EVAL-LTM4683-A1Z

LTM4683

Low V_{OUT} Quad 31.25A (EVAL-LTM4683-A1Z) or Single 125A (EVAL-LTM4683-A2Z) µModule Regulator with Digital Power System Management

General Description

The EVAL-LTM4683-A1Z evaluation board features the *LTM4683*: the wide input and output voltage range, high efficiency and power density, quad output PolyPhase® DC-to-DC step-down µModule® (micromodule) regulator with digital power system management (PSM). The EVAL-LTM4683-A1Z evaluation board is configured as a 4-phase four outputs. A similar evaluation board with a 4-phase single output is also available (*EVAL-LTM4683-A2Z*).

The EVAL-LTM4683-A1Z evaluation board's default input voltage range is 4.5V to 14V. However, if V_{IN} is lower than 6V and within 4.5V ≤ V_{IN} ≤ 5.75V, a minor modification to certain existing on-board components is required. See step 0 (*Operation at Low V_{IN}: 4.5V ≤ V_{IN} ≤ 5.75V*) in the *Procedure* section.

The factory default output voltage V_{OUT} [0:3] is 0.4V at 31.25A maximum load current per channel. Each channel can deliver up to 31.25A maximum load current but forced airflow and heatsink might also be used to further optimize the output power when all output rails are on and fully loaded. The evaluation board output voltages can be adjusted from 0.3V up to 0.7V. Refer to the *LTM4683* data sheet for thermal derating curves and recommended switching frequency when adjusting the output voltage. The factory default switching frequency is preset at 350kHz (typical). The EVAL-LTM4683-A1Z evaluation board comes with a PMBus interface and digital PSM functions. An on-board 12-pin connector is available for the users to connect the dongle DC1613A to the evaluation board, which provides an easy way to communicate and program the part using the LTpowerPlay® software development tool.

The LTpowerPlay software and the I^2C/PMBus/SMBus dongle DC1613A allow the users to monitor real-time telemetry of input and output voltages, input, and output current, switching frequency, internal IC die temperatures, external power component temperatures, and fault logs. Programmable parameters include device address, output voltages, control loop compensation, switching frequency, phase interleaving, discontinuous-conduction mode (DCM) or continuous-conduction mode (CCM) of operation, digital soft start, sequencing, and time-based shutdown, fault responses to input and output overvoltage, output overcurrent, IC die and power component over temperatures.

The LTM4683 is available in a thermally enhanced, low-profile 330-pin, (15mm × 22mm × 5.71mm) BGA package. It is recommended to read the LTM4683 data sheet and this user guide prior to using or making any hardware changes to the EVAL-LTM4683-A1Z evaluation board.

Features and Benefits

- Quad digitally adjustable analog loops with digital interface for control and monitoring.
- Optimized for low output voltage ranges.
- 15mm × 22mm × 5.71mm BGA package.

EVAL-LTM4683-A1Z Evaluation Board

FILE	DESCRIPTION
EVAL-LTM4683-A1Z	Design files.
LTpowerPlay	Easy-to-use Windows® based graphical user interface (GUI) development tool.
DC1613A	The USB to PMBus controller dongle.

***Ordering Information* appears at end of this user guide.**

One Analog Way, Wilmington, MA 01887-2356, U.S.A. | Tel: 781.329.4700

Evaluation Board Photo

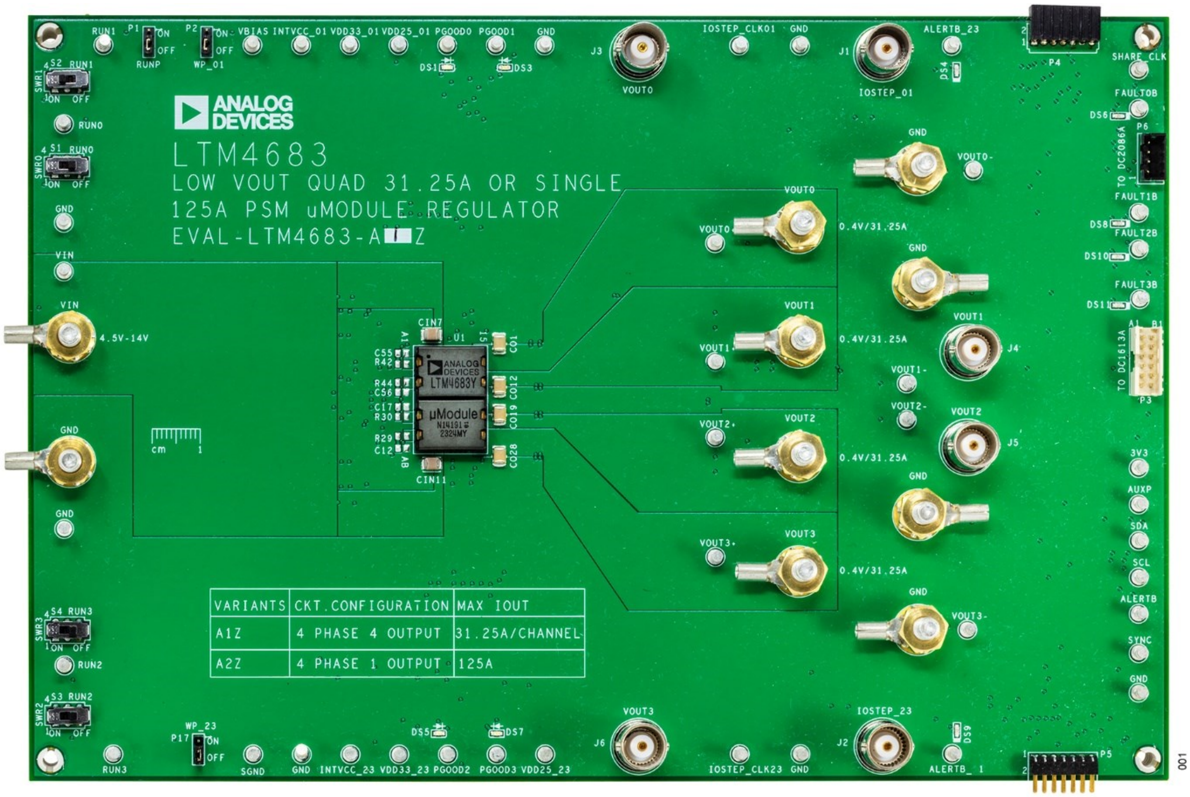

Figure 1. EVAL-LTM4683-A1Z Evaluation Board (Part Marking Is either Ink Mark or Laser Mark)

Performance Summary

Specifications are at T_A = 25°C

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage V_{IN} Range		4.5	12	14	V
Evaluation board default output voltage, $V_{OUT0–OUT3}$	f_{SW} = 350kHz, V_{IN} = 4.5V to 14V, I_{OUT} = 0A to 31.25A per channel.		0.4		V
Switching frequency, f_{SW}	Factory default switching frequency.		350		kHz
Maximum continuous output current per channel, $I_{OUT0–OUT3}$			30	31.25	A
Efficiency	f_{SW} = 350kHz, V_{IN} =12V, V_{OUT0} = 0.4V I_{OUT0} = 0A to 31.25A, V_{BIAS} = 5.5V (RUNP: ON), only one channel is on at a time, no forced airflow, no heatsink.		79.1		%
Thermal performance	f_{SW} = 350kHz, V_{IN} =12V, $V_{OUT0–OUT3}$ = 0.4V, $I_{OUT0–OUT3}$ = 31.25A per channel, V_{BIAS} = 5.5V (RUNP: ON), no forced airflow, no heatsink.		86.4		°C

Quick Start

Required Equipment

- One power supply that can deliver 20V at 20A.
- Four electronic loads that can deliver 35A at 0.3V each load.
- Five digital multimeters (DMMs).

