User's Guide
SLUUC60–February 2020

BQ24800 EVM

The BQ24800 evaluation module (EVM) is an SMBus 1- to 4-cell hybrid power boost mode battery charge controller with battery-only boost and processor hot monitoring. The input voltage range is between 4.5 V and 24 V, with a programmable output of 1–4 cells charge voltage and 128-mA to 8.128-A charge current. This EVM does not include the EV2400 interface device; it must be ordered separately to evaluate the BQ24800 EVM.

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1 Introduction

1.1 EVM Features

Refer to the data sheet (SLUSDO8) for detailed features and operation.

1.2 I/O Descriptions

Table 1 lists the I/O descriptions.

Table 1. I/O Descriptions

Jack	Description
J1– DCIN	Connect to AC adapter positive output
J1– GND	Connect to AC adapter, negative output
J2 – SYS	Connect to system
J2 – GND	Power ground
J3 – BAT	Connect to battery positive
J3 - GND	Connect to battery negative
J4 - 1 CMPIN	Independent Comparator Input
J4 - 2 GND	Analog Ground
J4-3 CMPOUT	Independent Comparator Output
J5 - 1 GND	Communication interface
J5 – 2 SCL	
J5 – 3 SDA	
J5 – 4 NC	

1.3 Controls and Key Parameters Setting

Table 2 lists the controls and key parameter settings of the EVM.

Table 2. Controls and Key Parameters Settings

Jack	Description	Factory Setting
JP1	Connect battery positive input (BAT) to TPS3898 SENSE pin through resistor divider (R33/R34)	Jumper installed
JP2	Connect REGN to TPS3898 VCC pin	Jumper not installed
JP3	Connect BAT to BQ24800 CMPIN pin through resistor divider (R35/R36)	Jumper not installed
JP4	Connect BQ24780 CMPOUT to BQ24800/BATPRES pin	Jumper installed
JP5	Connect TPS3898/SENSE_OUT pin to BQ24800/BATPRES pin	Jumper installed

The BQ24800EVM supports two methods for detecting the battery for input to the BATPRES pin. The use may either use the independent comparator of the BQ24800 or the external TPS3898A Voltage Monitor (U2.) To use the BQ24800 independent comparator, install jumpers at JP3 and JP4. To instead use the TPS3898A, install jumpers at JP1, JP2 and JP5. Do not install both sets of jumpers. Either the BQ24800 independent comparator or the TPS3898A should be enabled via jumper but not both.

1.4 Recommended Operating Conditions

Table 3 provides the recommended operating conditions.

Table 3. Recommended Operating Conditions

Description			MIN	TYP	MAX	UNIT
V_{IN}	Supply voltage	Input voltage from AC adapter input[(1)]	18	19–20	24	V
V_{BAT}	Battery voltage	Voltage applied at V_{BAT} terminal		0–17.6	19.2	V
I_{AC}	Supply current	Maximum input current from AC adapter input			8	A
I_S	Output current	Output current (SYS and CHG)			8	A
T_J	Operating junction temperature range		0		125	°C

(1) ACDET bias, R5 and R6, is set for this range. For lower adapter voltages, this divider has to be modified. With the proper bias, $V_{IN\ MIN}$ can be as low as 4.5 VDC. See the data sheet (SLUSDO8) for more information.

2 Test Summary

Section 2.1 and Section 2.2 explain the equipment and the equipment setup.

2.1 Equipment

2.1.1 Power Supplies

Power Supply #1 (PS#1): a power supply capable of supplying 20 V at 5 A is required.

Power Supply #2 (PS#2): a power supply capable of supplying 20 V at 3 A is required.

2.1.2 Loads

LOAD #1: A 30-V (or above), 5-A (or above) electronic load that can operate at constant current mode.

LOAD #2: An HP 6060B 3–60 V/0–60 A, 300-W system DC electronic load, or equivalent.

2.1.3 Meters

Seven Fluke 75 multimeters, (equivalent or better), or four equivalent voltage meters and three equivalent current meters.

The current meters must be capable of measuring 5-A+ current.

2.1.4 Computer

A computer with at least one USB port and a USB cable. The EV2400 USB driver and BQStudio software must be properly installed.

2.1.5 SMBUS Communication Kit

This EVM is compatible with both the EV2400 and EV2300 hardware kit. TI recommends using the EV2400 hardware kit.

2.1.6 Install Battery Management Studio (bqStudio) Software

Double click the *Battery Management Studio software* installation file, follow the installation steps.

2.1.7 Upon First Insertion of EV2400 Into USB Port of PC

Follow the instructions of the *Found New Hardware Wizard*

- Allow Microsoft® Windows® to connect to Windows Update to search for software, then click *Next*
- Select *Install software automatically (Recommended)*, then click *Next*
- If a window pops up informing that the TI USB Firmware Updater has not passed Windows Logo testing click *Continue Anyway*
- If a target file already exists **and** is newer, do not overwrite the newer file
- Click *Finish*

2.2 Equipment Setup

- Set power supply #1 (PS#1) for 0 V ±100 mVDC, with the current limit set to > 5 A. Turn off supply.
- Connect PS#1 output in series with a current meter (multimeter) to J1 (VIN, GND)
- Connect a voltage meter across J1 (VIN, GND)
- Connect a voltage meter across J3 (BAT, GND)
- Connect a voltage meter across J2 (SYS, GND)
- Connect J5 (SDA, SCL, GND) to the EV2400 kit *SMB* port. Refer to Table 4 for EVM connections. Connect the USB port of the EV2400 kit to the USB port of the computer. The connections are shown in Figure 2.

