

Iridium 9603N Solar Beacon

Page 2:

With grateful thanks to:
Adafruit for the Feather M0 Adalogger
<https://www.adafruit.com/products/2796>
<https://github.com/adafruit/Adafruit-Feather-M0-Adalogger-PCB>
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Page 3:

With grateful thanks to:
Adafruit for the Ultimate GPS FeatherWing
<https://www.adafruit.com/products/3133>
<https://github.com/adafruit/Adafruit-Ultimate-GPS-FeatherWing-PCB>
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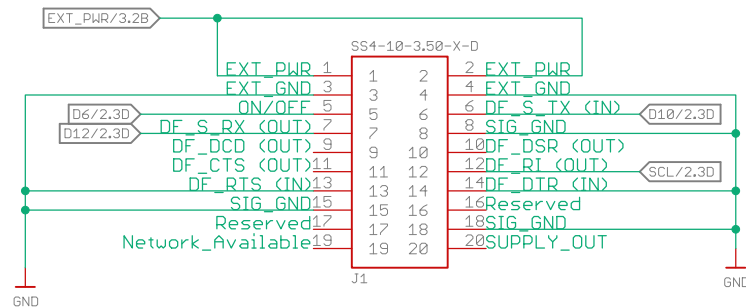
Page 4:

LTC3225EDDB SuperCapacitor Charger
Based on Linear Technology DC1220B
and Element14's LTC Library

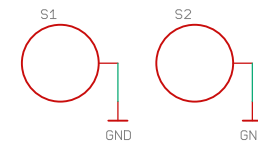
Fiducials



Connector for Iridium 9603



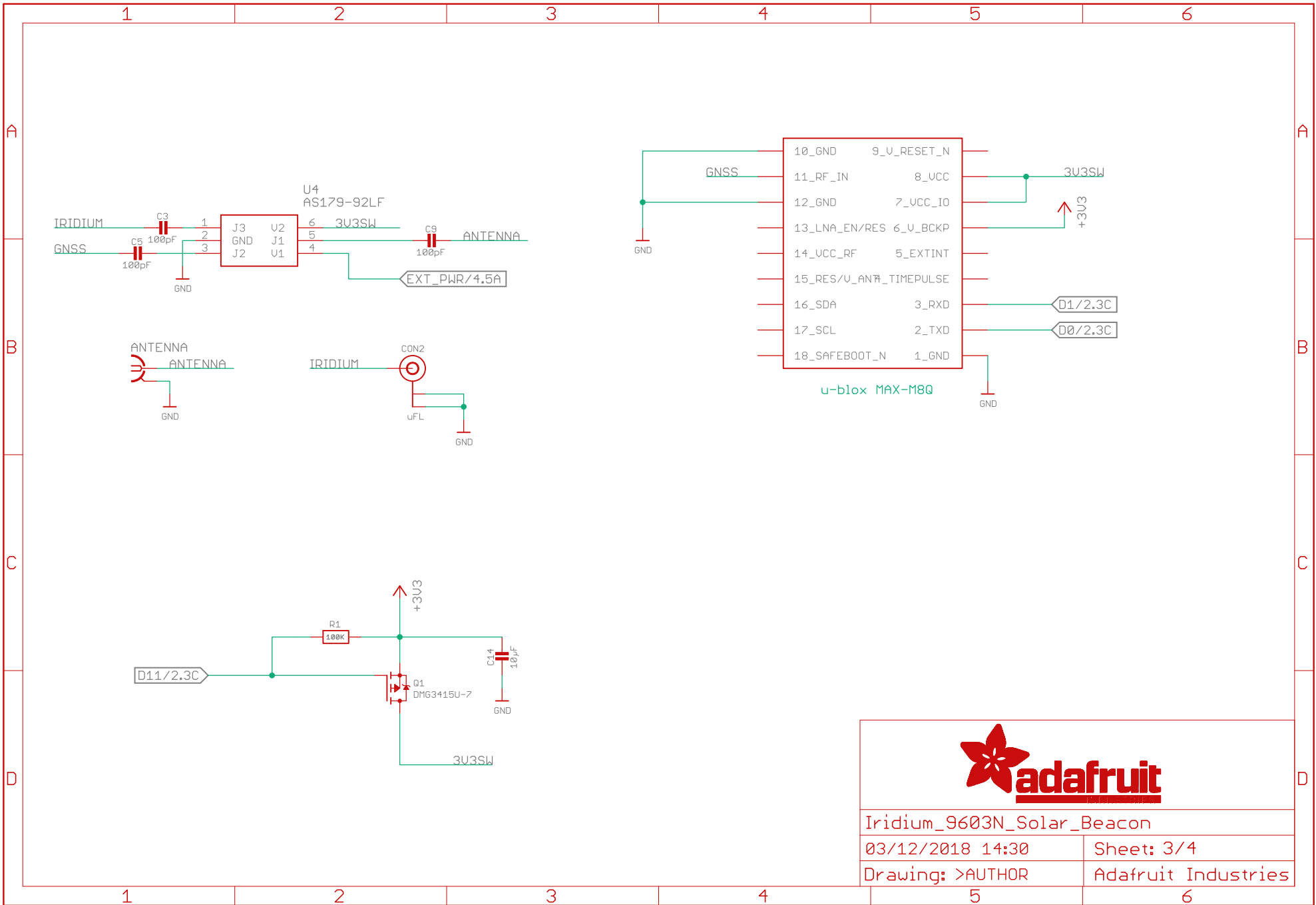
Mounting holes for Iridium 9603
2 x McMaster 95117A411 Press-In Nuts

