet	C0603C331J3GAC7867-T
1	C32	CAP, SMD, 0805, 2.2µF, 25V, 10%, X7R, ROHS	Murata	GRM21BR71E225KA73L-T
2	C33, C35	CAP, SMD, 1206, 10µF, 25V, 10%, X7R, ROHS	TDK	C3216X7R1E106K160AB-T
12	C38, C40, C42, C44, C46, C48, C50, C52, C54, C56, C58, C62	CAP-TANT, SMD, 7.3x4.3mm, 100µF, 25V, 20%, ROHS	Kemet	T521X107M025ATE030-T
1	C5	DO NOT POPULATE OR PURCHASE	Generic	DNP
1	C6	CAP, SMD, 0603, 0.056µF, 50V, 10%, X7R, ROHS	Kemet	C0603X563K5RAC7867-T
2	C60, C61	CAP, SMD, 0603, 680pF, 25V10%, X7R, ROHS	AVX	KGM15AR71E681KT-T
7	C8, C10-C13, C16, C17	CAP, SMD, 0805, 1µF, 25V, 10%, X7R, ROHS	AVX	08053C105KAT2A-T
1	C86	CAP, SMD, 0603, 100pF, 50V, 10%, X7R, ROHS	Yageo	CC0603KPX7R9BB101-T
1	C89	CAP, SMD, 0603, 10pF, 25V, 10%, C0G/NP0, ROHS	Kemet	C0603C100K3GAC7867-T
1	C9	DO NOT POPULATE OR PURCHASE	Generic	DNP
1	J1	CONN-HEADER, 2×3, BRKAWY, 2.54mm, TIN, R/A, ROHS	Samtec	TSW-103-08-T-D-RA
5	JP1, JP3-JP5, JP7	CONN-HEADER, 1×3, BREAKAWY 1×36, 2.54mm, ROHS	Generic	68000-236HLF-1X3
5	JP2, JP6, JP8-JP10	CONN-HEADER, 1×2, RETENTIVE, 2.54mm, 0.230×0.120, ROHS	Generic	69190-202HLF
4	JP6(1-2), JP1(2-3), JP4(2-3), JP5(2-3)	CONN-JUMPER, SHUNT, 2P, 2.54mmPITCH, BLK, 6mm, ROHS	Amphenol	SPC02SYAN
2	L1A, L2A	COIL-AEC-Q200, PWR INDUCT, SMD, 11.3x10mm, 0.22uH, 20%, ROHS	CoilCraft	XAL1010-221MEB-T
2	L1B, L2B	DO NOT POPULATE OR PURCHASE	CoilCraft	DNP

Qty	Ref Des	Description	Manufacturer	Part Number
4	Q1, Q4, Q7, Q8	IC-SAMPLE DIE, RAD HARD, 100V GAN FET, ROHS	Renesas	ISL70023SEHX/SAMPLE
6	Q2, Q3, Q5, Q6, Q10, Q11	IC-SAMPLE DIE, RAD HARD, 40V GAN FET, ROHS	Renesas	ISL70020SEHX/SAMPLE
1	Q9	TRANSIST-MOS, N-CHANNEL, SMD, SOT23, 60V, 115mA, ROHS	Fairchild	2N7002LT1G-T
1	R1	RES-AEC-Q200, SMD, 0603, 604Ω, 1/8W, 1%, TKF, ROHS	KOA	RK73H1JTTD6040F-T
1	R10	RES-AEC-Q200, SMD, 0603, 62.6K, 1/10W, 0.1%, MF, ROHS	KOA Speer	RN73H1JTTD6262B25-T
1	R11	RES-AEC-Q200, SMD, 0603, 34.8K, 1/10W, 1%, TKF, ROHS	KOA	RK73H1JTTD3482F-T
4	R13-R16	RES-AEC-Q200, SMD, 0603, 2.1K, 1/10W, 1%, TKF, ROHS	KOA	RK73H1JTTD2101F-T
2	R17, R18	RES-AEC-Q200, SMD, 0603, 3.65K, 1/10W, 1%, ROHS	KOA	RK73H1JTTD3651F-T
5	R19, R20, R25, R26, R31	RES-AEC-Q200, SMD, 0603, 10K, 1/10W, 1%, TKF, ROHS	Vishay	CRCW060310K0FKEB-T
1	R2	RES, SMD, 0603, 94.2K, 1/10W, 0.1%, TNF, ROHS	Yageo	RT0603BRD0794K2L-T
16	R21-R24, R27-R30, R48, R49, R51, R52, R64-R67	RES, SMD, 0402, 0Ω, 1/16W, 1%, TNF, ROHS	Vishay	MCS04020Z0000ZE000-T
1	R3	RES-AEC-Q200, SMD, 0603, 4.22K, 1/10W, 1%, TKF, ROHS	Yageo	AC0603FR-074K22L-T
4	R32, R34, R57, R58	RES-AEC-Q200, SMD, 0603, 10Ω, 1/10W, 1%, TKF, ROHS	ROHM	KTR03EZPF10R0-T
14	R35-R46, R68, R71	RES-CURR.SENSE, SMD, 2512, 0.22Ω, 2W, 1%, TF, ROHS	Bourns	CRM2512-FX-R220ELF-T
4	R4, R47, R50, R53	RES-AEC-Q200, SMD, 0603, 100K, 1/10W, 1%, TKF, ROHS	Stackpole	RMCF0603FT100K-T
3	R5, R12, R70	RES, SMD, 0603, 4.99K, 1/10W, 1%, TKF, ROHS	Yageo	RC0603FR-074K99L-T
6	R54, R59, R75-R78	DO NOT POPULATE OR PURCHASE	Generic	DNP
2	R55, R56	RES-AEC-Q200, SMD, 2512W, 0.002Ω, 3W, 2%, MF, ROHS	SSM	KRL6432E-M-R002-G-T1-T
2	R62, R63	RES-AEC-Q200, SMD, 0603, 30.1Ω, 1/8W, 1%, TKF, ROHS	KOA	RK73H1JTTD30R1F-T
1	R69	RES-AEC-Q200, SMD, 0603, 3.24K, 1/10W, 1%, TF, ROHS	Yageo	AC0603FR-073K24L-T
4	R7, R8, R60, R61	RES-AEC-Q200, SMD, 0603, 0Ω, 1/10W, TKF, ROHS	Yageo	RMCF0603ZT0R00-T
1	R72	RES, SMD, 0603, 113K, 1/10W, 0.1%, TNF, ROHS	Yageo	RT0603BRD07113KL-T
1	R73	RES, SMD, 0603, 37.4K, 1/10W, 0.1%, TNF, ROHS	Yageo	RT0603BRE0737K4L-T
1	R74	RES-AEC-Q200, SMD, 0603, 87.6K, 1/10W, 0.1%, ROHS	Vishay	TNPW060387K6BEEA-T
2	R79, R81	RES-AEC-Q200, SMD, 2010, 200Ωs, 1/2W, 1%, TF	ROHM	MCR50JZHF2000-T
1	R80	RES, SMD, 0603, 1K, 1/10W, 0.01%, THIN FILM, ROHS	State of the Art	S0603CA1001BEB
2	R9, R33	RES-AEC-Q200, SMD, 0603, 680Ω, 1/10W, 1%, TKF, ROHS	Vishay	CRCW0603680RFKEA-T
1	SALRTB_LED	LED, 565nm, 2.2V GREEN, 2V RED, 20mA, ROHS	Lumex	SSL-LXA3025IGC-TR-T
1	SW1	SWITCH-DIP, TH, 6POS, SLIDE, SPST, SEALED, ROHS	Grayhill	78B06ST
4	TERM1-TERM4	HDWARE-SINGLE WIRE LUG, TH, 11.8×10.3mm, HEX SCREW, ROHS	IHI Connectors	B2C-PCB-HEX