Table 4. EV2400 and BQ24800 EVM Connections

BQ24800 EVM	EV2400
GND (J5-1)	VSS 1.1
SCL (J5-2)	SCL 1.2
SDA (J5-3)	SDA 1.3

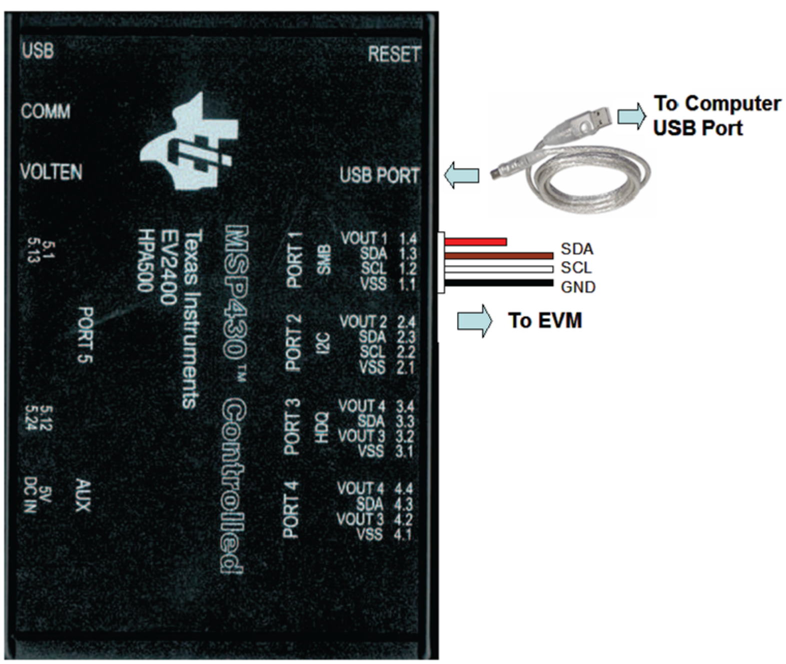

Figure 1. Connections of the EV2400 Kit

After completing the previous steps, the test setup for BMS031 appears as shown in Figure 2.

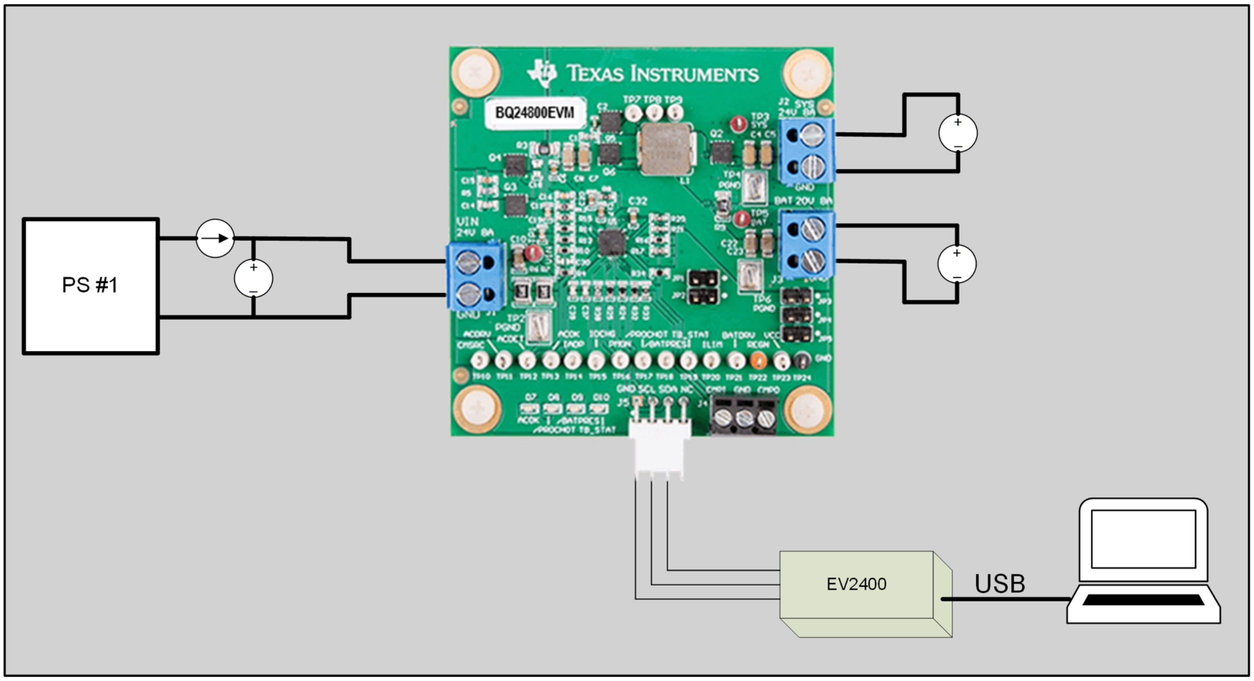

Figure 2. Original Test Setup for BQ24800 EVM (BMS031)

Turn on the computer. Launch the bqstudio evaluation software and select *charger* and *BQ24800*. And then click the *Registers* button. The main window of the BQ24800 software is shown in Figure 3.