Procedure

The EVAL-LTM4683-A1Z evaluation board is easy to set up to evaluate the performance of the LTM4683. See *Figure 2* for proper measurement equipment setup and use the following test procedures.

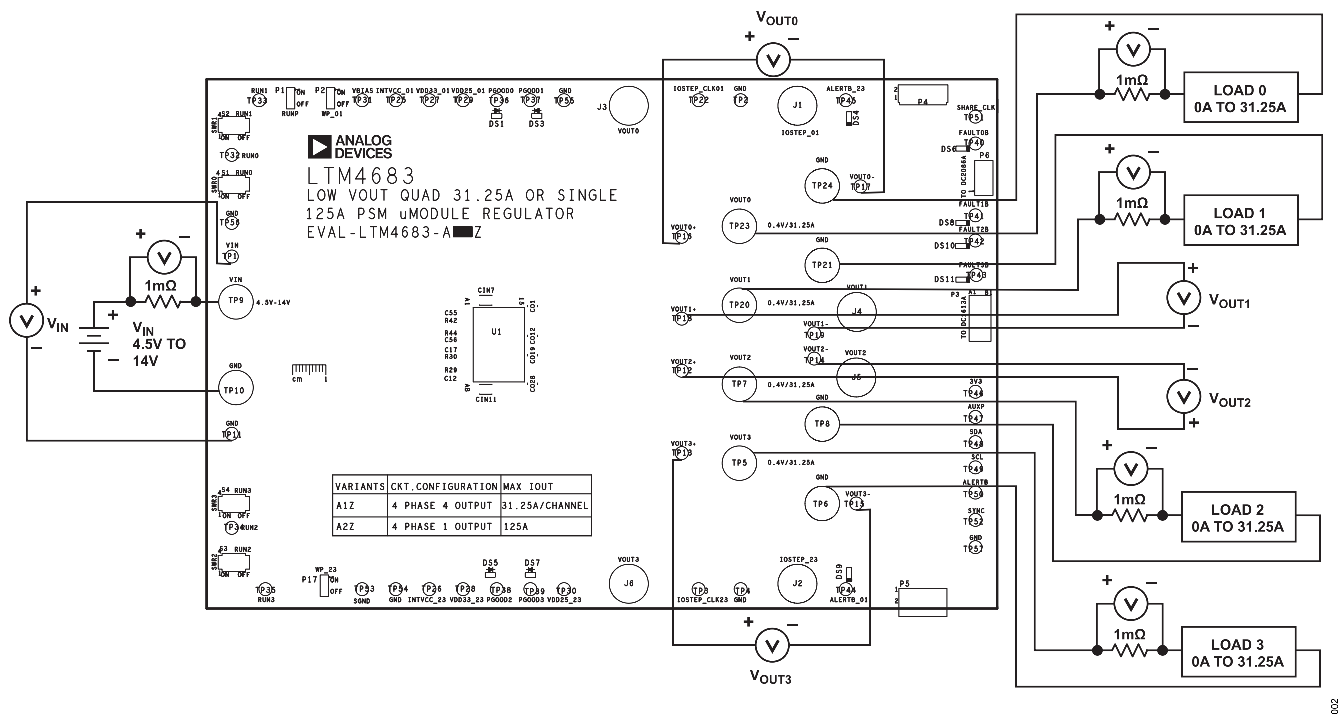

Figure 2. Proper Measurement Equipment Setup

1. With power off, connect the input power supply between VIN (TP9) and GND (TP10). Set the input voltage supply to 0V.

2. Connect the first load between VOUT0 (TP23) and GND (TP24), connect the second load between VOUT1 (TP20) and GND (TP21), connect the third load between VOUT2 (TP7) and GND (TP8), connect the fourth load between VOUT3 (TP5) and GND (TP6). Preset all the loads to 0A.

3. Connect the DMM between the input test points: VIN (TP1) and GND (TP11) to monitor the input voltage. Connect DMMs between VOUT0+ (TP16) and VOUT0− (TP17), VOUT1+ (TP18) and VOUT1− (TP19), VOUT2+ (TP12) and VOUT2− (TP14), VOUT3+ (TP13) and VOUT3− (TP15) to monitor the corresponding dc output voltages of Channel 0, Channel 1, Channel 2, and Channel 3. These output voltage test points are Kelvin sensed directly across COUT2 (Channel 0), COUT10 (Channel 1), COUT20 (Channel 2), and COUT29 (Channel 3) to provide an accurate measurement of output voltages. Do not apply load current to any of the above test points to avoid damage to the regulator. Do not connect the scope probe ground leads to VOUT0−, VOUT1−, VOUT2−, and VOUT3−.

4. Prior to powering up the EVAL-LTM4683-A1Z, check the default position of the jumpers and switches in the following positions.

SWITCH/JUMPER	SWR0, SWR1 SWR2, SWR3	P1	P2 P17
DESCRIPTION	RUN0, RUN1 RUN2, RUN3	RUNP	WP_01 WP_23
POSITION	OFF	ON	OFF

5. Turn on the power supply at the input. Slowly increasing the input voltage from 0V to 12V (typical). Measure and make sure the input supply voltage is 12V and flip SWR0 (RUN0) and SWR1 (RUN1), SWR2 (RUN2), and SWR3 (RUN3) to the ON position. The output voltages should be 0.4V ±0.5% (typical) for VOUT0, VOUT1, VOUT2, and VOUT3.

6. Once the input and output voltages are properly established, adjust the input voltage between 6V to 14V max and the load current within the operating range of 0A to 31.25A max per channel. Observe the output voltage regulation, output voltage ripples, switching node waveform, load transient response, and other parameters. See *Figure 3* for proper output voltage ripples measurement.

   To measure the input/output voltage ripples properly, do not use the long ground lead on the oscilloscope probe. See *Figure 3* for the proper scope probe technique. Short, stiff leads need to be soldered to the (+) and (−) terminals of an input or output capacitor. The probe's ground ring needs to touch the (−) lead, and the probe tip needs to touch the (+) lead.

