

Explorer Board HAT

PN: 1277 Rev A2 As of: 10/31/2017 Patrick Kelly, Jack Kelly © Copyright 2017

| 1 1 A1 SR4C033-L RF Chip Antenna 791-960 MHz Left SMD Antenova 237-SR4C033-L   2 2 C6, C7 GRM1555C1H180JA01D Cap Cer 18pF 50V COG 5% 0402 COG 0402 Murata 81-GRM1555C1H180JA1D   3 C1, C2, C5, C9, C21, C1, C2, C5, C9, C21, C2 C3 C3 C4 | 627-1094-1-ND<br>490-5858-1-ND<br>311-1088-1-ND |     | 1.850 | 1.850 |
|--|---|-----|-------|-------|
| C1 C2 C5 C9 C21  |   |     | 0.000 |       |
| C1, C2, C5, C9, C21,   | 311-1088-1-ND                                   |     | 0.006 | 0.012 |
| 3 8 C22, C24, C30 CC0603KRX7R7BB104 Cap Cer 0.1uF 16V X7R 10% 0603 X7R 0603 Yageo 603-CC603KRX7R7BB104   |   |     | 0.005 | 0.040 |
| 4 7 C12, C13, C14, C15, C16, C17, C23 GRM155R71C104KA88J Cap Cer 0.1uF 16V X7R 10% 0402 X7R 0402 Murata 81-GRM155R71C104KA8J   | 490-6328-1-ND                                   |     | 0.006 | 0.042 |
| 5 3 C3, C4, C27 CC0603KRX5R7BB475 Cap Cer 4.7uF 16V X5R 10% 0603 X5R 0603 Yageo 603-CC603KRX5R7BB475   | 311-1785-1-ND                                   |     | 0.072 | 0.216 |
| 6 3 C8, C28, C29 GRT188R61C106KE13D Cap Cer 10uF 6.3V X5R 10% 0603 X5R 0603 Murata 81-GRT188R61C106KE3D  | 490-12317-1-ND                                  |     | 0.154 | 0.462 |
| 7 1 C10 CC1206KKX7R6BB225 Cap Cer 2.2uF 10V X7R 10% 1206 X7R 1206 Yageo 603-CC126KKX7R6BB225   | 311-1953-1-ND                                   |     | 0.037 | 0.037 |
| 7 0 C10 GRM31MR71A225KA01L Cap Cer 2.2uF 10V X7R 10% 1206 X7R 1206 Murata 81-GRM426X225K010L   | 490-1803-1-ND                                   |     | 0.118 | 0.000 |
| 7 0 C10 C1206C225K8RACTU Cap Cer 2.2uF 10V X7R 10% 1206 X7R 1206 Kemet 80-C1206C225K8R   | 399-8182-1-ND                                   |     | 0.470 | 0.000 |
| 7 0 C10 LMK316B7225KL-T Cap Cer 2.2uF 10V X7R 10% 1206 X7R 1206 Taiyo Yuden 963-LMK316B7225KL-T  | 587-2232-1-ND                                   |     | 0.074 | 0.000 |
| 8 1 C11 GRM31CR60J107KE39L Cap Cer 100uF 6.3V X5R 10% 1206 X5R 1206 Murata 81-GRM31CR60J107KE9L  | 490-13982-1-ND                                  |     | 0.290 | 0.290 |
| 8 0 C11 CL31A107MQHNNNE Cap Cer 100uF 6.3V X5R 20% 1206 X5R 1206 Samsung NA  | 1276-1782-1-ND                                  |     | 0.261 | 0.000 |
| 8 0 C11 JMK316BJ107ML-T Cap Cer 100uF 6.3V X5R 20% 1206 X5R 1206 Taiyo Yuden 963-JMK316BJ107ML-T   | 587-1963-6-ND                                   |     | 0.472 | 0.000 |
| 9 3 C18, C25, C26 CC0603KRX5R5BB475 Cap Cer 4.7uF 6.3V X5R 10% 0603 X5R 0603 Yageo 603-CC603KRX5R5BB475  | 311-1521-1-ND                                   |     | 0.025 | 0.075 |
| 10 1 C19 LMK105BJ105KV-F Cap Cer 1uF 10V X5R 10% 0402 X5R 0402 Taiyo Yuden 963-LMK105BJ105KV-F   | 587-1454-1-ND                                   |     | 0.023 | 0.023 |
| 11 1 C20 GRM1555C1HR50WA01D Cap Cer 0.5pF 50V COG +/-0.05pF 0402 COG 0402 Murata 81-GRM1555C1HR50WA1D  | 490-6264-1-ND                                   |     | 0.019 | 0.019 |
| 12 2 D1, D4 LTST-C190KRKT LED Red Clear 0603 0603 Lite-On 859-LTST-C190KRKT  | 160-1436-1-ND                                   |     | 0.068 | 0.136 |