Qty	Ref Des	Description	Manufacturer	Part Number
7	TP1, TP8, TP10, TP13, TP31, TP41, TP42	CONN-MINI TEST POINT, VERTICAL, WHITE, ROHS	Keystone	5002
6	TP28, TP32-TP36	CONN-TURRET, TERMINAL POST, TH, ROHS	Keystone	1514-2
30	TP2-TP7, TP9, TP11, TP12, TP14-TP27, TP29, TP30, TP37-TP40, TP43	CONN-HEADER, 1×2, BRKAWY 1×36, 2.54mm, ROHS	FCI	68000-236HLF-1X2
1	U1	IC-RAD HARD SINGLE/DUAL PHASE, CONTROLLER, TQFP80, ROHS	Renesas	ISL73849M30NZ
2	U2, U3	IC-GAN FET DRIVER, HALF-BRIDGE, 20P, QFN, 30K RLAT, ROHS	Renesas	ISL71441M30RZ
1	U4	IC-GAN FET, RAD TOLERANT DRIVER, TDFN8, ROHS	Renesas	ISL71040M30RTZ
1	U5	IC-TEMPERATURE TRANSDUCER, 2P, FLATPACK, ROHS	Renesas	ISL71590SEHF/PROTO
4	Four corners top PCB	SCREW, 4-40×1/4in, PHILLIPS, PANHEAD, STAINLESS, ROHS	-	4-40×1/4-SCREW-SS
4	Four corners bottom PCB	STANDOFF, 4-40×3/4in, F/F, HEX, ALUMINUM, 0.25 OD, ROHS	-	4-40×3/4-STANDOFF-METAL
1	AFFIX TO BACK OF PCB	LABEL-DATE CODE=LINE 1:YRWK-REV#, LINE 2:BOM NAME	-	LABEL-DATE CODE
1	Place assy in bag	BAG, STATIC, 10×10, ZIP LOC, ROHS	-	10X10-STATIC-BAG

