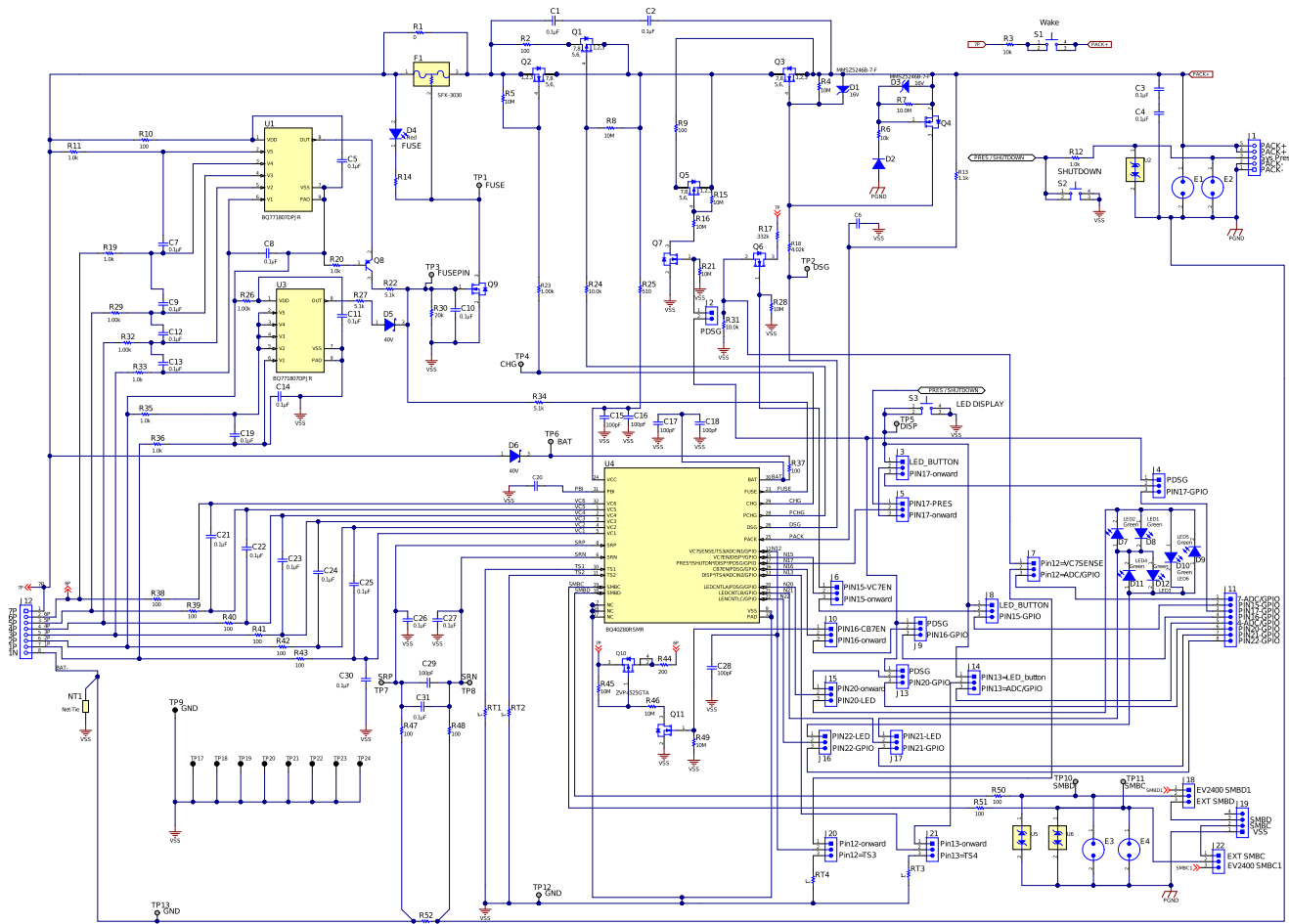
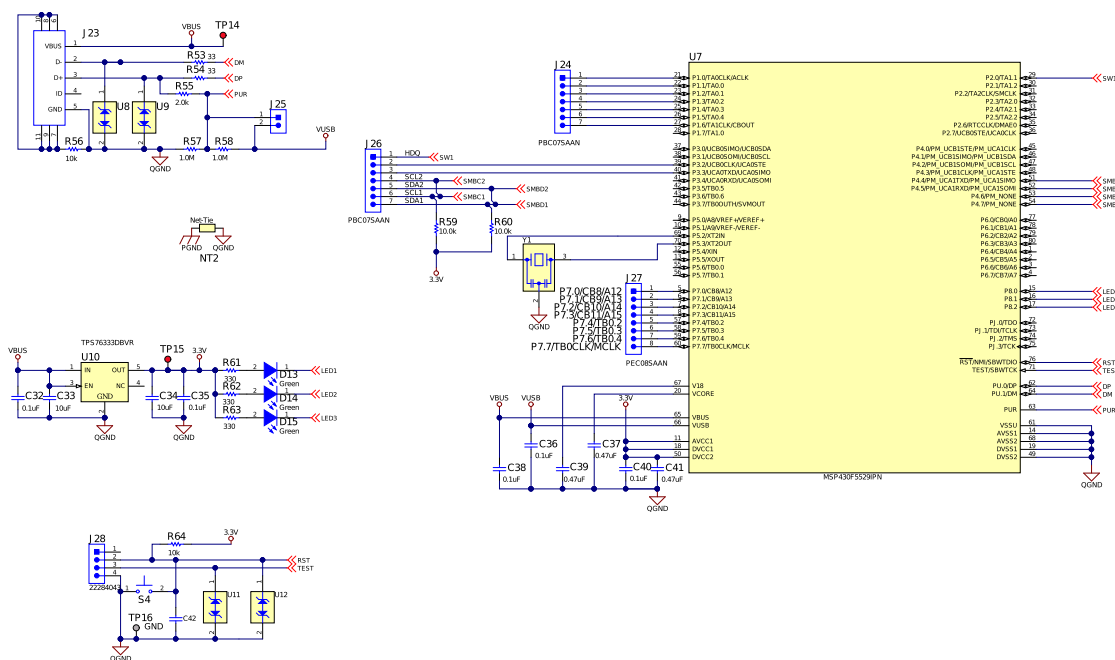


