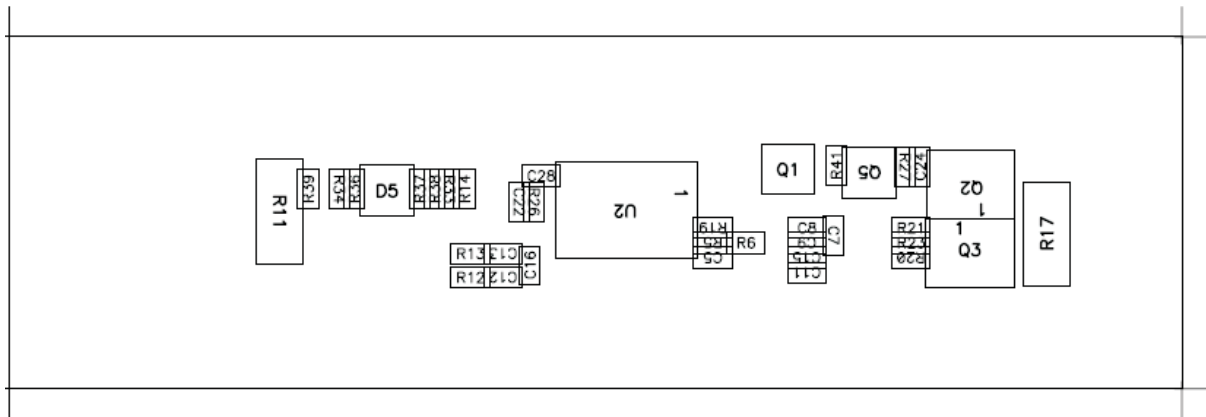


**Figure 4. Bottom Layer**



**Figure 5. Bottom Assembly**

**4.2 Bill of Materials and Schematic**

**Table 3. Bill of Materials**

Count	RefDes	Description	Size	Mfr	Part Number
21	C1–C9, C12, C13, C15–C18, C23, C24, C26–C28	Capacitor, Ceramic, 0.1µF, 50 V, X7R, 20%	0603	Any	STD
1	C11	Capacitor, Ceramic, 0.22µF, 50 V, X7R, 20%	0603	Any	STD
1	C19	Capacitor, Ceramic, 4.7µF, 10 V, X7R, 20%	0603	Any	STD
1	C20	Capacitor, Ceramic, 47nF, 50 V, X7R, 20%	0603	Any	STD
2	C22, C25	Capacitor, Ceramic, 0.47µF, 16 V, X7R, 20%	0603	Any	STD
3	C10, C14, C21	Capacitor, Ceramic, 1.0µF, 25 V, X7R, 20%	0805	Any	STD
4	D1–D3, D11	Diode, Switching, 150-mA, 75-V, 350mW	SOT23	Vishay-Liteon	BAS16
2	D4, D5	Diode, Dual, Zener, 5.6V, 300mW	SOT23	Vishay-Telefunken	AZ23C5V6
5	D6–D10	Diode, LED, Green, Gullwing, GW Type, 20ma, 7.5 mcd typ.	0.120 × 0.087 inches	Panasonic	LN1361C
1	J1	Header, Friction Lock Ass’y, 4-pin Right Angle,	0.400 × 0.500	Molex	22-05-3041
1	Q1	MOSFET, N-ch, 20-V, 1.3A, 0.16-Ω	SOT23	Fairchild	NDS331N
2	Q2, Q4	MOSFET, N-ch Logic Level, Power Trench, 30V, 11A, 12.5 mΩ	SO8	Fairchild	FDS6690A

**Table 3. Bill of Materials (continued)**

Count	RefDes	Description	Size	Mfr	Part Number
1	Q3	MOSFET, P-ch, 30-V, 8.0-A, 20-mΩ	SO8	Siliconix	Si4435DY
1	Q6	MOSFET, Nch, 50V, 0.22A, 6 Ω	SOT23	Fairchild	BSS138
12	R1–R5, R12, R13, R32–R34, R38, R39	Resistor, Chip, 100-Ω, 1/16-W, 5%	0603	Std	Std
1	R11	Resistor, Chip, 0.010 Ω, 1-W, xx%	2512	Vishay	WSL-2512-010 1% R86
3	R15, R16, R40	Resistor, Chip, 220 kΩ, 1/16-W, 5%	0603	Std	Std
1	R17	Resistor, Chip, 300-Ω, 1-W, 10%	2512		WSL-2512-300 1% R86
2	R18, R27	Resistor, Chip, 3.01MΩ, 1/16-W, 5%	0603	Std	Std
5	R14, R19, R21–R23	Resistor, Chip, 5.1kΩ, 1/16-W, 5%	0603	Std	Std
4	R20, R36, R37, R41	Resistor, Chip, 1MΩ, 1/16-W, 5%	0603	Std	Std
2	R24, R28	Resistor, Chip, 100kΩ, 1/16-W, 5%	0603	Std	Std
2	R25, R29	Resistor, Chip, 8.45kΩ, 1/16-W, 1%	0603	Std	Std
2	R26, R30	Resistor, Chip, 61.9kΩ, 1/16-W, 1%	0603	Std	Std
7	R6–R10, R31, R35	Resistor, Chip, 1kΩ, 1/16-W, 5%	0603	Std	Std
2	RT1, RT2	Thermistor, 10kΩ	0.095 × 0.150	Semitec	NTC103AT
1	SW1	Switch, Push button, Momentary, N.O. Low Profile	5 mm × 5 mm	Panasonic	EVQPLCxxx
2	TB1, TB4	Terminal Block, 2-pin, 6-A, 3.5mm	0.27 × 0.25	OST	ED1514
2	TB2, TB3	Terminal Block, 3-pin, 6-A, 3.5mm	0.41 × 0.25	OST	ED1515
1	TP1	Test Point, Black, Thru Hole Color Keyed	0.100 × 0.100 inch	Keystone	5001
1	TP3	Test Point, White, Thru Hole Color Keyed	0.100 × 0.100 inch	Keystone	5002
1	U1	IC, Voltage Protection for 2, 3, 4 Cell Lion, 2nd Protection, 4.45 V OVP	SSOP-08	TI	BQ29412DCT
1	U2	IC, Cool-GG Programmable Battery Management	TSSOP30	TI	bq20z65DBT

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