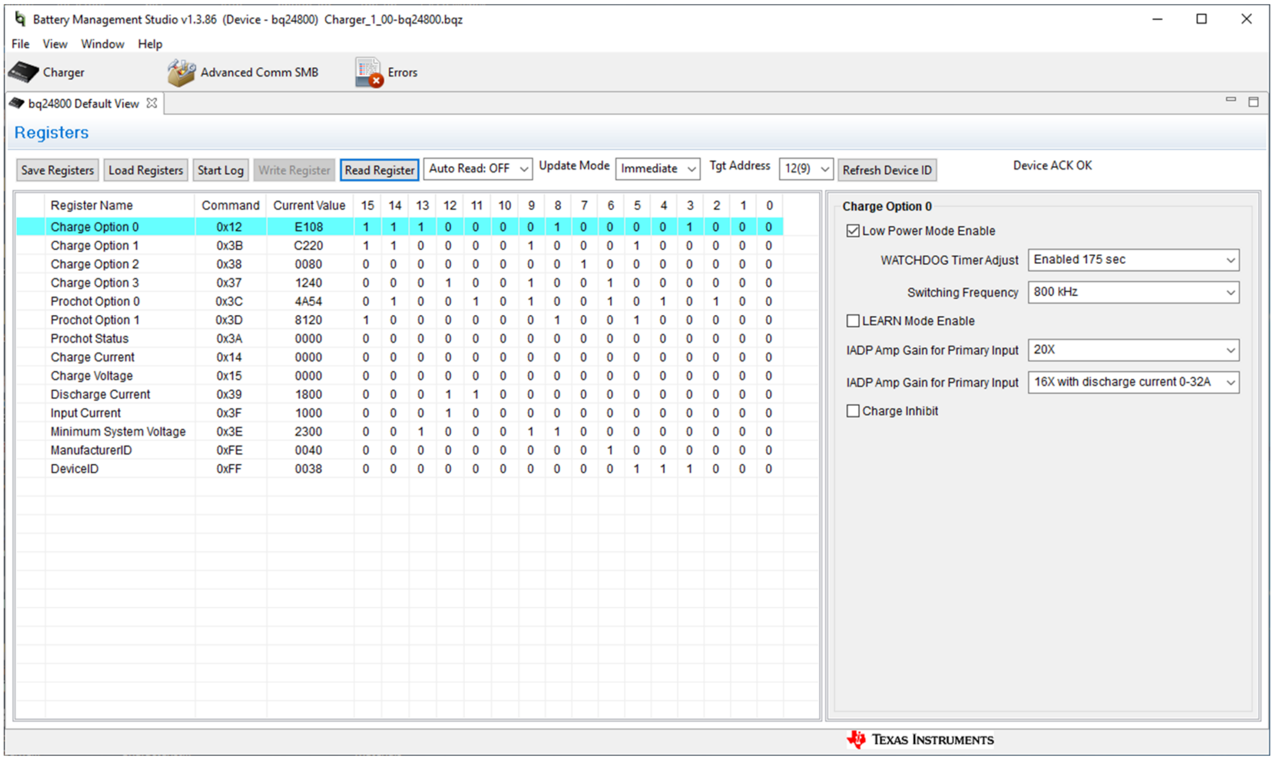

Figure 3. Main Window of BQ24800 Evaluation Software

3 Procedure

3.1 AC Adapter Detection Threshold

Use the following steps for AC adapter detection threshold:

1. Ensure Equipment Setup steps are followed.
2. Turn on PS#1

   Load #1 and Load #2 are not connected during this step.
3. Increase the output voltage of PS#1 to 20.0 V
   - Measure → V[TP23(VCC)] = 19.6 V ±0.5 V
   - Measure → V[TP12(ACDET)] = 2.7 V ±0.1 V
   - Measure → V[TP13(ACOK)] = 3.3 V ±0.1 V
   - Measure → V[TP3(SYS)] = 20.0 V ±0.5 V
   - Measure → V[TP22(REGN)] = 6 V ±0.6 V
   - Measure → V[TP20(ILIM)] = 0.79 V ±0.1 V

3.2 Charger Parameter Settings

In the main software window, click the *Refresh* button on the top right corner. Make sure there is no error information.

1. Type “512” (mA) in *ChargeCurrent* Register and click *OK*. This sets the battery charge current regulation threshold.
2. Type “12592” (mV) in *ChargeVoltage* Register and click *OK*. This sets the battery voltage regulation threshold.
3. Measure → V(TP5(BAT)) = 12.6 V ±200 mV

3.3 Charge Current and AC Current Regulation (DPM)

1. Connect Load #2 in series with a current meter (multimeter) to J2 (BAT, GND). Make sure a voltage meter is connected across J2 (BAT, GND). Turn on Load #2. Use the constant voltage mode. Set output voltage to 10.5 V.
2. Connect the output of Load #1 in series with a current meter (multimeter) to J2 (SYS, GND). Make sure a voltage meter is connected across J2 (SYS, GND). Turn on the power of Load #1.

   The setup is now like Figure 4 for BQ24800EVM.

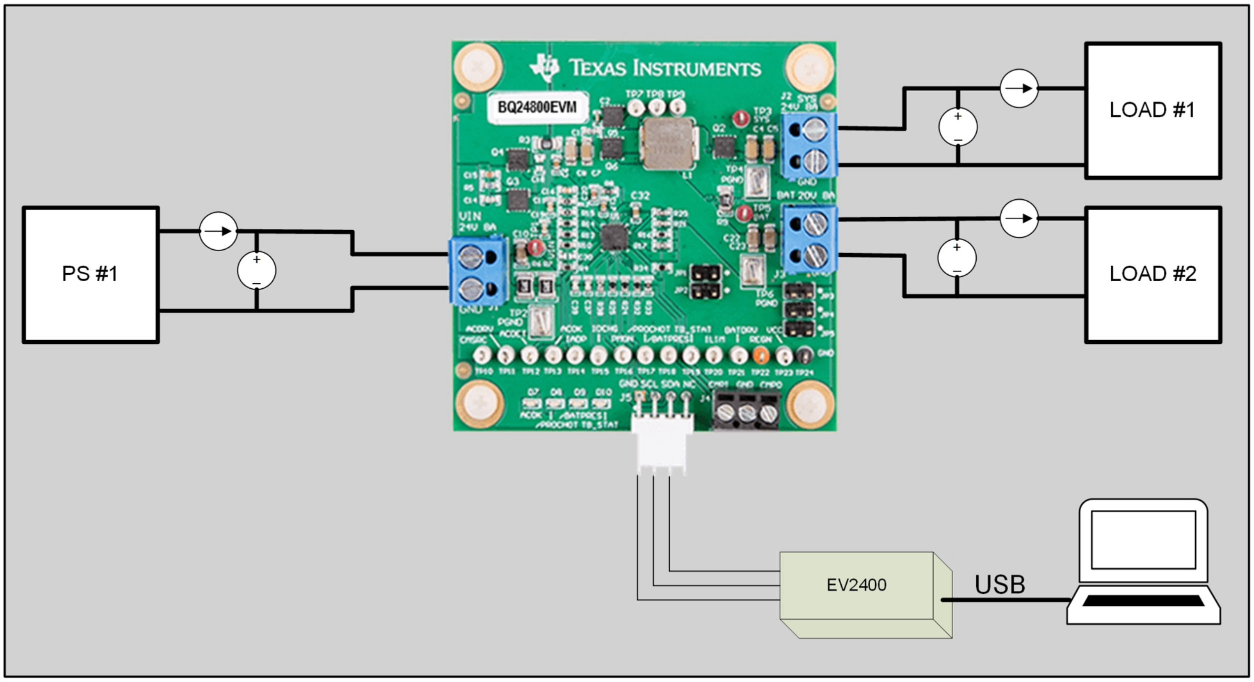

Figure 4. Test Setup for BQ24800EVM

3. Type “2944” (mA) in *ChargeCurrent* Register and click *OK*.
   This sets the battery charge current regulation threshold to 2.944 A.
   - Measure → IBAT = 3000 mA ±300 mA
   - Measure → V[TP14(IIADP)] = 340 mV ±40 mV
4. Set Load #1 current to 3.0 A ±50 mA but disable the output. Make sure ISYS = 0 A ±10 mA. Enable the output of Load #1.
   - Measure → ISYS = 3000 mA ±300 mA
   - Measure → IBAT = 1800 mA ±300 mA
   - Measure → IIN = 4100 mA ±400 mA
   - Measure → V[TP14(IADP]) = 820 mV ±100 mV
5. Turn off the Load #1.
   - Measure → ISYS = 0 ±100 mA
   - IBAT = 3000 mA ±300 mA