2.3 Board Layout

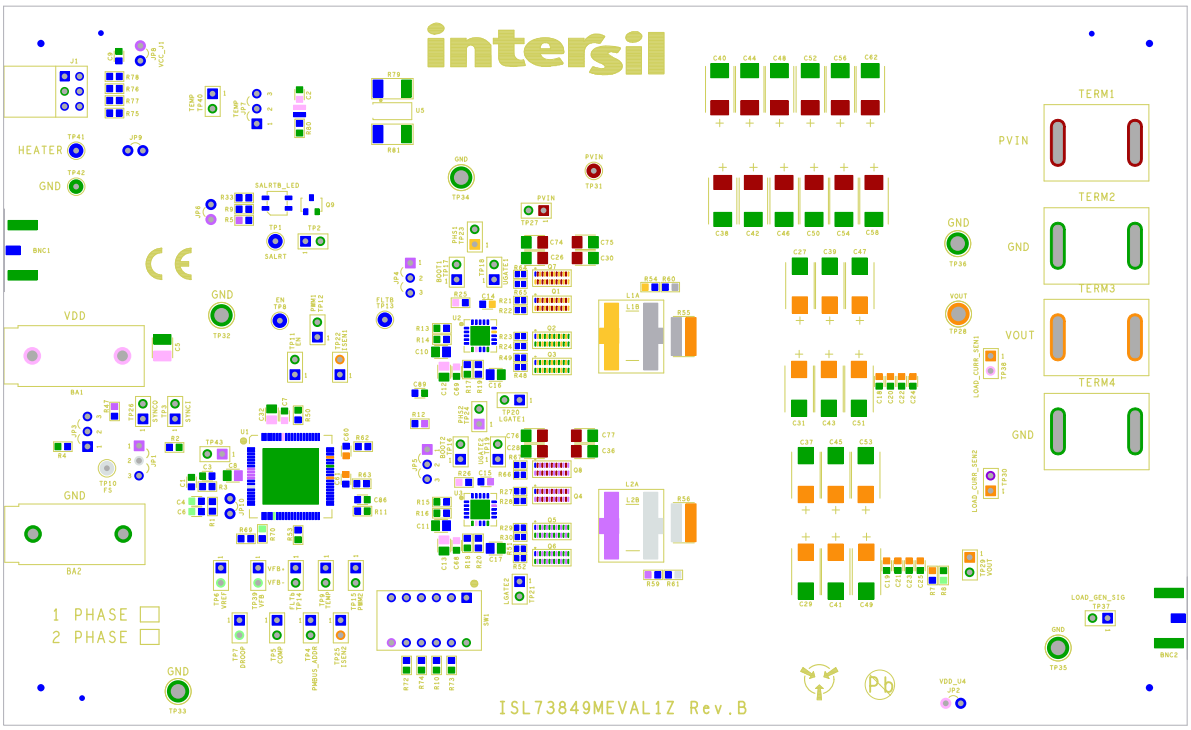

Figure 12. Silkscreen Top Layer

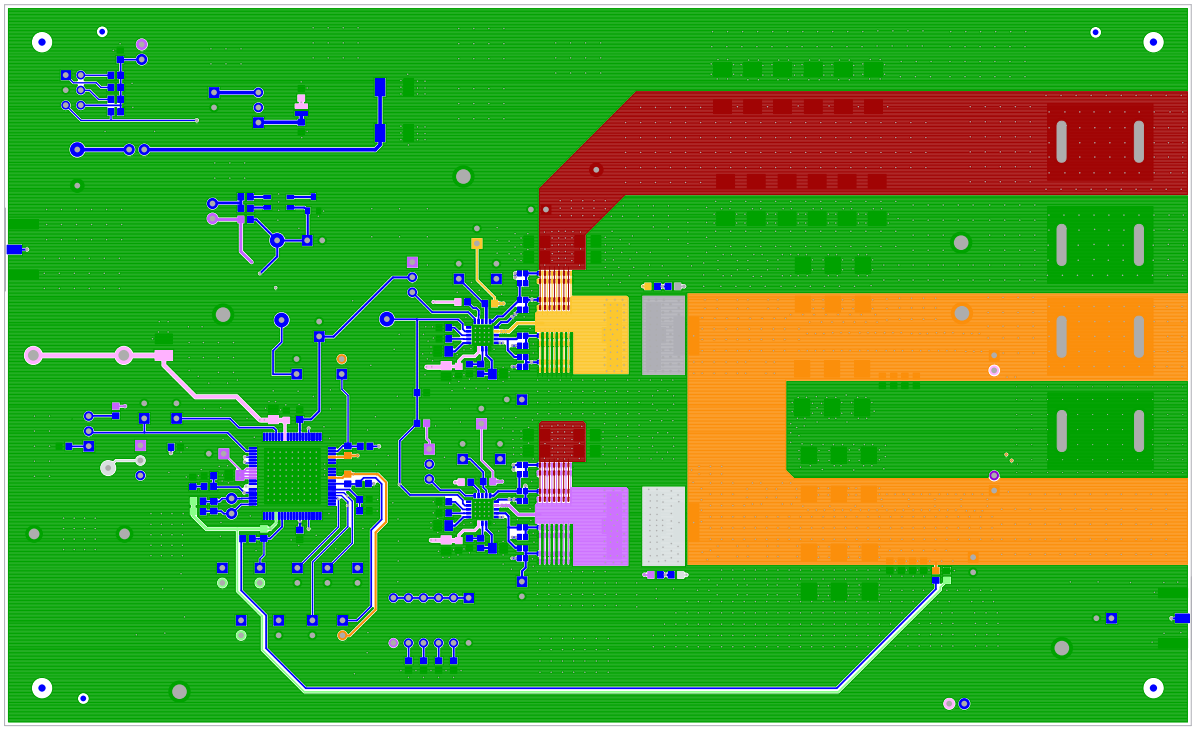

Figure 13. Top Layer

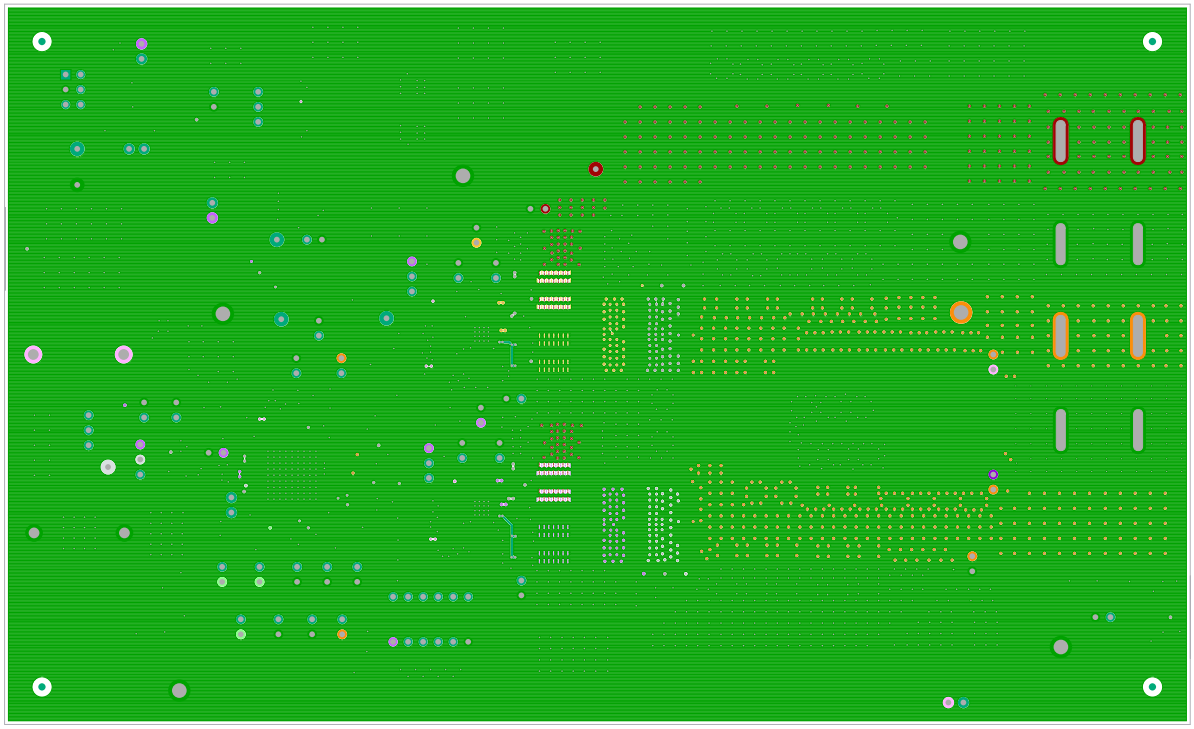

Figure 14. Layer 2

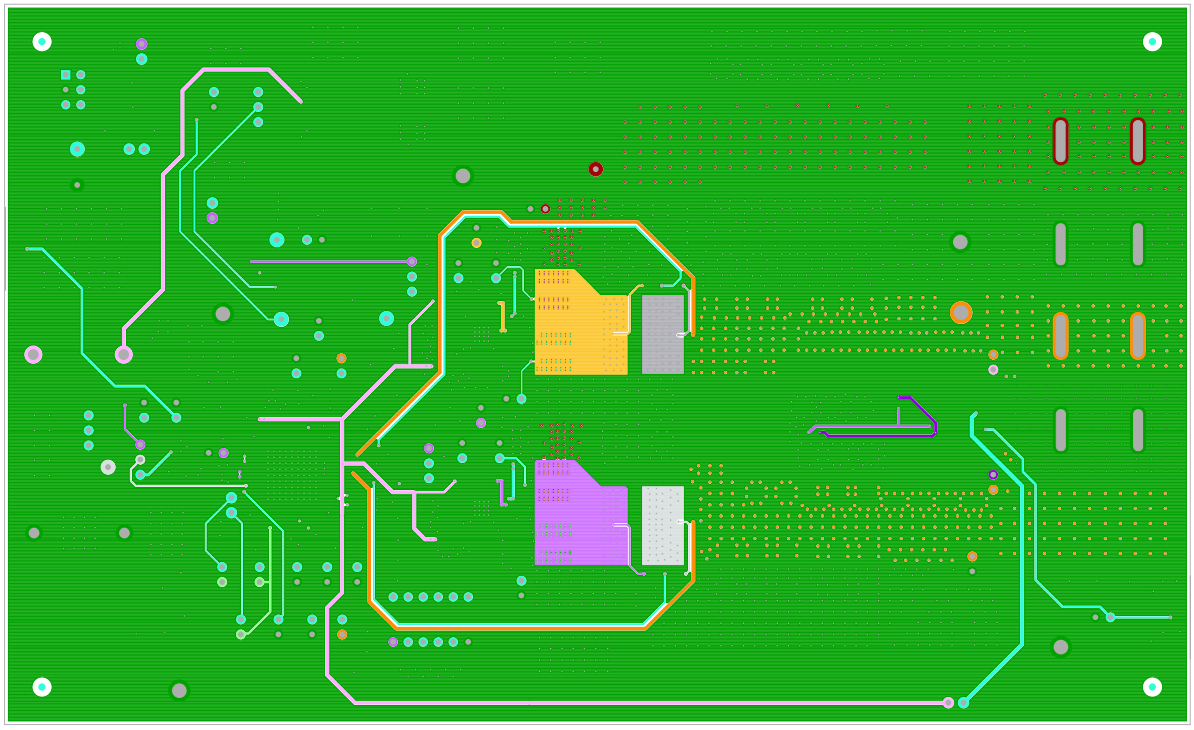

Figure 15. Layer 3

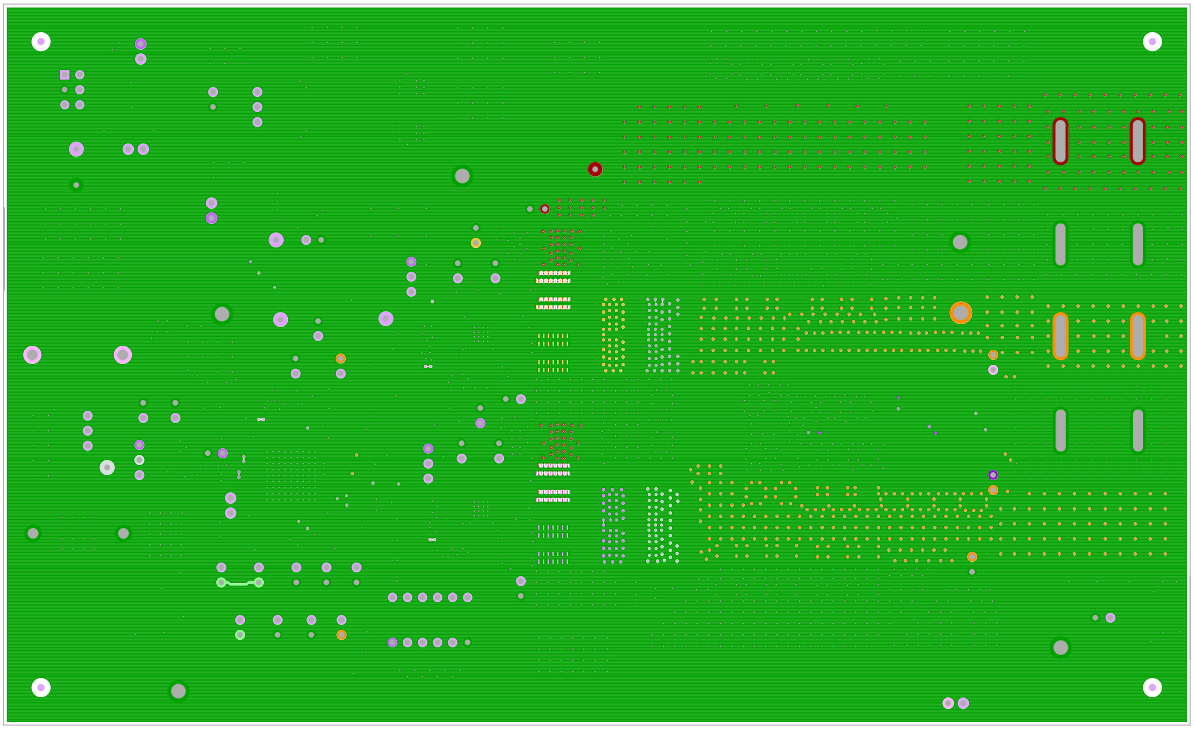

Figure 16. Layer 4

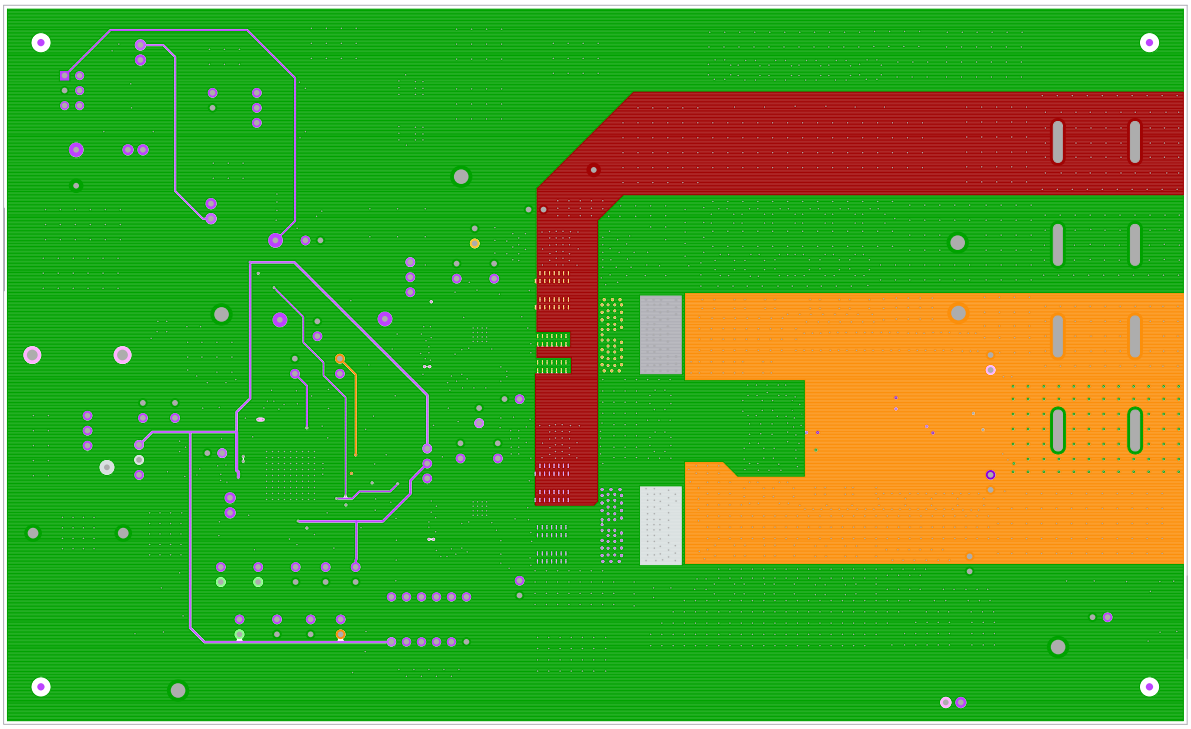

Figure 17. Layer 5

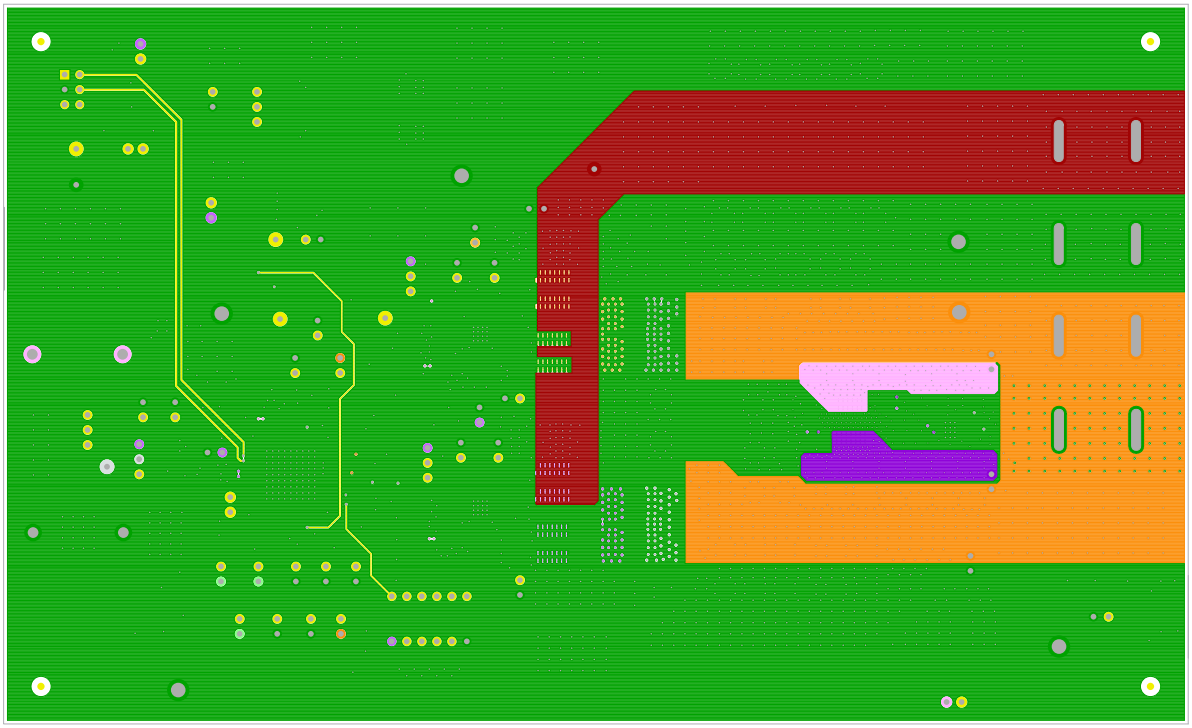

Figure 18. Layer 6

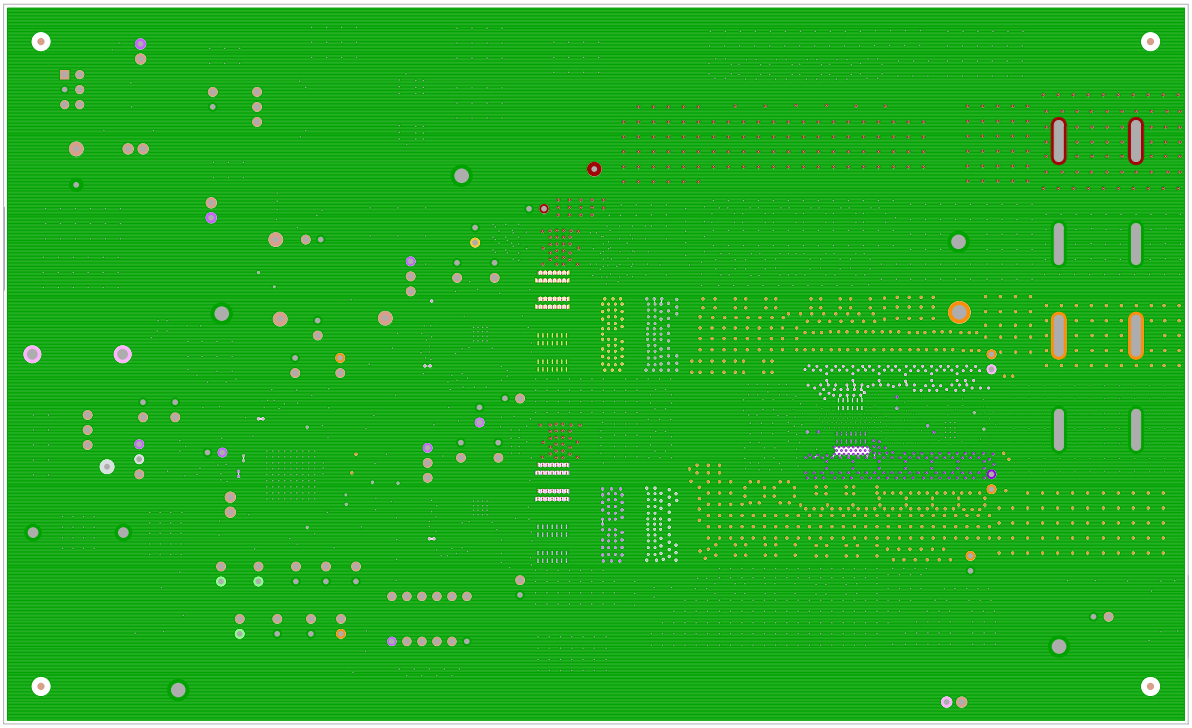