   The output voltage ripples of Channel 0, Channel 1, Channel 2, and Channel 3 can also be monitored using on-board BNC terminals. Connect short BNC cables from VOUT0 (J3), VOUT1 (J4), VOUT2 (J5), and VOUT3 (J6) to the inputs of a 4-channel oscilloscope (scope probe ratio 1:1, AC-coupling) to observe output voltage ripples.

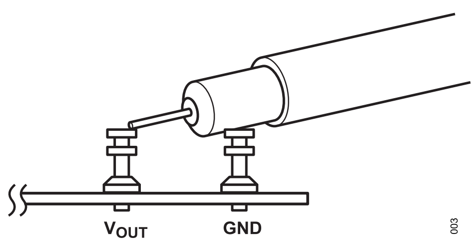

Figure 3. Scope Probe Placement for Measuring Output Ripple Voltage

(Option) Operation with V_{BIAS}

7. The V_{BIAS} pin is the 5.5V output of an internal buck regulator that can be enabled or disabled with RUNP. The V_{BIAS} regulator input is the V_{IN_VBIAS} pin and is powered from V_{IN}. The advantage of using V_{BIAS} is bypassing the internal $INTV_{CC\_LDO}$ powered from V_{IN}, turning on the internal switch connected to the 5.5V V_{BIAS} to $INTV_{CC\_01}$ and $INTV_{CC\_23}$ of the part, therefore, reducing the power loss, improving the overall efficiency, and lowering the temperature rise of the part when operating at high V_{IN} and high switching frequency. The V_{BIAS} must exceed 4.8V and the V_{IN} must be greater than 7V to activate the internal switch connecting V_{BIAS} to $INTV_{CC\_01}$ and $INTV_{CC\_23}$ of the part. In typical applications, it is recommended to enable V_{BIAS}.

Operation at Low V_{IN}: 4.5V ≤ V_{IN} ≤ 5.75V

8. Remove R31 to disconnect V_{IN_VBIAS} from V_{IN}. Remove C25. Set RUNP (P1) to the OFF position. Tie SV_{IN_01} to $INTV_{CC\_01}$ by stuffing R142 with a 0Ω resistor. Tie SV_{IN_23} to $INTV_{CC\_23}$ by stuffing R143 with a 0Ω resistor. Make sure V_{IN} is within 4.5V ≤ V_{IN} ≤ 5.75V. Additional input electrolytic capacitors may be installed between VIN (TP9) and GND (TP10) to prevent V_{IN} from drooping or overshoot to a voltage level that can exceed the specified minimum V_{IN} (4.5V) and maximum V_{IN} (5.75V) during large output load transient.

***(Option)* On-Board Load Step Circuit**

9. The EVAL-LTM4683-A1Z evaluation board provides an on-board load transient circuit to measure ΔV_{OUT} peak-to-peak deviation during rising or falling dynamic load transient. The simple load step circuit consisting of two paralleled 40V N-channel power MOSFETs in series with two paralleled 10mΩ, 2W, 1% current sense resistors. The MOSFETs are configured as voltage control current source (V_{CCS}) devices; therefore, the output current step and its magnitude are created and controlled by adjusting the amplitude of the applied input voltage step at the gate of the MOSFETs. Use a function generator to provide a voltage pulse between IOSTEP_CLK01 (TP22) and GND (TP2). The input voltage pulse should be set at a pulse width of less than 300µs and a maximum duty cycle of less than 2% to avoid excessive thermal stress on the MOSFET devices. The output current step is measured directly across the current sense resistors and monitored by connecting the BNC cable from IOSTEP_01 (J1) to the input of the oscilloscope (scope probe ratio 1:1, DC-coupling). The equivalent voltage to the current scale is 5mV/1A. The load step current slew rate dI/dt can be varied by adjusting the rise time and fall time of the input voltage pulse. The load step circuit of Channel 0 or Channel 1 is connected to VOUT0 by default but can be used for VOUT1 by simply removing the zero-ohm jumper R92 and stuffing it at the position of R93 and vice versa. Only one resistor, R92 or R93, can be stuffed at a time to avoid shorting VOUT0 and VOUT1 together. Repeat step 9 to perform load step transient evaluation for the VOUT1 rail. Similarly, load step transient evaluation of VOUT2 or VOUT3 can be performed using the same method described above. See the *Schematics* section for more details.

Connecting a PC to the EVAL-LTM4683-A1Z

Use a PC to reconfigure the digital PMS features of the LTM4683, such as nominal V_{OUT}, margin set points, OV/UV limits, output current and temperature fault limits, sequencing parameters, the fault logs, fault responses, GPIOs, and other functionality. The DC1613A dongle can be hot plugged when V_{IN} is present. See *Figure 4* for the proper setup of the evaluation board.

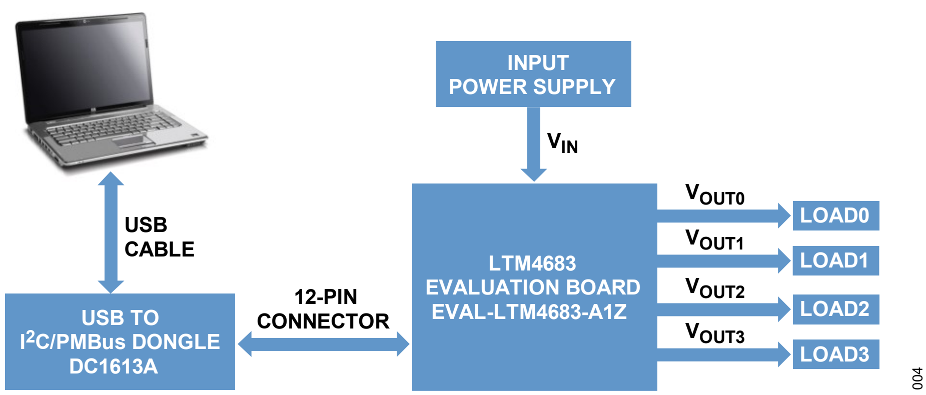

Figure 4. EVAL-LTM4683-A1Z Evaluation Board Setup with a PC

LTpowerPlay Quick Start Guide

The LTpowerPlay is a powerful Windows-based development environment that supports Analog Devices' digital power system management (PSM) ICs. The software supports a variety of different tasks. Use the LTpowerPlay to evaluate Analog Devices' digital PSM µModule ICs by connecting to an evaluation board system.

The LTpowerPlay can also be used in an offline mode (with no hardware present) to build a multichip configuration file that can be saved and reloaded anytime.

The LTpowerPlay provides unprecedented diagnostic tools and debug features. It becomes a valuable diagnostic tool during board bring-up to program or tweak the power management scheme in a system, or to diagnose power issues when bringing up rails.

The LTpowerPlay utilizes the DC1613A, USB-to-PMBus controller, to communicate with one of the many potential targets, including all the parts in the PSM product category evaluation system. The software also provides an automatic update feature to keep it current with the latest set of device drivers and documentation. Download and install the LTpowerPlay software at *LTpowerPlay*.