## 5.2 bq40z80 RevBSchematic

**NOTE:** The bq40z80EVM-020 has an incorrect implementation for the reverse polarity circuit. For proper charge and discharge behavior, D3 and R7 should be removed. This will be corrected on a future version of the EVM.



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## 6 bq40z80EVM Bill of Materials

**Table 5. bq40z80EVM RevB**

Count	Designator	Value	Description	Package Reference	Part Number	Manufacturer
23	C1, C2, C3, C4, C5, C7, C8, C9, C10, C11, C12, C13, C14, C19, C21, C22, C23, C24, C25, C26, C27, C30, C31	0.1uF	CAP, CERM, 0.1 $\mu$ F, 50 V, +/- 10%, X7R, AEC-Q200 Grade 0, 0603	0603	06035C104K4Z4A	AVX
1	C6	0.01uF	CAP, CERM, 0.01 $\mu$ F, 100 V, +/- 10%, X7R, AEC-Q200 Grade 1, 0603	0603	GCM188R72A103KA37J	MuRata
6	C15, C16, C17, C18, C28, C29	100pF	CAP, CERM, 100 pF, 50 V, +/- 5%, C0G/NP0, 0603	0603	VJ0603A101JXAAC	Vishay-Vitramon
1	C20	2.2uF	CAP, CERM, 2.2 $\mu$ F, 100 V, +/- 10%, X7R, 1812	1812	C1812C225K1RACTU	Kemet
5	C32, C35, C36, C38, C40	0.1uF	CAP, CERM, 0.1 uF, 10 V, +/- 10%, X5R, 0402	0402	GRM155R61A104KA01D	MuRata
2	C33, C34	10uF	CAP, CERM, 10 uF, 16 V, +/- 10%, X5R, 0805	0805	0805YD106KAT2A	AVX
3	C37, C39, C41	0.47uF	CAP, CERM, 0.47 uF, 6.3 V, +/- 10%, X5R, 0402	0402	04026D474KAT2A	AVX
1	C42	2200pF	CAP, CERM, 2200 pF, 10 V, +/- 10%, X5R, 0402	0402	GRM155R61A222KA01D	MuRata
2	D1, D3	16V	Diode, Zener, 16 V, 500 mW, SOD-123	SOD-123	MMSZ5246B-7-F	Diodes Inc.
1	D2	100V	Diode, Ultrafast, 100 V, 0.15 A, SOD-123	SOD-123	1N4148W-7-F	Diodes Inc.
1	D4	Red	LED, Red, SMD	LED_0603	150060RS75000	Würth Elektronik
2	D5, D6	40V	Diode, Schottky, 40 V, 0.2 A, SOT-323	SOT-323	BAS40W-7-F	Diodes Inc.
6	D7, D8, D9, D10, D11, D12	Green	LED, Green, SMD	1.6x0.8x0.8mm	LTST-C190GKT	Lite-On
3	D13, D14, D15	Green	LED, Green, SMD	LED_0603	150060VS75000	Würth Elektronik
1	F1		Fuse, 30 A, 62 VDC, SMD	9.5x2x5mm	SFK-3030	Dexerials Corporation
4	H1, H2, H3, H4		Bumpon, Hemisphere, 0.44 X 0.20, Clear	Transparent Bumpon	SJ-5303 (CLEAR)	3M
1	H5		USB to micro USB cable		102-1092-BL-00100	CNC Tech
1	J1		Terminal Block, 3.5mm, 5x1, Tin, TH	Terminal Block, 3.5mm, 5x1, TH	393570005	Molex
2	J2, J25		Header, 2.54 mm, 2x1, Gold, TH	Header, 2.54mm, 2x1, TH	61300211121	Würth Elektronik
17	J3, J4, J5, J6, J7, J8, J9, J10, J13, J14, J15, J16, J17, J18, J20, J21, J22		Header, 2.54mm, 3x1, Gold, SMT	Header, 2.54mm, 3x1, SMT	87898-0304	Molex
1	J11		Terminal Block, 3.5mm, 8-Pos, TH	Terminal Block, 3.5mm, 8-Pos, TH	ED555/8DS	On-Shore Technology