3.4 Hybrid Boost Mode

Use the following steps for hybrid boost mode:

1. Enter “1A44” in *ChargeOption3* value to enable the hybrid boost function
2. Change Load #2 with PS#2. Make sure a voltage meter is connected across J2 (BAT, GND).
3. Enable the output of PS#2. Make sure the output voltage is 10 V ±500 mV and 3-A current limit.
4. Set Load #1 load current to 5.0 A ±50 mA. Enter boost mode.
   - Measure → ISYS = 5000 mA ±500 mA
   - Measure → IBAT = –2000 mA ±600 mA
   - Measure → IIN = 4100 mA ±400 mA
   - Measure → V[TP15(IIDCHG)] = 270 mV±100 mV
5. Set Load #1 load current to 0.5 A ±50 mA. Exit boost mode. Back to charging mode.
   - Measure → ISYS = 500 mA ±50 mA

- Measure → IBAT = 3000 mA ±300 mA
- Measure → IIN = 2100 mA ±400 mA

3.5 Battery-only Boost Mode

The setup for battery-only boost selection follows:

1. Disconnect PS#1 from J1 (VIN,GND)
2. Enter “00C0” in *ChargeOption2* value to enable the battery-only boost function
3. Enter “0108” in *ChargeOption0* value to disable low power mode and disable the watchdog timer.
4. Enter “2800” in *MinSysVoltage* value to set the entry threshold for battery boost to 10.24 V.
5. Reduce the voltage of PS#2 to 9.0 V to enter battery-only boost mode
   - Measure → V[TP3(VBATT)] = 9.0 V ±300 mV
   - Measure → V[TP2(VSYS)] = 12.0 V ±600 mV

3.6 Power Path Selection

The setup for power path selection follows:

1. Change Load #2 with PS#2. Make sure a voltage meter is connected across J2 (BAT, GND)
2. Enable the output of PS#2. Ensure the output voltage is 10 V ±500 mV and 3-A current limit.
3. Set Load #1 load current to 0.5 A ±50 mA
4. Enter “E109” in *ChargeOption0*, this disables charging
5. Make sure a voltage meter is connected across J2 (BAT, GND)
   - Measure → V(TP3(SYS)) = 19.5 V ±1 V (adapter connected to system)
6. Turn off PS#1
   - Measure → V[TP5(BAT)] = 10 V ±1 V
   - Measure → V[TP3(SYS)] = 10 V ±1 V (battery connected to system)

4 PCB Layout Guidelines

The switching node rise and fall times should be minimized for minimum switching loss. Proper layout of the components to minimize high frequency current path loop is important to prevent electrical and magnetic field radiation and high-frequency resonant problems. Here is a PCB layout priority list for proper layout. Layout of the PCB according to this specific order is essential.

1. Place input capacitor as close as possible to switching MOSFET's supply and ground connections and use the shortest possible copper trace connection. These parts should be placed on the same layer of PCB instead of on different layers and using vias to make this connection.
2. The IC should be placed close to the switching MOSFET's gate pins and keep the gate drive signal traces short for a clean MOSFET drive. The IC can be placed on the other side of the PCB from the switching MOSFETs.
3. Place the inductor input pin to the switching MOSFET's output pin as close as possible. Minimize the copper area of this trace to lower electrical and magnetic field radiation but make the trace wide enough to carry the charging current. Do not use multiple layers in parallel for this connection. Minimize parasitic capacitance from this area to any other trace or plane.
4. The charging current sensing resistor should be placed right next to the inductor output. Route the sense leads connected across the sensing resistor back to the IC in same layer, close to each other (minimize loop area) and do not route the sense leads through a high-current path. Place decoupling capacitor on these traces next to the IC.
5. Place the output capacitor next to the sensing resistor output and ground.
6. Output capacitor ground connections need to be tied to the same copper that connects to the input capacitor ground before connecting to system ground.
7. Use a single ground connection to tie charger power ground to charger analog ground. Just beneath the IC, use analog ground copper pour but avoid power pins to reduce inductive and capacitive noise coupling.
8. Route analog ground separately from power ground. Connect analog ground and connect power ground separately. Connect analog ground and power ground together using the power pad as the single ground connection point or using a 0-Ω resistor to tie analog ground to power ground (power pad should tie to analog ground in this case, if possible).
9. Decoupling capacitors should be placed next to the IC pins and make the trace connection as short as possible.
10. It is critical that the exposed power pad on the backside of the IC package be soldered to the PCB ground. Ensure that there are sufficient thermal vias directly under the IC, connecting to the ground plane on the other layers.
11. The via size and number should be enough for a given current path.

See the EVM design for the recommended component placement with trace and via locations. For the WQFN information, see *Quad Flatpack No-Lead Logic Packages Application Report* and *QFN and SON PCB Attachment Application Report*.

5 Board Layout, Schematic, and Bill of Materials

This section contains the BQ24800EVM PCB layouts, schematic, and bill of materials.

5.1 BQ24800EVM PCB Layouts

Figure 5 through Figure 10 show the PCB layouts for the BQ24800EVM.