Figure 19. Layer 7

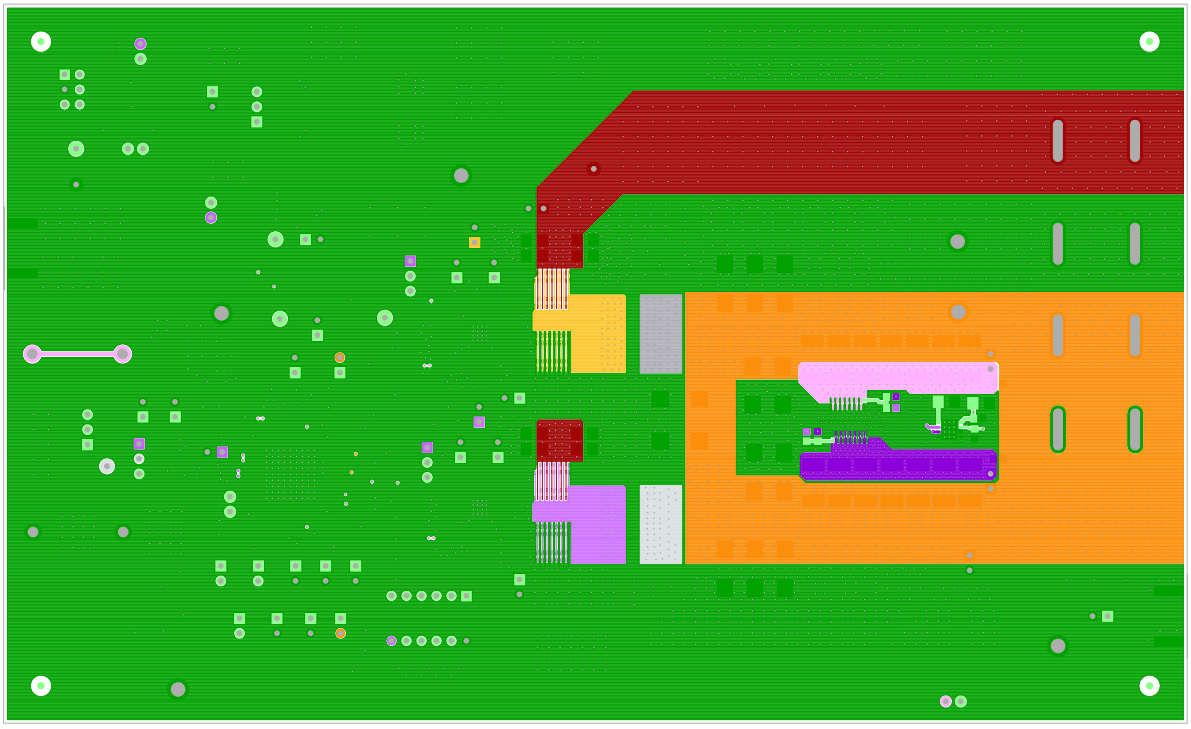

Figure 20. Bottom Layer

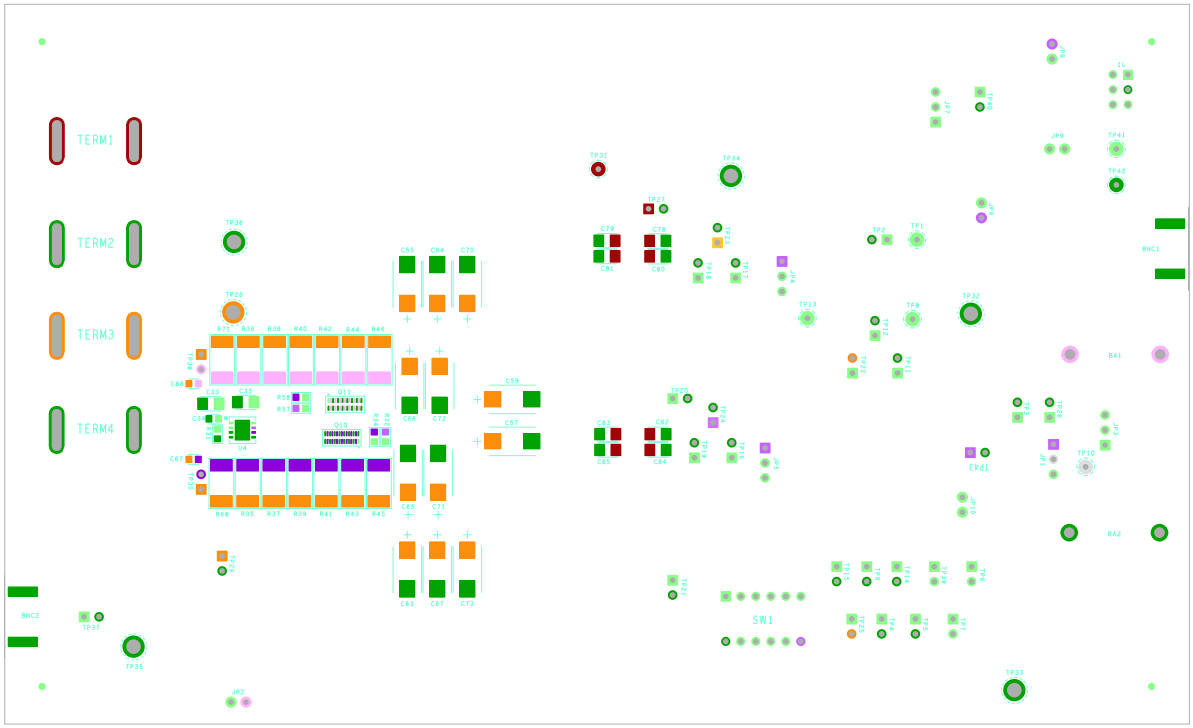

Figure 21. Silkscreen Bottom Layer

3. Typical Performance Graphs

Unless otherwise noted: VREF=0.592V, f_{SW}=500kHz; L_{OUT} = 220nH per phase, C_{OUT} = 2.64mF per phase, C_{DROOP} = 56nF, C_{VREF} = 47nF, R_{DROOP} =604Ω, FS tied to VCC, C_{SS} = 22nF, C_{COMP} = 4.7nF, R_{COMP} = 4.22kΩ, C_{POLE} = 330pF, C_{VCC} = 1µF, R_{SLOPE} = 30.1kΩ, C_{SLOPE} = 100pF, T_A = +25°C

