













| Part   | X                               | Y                                | Angle                   | e Package                                       | Value  | Manufacturer   | Manufacturer Part No  | Farnell<br>Part No                       | Mouser Part No                         | McMaster<br>Part No    | Description   |
|--|---------------------------------|----------------------------------|-------------------------|---|--|--|---|--|--|------------------------|---|
| Dimensio   |                                 | 36.20                            |                         | ·   |  |  |   |  |  |                        |   |
| Fiducials - for solder paste mask alignment:   |                                 |                                  |                         |   |  |  |   |  |  |                        |   |
| FD1  | 1.27                            | 1.27                             | 0                       | <b>6</b>  |  |  |   |  |  |                        | Fiducial 1mm  |
| FD2  | 29.62                           | 34.93                            | 0                       |   |  |  |   |  |  |                        | Fiducial 1mm  |
| Surface Mount Components:  |                                 |                                  |                         |   |  |  |   |  |  |                        |   |
| C1<br>C2<br>C3<br>C4   | 1.78<br>2.67<br>22.86<br>9.94   | 12.1<br>7.46<br>20.7<br>7.56     | 180<br>180<br>0<br>270  | 0603<br>0603<br>0603                            | 1uF<br>12pF<br>120pF<br>12pF                             | Walsin<br>Walsin<br>Walsin<br>Walsin                     | 0603X105K100CT<br>0603N120J500CT<br>0603B121K500CT<br>0603N120J500CT      | 2496916<br>2496884<br>2524820<br>2496884 |  |                        | MultiLayer Ceramic Capacitor; 1uF; 10V; 0603; X5R<br>MultiLayer Ceramic Capacitor; 12pF; 50V; 0603<br>MultiLayer Ceramic Capacitor; 12pF; 50V; 0603<br>MultiLayer Ceramic Capacitor; 12pF; 50V; 0603          |
| C5<br>C6<br>C7<br>C8   | 22.86<br>19.94<br>2.06<br>14.1  | 14.54<br>15.24<br>18.29<br>15.4  | 270<br>270<br>180<br>90 | 0603<br>0805<br>0603<br>0805                    | 120pF<br>10μF<br>100nF<br>10μF                           | Walsin<br>Walsin<br>Murata<br>Walsin                     | 0603B121K500CT<br>0805F106Z100CT<br>GRM188R71H104JA93D<br>0805F106Z100CT  | 2524820<br>2496998<br>2688523<br>2496998 |  |                        | MultiLayer Ceramic Capacitor; 120pF; 50V; 0603<br>MultiLayer Ceramic Capacitor; 10uF; 10V; 0805<br>MultiLayer Ceramic Capacitor; 0.1uF; 50V; 0603; X7R<br>MultiLayer Ceramic Capacitor; 10uF; 10V; 0805       |
| C9<br>C10<br>C11<br>C12  | 26.42<br>24.32<br>10.79<br>18.7 | 18.1<br>26.8<br>10.19<br>26.86   | 180<br>270<br>0<br>270  | 0603<br>0603<br>0603                            | 120pF<br>1uF<br>1uF<br>1uF                               | Walsin<br>Walsin<br>Walsin<br>Walsin                     | 0603B121K500CT<br>0603X105K100CT<br>0603X105K100CT<br>0603X105K100CT      | 2524820<br>2496916<br>2496916<br>2496916 |  |                        | MultiLayer Ceramic Capacitor; 120pF; 50V; 0603<br>MultiLayer Ceramic Capacitor; 1uF; 10V; 0603; X5R<br>MultiLayer Ceramic Capacitor; 1uF; 10V; 0603; X5R<br>MultiLayer Ceramic Capacitor; 1uF; 10V; 0603; X5R |
| C13<br>CON1<br>CON2<br>D1  | 26.07<br>2.99<br>28.58<br>8.32  | 34.04<br>24.13<br>28.77<br>23.56 | 270<br>270<br>270<br>90 | 0603<br>uFL<br>SOD-123                          | 100nF<br>Micro_USB<br>uFL<br>MBR120                      | Murata Amphenol_FCI Hirose ON SEMICONDUCTOR              | GRM188R71H104JA93D<br>10103594<br>U.FL-R-SMT(01)<br>MBR120VLSFT1G         | 2688523<br>2293752<br>3908021<br>1431044 |  |                        | MultiLayer Ceramic Capacitor; 0.1uF; 50V; 0603; X7R<br>Amphenol FCI 10103594 Micro USB Type B<br>HIROSE U.FL-R-SMT(01); U.FL Coaxial; Straight Jack; 50 ohm<br>Schottky Rectifier; 20V; 1A; SOD-123           |