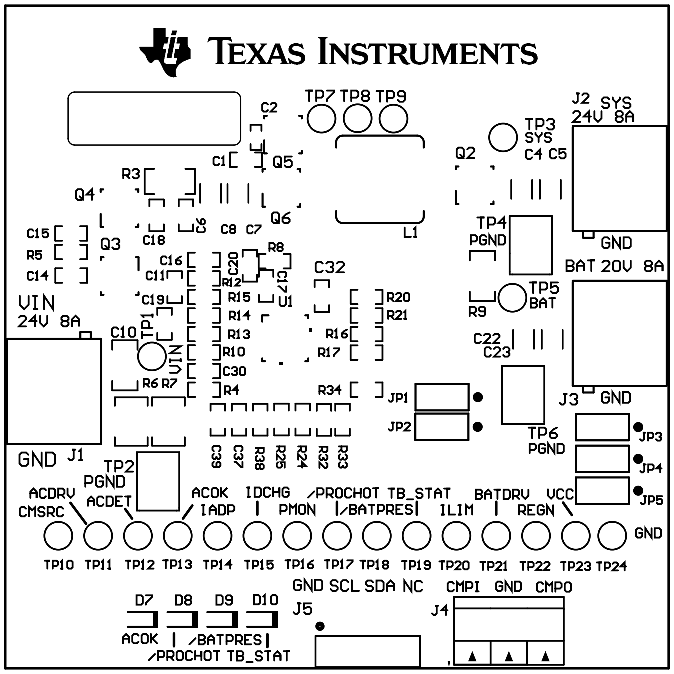

Figure 5. Top Assembly

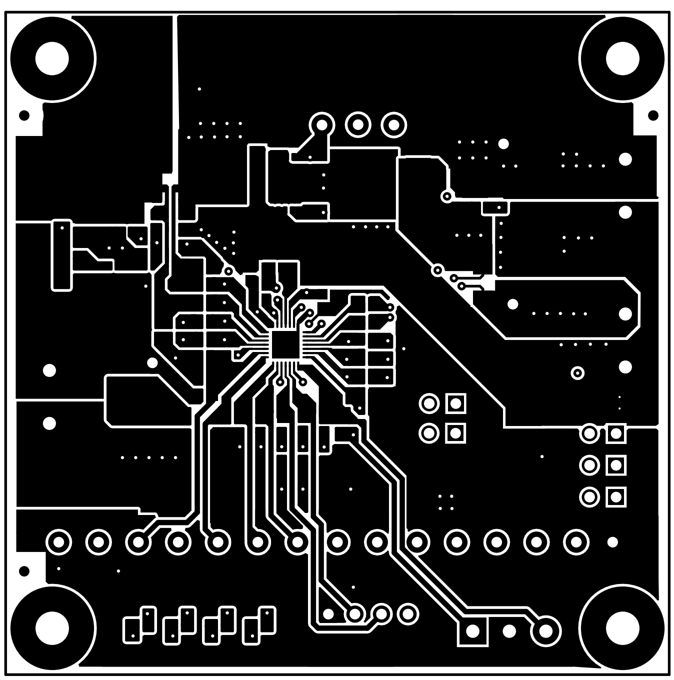

Figure 6. Top Layer

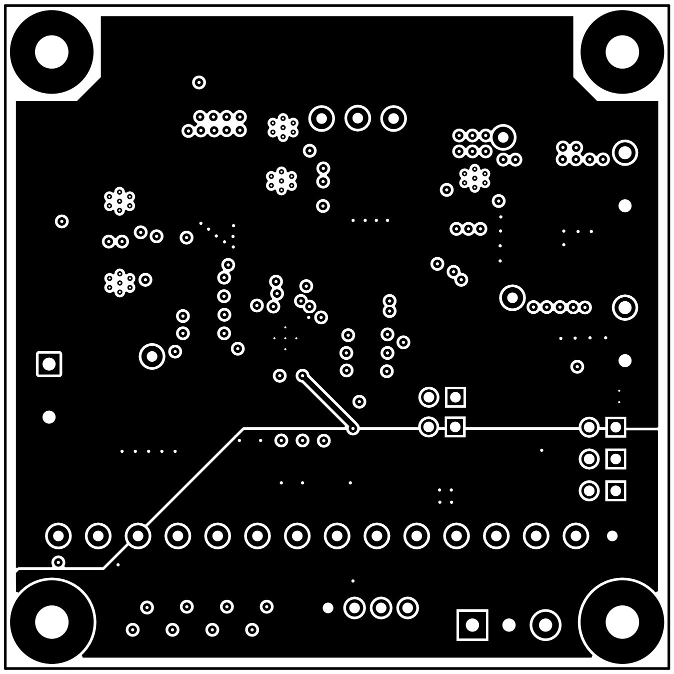

Figure 7. Mid-Layer 1

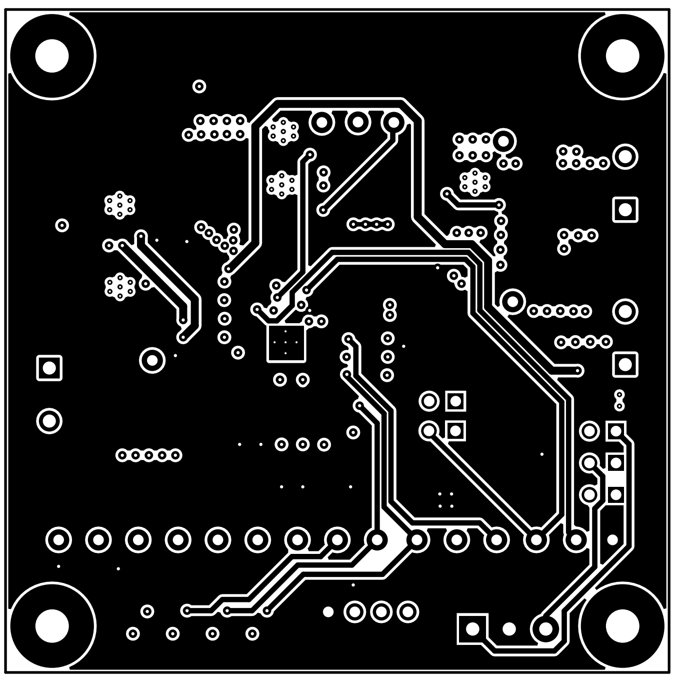

Figure 8. Mid-Layer 2

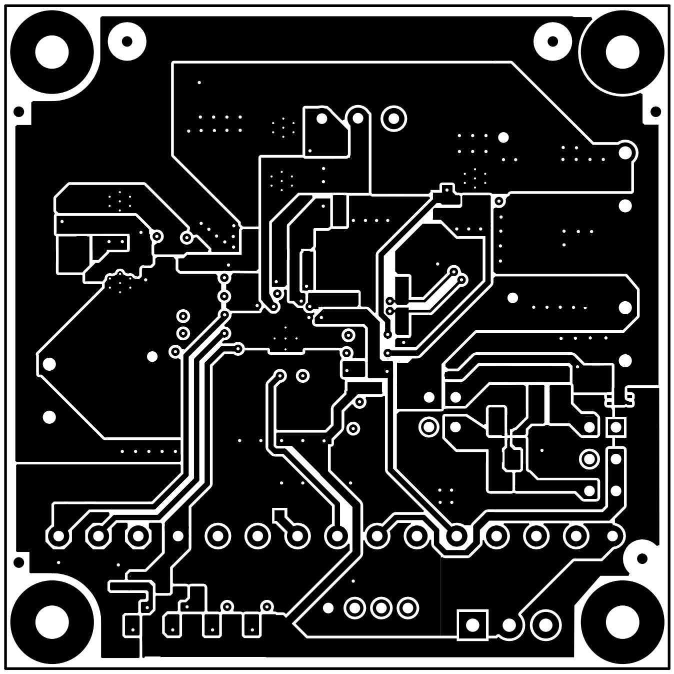