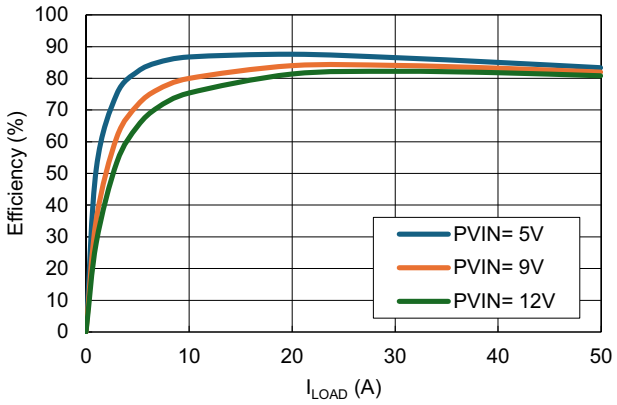

Figure 22. Conversion Efficiency

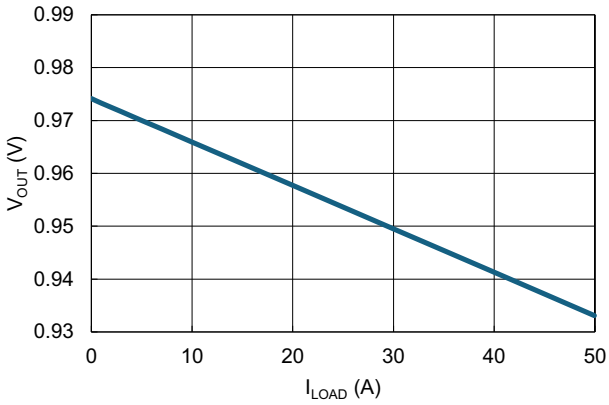

Figure 23. Droop Regulation (VDD = PVIN = 12V)

Unless otherwise noted: VREF=0.592V, f_{SW}=500kHz; L_{OUT} = 220nH per phase, C_{OUT} = 2.64mF per phase, C_{DROOP} = 56nF, C_{VREF} = 47nF, R_{DROOP} =604Ω, FS tied to VCC, C_{SS} = 22nF, C_{COMP} = 4.7nF, R_{COMP} = 4.22kΩ, C_{POLE} = 330pF, C_{VCC} = 1µF, R_{SLOPE} = 30.1kΩ, C_{SLOPE} = 100pF, T_A = +25°C (Cont.)

