



Bill of Materials for the STR-USBC-4PORT-200W-EVK Evaluation Board

| Designator | Quantity | Description | Value | Tolerance | Footprint | Manufacturer | Manufacturer Part Number | Substitution Allowed | Lead Free |
|-------------------|----------|---|--------------|-----------|--------------|------------------|--------------------------|----------------------|-----------|
| ACDC Board | | | | | | | | | |
| BR1 | 1 | GBU4A-GBU4M Bridge Rectifiers | GBU4M | | GBU | ON Semiconductor | GBU4M | No | Yes |
| C1 | 1 | X-Type Film Capacitor | 0.1uF | | 13x7mm | Wurth | 890324023023 | Yes | Yes |
| C2 C7 C10 C16 | 4 | Aluminum Through Hole Electrolytic Capacitor | 680uF | | Radial 13mm | Wurth | 860080578019 | Yes | Yes |
| C3 C4 | 2 | XY Rated Ceramic Disc Capacitor | 1nF | | Radial 6mm | Murata | DE2E3SA102MN3AX02F | Yes | Yes |
| C5 | 1 | Generic 0805 SMD Capacitor | 22nF | | 0805 | Murata | GRM2165C1H223JA01 | Yes | Yes |
| C6 | 1 | Double Metallized Polypropylene Film Radial Capacitor | 33nF | | 18x6mm | Kemet | R76PI23304030J | Yes | Yes |
| C8 | 1 | 47uF 25V Aluminum Electrolytic Capacitor | 47uF | | Radial 6.3mm | Wurth | 860240473003 | Yes | Yes |
| C9 | 1 | 47uF 35V Aluminum Electrolytic Capacitor | 47uF | | Radial 8mm | Wurth | 860240574004 | Yes | Yes |
| C11 | 1 | 120uF 450V Aluminum Electrolytic Capacitor | 120uF | | Radial 25mm | Wurth | 861111484016 | Yes | Yes |
| C12 C13 | 2 | XY Rated Ceramic Disc Capacitor | 2.2nF | | Radial 8mm | Murata | DE2E3SA222MN3AX02F | Yes | Yes |
| C14 | 1 | X-Type Film Capacitor | 0.33uF | | 15x8.5mm | Wurth | 890324024003 | Yes | Yes |
| C15 | 1 | 220uF 25V Aluminum Electrolytic Capacitor | 220uF | | Radial 10mm | Wurth | 860240475007 | Yes | Yes |
| C17 C18 | 2 | Polypropylene Film Capacitor | 1uF | | 17.5x7.8mm | Panasonic | ECW-FD2W105J | Yes | Yes |
| C19 C23 | 2 | Generic 0805 SMD Capacitor | 3.9nF | | 0805 | Murata | GRM21B7U2E392JW32L | Yes | Yes |
| C20 C25 | 2 | Generic 0805 SMD Capacitor | 1uF | | 0805 | Murata | GRM219R7YA105KA12 | Yes | Yes |
| C21 C22 | 2 | Generic 1206 SMD Capacitor | 220pF | | 1206 | Murata | GRM31A5C3A221JW01 | Yes | Yes |
| C24 | 1 | Generic 1206 SMD Capacitor | 0.1uF | | 1206 | Murata | GRM3195C1H104JA05 | Yes | Yes |
| C26 C42 | 2 | Generic 0201 SMD Capacitor | 100nF | | 0201 | Murata | GRM033C81E104KE14 | Yes | Yes |
| C27 C30 | 2 | Generic 0603 SMD Capacitor | DNP | | 0603 | | | Yes | Yes |
| C28 C38 C45 | 3 | Generic 0201 SMD Capacitor | 10nF | | 0201 | Murata | GRM033R71C103ME14 | Yes | Yes |
| C29 | 1 | Generic 0201 SMD Capacitor | 100pF | | 0201 | Murata | GRM033R71H101MA12 | Yes | Yes |
| C31 | 1 | Generic 0201 SMD Capacitor | 470pF | | 0201 | Murata | GRM033R71H471KA12 | Yes | Yes |