To access technical support documents for Analog Devices' digital PSM products, visit Help or view online help on the LTpowerPlay menu.

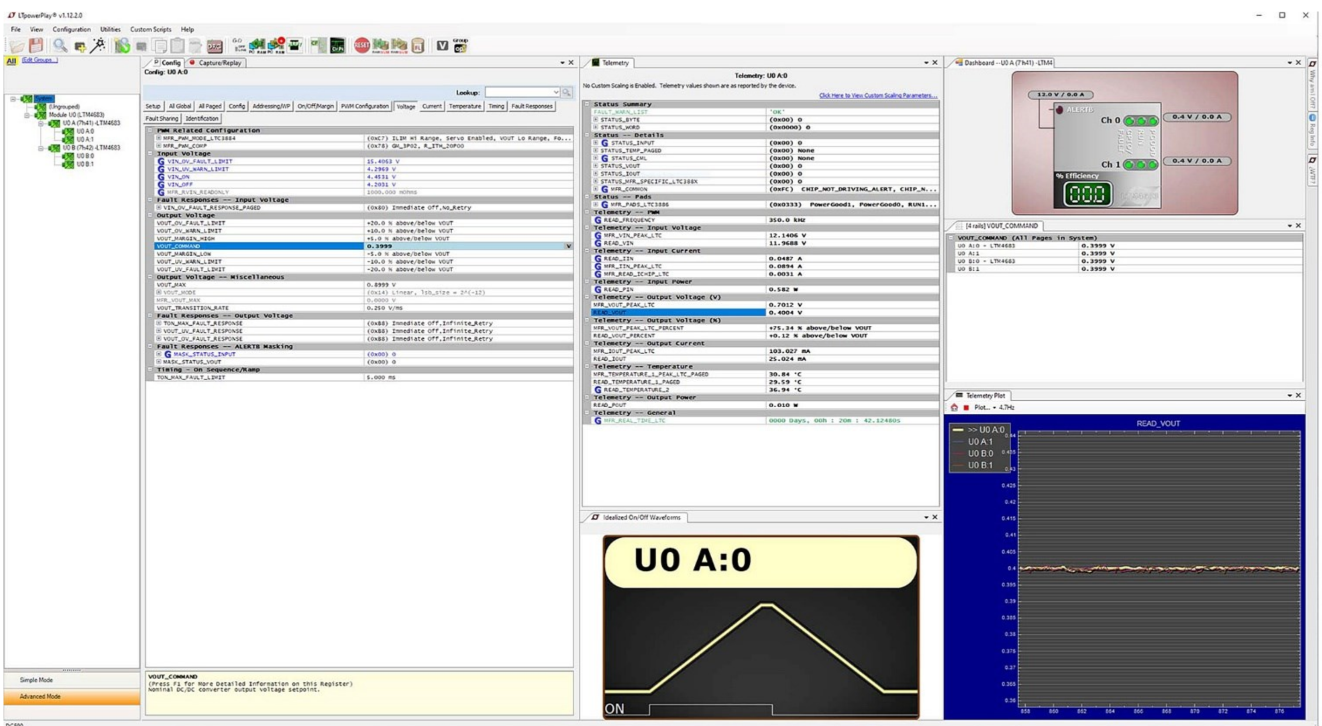

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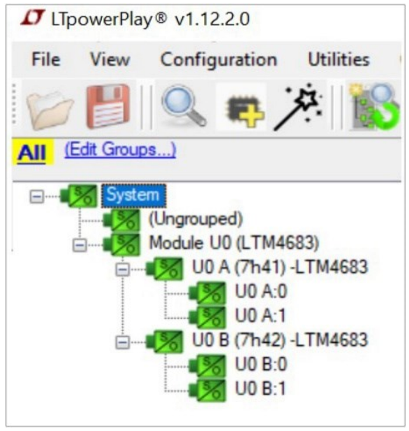
Figure 5. LTpowerPlay Main Interface

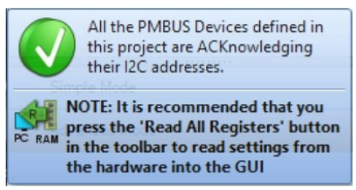
LTpowerPlay Procedure

Use the following procedure to monitor and change the settings for the LTM4683.

1. Launch the LTpowerPlay GUI. The GUI should automatically identify the EVAL-LTM4683-A1Z (see system tree below).

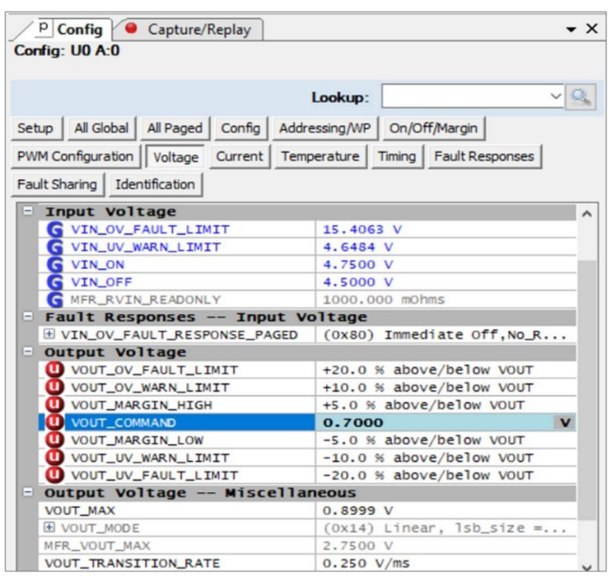


2. A green message box shows for a few seconds in the lower left-hand corner, confirming that LTM4683 is communicating.



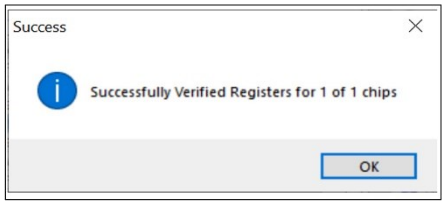
3. In the Toolbar, **Click the R** (RAM to PC) icon to read the RAM from the LTM4683. The configuration is read from the LTM4683 and loaded into the GUI.

4. Example of programming the output voltage to a different value. In the Config Tab, **Click on the Voltage** tab in the main menu bar, and **type in 0.7V** in the VOUT_COMMAND box as shown below.



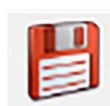
5. Then **Click the W** (PC to RAM) icon to write these register values to the LTM4683.

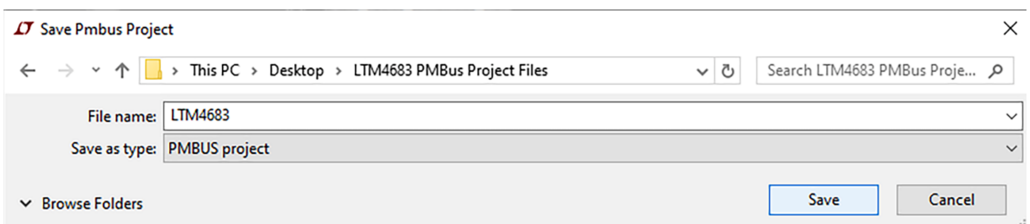
6. The output voltage will change to 0.7V. If the write command is successfully executed, the following message should be seen.