**Table 5. bq40z80EVM RevB (continued)**

Count	Designator	Value	Description	Package Reference	Part Number	Manufacturer
1	J12		Terminal Block, 3.5mm, 8x1, Tin, TH	Terminal Block, 3.5mm, 8x1, TH	393570008	Molex
1	J19		Header (friction lock), 100mil, 4x1, R/A, TH	4x1 R/A Header	22/05/3041	Molex
1	J23		Receptacle, Micro-USB Type B, 0.65 mm, 5x1, R/A, Bottom Mount SMT	Receptacle, 0.65mm, 5x1, R/A, SMT	47346-1001	Molex
1	J28		Header, 2.54mm, 4x1, Tin, TH	Header, 2.54mm, 4x1, TH	22284043	Molex
2	Q1, Q5	-40V	MOSFET, P-CH, -40 V, -8.2 A, SOIC-8	SO-8	FDS4685	ON Semiconductor
1	Q2	40V	MOSFET, N-CH, 40 V, 15 A, DQJ0008A (VSONP-8)	DQJ0008A	CSD18504Q5A	Texas Instruments
1	Q3	60V	MOSFET, N-CH, 60 V, 100 A, DNK0008A (VSON-CLIP-8)	DNK0008A	CSD18540Q5B	Texas Instruments
1	Q4	60V	MOSFET, N-CH, 60 V, 0.31 A, SOT-323	SOT-323	2N7002KW	Fairchild Semiconductor
3	Q6, Q7, Q11	50V	MOSFET, N-CH, 50 V, 0.28 A, SOT-23	SOT-23	CMPDM7003 TR	Central Semiconductor
1	Q8	40V	Transistor, PNP, 40 V, 0.2 A, SOT-23	SOT-23	CMPT3906 LEAD FREE	Central Semiconductor
1	Q9	60V	MOSFET, N-CH, 60 V, 2 A, AEC-Q101, SOT-23	SOT-23	DMN6075S-7	Diodes Inc.
1	Q10	-250V	MOSFET, P-CH, -250 V, -0.265 A, AEC-Q101, SOT-223	SOT-223	ZVP4525GTA	Diodes Inc.
1	R1	0	RES, 0, 5%, 2 W, 2512 WIDE	2512 WIDE	RCL12250000Z0EG	Vishay Draloric
2	R2, R9	100	RES, 100, 5%, 1 W, AEC-Q200 Grade 0, 2512	2512	CRCW2512100RJNEG	Vishay-Dale
2	R3, R6	10k	RES, 10 k, 5%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW060310K0JNEA	Vishay-Dale
10	R4, R5, R8, R15, R16, R21, R28, R45, R46, R49	10Meg	RES, 10 M, 5%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW060310M0JNEA	Vishay-Dale
1	R7	10.0Meg	RES, 10.0 M, 1%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW060310M0FKEA	Vishay-Dale
12	R10, R37, R38, R39, R40, R41, R42, R43, R47, R48, R50, R51	100	RES, 100, 5%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW0603100RJNEA	Vishay-Dale
8	R11, R12, R14, R19, R20, R33, R35, R36	1.0k	RES, 1.0 k, 5%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW06031K00JNEA	Vishay-Dale
1	R13	1.1k	RES, 1.1 k, 5%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW06031K10JNEA	Vishay-Dale
1	R17	332k	RES, 332 k, 0.1%, 0.1 W, 0603	0603	RG1608P-3323-B-T5	Susumu Co Ltd
1	R18	4.02k	RES, 4.02 k, 1%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW06034K02FKEA	Vishay-Dale