| C32 C47 | 2 | Generic 0201 SMD Capacitor | 100pF | | 0201 | Murata | GRM0335C1H101GA01 | Yes | Yes |
| C33 | 1 | Generic 0402 SMD Capacitor | 2.2nF | | 0402 | Murata | GRM1555C1H222JA01 | Yes | Yes |
| C34 C35 C36 C37 | 4 | CAP CER 10UF 35V X5R 0603 | 10uF | | 0603 | Murata | GRM188R6YA106MA73 | Yes | Yes |
| C39 | 1 | Generic 0805 SMD Capacitor | 10nF | | 0805 | Yageo | CC0805KRX7R9BB103 | Yes | Yes |
| C40 | 1 | Generic 0201 SMD Capacitor | 10nF | | 0201 | Murata | GRM033R71E103KE14 | Yes | Yes |
| C41 C52 C53 | 3 | Generic 0201 SMD Capacitor | 220nF | | 0201 | Murata | GRM033R61A224KE90 | Yes | Yes |
| C43 | 1 | Generic 2220 SMT Capacitor | 0.22uF | | 2220 | TDK | C5750X7R2J224K230KM | Yes | Yes |
| C44 | 1 | Generic 1206 SMD Capacitor | 220nF | | 1206 | Murata | GRM31C5C1H224JE02 | Yes | Yes |
| C46 | 1 | Generic 0201 SMD Capacitor | 10pF | | 0201 | Murata | GRM0335C1E100JA01 | Yes | Yes |
| C48 | 1 | CAP CER 10UF 25V X5R 0603 | 10uF | | 0603 | Murata | GRM188R61E106MA73 | Yes | Yes |

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|---------------------------|---|--|-----------------|--|-----------------------------------|-------------------|--------------------|-----|-----|
| C49 C55 | 2 | Generic 0201 SMD Capacitor | 100nF | | 0201 | Murata | GRM033C71A104KE14 | Yes | Yes |
| C50 | 1 | Generic 0201 SMD Capacitor | 4.7nF | | 0201 | Murata | GRM033R71C472KE14 | Yes | Yes |
| C51 | 1 | CAP CER 1UF 16V X5R 0402 | 1uF | | 0402 | Murata | GRM155R61C105KA12 | Yes | Yes |
| C54 | 1 | Generic 0603-1206 SMD Capacitor | 220nF | | 0603-1206 | Murata | GRM31C5C1H224JE02 | Yes | Yes |
| C56 | 1 | Generic 0603 SMD Capacitor | 2.2uF | | 0603 | Murata | GRM188R71A225ME15 | Yes | Yes |
| C57 | 1 | Generic 0201 SMD Capacitor | 0.1uF | | 0201 | Murata | GRM033R6YA104KE14 | Yes | Yes |
| CY1 | 1 | CAP CER 2200PF 300VAC RADIAL | 2.2nF | | Radial 10mm | Murata | DE1E3RA222MN4AP01F | Yes | Yes |
| D1 D2 | 2 | Generic SOD-323 Diode | BAS20H | | SOD-323 | ON Semiconductor | BAS20H | No | Yes |
| D3 D4 | 2 | Generic SOD-123 Schottky Diode | MBR2H200SF | | SOD-123 | ON Semiconductor | MBR2H200SF | No | Yes |
| D5 D9 D10 D11 D14 D16 D17 | 7 | Generic SOD-323 Diode | MMDL914 | | SOD-323 | ON Semiconductor | MMDL914 | No | Yes |
| D6 | 1 | Generic SOD-323 Zener Diode | MM3Z30V | | SOD-323 | ON Semiconductor | MM3Z30VT1G | No | Yes |
| D7 | 1 | Generic SOD-123 Diode | ES1JFL | | SOD-123 | ON Semiconductor | ES1JFL | No | Yes |
| D8 | 1 | Generic SOD-123 Zener Diode | MMSZ5245BT1G | | SOD-123 | ON Semiconductor | MMSZ5245BT1G | No | Yes |
| D12 D13 | 2 | General Purpose Rectifier | S1JFL | | SOD-123 | ON Semiconductor | S1JFL | No | Yes |