Figure 9. Bottom Layer

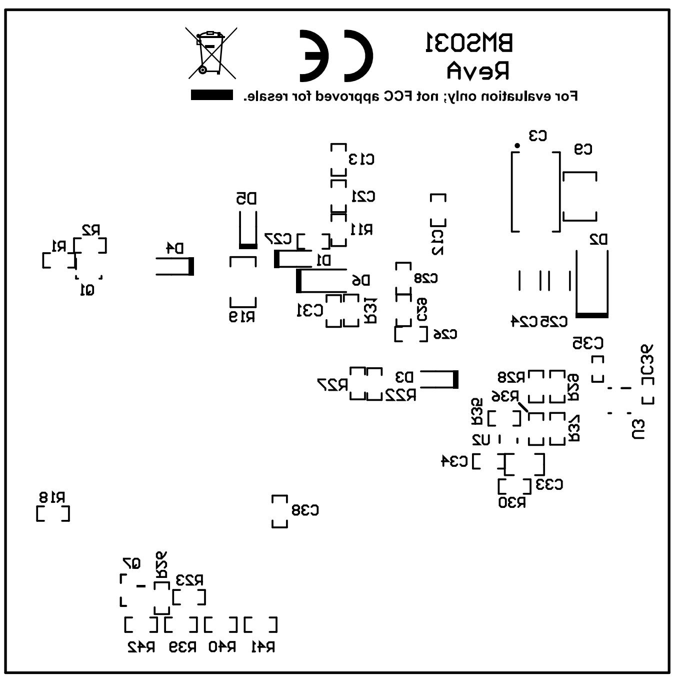

Figure 10. Bottom Assembly

5.2 Schematic

The BQ24800EVM (Figure 11) schematic is provided for reference.

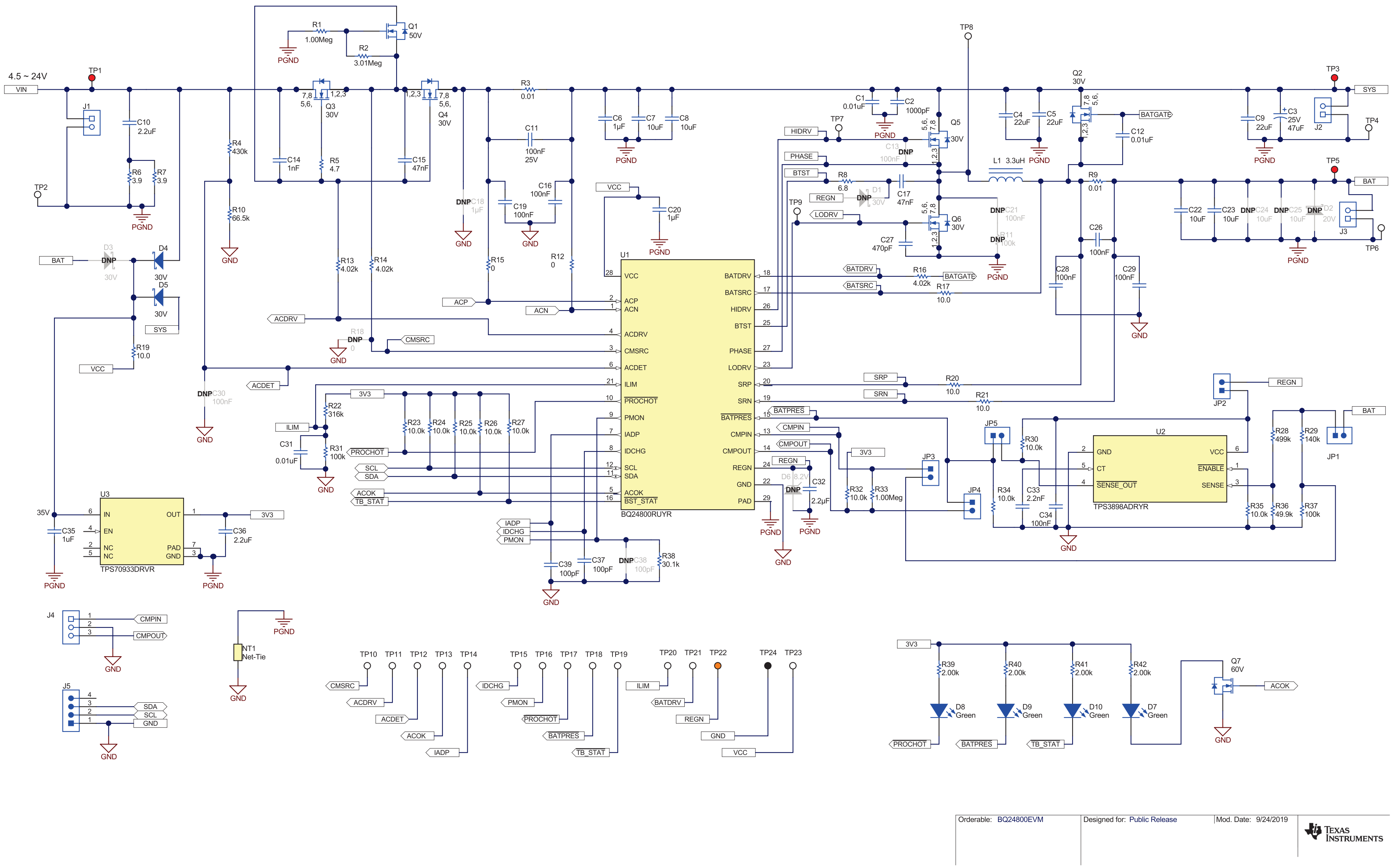

Figure 11. BQ24800EVM Schematic

5.3 Bill of Materials

Table 5 lists the BQ24800EVM BOM.