| 13 1 D2 LTST-C191KFKT LED Orange Clear 0603 0603 Lite-On 859-LTST-C191KFKT   | 160-1445-1-ND                                   |     | 0.068 | 0.068 |
| 14 1 D3 LTST-C190KGKT LED Green Clear 0603 0603 Lite-On 859-LTST-C190KGKT  | 160-1435-1-ND                                   |     | 0.068 | 0.068 |
| 15 1 F1 0ZCK0100FF2E Fuse PTC Resttable 1.0A 6V Chip 0805 0805 Bel Fuse  | 507-1815-1-ND                                   |     | 0.185 | 0.185 |
| 16 1 J1 CS25582-40G-M36-0A Conn Socket 2x20 0.100 inch SMD 0.100 Kaweei Tech (Buy from Adafruit #2187)   | NA  |     | 1.950 | 1.950 |
| 17 1 J2 S2B-PH-SM4-TB(LF)(SN) Conn Header PH Side 2 Pos 2mm SMD SMD JST NA   | 455-1749-1-ND                                   |     | 0.419 | 0.419 |
| 18 0 /3 20021121-00010C4LF Conn Header 10 Pos DL 0.050 in SMD SMD Amphenol 649-202112100010C4LF  | 609-3695-1-ND                                   |     | 0.606 | 0.000 |
| 19 0 1/4 68000-404HLF Header 4 Pos 0.100 in Str Tin 0.100 Amphenol 649-68000-404HLF  | 609-3262-ND                                     | 6   | 0.155 | 0.000 |
| 20 0 J5 M22-2510246 Header 2 Pos 2mm 2mm Harwin 855-M22-2510246  | 952-2280-ND                                     | 5,6 | 0.082 | 0.000 |
| 21 0 J5 Shunt M22-1900005 Shunt Jumper 2mm 2mm Harwin 855-M22-1900005  | 952-1305-ND                                     |     | 0.215 | 0.000 |
| 22 1 L1 PA4341.682NLT Inductor 6.8uH 4.5A 60 Mohm SMD Pulse 673-PA4341.682NLT  | 553-3420-1-ND                                   |     | 0.702 | 0.702 |
| 22 0 L1 PA4341.682NLT Inductor 6.8uH 4.5A 60 Mohm SMD Pulse buy from Arrow   |   |     | 0.663 | 0.000 |
| 23 1 L2 LQG15HN33NH02D Inductor 33nH 300mA 670 mOhm 0402 0402 Murata 81-LQG15HN33NH02D   | 490-15080-1-ND                                  |     | 0.048 | 0.048 |
| 24 1 L3 LQG15HN3N3C02D Inductor 3.3nH 800mA 120Mohm 0402 0402 Murata 81-LQG15HN3N3C02D   | 490-15083-1-ND                                  |     | 0.048 | 0.048 |
| 25 2 Q1, Q4 FDN340P MOSFET P-Chan 20V 2A SSOT-3 SSOT-3 On Semi 512-FDN340P   | FDN340PCT-ND                                    |     | 0.157 | 0.314 |
| 26 1 Q2 MMUN2133LT1G Trans Prebias PNP 246mW SOT23-3 SOT23-3 On Semi 863-MMUN2133LT1G  | MMUN2133LT1GOSCT-ND                             |     | 0.039 | 0.039 |
| 27 1 Q3 MMBT2222ALT1G Trans NPN 40V 0.6A SOT-23 SOT-23 On Semi 863-MMBT2222ALT1G   | MMBT2222ALT1GOSCT-ND                            |     | 0.034 | 0.034 |
| 28 3 R14, R15, R17 RC0603FR-071KL Res 1.0K Ohm 1% Thick Film 0603 1% 0603 Yageo 603-RC0603FR-071KL   | 311-1.00KHRCT-ND                                |     | 0.006 |       |
| 29 1 R1 RT0805BRD07732KL Res 732K Ohm 0.1% Thin Film 0805 0.1% 0805 Yageo 603-RT0805BRD07732KL   | YAG4938CT-ND                                    |     | 0.114 | 0.114 |
| 30 1 R22 ERA-6AEB6653V Res 665K Ohm 0.1% Thin Film 0805 0.1% 0805 Panasonic 667-ERA-6AEB6653V  | P665KDACT-ND                                    |     | 0.118 | 0.118 |
| 31 1 R7 RT0603BRD07200KL Res 200K Ohm 0.1% Thin Film 0603 0.1% 0603 Yageo 603-RT0603BRD07200KL   | YAG1578CT-ND                                    |     | 0.127 | 0.127 |