| D15 | 1 | Generic DPAK Diode | MURD550PF | | DPAK | ON Semiconductor | MURD550PFT4G | No | Yes |
| D18 | 1 | Generic SMB Schottky Diode | S3JB | | SMB | ON Semiconductor | S3JB | No | Yes |
| F1 | 1 | Time Lag Radial Lead Micro Fuse | RST 4 | | 4x8.35mm | Belfuse | 0697-4000 | Yes | Yes |
| HS1 HS2 HS3 | 3 | Heatsink TO-220 | 6021BG | | Heatsink TO-220 | Aavid | 6021BG | Yes | Yes |
| HS4 HS5 | 2 | Pinless TO-220 heatsink | 577102B00000G | | Heatsink TO-220 | Aavid | 577102B00000G | Yes | Yes |
| J1 J5 J7 J9 | 4 | Standard 1x2pin 100mil Pitch Header | 613 002 111 21 | | 1x2pin 100mil | Würth Elektronik | 613 002 111 21 | Yes | Yes |
| J2 J3 J10 J11 | 4 | PLASTIC SPACER STUD METRIC THREAD M3 30MM PWR ENT RCPT IEC320-C14 PNL SLDR | 970300365 | | M3 30MM | Würth | 970300365 | Yes | Yes |
| J4 | 1 | CONN HEADER DUAL 20 POS RA 2.54 MALE | PX0580/PC | | IEC 320-C14 | Bulgin | PX0580/PC | Yes | Yes |
| J6 | 1 | CONN HEADER DUAL 20 POS RA 2.54 MALE | 61302021021 | | 2x10pin 100mil RA | Würth Elektronik | 61302021021 | Yes | Yes |
| J8 | 1 | Spyglass Assisted (SGA) 16pin Header Platform Side | SGAP0 | | SGAP0 | Würth Elektronik | 613016243121 | Yes | Yes |
| J12 J13 J16 J17 | 4 | PLASTIC SPACER STUD METRIC THREAD M3 10MM | 971100365 | | M3 10MM | Würth | 971100365 | Yes | Yes |
| J14 J15 | 2 | Rectangle power pad 200x300 mils | DNI | | 200x300mil | | | Yes | Yes |
| J18 J19 J24 | 3 | Passivated 18-8 Stainless Steel Pan Head Phillips Screws, M3 x 0.5mm Thread, 8mm Long | 92000A118 | | Screw, 8mm M3 screw, 0.5mm Thread | McMaster-Carr | 92000A118 | Yes | Yes |
| J20 J21 J26 J29 | 4 | Zinc-Plated Steel Hex Nut, Medium-Strength, Class 8, M3 x 0.5 mm Thread | 90591A250 | | Nut, M3 x 0.5mm Thread | McMaster-Carr | 90591A250 | Yes | Yes |
| J22 J23 J25 J28 | 4 | 316 Stainless Steel Washer for M3 Screw Size, 3.2 mm ID, 7 mm OD | 90965A130 | | Washer, M3, 3.2mm ID, 7mm OD | McMaster-Carr | 90965A130 | Yes | Yes |
| J27 | 1 | Passivated 18-8 Stainless Steel Pan Head Phillips Screws, M3 x 0.5mm Thread, 10mm Long | 92000A120 | | Screw, 10mm M3, 0.5mm Thread | McMaster-Carr | 92000A120 | Yes | Yes |
| J30 J31 | 2 | PLASTIC HEXAGON NUT M3 | 709940300 | | M3 Nut | Würth | 709940300 | Yes | Yes |
| J32 J33 | 2 | M3 x 6mm Nylon Machine Screw, Black | SCW-NLB/M3x6 | | M3 6MM | Electronics-Salon | SCW-NLB/M3x6 | Yes | Yes |
| L1 | 1 | Würth Transformer EE20/10/6 Vertical, Inductor configuration for USB-PD 4-Port | 120uH | | EE20/10/6 Vert | Würth | 750317576r01 | Yes | Yes |
| L2 | 1 | Horizontal Würth ER28/17 Transformer, LLC Transformer for USB-PD 4-Port | 750316907r02 | | 12pin 30x30mm | Würth | 750316907r02 | Yes | Yes |