Table 5. BQ24800EVM Bill of Materials

Designator	Qty	Value	Description	Package Reference	PartNumber	Manufacturer
!PCB1	1		Printed Circuit Board		BMS031	Any
C1	1	0.01µF	CAP, CERM, 0.01 µF, 25 V, ±5%, C0G/NP0, 0603	0603	C0603H103J3GACTU	Kemet
C2	1	1000pF	CAP, CERM, 1000 pF, 25 V, ±10%, X7R, 0402	0402	885012205044	Wurth Elektronik
C3	1	47µF	CAP, TA, 47 µF, 25 V, ±10%, 0.125 ohm, SMD	7343-31	TPSD476K025R0125	AVX
C4, C5	2	22µF	CAP, CERM, 22 µF, 25 V, ±20%, X5R, 1206_190	1206_190	C3216X5R1E226M160AB	TDK
C6, C20	2	1µF	CAP, CERM, 1 µF, 25 V, ±10%, X7R, AEC-Q200 Grade 1, 0603	0603	GCM188R71E105KA64D	MuRata
C7, C8, C22, C23	4	10µF	CAP, CERM, 10 µF, 25 V, ±10%, X7R, 1206_190	1206_190	TMK316B7106KL-TD	Taiyo Yuden
C9	1	22µF	CAP, CERM, 22 µF, 25 V, ±10%, X5R, 1210	1210	CL32A226KAJNNNE	Samsung Electro-Mechanics
C10	1	2.2µF	CAP, CERM, 2.2 µF, 25 V, ±10%, X5R, 1206	1206	12063D225KAT2A	AVX
C11, C16, C19, C26, C28, C29	6	0.1µF	CAP, CERM, 0.1 µF, 25 V, ±5%, X7R, 0603	0603	C0603C104J3RACTU	Kemet
C12, C31	2	0.01µF	CAP, CERM, 0.01 µF, 50 V, ±10%, X7R, 0603	0603	C0603X103K5RACTU	Kemet
C14	1	1000pF	CAP, CERM, 1000 pF, 50 V, ±10%, X7R, 0603	0603	CL10B102KB8NNNC	Samsung Electro-Mechanics
C15, C17	2	0.047µF	CAP, CERM, 0.047 µF, 50 V, ±10%, X7R, AEC-Q200 Grade 1, 0603	0603	CGA3E2X7R1H473K080AA	TDK
C27	1	470pF	CAP, CERM, 470 pF, 50 V, ±10%, X7R, 0603	0603	C0603C471K5RACTU	Kemet
C32	1	2.2µF	CAP, CERM, 2.2 µF, 16 V, ±10%, X7R, 0603	0603	EMK107BB7225KA-T	Taiyo Yuden
C33	1	2200pF	CAP, CERM, 2200 pF, 50 V, ±10%, X7R, 0805	0805	08055C222KAT2A	AVX
C34	1	0.1µF	CAP, CERM, 0.1 µF, 25 V, ±10%, X7R, 0603	0603	C0603C104K3RACTU	Kemet
C35	1	1µF	CAP, CERM, 1 µF, 35 V, ±20%, X5R, 0402	0402	GRM155R6YA105ME11D	MuRata
C36	1	2.2µF	CAP, CERM, 2.2 µF, 10 V, ±20%, X5R, 0402	0402	885012105013	Wurth Elektronik
C37, C39	2	100pF	CAP, CERM, 100 pF, 50 V, ±5%, C0G/NP0, 0603	0603	GRM1885C1H101JA01D	MuRata
D4, D5	2	30V	Diode, Schottky, 30 V, 0.2 A, SOD-323	SOD-323	BAT54HT1G	ON Semiconductor
D7, D8, D9, D10	4	Green	LED, Green, SMD	1.6x0.8x0.8mm	LTST-C190GKT	Lite-On
H2, H3, H4	3		Machine Screw, Round, #4-40 x 1/4, Nylon, Philips panhead	Screw	NY PMS 440 0025 PH	B&F Fastener Supply
H5, H6, H7, H8	4		Standoff, Hex, 0.5"L #4-40 Nylon	Standoff	1902C	Keystone
J1, J2, J3	3		Terminal Block, 5.08 mm, 2x1, Brass, TH	2x1 5.08 mm Terminal Block	ED120/2DS	On-Shore Technology
J4	1		Terminal Block, 3.5mm Pitch, 3x1, TH	10.5x8.2x6.5mm	ED555/3DS	On-Shore Technology
J5	1		Header (friction lock), 100mil, 4x1, R/A, TH	4x1 R/A Header	22/05/3041	Molex
JP1, JP2, JP3, JP4, JP5	5		Header, 100mil, 2x1, Gold, TH	Header, 2x1, 100mil	5-146261-1	TE Connectivity
L1	1	3.3µH	Inductor, Shielded, Powdered Iron, 3.3 µH, 9.2 A, 0.0177 ohm, SMD	322x158x322mil	IHLP3232DZER3R3M01	Vishay-Dale
LBL1	1		Thermal Transfer Printable Labels, 0.650" W x 0.200" H - 10,000 per roll	PCB Label 0.650 x 0.200 inch	THT-14-423-10	Brady
Q1	1	50V	MOSFET, N-CH, 50 V, 0.2 A, SOT-323	SOT-323	BSS138W-7-F	Diodes Inc.
Q2, Q3, Q4, Q5, Q6	5	30V	MOSFET, N-CH, 30 V, 47 A, DQG0008A (VSON-CLIP-8)	DQG0008A	CSD17308Q3	Texas Instruments
Q7	1	60V	MOSFET, N-CH, 60 V, 0.26 A, SOT-23	SOT-23	2N7002ET1G	ON Semiconductor
R1, R33	2	1.00Meg	RES, 1.00 M, 1%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW06031M00FKEA	Vishay-Dale
R2	1	3.01Meg	RES, 3.01 M, 1%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW06033M01FKEA	Vishay-Dale
R3, R9	2	0.01	RES, 0.01, 1%, 1 W, 1206	1206	WSLP1206R0100FEA	Vishay-Dale
R4	1	430k	RES, 430 k, 1%, 0.1 W, 0603	0603	RC0603FR-07430KL	Yageo
R5	1	4.7	RES, 4.7, 5%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW06034R70JNEA	Vishay-Dale