| 32 2 R3, R21 RT0603BRD074K99L Res 4.99K Ohm 0.1% Thin Film 0603 0.1% 0603 Yageo 603-RT0603BRD074K99L   | YAG1678CT-ND                                    |     | 0.127 | 0.254 |
| 33 1 R2 ERA-3AEB2433V Res 243K Ohm 0.1% Thin Film 0603 0.1% 0603 Panasonic 667-ERA-3AEB2433V   | P243KDBCT-ND                                    |     | 0.117 | 0.117 |
| 34 1 R23 RN73C1J402KBTD Res 402K Ohm 0.1% Thin Film 0603 0.1% 0603 TE 279-RN73C1J402KBTDF  | A124747CT-ND                                    |     | 0.437 | 0.437 |
| 35 1 R6 CPF0603B1M0E1 Res 1M Ohm 0.1% Thin Film 0603 0.1% 0603 TE 279-CPF0603B1M0E1  | A102234CT-ND                                    |     | 0.157 | 0.157 |
| 36 1 R33 CPF0603B750KE1 Res 750K Ohm 0.1% Thin Film 0603 0.1% 0603 TE 279-CPF0603B750KE1   | A102315CT-ND                                    |     | 0.199 | 0.199 |
| 37 1 R25 ERA-3AEB8061V Res 8.06K Ohm 0.1% Thin Film 0603 0.1% 0603 Panasonic 667-ERA-3AEB8061V   | P8.06KDBCT-ND                                   |     | 0.117 | 0.117 |
| 38 1 R9 RN73C1J340KBTD Res 340K Ohm 0.1% Thin Film 0.1% 0603 TE 279-RN73C1J340KBTDF  | A124740CT-ND                                    |     | 0.437 | 0.437 |

| 39 | 0 | R12, R13                | RC0603FR-071KL       | Res 1.0K Ohm 1% Thick Film 0603         | 1%   | 0603     | Yageo        | 603-RC0603FR-071KL   | 311-1.00KHRCT-ND       | 0.00 | 0.000    |
|----|---|-------------------------|----------------------|---|------|----------|--------------|----------------------|------------------------|------|----------|
| 40 | 3 | R5, R10, R20            | RC0603FR-072KL       | Res 2.0K Ohm 1% Thick Film 0603         | 1%   | 0603     | Yageo        | 603-RC0603FR-072KL   | 311-2.00KHRCT-ND       | 0.00 | 0.018    |
| 41 | 3 | R4, R24, R35            | RC0603FR-07100KL     | Res 100K Ohm 1% Thick Film 0603         | 1%   | 0603     | Yageo        | 603-RC0603FR-07100KL | 311-100KHRCT-ND        | 0.00 | 0.018    |
| 42 | 2 | R8, R34                 | CRCW06032M10FKEA     | Res 2.1M Ohm 1% Thick Film 0603         | 1%   | 0603     | Vishay Dale  | 71-CRCW06032M10FKEA  | 541-2.10MHCT-ND        | 0.01 | 0.028    |
| 43 | 2 | R18, R19                | RC0603FR-073K9L      | Res 3.9K Ohm 1% Thick Film 0603         | 1%   | 0603     | Yageo        | 603-RC0603FR-073K9L  | 311-3.90KHRCT-ND       | 0.00 | 0.012    |
| 44 | 1 | R26                     | RT0603BRD07442RL     | Res 442 Ohm 0.1% Thin Film 0603         | 0.1% | 0603     | Yageo        | 603-RT0603BRD07442RL | YAG4558CT-ND           | 0.06 | 0.069    |
| 45 | 1 | R11                     | RC0603FR-0710KL      | Res 10K Ohm 1% Thick Film 0603          | 1%   | 0603     | Yageo        | 603-RC0603FR-0710KL  | 311-10.0KHRCT-ND       | 0.00 | 0.003    |
| 46 | 1 | <u>R16</u>              | RC0402FR-0756KL      | Res 56K Ohm 1% Thick Film 0402          | 1%   | 0402     | Yageo        | 603-RC0402FR-0756KL  | 311-56.0KLRCT-ND       | 0.00 | 0.005    |
| 47 | 2 | R27, R32                | RT0603BRD071KL       | Res 1K Ohm 0.1% Thin Film 0603          | 0.1% | 0603     | Yageo        | 603-RT0603BRD071KL   | YAG1237CT-ND           | 0.06 | 0.138    |