| L3 | 1 | Würth Radial Leaded Wire Wound Inductor with 4 Pins | 100uH | | 11mm Radial | Würth | 7447231101 | Yes | Yes |
| L4 | 1 | Würth Common Mode Power Line Choke | 2x2.2mH | | 4pin 23.5x13.8mm | Würth | 744823422 | Yes | Yes |
| L5 | 1 | Würth Common Nanocrystalline Common Mode Choke | 2x9mH | | 4pin 22x13.5mm | Würth | 7448030509 | Yes | Yes |
| L6 | 1 | Würth Transformer PQ3220, PFC Inductor for USB-PD 4-Port | 250uH | | 12pin 37.34x35.56mm | Würth | 750317636r01 | Yes | Yes |
| L7 | 1 | Würth Leaded Toroidal Line Choke | 150uH | | 2pin 25x13mm | Würth | 7447055 | Yes | Yes |
| Q1 Q2 | 2 | Generic TO-220 N-Channel Power Mosfet with Extended Drain | FCPF250N65S3R0L | | TO-220 Ext. Drain | ON Semiconductor | FCPF250N65S3R0L | No | Yes |
| Q3 | 1 | Generic SOT-223 N-Channel Power MOSFET | NTF3055-100 | | SOT223 | ON Semiconductor | NTF3055-100T1G | No | Yes |

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|--------------------|---|---|-----------------|--|-------------------|------------------|-----------------|-----|-----|
| Q4 | 1 | Generic TO-220 N-Channel Power Mosfet with Extended Drain | FCPF190N65S3R0L | | TO-220 Ext. Drain | ON Semiconductor | FCPF190N65S3R0L | No | Yes |
| Q5 Q6 | 2 | Generic SO8-FL DFN-8 N-Channel Power MOSFET | FDMS86550 | | SO8-FL DFN-8 | ON Semiconductor | FDMS86550 | No | Yes |
| Q7 Q9 | 2 | Small Signal MOSFET 50V 200mA 3.5 Ohm N-Channel | BSS138L | | SOT-23-3 | ON Semiconductor | BSS138LT1G | No | Yes |
| Q8 | 1 | Generic SO8-FL DFN-5 P-Channel Power MOSFET | FDMS6681Z | | SO8-FL DFN-5 | ON Semiconductor | FDMS6681Z | No | Yes |
| Q10 Q11 | 2 | PNP Bipolar Transistor | MMBT3906L | | SOT-23-3 | ON Semiconductor | MMBT3906L | No | Yes |
| Q12 | 1 | Small Signal MOSFET 60V 340mA 2.5 Ohm Single N-Channel SOT-323 | 2N7002W | | SOT-323 | ON Semiconductor | 2N7002W | No | Yes |
| Q13 Q14 | 2 | Automotive Small Signal MOSFET 60V 340mA 2.5 Ohm Single N-Channel SOT-323 | 2N7002W | | SOT-323 | ON Semiconductor | 2N7002W | No | Yes |
| R1 R7 R17 R60 | 4 | RES SMD 10K OHM 1% 1/10W 0603 | 10K | | 0603 | Vishay | CRCW060310K0FK | Yes | Yes |
| R2 R32 R63 | 3 | RES SMD 100K OHM 1% 1/10W 0603 | 100K | | 0603 | Vishay | CRCW0603100KFK | Yes | Yes |
| R3 | 1 | RES SMD 24.9K OHM 1% 1/10W 0603 | 24.9K | | 0603 | Vishay | CRCW060324K9FK | Yes | Yes |
| R4 | 1 | RES SMD 10K OHM 1% 1/4W 1206 | 10K | | 1206 | Vishay | CRCW120610K0FK | Yes | Yes |
| R5 R52 R53 R61 R68 | 5 | RES SMD 10K OHM 1% 1/16W 0402 | 10K | | 0402 | Vishay | CRCW040210K0FK | Yes | Yes |
| R6 R13 | 2 | RES SMD 15 OHM 1% 1/4W 1206 | 15 | | 1206 | Vishay | CRCW120615R0FK | Yes | Yes |
| R8 R20 R40 R41 R45 | 5 | RES SMD 0 OHM 1% 1/10W 0603 | 0 | | 0603 | Vishay | CRCW06030000Z0 | Yes | Yes |