| J1<br>LED<br>Q1  | 13.81<br>1.21<br>27.53          | 29.53<br>30.48<br>9.21           | 0<br>180<br>180         | 2.0x1.25<br>SOT23                               | SS4-10-3.50<br>RED<br>DMG3415U-7                         | Samtec<br>Wurth Electronik<br>Diodes Inc.                | SS4-10-3.50-L-D-K-TR<br>150080RS75000<br>DMG3415U-7                       | 2085336<br>2322077<br>1843688            | 710-150080RS75000                      |                        | Samtec SS4-10-3.50-L-D-K-TR<br>LED; Red; 20mA; 2V; 2.0x1.25mm<br>MOSFET; P Channel; SOT23-WIDE  |
| Q2<br>Q3<br>R1<br>R2   | 17.24<br>20.22<br>27.5<br>13.65 | 23.53<br>30.67<br>12.07<br>19.88 | 0<br>90<br>180<br>90    | SOT23<br>SOT23<br>0603<br>0603                  | 2N2222<br>DMG3415U-7<br>100K<br>100K                     | Fairchild<br>Diodes Inc.<br>Multicomp<br>Multicomp       | MMBT2222A<br>DMG3415U-7<br>MCWR06X1003FTL<br>MCWR06X1003FTL               | 9846700<br>1843688<br>2447226<br>2447226 |  |                        | Bipolar (BJT) Single Transistor, NPN, 40 V, 350 mW, 1 A MOSFET; P Channel; SOT23-WIDE Chip Resistor; Thick Film; 100k; 50V; 0603; 100mW Chip Resistor; Thick Film; 100k; 50V; 0603; 100mW                     |
| R3<br>R4<br>R5<br>R6   | 21.4<br>16.26<br>13.65<br>1.78  | 23.62<br>19.88<br>23.75<br>9.78  | 180<br>90<br>90<br>0    | 0603<br>0603<br>0603<br>0603                    | 30K<br>1K<br>100K<br>100K                                | Multicomp<br>Multicomp<br>Multicomp<br>Multicomp         | MCWR06X3002FTL<br>MCWR06X1001FTL<br>MCWR06X1003FTL<br>MCWR06X1003FTL      | 2447333<br>2447272<br>2447226<br>2447226 |  |                        | Chip Resistor; Thick Film; 30k; 50V; 0603; 100mW<br>Chip Resistor; Thick Film; 1k; 50V; 0603; 100mW<br>Chip Resistor; Thick Film; 100k; 50V; 0603; 100mW<br>Chip Resistor; Thick Film; 100k; 50V; 0603; 100mW |
| R7<br>R8<br>R9   | 12.64<br>23.11<br>11.08         | 7.56<br>30.67<br>23.72           | 270<br>270<br>90        | 0603<br>0603<br>0603                            | 47k<br>10K<br>10K  | Multicomp<br>Multicomp<br>Multicomp                      | MCWR06X4702FTL<br>MCWR06X1002FTL<br>MCWR06X1002FTL                        | 2447376<br>2447230<br>2447230            |  |                        | Chip Resistor; Thick Film; 47k; 50V; 0603; 100mW<br>Chip Resistor; Thick Film; 10k; 50V; 0603; 100mW<br>Chip Resistor; Thick Film; 10k; 50V; 0603; 100mW  |
| R10<br>R11<br>SW1<br>U1  | 3.71<br>18.22<br>3.05<br>2.06   | 30.51<br>19.88<br>34.35<br>15.46 | 90<br>90<br>0<br>270    | 0603<br>0603<br>4.6x2.8<br>SOT23-3              | 2.2K<br>10K<br>Tactile Switch<br>MCP111T-240E/TT         | Multicomp<br>Multicomp<br>Multicomp<br>Microchip         | MCWR06X2201FTL MCWR06X1002FTL MCIPTG23K-V MCP111T-240E/TT                 | 2447320<br>2447230<br>1605470<br>1627192 |  |                        | Chip Resistor; Thick Film; 2.2k; 50V; 0603; 100mW Chip Resistor; Thick Film; 10k; 50V; 0603; 100mW Tactile Switch; 4.6x2.8mm; 50mA; 12V Reset Supervisor; SOT23-3; 2.40V; Open Drain; Active Low              |
| U2<br>U3<br>U4<br>U5   | 17.11<br>21.49<br>22.73<br>8.35 | 15.37<br>26.29<br>18.1<br>15.24  | 180<br>0<br>0<br>0      | SOT23-5<br>DFN-10<br>SOT65P220X100-6N<br>TQFN48 | SPX3819-3.3<br>LTC3225EDDB<br>AS179-92LF<br>ATSAMD21G18A | Exar<br>Linear Technology<br>Skyworks Solutions<br>Atmel | SPX3819M5-L-3-3/TR<br>LTC3225EDDB#TRMPBF<br>AS179-92LF<br>ATSAMD21G18A-MF | 1715231<br>2460544                       | 701-SPX3819M5-L-33TR<br>873-AS179-92LF |                        | LDO Voltage Regulator; 500mA; SOT-23-5 Supercapacitor Charger Skyworks AS179-92LF RF Switch ATSAMD21G18A-MF; QFN48  |