7. All user configurations or changes can be saved in to the NVM. In the Toolbar, **Click the RAM to NVM** icon.

8. Save the evaluation board configuration to a (*.proj) file. **Click the Save icon** and save the file with a preferred file name.





Typical Performance Characteristics

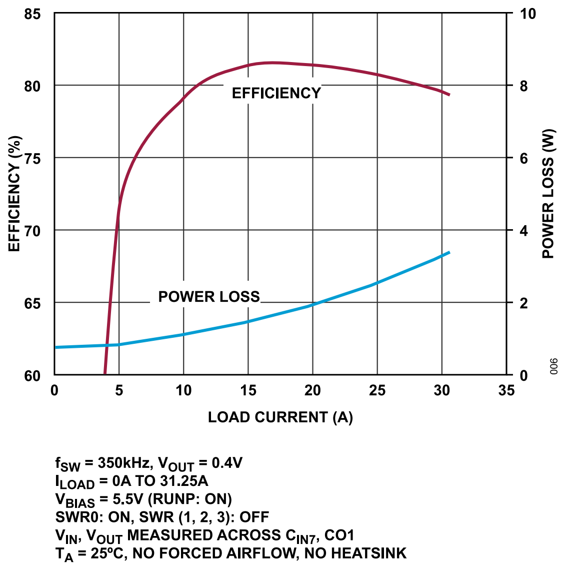
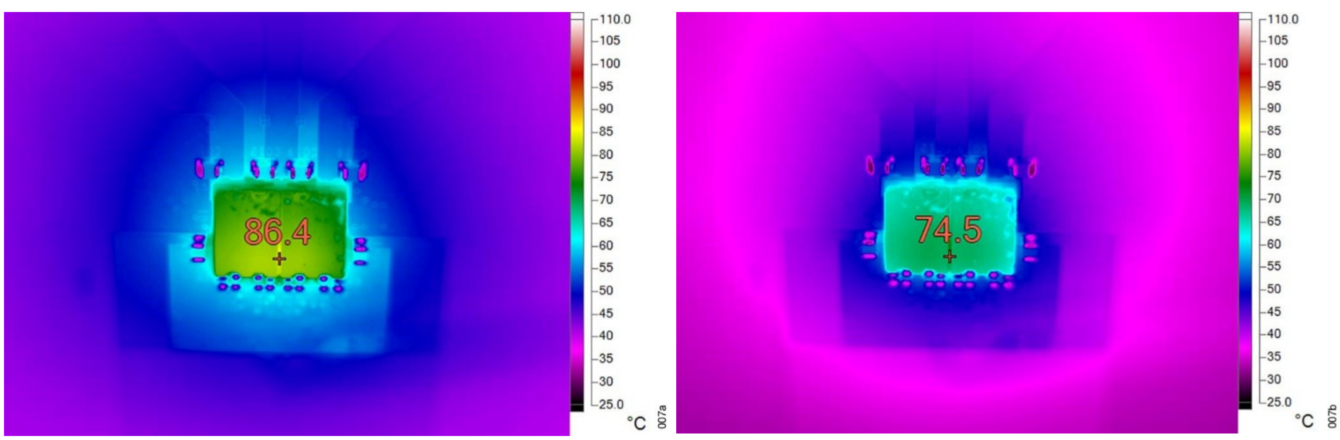


Figure 6. Efficiency vs. Load Current



(a) No Forced Airflow

(b) Forced Airflow (200LFM)

Figure 7. Thermal Performance, V_{OUT} = 0.4V, I_{LOAD} = 31.25A per Channel, V_{BIAS} = 5.5V (RUNP: ON), f_{SW} = 350kHz, T_A = 25°C, No Heatsink