| R9 R27 | 2 | RES SMD 1K OHM 1% 1/10W 0603 | 1K | | 0603 | Vishay | CRCW06031K00FK | Yes | Yes |
| R10 R16 | 2 | RES SMD 22.1 OHM 1% 1/10W 0603 | 22.1 | | 0603 | Vishay | CRCW060322R1FK | Yes | Yes |
| R11 R19 | 2 | RES SMD 22.1K OHM 1% 1/10W 0603 | 22.1K | | 0603 | Vishay | CRCW060322K1FK | Yes | Yes |
| R12 R22 R39 R56 | 4 | RES SMD 4.75K OHM 1% 1/10W 0603 | 4.75K | | 0603 | Vishay | CRCW06034K75FK | Yes | Yes |
| R14 R15 R35 R66 | 4 | RES SMD 10 OHM 1% 1/10W 0603 | 10 | | 0603 | Vishay | CRCW060310R0FK | Yes | Yes |
| R18 | 1 | RES SMD 200K OHM 1% 1/10W 0603 | 200K | | 0603 | Vishay | CRCW0603200KFK | Yes | Yes |
| R21 | 1 | RES SMD 5.62 OHM 1% 1/8W 0805 | 5.62 | | 0805 | Vishay | CRCW08055R62FK | Yes | Yes |
| R23 | 1 | RES SMD 5.62 OHM 1% 1/4W 1206 | 5.62 | | 1206 | Vishay | CRCW12065R62FK | Yes | Yes |
| R24 R37 | 2 | RES SMD 1K OHM 1% 1/8W 0805 | 1K | | 0805 | Vishay | CRCW08051K00FK | Yes | Yes |
| R25 R33 R49 R50 | 4 | RES SMD 2.74K OHM 1% 1/4W 1206 | 2.74K | | 1206 | Vishay | CRCW12062K74FK | Yes | Yes |
| R26 | 1 | RES SMD 10.2K OHM 1% 1/10W 0603 | 10.2K | | 0603 | Vishay | CRCW060310K2FK | Yes | Yes |
| R28 | 1 | RES SMD 68.1K OHM 1% 1/8W 0805 | 68.1K | | 0805 | Vishay | CRCW080568K1FK | Yes | Yes |
| R29 | 1 | RES SMD 100 OHM 1% 1/10W 0603 | 100 | | 0603 | Vishay | CRCW0603100RFK | Yes | Yes |
| R30 | 1 | RES SMD 13K OHM 1% 1/10W 0603 | 13K | | 0603 | Vishay | CRCW060313K0FK | Yes | Yes |
| R31 | 1 | RES SMD 10.5K OHM 1% 1/10W 0603 | 10.5K | | 0603 | Vishay | CRCW060310K5FK | Yes | Yes |
| R34 | 1 | RES SMD 68.1K OHM 1% 1/10W 0603 | 68.1K | | 0603 | Vishay | CRCW060368K1FK | Yes | Yes |
| R36 | 1 | RES SMD 88.7K OHM 1% 1/10W 0603 | 88.7K | | 0603 | Vishay | CRCW060388K7FK | Yes | Yes |
| R38 | 1 | RES SMD 1.5K OHM 1% 1/10W 0603 | 1.5K | | 0603 | Vishay | CRCW06031K50FK | Yes | Yes |
| R42 R48 | 2 | RES SMD 12.4K OHM 1% 1/10W 0603 | 12.4K | | 0603 | Vishay | CRCW060312K4FK | Yes | Yes |
| R43 | 1 | RES SMD 20.5K OHM 1% 1/10W 0603 | 20.5K | | 0603 | Vishay | CRCW060320K5FK | Yes | Yes |
| R44 | 1 | RES SMD 332K OHM 1% 1/10W 0603 | 332K | | 0603 | Vishay | CRCW0603332KFK | Yes | Yes |
| R46 | 1 | RES SMD 37.4K OHM 1% 1/10W 0603 | 37.4K | | 0603 | Vishay | CRCW060337K4FK | Yes | Yes |
| R47 | 1 | RES SMD 2.21K OHM 1% 1/10W 0603 | 2.21K | | 0603 | Vishay | CRCW06032K21FK | Yes | Yes |

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|---|----|---|--------------|------------|------------------|------------------|-----|-----|
| R51 | 1 | RES SMD 4.75K OHM 1% 1/8W 0805 | 4.75K | 0805 | Vishay | CRCW08054K75FK | Yes | Yes |
| R54 | 1 | RES SMD 30.1K OHM 1% 1/10W 0603 | 30.1K | 0603 | Vishay | CRCW060330K1FK | Yes | Yes |