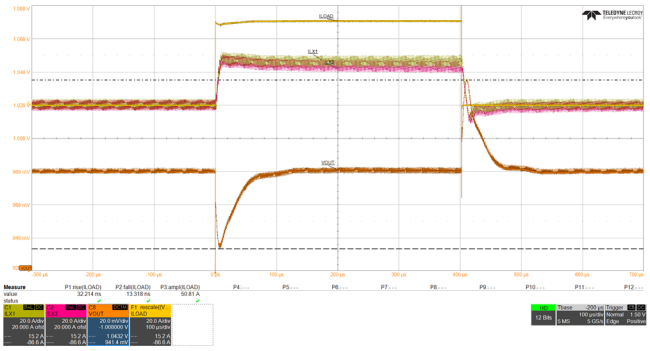

Figure 24. Load Transient Response (VDD = PVIN = 5V, I_{LOAD} = 0A to 50A at 1578A/µs and 50A to 0A at 3815A/µs, V_{REF} = 0.6V, R_{DROOP} = 0Ω)

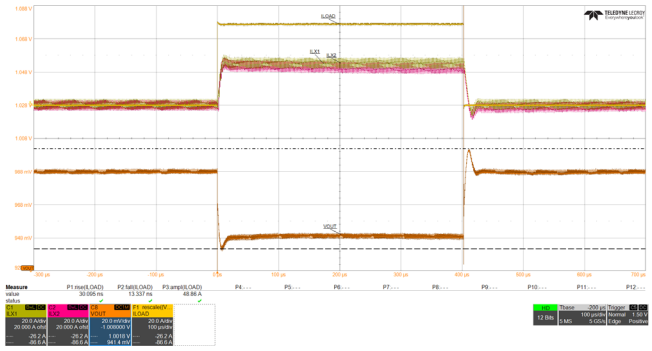

Figure 25. Load Transient Response (VDD = PVIN = 5V, I_{LOAD} = 0A to 50A at 1600A/µs and 50A to 0A at 3582A/µs, V_{REF} = 0.6V, R_{DROOP} = 604Ω)

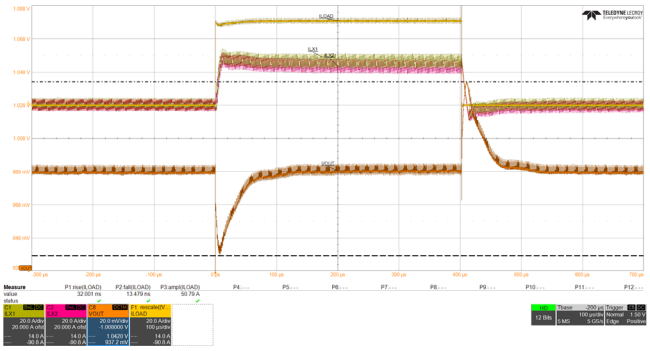

Figure 26. Load Transient Response (VDD = PVIN = 12V, I_{LOAD} = 0A to 50A at 1578A/µs and 50A to 0A at 3815A/µs, V_{REF} = 0.6V, R_{DROOP} = 0Ω)

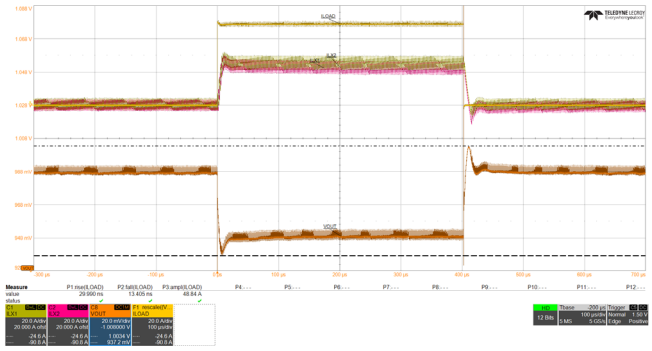

Figure 27. Load Transient Response (VDD = PVIN = 12V, I_{LOAD} = 0A to 50A at 1600A/µs and 50A to 0A at 3582A/µs, V_{REF} = 0.6V, R_{DROOP} = 604Ω)

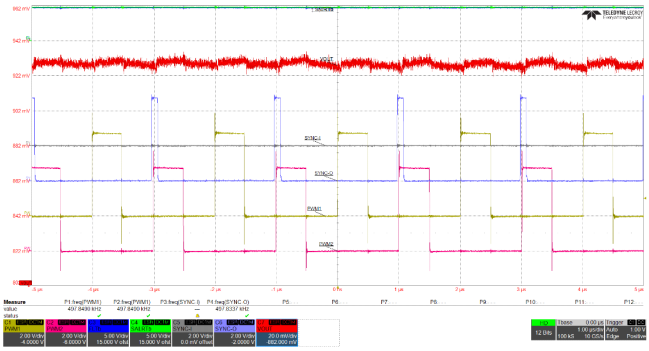

Figure 28. SYNC-O Frequency = SYNC-I Frequency (VDD = PVIN = 5V, I_{LOAD} = 50A, R_{SYNC-O} = Floating)

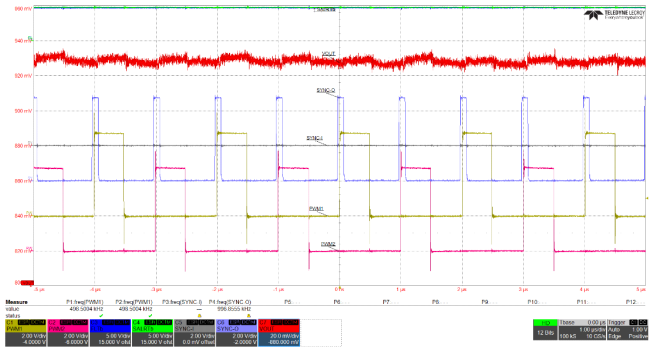

Figure 29. SYNC-O Frequency = SYNC-I Frequency (VDD = PVIN = 5V, I_{LOAD} = 50A, R_{SYNC-O} = 100kΩ to GND)

Unless otherwise noted: VREF=0.592V, f_{SW}=500kHz; L_{OUT} = 220nH per phase, C_{OUT} = 2.64mF per phase, C_{DROOP} = 56nF, C_{VREF} = 47nF, R_{DROOP} =604Ω, FS tied to VCC, C_{SS} = 22nF, C_{COMP} = 4.7nF, R_{COMP} = 4.22kΩ, C_{POLE} = 330pF, C_{VCC} = 1µF, R_{SLOPE} = 30.1kΩ, C_{SLOPE} = 100pF, T_A = +25°C (Cont.)