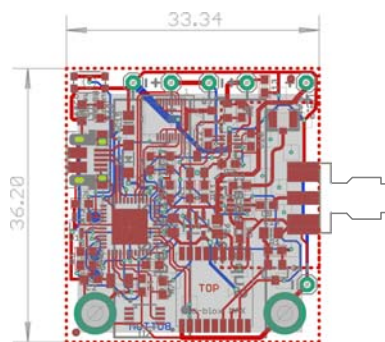


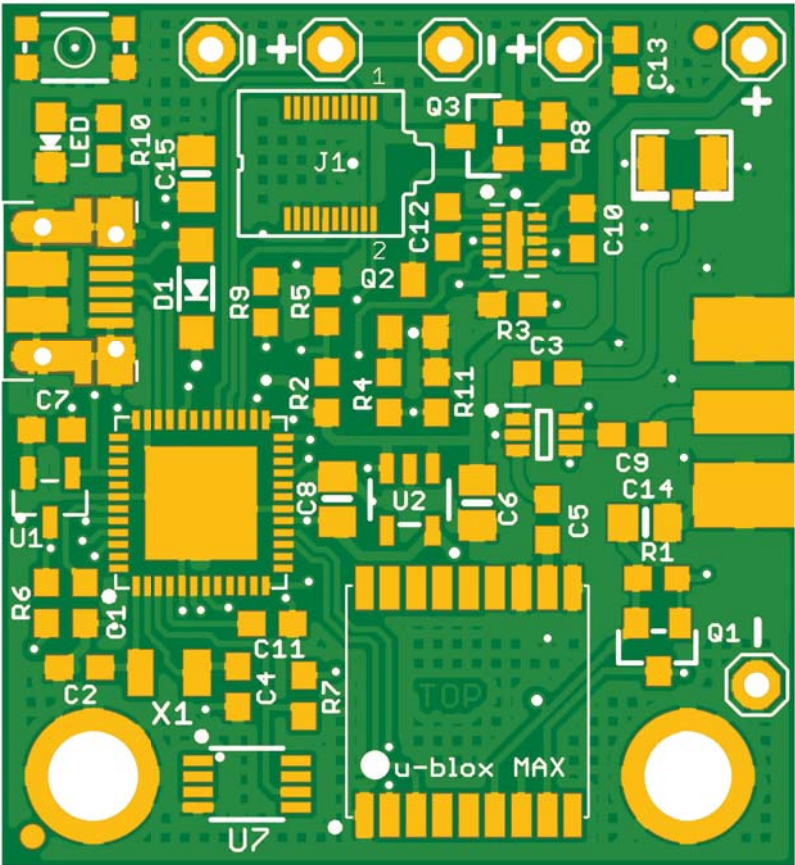
Iridium_9603N_Solar_Beacon

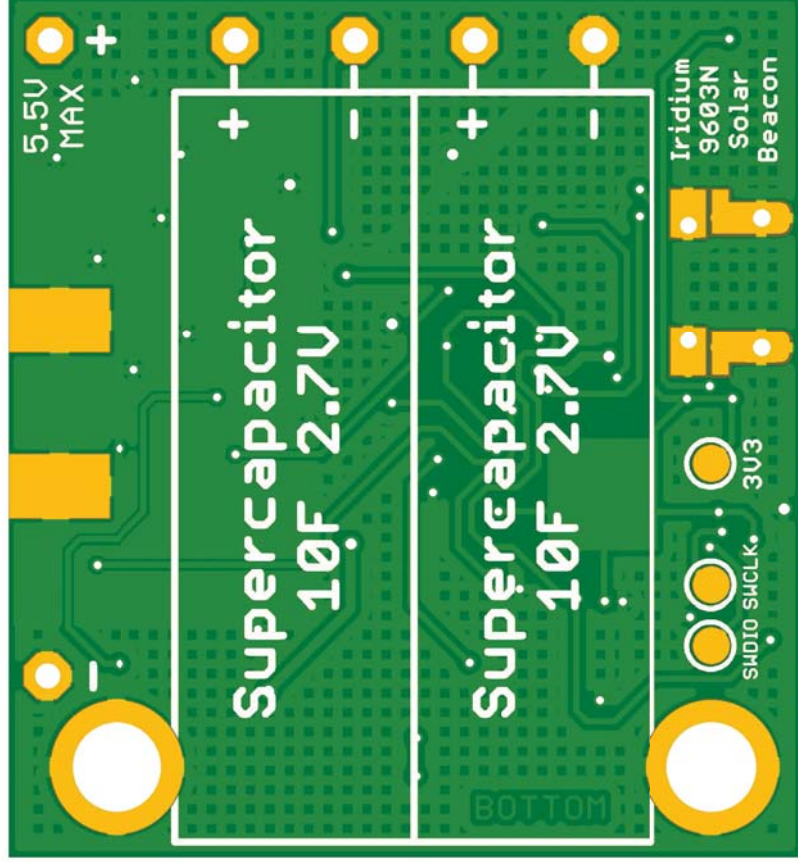
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Part	X	Y	Angle	Package	Value	Manufacturer	Manufacturer Part No	Farnell Part No	Mouser Part No	McMaster Part No	Description
Dimensions	33.34	36.20									
Fiducials - for solder paste mask alignment:											
FD1	1.27	1.27	0								Fiducial 1mm
FD2	29.62	34.80	0								Fiducial 1mm
Surface Mount Components:											
C1	3.46	11.05	270	0603	1uF	Walsin	0603X105K100CT	2496916			MultiLayer Ceramic Capacitor; 1uF; 10V; 0603; X5R
C2	3.24	8.35	180	0603	12pF	Walsin	0603N120J500CT	2496884			MultiLayer Ceramic Capacitor; 12pF; 50V; 0603
C3	22.86	20.7	0	0603	120pF	Walsin	0603B121K500CT	2524820			MultiLayer Ceramic Capacitor; 120pF; 50V; 0603
C4	9.94	7.56	270	0603	12pF	Walsin	0603N120J500CT	2496884			MultiLayer Ceramic Capacitor; 12pF; 50V; 0603
C5	22.86	14.54	270	0603	120pF	Walsin	0603B121K500CT	2524820			MultiLayer Ceramic Capacitor; 120pF; 50V; 0603
C6	19.94	15.24	270	0805	10uF	Walsin	0805F106Z100CT	2496998			MultiLayer Ceramic Capacitor; 10uF; 10V; 0805
C7	2.06	18.29	180	0603	100nF	Murata	GRM188R71H104JA93D	2688523			MultiLayer Ceramic Capacitor; 0.1uF; 50V; 0603; X7R
C8	14.1	15.4	90	0805	10uF	Walsin	0805F106Z100CT	2496998			MultiLayer Ceramic Capacitor; 10uF; 10V; 0805
C9	26.42	18.1	180	0603	120pF	Walsin	0603B121K500CT	2524820			MultiLayer Ceramic Capacitor; 120pF; 50V; 0603
C10	24.32	26.8	270	0603	1uF	Walsin	0603X105K100CT	2496916			MultiLayer Ceramic Capacitor; 1uF; 10V; 0603; X5R
C11	11.37	10.19	0	0603	1uF	Walsin	0603X105K100CT	2496916			MultiLayer Ceramic Capacitor; 1uF; 10V; 0603; X5R