| U6<br>U7<br>X1   | 19.57<br>10.32<br>6.76          | 6.91<br>3.46<br>7.75             | 270<br>270<br>180       | MSOP8<br>3.2x1.5                                | MAX-M8Q<br>LT1634BCMS8-1.25<br>32.768                    | u-blox<br>Linear Technology<br>Epson                     | MAX-M8Q<br>LT1634BCMS8-1.25<br>Q13FC13500004                              | 2252797<br>1278036                       | 584-1634BCMS8-1.25PF                   |                        | https://www.u-blox.com/en/product/max-m8-series<br>1.25V Precision Voltage Reference<br>Crystal; 32.768kHz; 12.5pF; 3.2 x 1.5mm   |
| Press-In N   |                                 |                                  | )3N:                    |   |  |  |   |  |  |                        |   |
| S1<br>S2   | 3.81<br>28.81                   | 3.81<br>3.81                     |                         |   | Press-In Nut<br>Press-In Nut                             | McMaster-Carr<br>McMaster-Carr                           | 95117A411<br>95117A411  |  |  | 95117A411<br>95117A411 | Press-In Nut; 2-56<br>Press-In Nut; 2-56  |
| Non-surface mount components:  |                                 |                                  |                         |   |  |  |   |  |  |                        |   |
| SC1 & SC2<br>ANTENNA   |                                 |                                  |                         |   | 10F 2.7V<br>SMA Jack                                     | Bussmann<br>Johnson                                      | HV1030-2R7106-R<br>142-0711-821   | 2148486<br>1019328                       |  |                        | Supercapacitor; 10F; 2.7V; +30%, -10%; 5.0mm Pitch SMA End Launch Jack  |
| <b>Iridium 96</b><br>9603N   | 603N:                           |                                  |                         |   |  | Iridium  | 9603N   |  |  |                        | https://www.iridium.com/products/iridium-9603/  |
| Iridium 9603N <a href="https://www.rock7.com/shop-product-detail?productId=5/">https://www.rock7.com/shop-product-detail?productId=5/</a> Mounting hardware for Iridium 9603N: |                                 |                                  |                         |   |  |  |   |  |  |                        |   |
| SPACERS_<br>SCREWS_  | x2                              | . 101 11141                      |                         |   |  |  |   |  |  | 94669A100<br>92185A081 | 4.5mm OD x 6mm Spacers for Iridium Module<br>2-56 x 7/16 Screws for Iridium Module  |
| Cable for Iridium 9603N:   |                                 |                                  |                         |   |  |  |   |  |  |                        |   |
| CABLE  |                                 |                                  |                         |   |  | HIROSE (HRS)<br>Amphenol                                 | U.FL-2LP-088K1T-A-50<br>A-1PA-132-025B2                                   | 1688071<br>2664624                       |  |                        | HIROSE u.FL - u.FL cable 50ohm 50mm<br>Amphenol AMC cable (u.FL compatible) 50ohm 25mm  |
| SMA Antenna:   |                                 |                                  |                         |   |  |  |   |  |  |                        |   |
| Iridium  |                                 |                                  |                         |   |  | Maxtena  | M1621HCT-SMA  | 2281619                                  |  |                        | Iridium Passive Antenna with SMA connector  |

## 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.