3	R22, R27, R34	5.1k	RES, 5.1 k, 5%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW06035K10JNEA	Vishay-Dale

**Table 5. bq40z80EVM RevB (continued)**

Count	Designator	Value	Description	Package Reference	Part Number	Manufacturer
1	R23	1.00k	RES, 1.00 k, 1%, 0.1 W, 0603	0603	ERJ-3EKF1001V	Panasonic
1	R24	10.0k	RES, 10.0 k, 1%, 0.1 W, 0603	0603	RCG060310K0FKEA	Vishay-Draloric
1	R25	510	RES, 510, 5%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW0603510RJNEA	Vishay-Dale
3	R26, R29, R32	1.00k	RES, 1.00 k, 1%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW06031K00FKEA	Vishay-Dale
1	R30	20k	RES, 20 k, 5%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW060320K0JNEA	Vishay-Dale
3	R31, R59, R60	10.0k	RES, 10.0 k, 0.1%, 0.1 W, 0603	0603	RG1608P-103-B-T5	Susumu Co Ltd
1	R44	200	RES, 200, 1%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW0603200RFKEA	Vishay-Dale
1	R52	0.001	RES, 0.001, 1%, 1 W, 1210	1210	PMR25HZPFV1L00	Rohm
2	R53, R54	33	RES, 33, 5%, 0.063 W, AEC-Q200 Grade 0, 0402	0402	CRCW040233R0JNED	Vishay-Dale
1	R55	2.0k	RES, 2.0 k, 5%, 0.063 W, AEC-Q200 Grade 0, 0402	0402	CRCW04022K00JNED	Vishay-Dale
2	R56, R64	10k	RES, 10 k, 5%, 0.063 W, AEC-Q200 Grade 0, 0402	0402	CRCW040210K0JNED	Vishay-Dale
2	R57, R58	1.0Meg	RES, 1.0 M, 5%, 0.063 W, AEC-Q200 Grade 0, 0402	0402	CRCW04021M00JNED	Vishay-Dale
3	R61, R62, R63	330	RES, 330, 1%, 0.1 W, AEC-Q200 Grade 0, 0402	0402	ERJ-2RKF3300X	Panasonic
4	RT1, RT2, RT3, RT4	10k	Thermistor NTC, 10.0k ohm, 1%, Disc, 5x8.4 mm	Disc, 5x8.4 mm	103AT-2	SEMITEC Corporation
3	S1, S2, S3		Switch, Tactile, SPST-NO, SMT	Switch, 6.2X5X6.2 mm	KST221JLFS	C&K Components
1	S4		Switch, SPST-NO, Off-Mom, 0.05A, 12VDC, SMD	3.9x2.9mm	PTS820 J20M SMTR LFS	C&K Components
20	SH-J1, SH-J2, SH-J3, SH-J4, SH-J5, SH-J6, SH-J7, SH-J8, SH-J9, SH-J10, SH-J11, SH-J12, SH-J13, SH-J14, SH-J15, SH-J16, SH-J17, SH-J18, SH-J19, SH-J20	1x2	Shunt, 100mil, Gold plated, Black	Shunt	SNT-100-BK-G	Samtec
9	TP9, TP17, TP18, TP19, TP20, TP21, TP22, TP23, TP24		Test Point, Compact, Black, TH	Black Compact Testpoint	5006	Keystone
2	TP14, TP15	Red	Test Point, Compact, Red, TH	Red Compact Testpoint	5005	Keystone
2	U1, U3		Family 2-5S Overvoltage Protector with Internal Delay Timer, DPJ0008A (WSON-8)	DPJ0008A	BQ771807DPJR	Texas Instruments