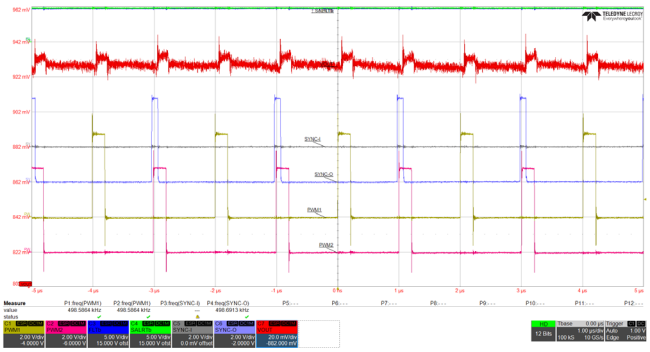

Figure 30. SYNC-O Frequency = SYNC-I Frequency (VDD = PVIN = 12V, I_{LOAD} = 50A, R_{SYNC-O} = Floating)

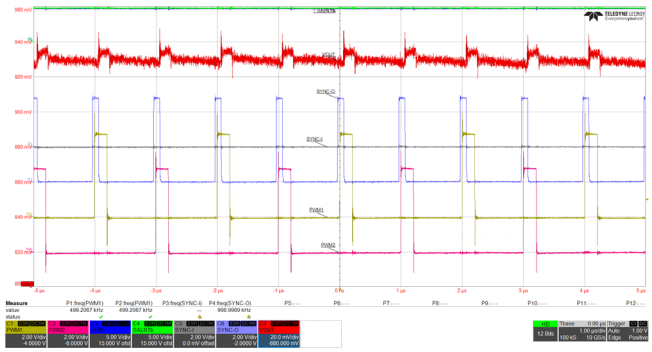

Figure 31. SYNC-O Frequency = SYNC-I Frequency (VDD = PVIN = 12V, I_{LOAD} = 50A, R_{SYNC-O} = 100kΩ to GND)

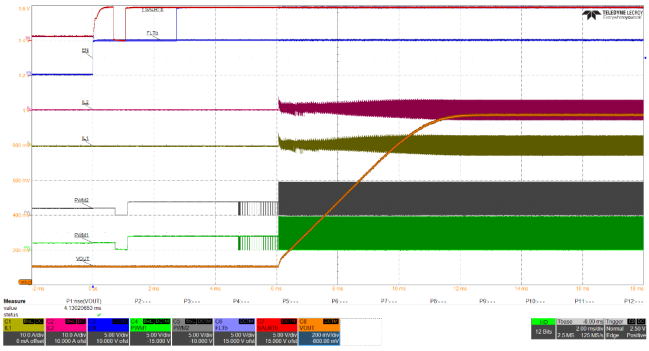

Figure 32. Startup with EN (VDD = PVIN = 5V, I_{LOAD} = 0A)

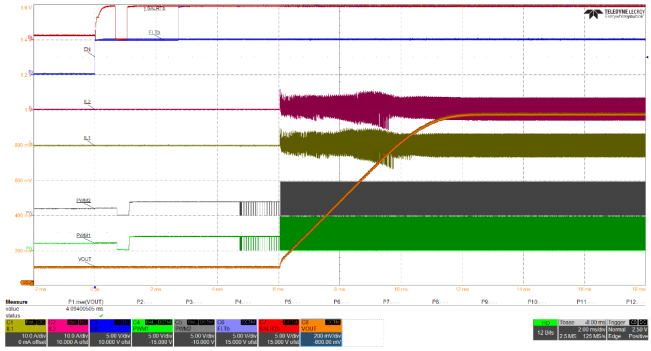

Figure 33. Startup with EN (VDD = PVIN = 12V, I_{LOAD} = 0A)

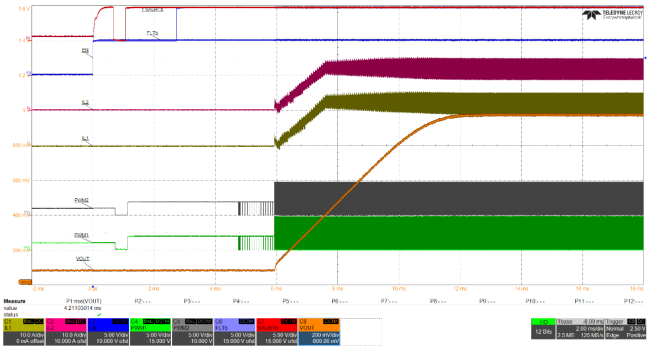

Figure 34. Startup with EN (VDD = PVIN = 5V, I_{LOAD} = 25A)

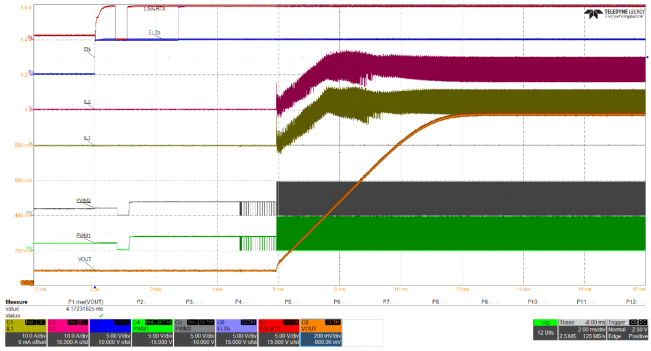

Figure 35. Startup with EN (VDD = PVIN = 12V, I_{LOAD} = 25A)

Unless otherwise noted: VREF=0.592V, f_{SW}=500kHz; L_{OUT} = 220nH per phase, C_{OUT} = 2.64mF per phase, C_{DROOP} = 56nF, C_{VREF} = 47nF, R_{DROOP} =604Ω, FS tied to VCC, C_{SS} = 22nF, C_{COMP} = 4.7nF, R_{COMP} = 4.22kΩ, C_{POLE} = 330pF, C_{VCC} = 1µF, R_{SLOPE} = 30.1kΩ, C_{SLOPE} = 100pF, T_A = +25°C (Cont.)

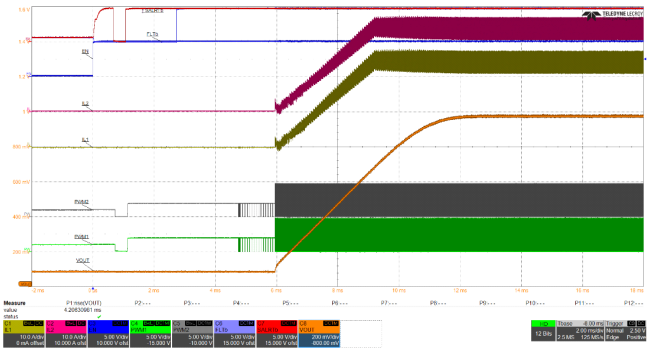

Figure 36. Startup with EN (VDD = PVIN = 5V, I_{LOAD} = 50A)

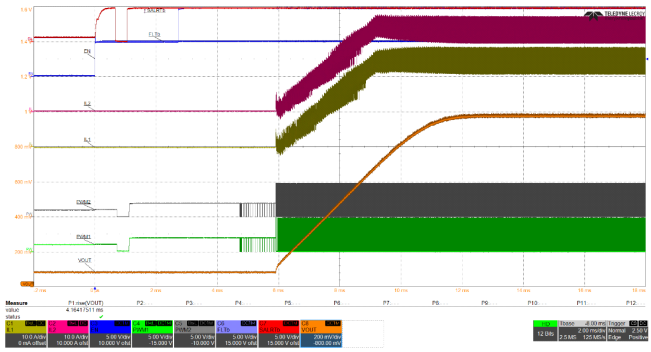

Figure 37. Startup with EN (VDD = PVIN = 12V, I_{LOAD} = 50A)

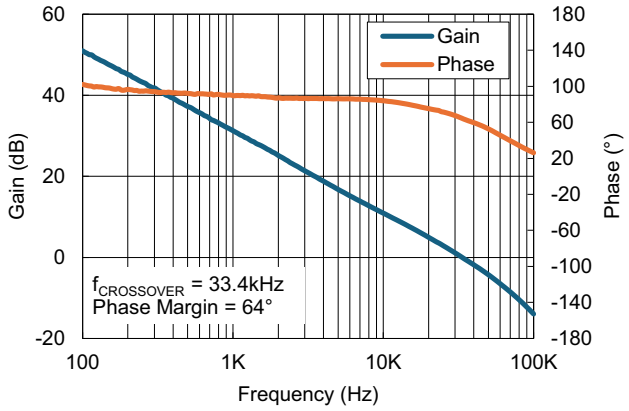

Figure 38. Gain and Phase vs Frequency (VDD = PVIN = 5V, I_{LOAD} = 0A)