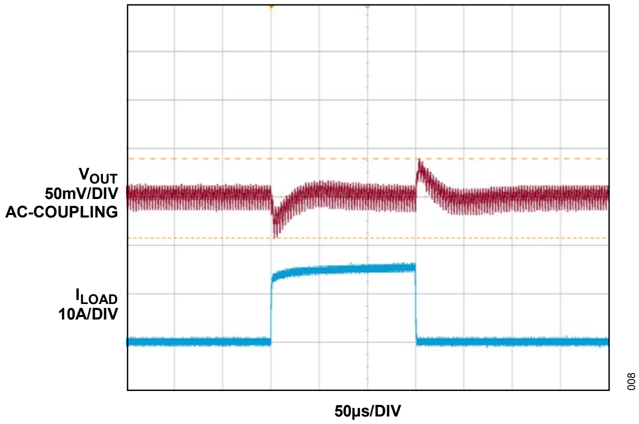


Figure 8. Load Transient Response

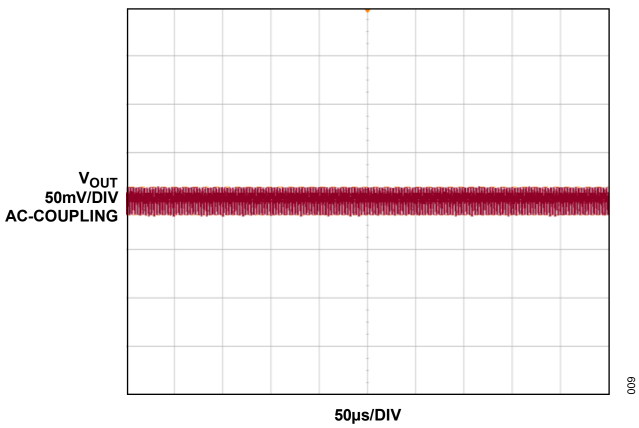


Figure 9. Output Ripple Voltage

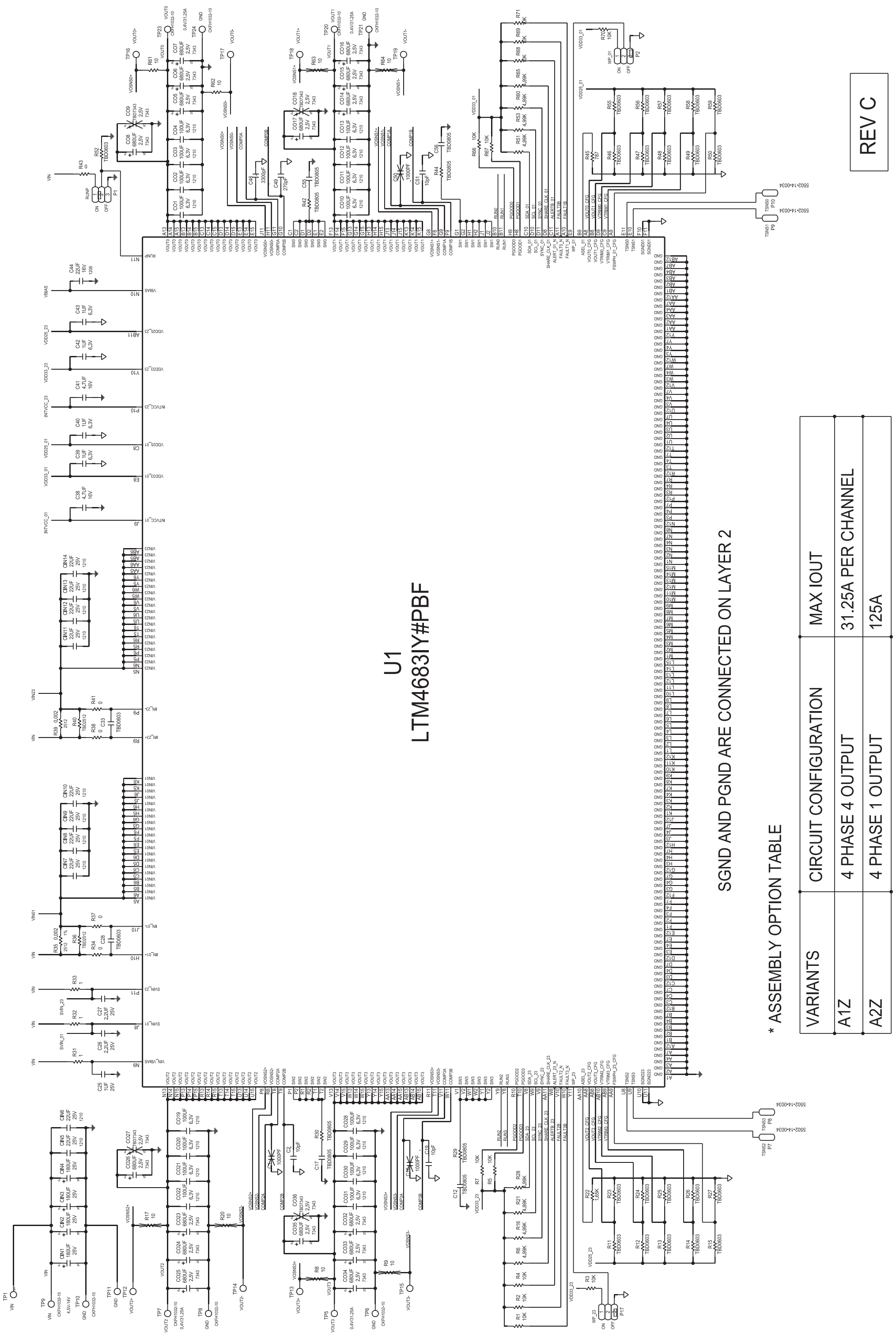
EVAL-LTM4683-A1Z Evaluation Board Bill of Materials

QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER
Required Circuit Components			
4	C1, C18, C48, C50	CAP. CER 1000pF 50V 5% C0G 0603	MURATA, GRM1885C1H102JA01D
4	C12, C17, C55, C56	DO NOT INSTALL	TBD0805
1	C14	CAP. CER 0.1µF 16V 10% X7R 0603	WÜRTH ELEKTRONIK, 885012206046
4	C2, C19, C49, C51	CAP. CER 100pF 100V 1% X8G 0603 AEC-Q200	MURATA, GCM1885G2A101FA16D
1	C25	CAP. CER 1µF 25V 10% X7R 0603	WÜRTH ELEKTRONIK, 885012206076
2	C26, C27	CAP. CER 2.2µF 25V 10% X5R 0603	MURATA, GRM188R61E225KA12D
2	C28, C33	DO NOT INSTALL	TBD0603
2	C38, C41	CAP. CER 4.7µF 16V 10% X6S 0603	MURATA, GRM188C81C475KE11D
4	C39, C40, C42, C43	CAP. CER 1µF 6.3V 20% X5R 0603	AVX CORPORATION, 06036D105MAT2A
1	C44	CAP. CER 22µF 16V 10% X5R 1206	AVX CORPORATION, 1206YD226KAT2A
2	C65, C66	CAP. CER 100µF 6.3V 10% X5R 1206	MURATA, GRM31CR60J107KEA8L
21	C67–C70, CO1–CO4, CO10–CO13, CO19–CO22, CO28–CO31, CO37	CAP. CER 100µF 6.3V 20% X7S 1210	MURATA, GRM32EC70J107ME15L
12	C71–C82	CAP. CER 0.1µF 16V 20% X7R 0603	VISHAY, VJ0603Y104MXJAP
4	C84–C87	CAP. CER 0.1µF 16V 10% X7R 0805	YAGEO, CC0805KRX7R7BB104
4	C88–C91	CAP. CER 0.01µF 25V 5% C0G 0603 EXTREME LOW ESR	KEMET, C0603C103J3GACTU
4	CIN1–CIN4	CAP. ALUM POLY 180µF 25V 20% 8mm ×11.9mm 0.016Ω 4650mA 5000h	PANASONIC, 25SVPF180M
10	CIN5–CIN14	CAP. CER 22µF 25V 10% X7R 1210	SAMSUNG, CL32B226KAJNNNE
16	CO5–CO8, CO14–CO17, CO23–CO26, CO32–CO35	CAP. TANT POLY 680µF 2.5V 20% 2917	PANASONIC, ETCF680M5H
2	D1, D2	DIODE SCHOTTKY BARRIER RECTIFIER	NEXPERIA, PMEG2005AEL, 315
4	DS1, DS3, DS5, DS7	LED GREEN WATER CLEAR, 515NM	WÜRTH ELEKTRONIK, 150060GS75000
6	DS4, DS6, DS8-DS11	LED SMD 0603 RED	VISHAY, TLMS1100-GS08
6	J1–J6	CONN-PCB BNCJACK ST 50Ω	AMPHENOL CONNEX, 112404
3	P1, P2, P17	CONN-PCB 3-POS MALE HDR UNSHROUDED SINGLE ROW, 2mm PITCH, 3.60mm POST HEIGHT, 2.80mm SOLDER TAIL	SULLINS, NRPN031PAEN-RC
4	P7–P10	DO NOT INSTALL	R&D INTERCONNECT SOLUTIONS, TBD 5502-14-0034
1	P3	CONN-PCB 12-POS SHROUDER HDR, 2mm PITCH, 4mm POST HEIGHT, 2.5mm SOLDER TAIL	AMPHENOL, 98414-G06-12ULF
1	P4	CONN-PCB 14-POS FEMALE HRD RA 2mm PITCH, 3mm SOLDER TAIL	SULLINS, NPPN072FJFN-RC
1	P5	CONN-PCB HDR 14-POS 2.0mm GOLD 14.0mm × 4.3mm TH	MOLEX, 877601416

QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER
1	P6	CONN-PCB 4-POS SHROUDED HDR MALE 2mm PITCH	HIROSE ELECTRIC CO., DF3A-4P-2DSA
4	Q1–Q4	TRAN N-CH MOSFET 40V 14A	VISHAY, SUD50N04-8M8P-4GE3
4	Q5, Q8, Q11, Q13	TRAN MOSFET N-CHANNEL ENHANCEMENT MODE	DIODES INCORPORATED, 2N7002A-7
6	Q9, Q12, Q14–Q17	TRAN P-CH D-S MOSFET, 5A	VISHAY, SI2333DDS-T1-GE3
18	R1–R5, R7, R66–R73, R127, R133, R138, R146	RES. SMD 10kΩ 1% 1/10W 0603 AEC-Q200	PANASONIC, ERJ-3EKF1002V
75	R11–R15, R23–R27, R46–R49, R50, R52, R54–R59, R79–R85, R96–R99, R102, R108–R114, R121, R122, R125, R126, R128, R131, R132, R134, R137, R140, R142, R143, R145, R149, R150, R154, R155, R163–R166, R168–R170, R172, R173–R179	DO NOT INSTALL	TBD0603
17	R36, R40, R86–R90, R103–R107, R116–R120	RES. SMD	VISHAY, TBD2512H35
4	R78, R91, R115, R123	DO NOT INSTALL	TBD2512
10	R124, R130, R136, R139, R144, R180–R184	RES. SMD 301Ω 1% 1/10W 0603 AEC-Q200	PANASONIC, ERJ-3EKF3010V
12	R8, R9, R17, R20, R61–R64, R129, R135, R141, R147	RES. SMD 10Ω 0.1% 1/16W 0603	TE CONNECTIVITY, RN73C1J10RBTDF
18	R34, R37, R38, R41, R43, R148, R151–R153, R156–R162, R167, R171	RES. SMD 0Ω JUMPER 1/10W 0603 AEC-Q200	PANASONIC, ERJ-3GEY0R00V
10	R6, R16, R18, R19, R21, R28, R51, R53, R60, R65	RES. SMD 4.99kΩ 1% 1/10W 0603 AEC-Q200	PANASONIC, ERJ-3EKF4991V
1	R22	RES. SMD 1.65kΩ 1% 1/10W 0603 AEC-Q200	PANASONIC, ERJ-3EKF1651V
4	R29, R30, R42, R44	DO NOT INSTALL	TBD0805
3	R31-R33	RES. SMD 1Ω 5% 1/10W 0603 AEC-Q200	PANASONIC, ERJ-3GEYJ1R0V
2	R35, R39	RES. SMD 0.002Ω 1% 1W 2512 AEC-Q200	VISHAY, WSL25122L000FEA
1	R45	RES. SMD 787Ω 1% 1/10W 0603 AEC-Q200	PANASONIC, ERJ-3EKF7870V
4	R74–R76, R77	RES. SMD 0.01Ω 1% 2W 2512 AEC-Q200	VISHAY, WSL2512R0100FEA18

QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER
2	R92, R94	RES. SMD 0Ω JUMPER 2512 AEC–Q200 SULFUR RESISTANT	VISHAY, WSL251200000ZEA9
4	S1-S4	SWITCH SLIDE DPDT 300mA 6V	C&K, JS202011CQN
47	TP1–TP4, TP11–TP19, TP22, TP25–TP57	CONN-PCB SOLDER TERMINAL TEST POINT TURRET 0.094 MTG. HOLE PCB 0.062-INCH THK	MILL-MAX, 2501-2-00-80-00-00-07-0
10	TP5–TP10, TP20, TP21, TP23, TP24	CONN-PCB THREADED BROACHING STUD 10-32 FASTENER 0.625-INCH	CAP.TIVE FASTENER, CKFH1032-10
1	U1	IC-ADI µModule REGULATOR WITH DIGITAL POWER SYSTEM MANAGEMENT	ANALOG DEVICES, LTM4683IY#PBF
1	U3	IC EEPROM 2KBIT I²C SERIAL EEPROM 400kHz	MICROCHIP TECHNOLOGY, 24LC025-I/ST
Hardware: For Evaluation Board Only			
10		WASHER, #10 FLAT STEEL	KEYSTONE, 4703
10		CONNECTOR RING LUG, TERMINAL, 10 CRIMP, NON-INSULATED	KEYSTONE, 8205
20		NUT, HEX STEEL, 10-32 THREAD, 9.27mm OUT DIA	KEYSTONE, 4705
3		SHUNT, 2mm JUMPER WITH TEST POINT	WURTH ELEKTRONIK, 60800213421
4		STANDOFF, BRD SPT SNAP FIT 12.7mm LENGTH	KEYSTONE, 8833
Optional Evaluation Board Circuit Components			
4	CO9, CO18, CO27, CO36	CAP. TANT POLY 680µF 2.5V 20% 2917	PANASONIC, ETCF680M5H
2	Q7, Q10	TRAN P-CHANNEL, MOSFET 20V 5.9A SOT-23	VISHAY, SI2365EDS-T1-GE3
2	R93, R95	RES. SMD 0Ω JUMPER 2512 AEC–Q200 SULFUR RESISTANT	VISHAY, WSL251200000ZEA9