| 48 | 2 | R28, R31                | RC0603JR-070RL       | Res 0 Ohm Jumper Thick Film 0603        |      | 0603     | Yageo        | 603-RC0603JR-070RL   | 311-0.0GRCT-ND         | 0.00 | 0.004    |
| 49 | 0 | R29, R30                | RC0603JR-070RL       | Res 0 Ohm Jumper Thick Film 0603        |      | 0603     | Yageo        | 603-RC0603JR-070RL   | 311-0.0GRCT-ND         | 0.00 | 0.000    |
| 50 | 1 | SW1                     | JS102011JAQN         | Switch Slide SPDT 300mA 6V SMD          |      |          | C&K          | 611-JS102011JAQN     | CKN10720CT-ND          | 0.35 | 0.350    |
| 51 | 2 | <u>SW2</u> , <u>SW3</u> | PTS645SK43SMTR92 LFS | Switch Tactile SPST-NO 0.05A 12V SMT    |      |          | C&K          | 611-PTS645SK43SMTR92 | CKN9084CT-ND           | 0.17 | 6 0.352  |
| 52 | 1 | U1                      | MCP73831-2ATI/MC     | IC Controller Li-Ion 4.2V 8DFN          |      | 8DFN     | Microchip    | 579-MCP73831T-2ATIMC | MCP73831-2ATI/MC-ND    | 0.45 | 0.450    |
| 53 | 2 | U2, U8                  | MIC842HYC5-TR        | IC Compartor w/Ref Open Drain           |      | SC-70-5  | Microchip    | 998-MIC842HYC5TR     | 576-2926-1-ND          | 0.42 | 0.840    |
| 54 | 1 | U3                      | ADS1014BQDGSRQ1      | IC ADC 12-Bit I2C SMD                   |      |          | TI           | 595-ADS1014BQDGSRQ1  | 296-45252-1-ND         | 2.17 | 0 2.170  |
| 55 | 1 | U4                      | TPS61090RSAR         | IC Reg Boost Adj 2A Sync 16VQFN         |      | 16VQFN   | TI           | 595-TPS61090RSAR     | 296-15259-1-ND         | 1.72 | 20 1.720 |
| 56 | 1 | <u>U5</u>               | CC1110F32RHHT        | IC RF TxRx MCU ISM<1GHz 36-VFQFN        |      | 36-VFQFN | TI           | 595-CC1110F32RHHR    | 296-38889-1-ND         | 4.48 | 4.480    |
| 57 | 1 | <u>U6</u>               | 0896BM15A0001        | RF Balun Filter 863-928 MHz             |      | 0805     | Johanson     | 609-0896BM15A0001E   | 712-1474-1-ND          | 0.52 | 22 0.522 |
| 58 | 1 | U7                      | CAT24C32WI-G         | IC EEPROM 32KBit 400KHz 8SOIC           |      | SOIC-8   | On Semi      | 698-CAT24C32WI-G     | CAT24C32WI-GOS-ND      | 0.22 | 0.220    |
| 59 | 2 | U10, <u>U11</u>         | SN74LVC1G06DBVR      | IC Inverter SGL 1 input SOT23-5         |      | SOT23-5  | TI           | 595-SN74LVC1G06DBVR  | 296-8483-1-ND          | 0.13 | 0.268    |
| 60 | 1 | U9                      | LTC4411ES5#TRMPBF    | IC OR Controller TSOT23-5               |      | TSOT23-5 | Linear Tech  | NA                   | LTC4411ES5#TRMPBFCT-ND | 2.32 | 2.328    |
| 61 | 1 | U12                     | 74LVC1G07DBVT        | IC Buffer Non-Invert 1 input SOT23-5    |      | SOT23-5  | TI           | 595-SN74LVC1G07DBVT  | 296-26590-1-ND         | 0.40 | 0.400    |
| 62 | 1 | V1                      | VC120605D150DP       | TVS 5.6VDC 150A 1206                    |      | 1206     | AVX          | 581-VC120605D150DP   | 478-2517-1-ND          | 0.37 | 0.370    |
| 63 | 1 | <u>Display</u>          | NA                   | Display 128X64 I2C OLED 0.96 inch white |      |          | еВау         | NA                   | NA                     | 3.67 | 70 3.670 |