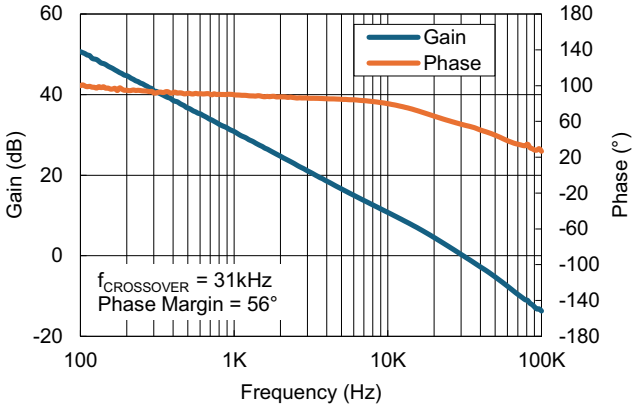

Figure 39. Gain and Phase vs Frequency (VDD = PVIN = 12V, I_{LOAD} = 0A)

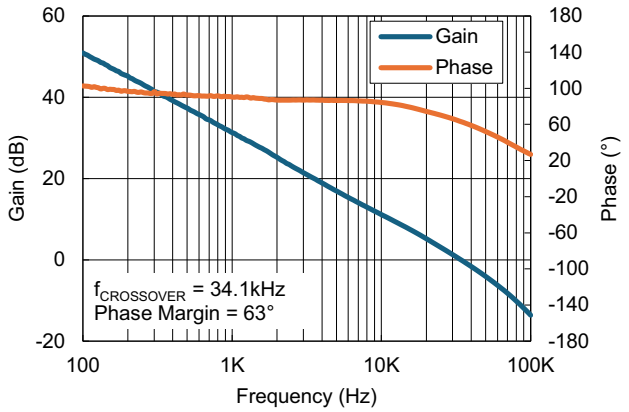

Figure 40. Gain and Phase vs Frequency (VDD = PVIN = 5V, I_{LOAD} = 25A)

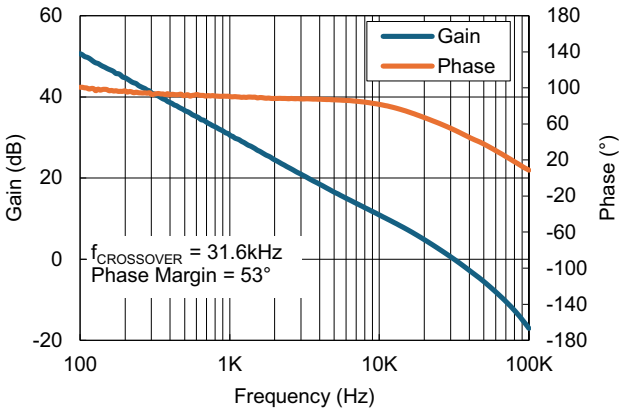

Figure 41. Gain and Phase vs Frequency (VDD = PVIN = 12V, I_{LOAD} = 25A)

Unless otherwise noted: VREF=0.592V, f_{SW}=500kHz; L_{OUT} = 220nH per phase, C_{OUT} = 2.64mF per phase, C_{DROOP} = 56nF, C_{VREF} = 47nF, R_{DROOP} =604Ω, FS tied to VCC, C_{SS} = 22nF, C_{COMP} = 4.7nF, R_{COMP} = 4.22kΩ, C_{POLE} = 330pF, C_{VCC} = 1µF, R_{SLOPE} = 30.1kΩ, C_{SLOPE} = 100pF, T_A = +25°C (Cont.)

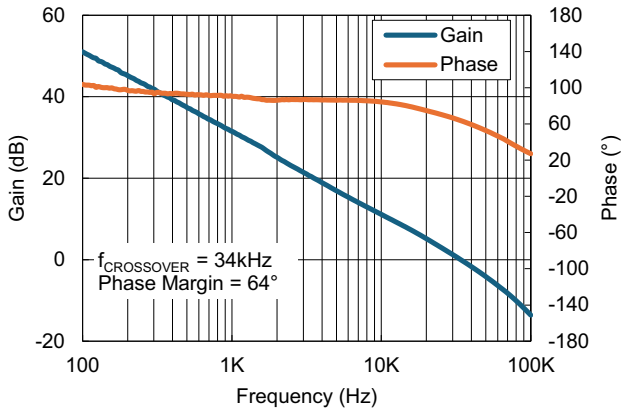

Figure 42. Gain and Phase vs Frequency (VDD = PVIN = 5V, I_{LOAD} = 50A)

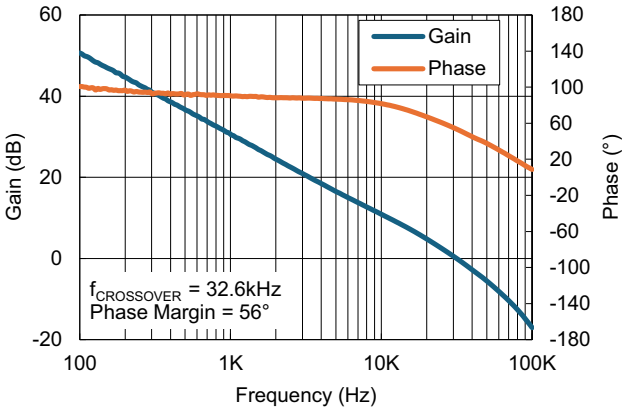

Figure 43. Gain and Phase vs Frequency (VDD = PVIN = 12V, I_{LOAD} = 50A)

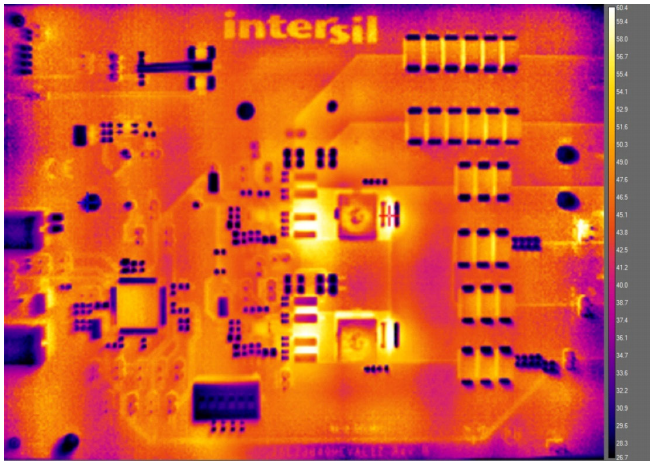

Figure 44. Board Thermals (VDD = PVIN = 5V, I_{LOAD} = 50A)

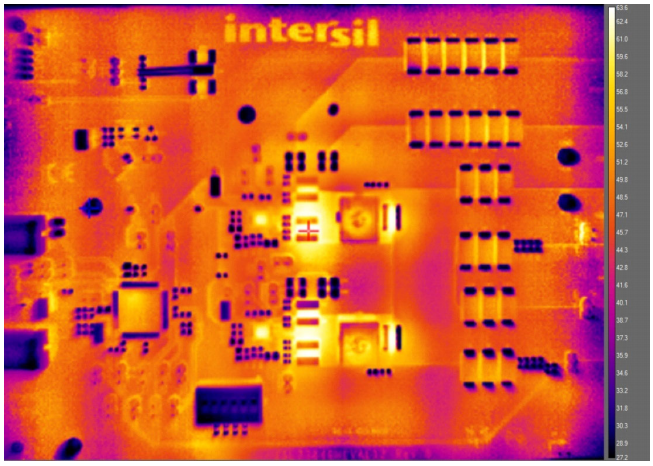

Figure 45. Board Thermals (VDD = PVIN = 12V, I_{LOAD} = 50A)

4. Ordering Information

Part Number	Description
ISL73849MEVAL1Z	2-Phase ISL73849M Board

5. Revision History

Revision	Date	Description
1.01	Mar 18, 2026	Updated Figures 24 through 27.
1.00	May 21, 2025	Initial release

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