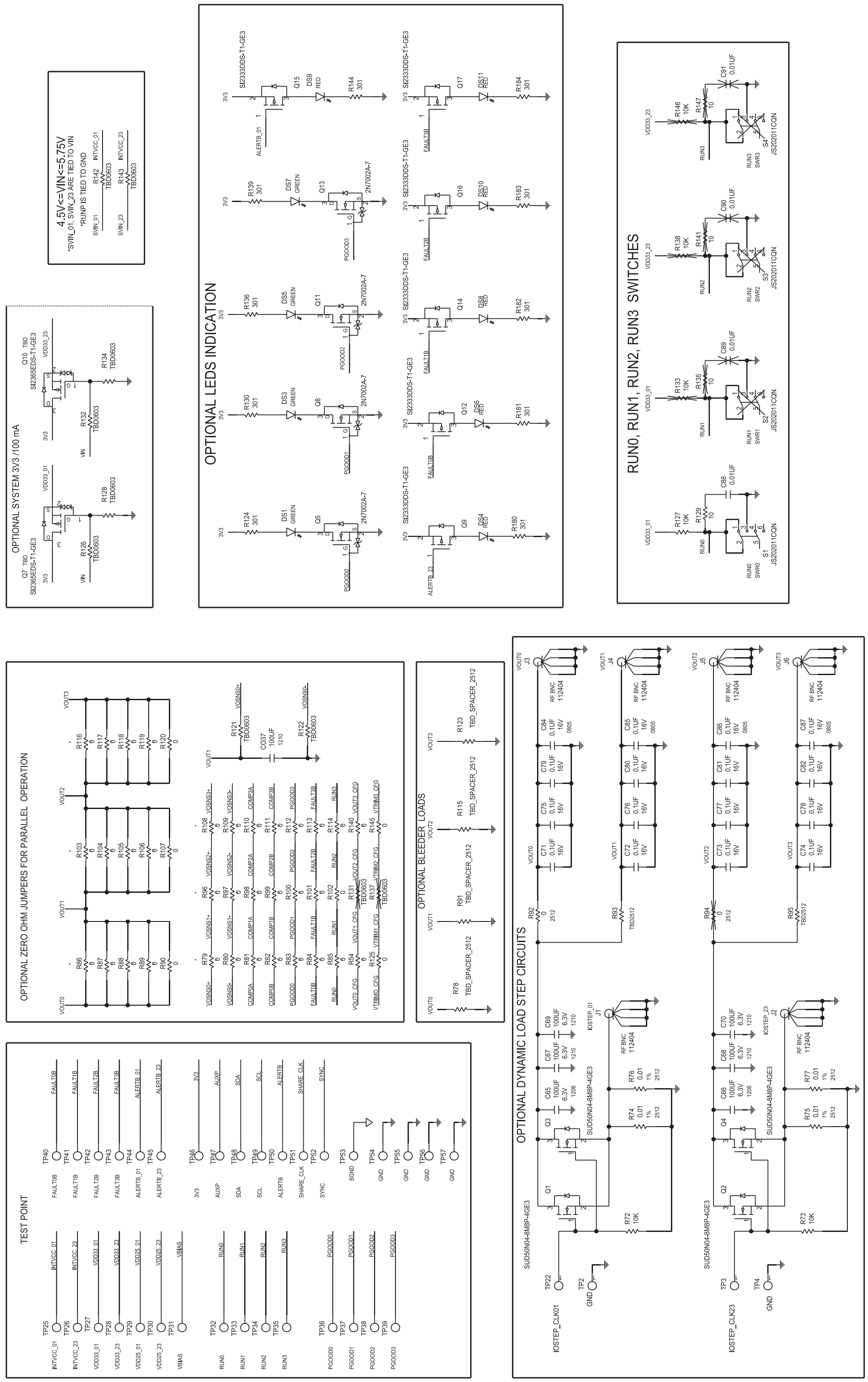
EVAL-LTM4683-A1Z Schematics



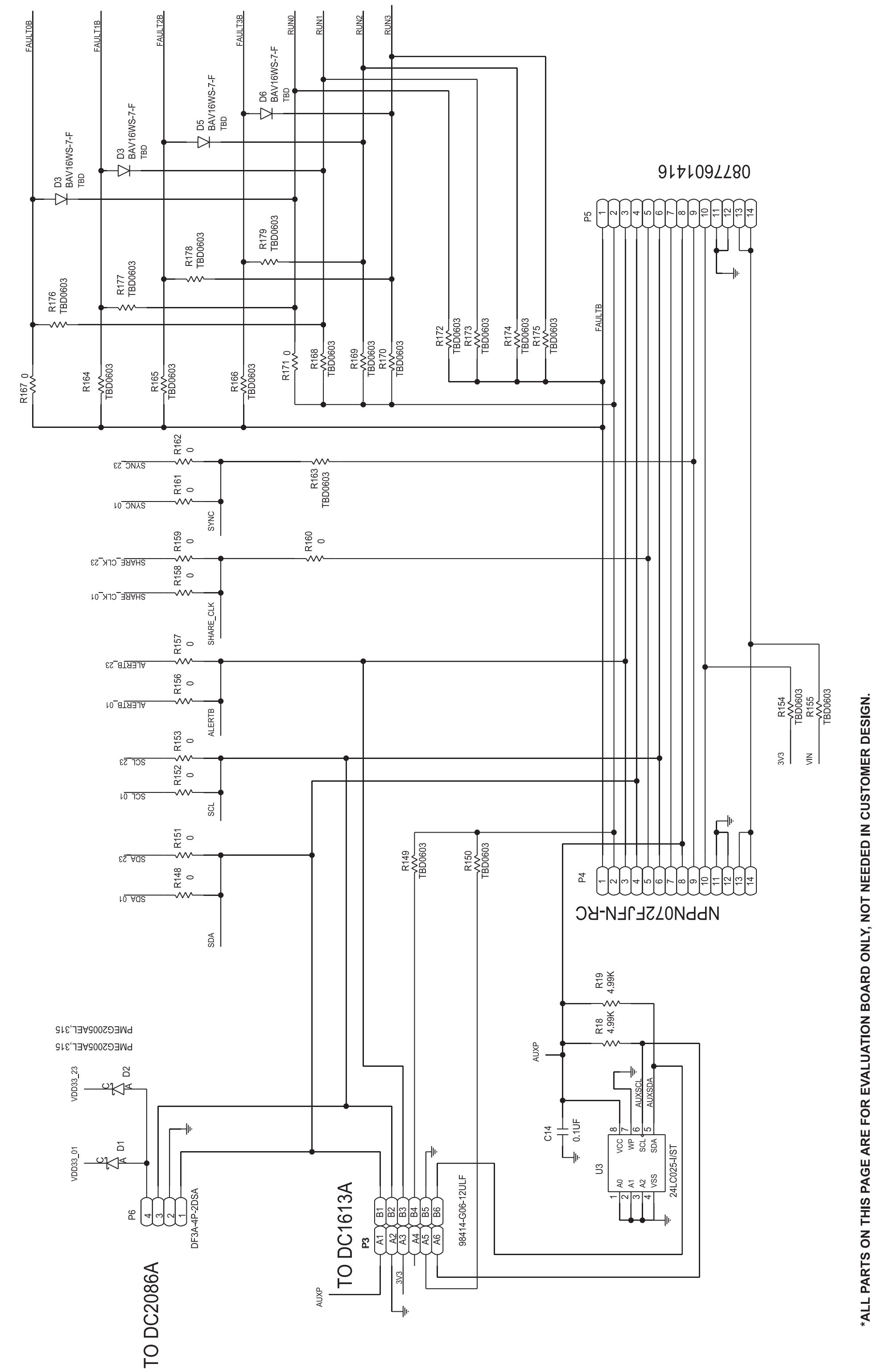
* ASSEMBLY OPTION TABLE

VARIANTS	CIRCUIT CONFIGURATION	MAX IOUT
A1Z	4 PHASE 4 OUTPUT	31.25A PER CHANNEL
A2Z	4 PHASE 1 OUTPUT	125A

EVAL-LTM4683-A1Z Schematics (continued)



EVAL-LTM4683-A1Z Schematics (continued)



Ordering Information

PART	TYPE
EVAL-LTM4683-A1Z	The EVAL-LTM4683-A1Z evaluation board features the LTM4683, quad output regulator with digital PSM. The EVAL-LTM4683-A1Z evaluation board is configured as a 4-phase four outputs.

Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	5/24	Initial release	—

Notes