C12	18.7	26.86	270	0603	1uF	Walsin	0603X105K100CT	2496916			MultiLayer Ceramic Capacitor; 1uF; 10V; 0603; X5R
C13	26.13	33.85	270	0603	100nF	Murata	GRM188R71H104JA93D	2688523			MultiLayer Ceramic Capacitor; 0.1uF; 50V; 0603; X7R
C14	26.99	14.41	0	0805	10uF	Walsin	0805F106Z100CT	2496998			MultiLayer Ceramic Capacitor; 10uF; 10V; 0805
C15	8.19	29.08	90	0805	10uF	Walsin	0805F106Z100CT	2496998			MultiLayer Ceramic Capacitor; 10uF; 10V; 0805
CON1	2.99	24.13	270		Micro_USB	Amphenol_FCI	10103594	2293752			Amphenol FCI 10103594 Micro USB Type B
CON2	28.58	28.77	270	uFL	uFL	Hirose	U.FL-R-SMT(01)	3908021			HIROSE U.FL-R-SMT(01); U.FL Coaxial; Straight Jack; 50 ohm
D1	8.19	24.26	90	SOD-123	MBR120	ON SEMICONDUCTOR	MBR120VLSFT1G	1431044			Schottky Rectifier; 20V; 1A; SOD-123
J1	13.81	29.53	0		SS4-10-3-50	Samtec	SS4-10-3.50-L-D-K-TR	2085336			Samtec SS4-10-3.50-L-D-K-TR
LED	2.03	30.42	180	2.0x1.25	RED	Würth Elektronik	150080RS75000	2322077	710-150080RS75000		LED; Red; 20mA; 2V; 2.0x1.25mm
Q1	27.53	9.21	180	SOT23	DMG3415U-7	Diodes Inc.	DMG3415U-7	1843688			MOSFET; P Channel; SOT23-WIDE
Q2	17.24	23.53	0	SOT23	2N2222	Fairchild	MMBT2222A	9846700			Bipolar (BJT) Single Transistor, NPN, 40 V, 350 mW, 1 A
Q3	20.22	30.67	90	SOT23	DMG3415U-7	Diodes Inc.	DMG3415U-7	1843688			MOSFET; P Channel; SOT23-WIDE
R1	27.5	12.07	180	0603	100K	Multicomp	MCWR06K1003FTL	2447226			Chip Resistor; Thick Film; 100k; 50V; 0603; 100mW
R2	13.65	19.88	90	0603	100K	Multicomp	MCWR06K1003FTL	2447226			Chip Resistor; Thick Film; 100k; 50V; 0603; 100mW
R3	21.4	23.62	180	0603	30K	Multicomp	MCWR06K3002FTL	2447333			Chip Resistor; Thick Film; 30k; 50V; 0603; 100mW
R4	16.26	19.88	90	0603	1K	Multicomp	MCWR06K1001FTL	2447272			Chip Resistor; Thick Film; 1k; 50V; 0603; 100mW