**Table 5. bq40z80EVM RevB (continued)**

Count	Designator	Value	Description	Package Reference	Part Number	Manufacturer
7	U2, U5, U6, U8, U9, U11, U12		Single-Channel ESD in 0402 Package With 10pF Capacitance and 6V Breakdown, DPY0002A (X1SON-2)	DPY0002A	TPD1E10B06DPYR	Texas Instruments
1	U4		Catalog 2S-7S Battery Gauge + Protector Based on bqExtend, RSM0032A (VQFN-32)	RSM0032A	BQ40Z80RSMR	Texas Instruments
1	U7		25 MHz Mixed Signal Microcontroller with 128 KB Flash, 8192 B SRAM and 63 GPIOs, -40 to 85 degC, 80-pin QFP (PN), Green (RoHS & no Sb/Br)	PN0080A	MSP430F5529IPN	Texas Instruments
1	U10		Single Output LDO, 150 mA, Fixed 3.3 V Output, 2.7 to 10 V Input, with Low IQ, 5-pin SOT-23 (DBV), -40 to 125 degC, Green (RoHS & no Sb/Br)	DBV0005A	TPS76333DBVR	Texas Instruments
1	Y1		Resonator, 4 MHz, 39 pF, AEC-Q200 Grade 1, SMD	4.5x1.2x2 mm	CSTCR4M00G55B-R0	MuRata
0	FID1, FID2, FID3, FID4, FID5, FID6		Fiducial mark. There is nothing to buy or mount.	N/A	N/A	N/A
0	J24, J26		Header, 2.54 mm, 7x1, Gold, TH	Header, 2.54 mm, 7x1, TH	PBC07SAAN	Sullins Connector Solutions
0	J27		Header, 100mil, 8x1, Tin, TH	Header, 8x1, 100mil, TH	PEC08SAAN	Sullins Connector Solutions

## 7 Related Documentation from Texas Instruments

- bq40z80 data sheet, [1-Series, 2-Series, 3-Series, 4-Series, 5-Series, 6-Series, and 7-Series Li-Ion Battery Pack Manager](#), SLUSCT4
- bq40z80, [Technical Reference Manual](#), SLUUBT5
- bq40z80, [Manufacture, Production, and Calibration](#), SLUA868
- bq40z80, [How to Complete a Successful Learning Cycle](#), SLUA848
- bq771807, [BQ7718XY Overvoltage Protection for 2-Series, 3-Series, 4-Series, and 5-Series Cell Li-Ion Batteries with Regulated Output Supply](#), SLUSBU5