Table 5. BQ24800EVM Bill of Materials (continued)

Designator	Qty	Value	Description	Package Reference	PartNumber	Manufacturer
R6, R7	2	3.9	RES, 3.9, 5%, 0.5 W, 1210	1210	ERJ-14YJ3R9U	Panasonic
R8	1	6.8	RES, 6.8, 5%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW06036R80JNEA	Vishay-Dale
R10	1	66.5k	RES, 66.5 k, 1%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW060366K5FKEA	Vishay-Dale
R12, R15	2	0	RES, 0, 5%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW06030000Z0EA	Vishay-Dale
R13, R14, R16	3	4.02k	RES, 4.02 k, 1%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW06034K02FKEA	Vishay-Dale
R17, R20, R21	3	10.0	RES, 10.0, 1%, 0.1 W, 0603	0603	RC0603FR-0710RL	Yageo
R19	1	10.0	RES, 10.0, 1%, 0.25 W, AEC-Q200 Grade 0, 1206	1206	ERJ-8ENF10R0V	Panasonic
R22	1	316k	RES, 316 k, 1%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW0603316KFKEA	Vishay-Dale
R23, R24, R25, R26, R27, R30, R32, R34, R35	9	10.0k	RES, 10.0 k, 1%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW060310K0FKEA	Vishay-Dale
R28	1	499k	RES, 499 k, 1%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW0603499KFKEA	Vishay-Dale
R29	1	140k	RES, 140 k, 1%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW0603140KFKEA	Vishay-Dale
R31, R37	2	100k	RES, 100 k, 5%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW0603100KJNEA	Vishay-Dale
R36	1	49.9k	RES, 49.9 k, 1%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW060349K9FKEA	Vishay-Dale
R38	1	30.1k	RES, 30.1 k, 1%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW060330K1FKEA	Vishay-Dale
R39, R40, R41, R42	4	2.00k	RES, 2.00 k, 1%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW06032K00FKEA	Vishay-Dale
TP1, TP3, TP5	3		Test Point, Miniature, Red, TH	Red Miniature Testpoint	5000	Keystone
TP2, TP4, TP6	3		Test Point, Compact, SMT	Testpoint_Keystone_Compact	5016	Keystone
TP7, TP8, TP9, TP10, TP11, TP12, TP13, TP14, TP15, TP16, TP17, TP18, TP19, TP20, TP21, TP23	16		Test Point, Miniature, White, TH	White Miniature Testpoint	5002	Keystone
TP22	1		Test Point, Miniature, Orange, TH	Orange Miniature Testpoint	5003	Keystone
TP24	1		Test Point, Miniature, Black, TH	Black Miniature Testpoint	5001	Keystone
U1	1		1- to 4-Cell Hybrid Power Boost Mode Battery Charge Controller With Battery Only Boost Mode and Power Monitoring, RUY0028A (WQFN-28)	RUY0028A	BQ24800RUYR	Texas Instruments
U2	1		Single Channel, Ultra Small, Adjustable Supervisory Circuit with Active-Low, Open-Drain Output, 1 Supply Monitored, -40 to 125 degC, 6-pin SON (DRY), Green (RoHS & no Sb/Br)	DRY0006A	TPS3898ADRYR	Texas Instruments
U3	1		150-mA, 30-V, Ultra-Low IQ, Wide Input Low-Dropout Regulator with Reverse Current Protection, DRV0006A (WSON-6)	DRV0006A	TPS70933DRVR	Texas Instruments
C13, C21, C30	0	0.1µF	CAP, CERM, 0.1 µF, 25 V, ±10%, X7R, 0603	0603	C1608X7R1E104K080AA	TDK
C18	0	1µF	CAP, CERM, 1 µF, 25 V, ±10%, X7R, 0603	0603	C1608X7R1E105K080AB	TDK
C24, C25	0	10µF	CAP, CERM, 10 µF, 25 V, ±10%, X7R, 1206_190	1206_190	TMK316B7106KL-TD	Taiyo Yuden
C38	0	100pF	CAP, CERM, 100 pF, 50 V, ±5%, C0G/NP0, 0603	0603	GRM1885C1H101JA01D	MuRata
D1, D3	0	30V	Diode, Schottky, 30 V, 0.2 A, SOD-323	SOD-323	BAT54HT1G	ON Semiconductor
D2	0	20V	Diode, Schottky, 20 V, 1 A, SMA	SMA	SS12-E3/61T	Vishay-Semiconductor
D6	0	8.2V	Diode, Zener, 8.2 V, 500 mW, SOD-123	SOD-123	BZT52C8V2-7-F	Diodes Inc.
FID1, FID2, FID3, FID4, FID5, FID6	0		Fiducial mark. There is nothing to buy or mount.	N/A	N/A	N/A
H1	0		Machine Screw, Round, #4-40 x 1/4, Nylon, Philips panhead	Screw	NY PMS 440 0025 PH	B&F Fastener Supply
R11	0	100k	RES, 100 k, 1%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW0603100KFKEA	Vishay-Dale

Table 5. BQ24800EVM Bill of Materials (continued)

Designator	Qty	Value	Description	Package Reference	PartNumber	Manufacturer
R18	0	0	RES, 0, 5%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW06030000Z0EA	Vishay-Dale