R5	13.65	23.75	90	0603	100K	Multicomp	MCWR06K1003FTL	2447226			Chip Resistor; Thick Film; 100k; 50V; 0603; 100mW
R6	1.84	11.05	270	0603	100K	Multicomp	MCWR06K1003FTL	2447226			Chip Resistor; Thick Film; 100k; 50V; 0603; 100mW
R7	12.7	7.18	270	0603	47k	Multicomp	MCWR06K4702FTL	2447376			Chip Resistor; Thick Film; 47k; 50V; 0603; 100mW
R8	23.11	30.67	270	0603	10K	Multicomp	MCWR06K1002FTL	2447230			Chip Resistor; Thick Film; 10k; 50V; 0603; 100mW
R9	11.08	23.72	90	0603	10K	Multicomp	MCWR06K1002FTL	2447230			Chip Resistor; Thick Film; 10k; 50V; 0603; 100mW
R10	4.48	30.58	90	0603	2.2K	Multicomp	MCWR06K2201FTL	2447320			Chip Resistor; Thick Film; 2.2k; 50V; 0603; 100mW
R11	18.22	19.88	90	0603	10K	Multicomp	MCWR06K1002FTL	2447230			Chip Resistor; Thick Film; 10k; 50V; 0603; 100mW
SW1	3.05	34.35	180	4.6x2.8	Tactile Switch	Multicomp	MCIPTG23K-V	1605470			Tactile Switch; 4.6x2.8mm; 50mA; 12V
U1	2	15.46	180	SOT23-3	MCP111T-240E/TT	Microchip	MCP111T-240E/TT	1627192			Reset Supervisor; SOT23-3; 2.40V; Open Drain; Active Low
U2	17.11	15.37	180	SOT23-5	SPX3819-3.3	Exar	SPX3819M5-L-3-3/TR		701-SPX3819M5-L-33TR		LDO Voltage Regulator; 500mA; SOT-23-5
U3	21.49	26.29	0	DFN-10	LTC3225EDDB	Linear Technology	LTC3225EDDB#TRMPBF	1715231			Supercapacitor Charger
U4	22.73	18.1	0	SOT65P220X100-6N	AS179-92LF	Skyworks Solutions	AS179-92LF		873-AS179-92LF		Skyworks AS179-92LF RF Switch
U5	8.35	15.24	0	TQFN48	ATSAMD21G18A	Atmel	ATSAMD21G18A-MF	2460544			ATSAMD21G18A-MF; QFN48
U6	19.57	6.91	270		MAX-M8Q	u-blox	MAX-M8Q				https://www.u-blox.com/en/product/max-m8-series
U7	10.32	3.46	270	MSOP8	LT1634BCMS8-1.25	Linear Technology	LT1634BCMS8-1.25	2252797	584-1634BCMS8-1.25PF		1.25V Precision Voltage Reference
X1	7.02	8.13	180	3.2x1.5	32.768	Epson	Q13FC13500004	1278036			Crystal; 32.768kHz; 12.5pF; 3.2 x 1.5mm