| 64 | 1 | <u>X1</u>               | 7V-24.000MAHJ-T      | Crystal 24.0000MHz 18pF SMD             |      | SMD      | TXC Corp     | 717-7V-24.000MAHJ-T  | 887-2580-1-ND          | 0.52 | 0.522    |
| 65 | 1 |                         |                      | PCB Bare                                |      |          |              |                      |                        |      | 0.000    |
|    |   |                         |                      |   |      | Sub      | total:       |                      | \$28.13                |      |          |
|    |   |                         |                      |   |      |          |              |                      |                        |      |          |
|    |   |                         |                      |   |      |          |              |                      |                        |      |          |
|    |   |                         |                      | Assemble Display to Explorer Board HAT  | •    |          |              |                      |                        |      |          |
|    |   |                         |                      |   |      |          |              |                      |                        |      |          |
| 1  | 4 | M1, M2, M3,M4           | R30-6700394          | Spacer M3 nylon 3mm                     |      |          | Harwin       | 855-R30-6700394      | 952-1526-ND            | 0.12 | 0.508    |
| 2  | 4 | M1, M2, M3,M4           | MPMS 002 0008 PH     | Screw Machine Pan M2 x 8 Phillips       |      |          | B&F Fastener | NA                   | H739-ND                | 0.07 | 0.280    |
| 3  | 4 | M1, M2, M3,M4           | MHNZ 002 4           | Nut Hex 0.157" M2                       |      |          | B&F Fastener | NA                   | H761-ND                | 0.04 | 9 0.196  |
| 4  | 4 | M1, M2, M3,M4           | 3114                 | Washer Flat #2 Nylon                    |      |          | Keystone     | 534-3114             | 36-3114-ND             | 0.07 | 0.280    |
| 5  | 0 | M1, M2, M3,M4           | 222 (Purple)         | Threadlocker 222 tube 6 ml              |      |          | Loctite      | (on M2 nut end)      | Amazon                 | 8.14 | 0.000    |
|    |   |                         |                      |   |      |          |              |                      |                        |      |          |
|    |   |                         |                      |   |      | Sub      | total:       |                      | \$1.26                 |      |          |
|    |   |                         |                      |   |      |          |              |                      |                        |      |          |
|    |   |                         | 1                    |   | 1    | 1        | 1            |                      |                        | 1    | 1        |

## Notes:

| 1 | These components should be stocked due to concerns over lead time and/or limited substitutions available. |
|---|---|
| 2 | Cut pins flush to this board (0.030 inch or less)   |
| 3 | Do not wash   |
| 4 |   |
| 5 | Leave holes open (do not fill with solder)  |
| 6 | Thru-hole component   |
| 7 |   |