Press-In Nuts for Iridium 9603N:

S1	3.81	3.81			Press-In Nut	McMaster-Carr	95117A411			95117A411	Press-In Nut; 2-56
S2	28.81	3.81			Press-In Nut	McMaster-Carr	95117A411			95117A411	Press-In Nut; 2-56

Non-surface mount components:

SC1 & SC2					10F 2.7V	Bussmann	HV1030-2R7106-R	2148486			Supercapacitor; 10F; 2.7V; +30%, -10%; 5.0mm Pitch
ANTENNA					SMA Jack	Johnson	142-0711-821	1019328			SMA End Launch Jack

Iridium 9603N:

9603N						Iridium	9603N				https://www.rock7.com/shop-product-detail?productId=50
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Mounting hardware for Iridium 9603N:

SPACERS_x2										94669A100	4.5mm OD x 6mm Spacers for Iridium Module
SCREWS_x2										92185A081	2-56 x 7/16 Screws for Iridium Module

Cable for Iridium 9603N:

CABLE						Amphenol	A-1PA-132-025B2	2664624			Amphenol AMC cable (u.FL compatible) 50ohm 25mm
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SMA Antenna:

Iridium						Maxtena	M1600HCT-P-SMA				Iridium + GNSS Passive Antenna with SMA connector
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Notes:

Install SC1 and SC2 flat against the underside of the PCB, carefully bending the legs first.
Connect two PowerFilm MPT3.6-150 solar panels to the SOLAR+/- terminals on the solar panel support. Be careful with the panel polarity.
Use two additional MBR120 diodes on the solar panel support to isolate the solar panels from each other.