| R55 | 1 | RES SMD 365K OHM 1% 1/10W 0603 | 365K | 0603 | Vishay | CRCW0603365KFK | Yes | Yes |
| R57 R58 R59 | 3 | Generic 1206 SMD Resistor | 0.15 | 1206 | Yageo | RL1206FR-7W0R15L | Yes | Yes |
| R62 | 1 | RES SMD 10M OHM 1% 1/10W 0603 | 10M | 0603 | Vishay | CRCW060310M0FK | Yes | Yes |
| R64 | 1 | RES SMD 1K OHM 1% 1/4W 1206 | 1K | 1206 | Vishay | CRCW12061K00FK | Yes | Yes |
| R65 | 1 | RES SMD 2.21 OHM 1% 1/10W 0603 | 2.21 | 0603 | Vishay | CRCW06032R21FK | Yes | Yes |
| R67 | 1 | RES SMD 34K OHM 1% 1/16W 0402 | 34K | 0402 | Vishay | CRCW040234K0FK | Yes | Yes |
| R69 | 1 | RES SMD 100K OHM 1% 1/16W 0402 | 100K | 0402 | Vishay | CRCW0402100KFK | Yes | Yes |
| R70 | 1 | RES SMD 60.4K OHM 1% 1/10W 0603 | 60.4K | 0603 | Vishay | CRCW060360K4FK | Yes | Yes |
| R71 | 1 | Generic 2512 SMD Resistor | 20 | 2512 | TE Connectivity | 352120RFT | Yes | Yes |
| R72 | 1 | RES SMD 45.3K OHM 1% 1/10W 0603 | 45.3K | 0603 | Vishay | CRCW060345K3FK | Yes | Yes |
| R73 | 1 | RES SMD 27.4K OHM 1% 1/10W 0603 | 27.4K | 0603 | Vishay | CRCW060327K4FK | Yes | Yes |
| R74 | 1 | RES SMD 4.64K OHM 1% 1/10W 0603 | 4.64K | 0603 | Vishay | CRCW06034K64FK | Yes | Yes |
| R75 | 1 | RES SMD 75K OHM 1% 1/10W 0603 | 75K | 0603 | Vishay | CRCW060375K0FK | Yes | Yes |
| R76 | 1 | RES SMD 150K OHM 1% 1/10W 0603 | 150K | 0603 | Vishay | CRCW0603150KFK | Yes | Yes |
| R77 | 1 | RES SMD 10.7K OHM 1% 1/10W 0603 | 10.7K | 0603 | Vishay | CRCW060310K7FK | Yes | Yes |
| R78 R79 | 2 | RES SMD 2.26M OHM 1% 1/4W 1206 | 2.26M | 1206 | Vishay | CRCW12062M26FK | Yes | Yes |
| R80 | 1 | RES SMD 2.32M OHM 1% 1/4W 1206 | 2.32M | 1206 | Vishay | CRCW12062M32FK | Yes | Yes |
| R81 | 1 | RES SMD 1M OHM 1% 1/10W 0603 | 1M | 0603 | Vishay | CRCW06031M00FK | Yes | Yes |
| RT1 RT2 | 2 | Generic 0603 NTC Thermistor | 220k | 0603 | Murata | NCP18WM224E03RB | Yes | Yes |
| RV1 | 1 | 10mm Metal Oxide Varistor | VARISTOR | 10mm | Wurth | 820412711 | Yes | Yes |
| SW1 | 1 | MINI SLIDE SWITCH | 450301014042 | SLIDE1 THT | Würth Elektronik | 450301014042 | Yes | Yes |
| TP1 TP2 TP18 TP21 | 4 | 63mil Hole 100mil Pad | DNI | 63mil | | | Yes | Yes |
| TP3 TP4 TP5 TP6 TP7 TP8 TP9 TP10 TP11 TP12 TP13 TP14 TP15 TP16 TP17 TP19 TP20 TP22 TP23 | 19 | Passive Probe Tip Tektronix P5050 (Tan) Tip | TP | 0.75mm | | | Yes | Yes |
| U1 | 1 | Linear Voltage Regulator, LDO, Wide Input Range, 50 mA | NCP4640 | SOT89-5 | ON Semiconductor | NCP4640H033T1G | No | Yes |
| U2 U3 | 2 | Secondary Side Synchronous Rectification Driver for High Efficiency SMPS Topologies | NCP4305D | DFN8 4x4 | ON Semiconductor | NCP4305DMNTWG | No | Yes |
| U4 | 1 | Current mode Resonant Controller with Integrated High-Voltage Drivers | NCP1399AP | SOIC-16 | ON Semiconductor | NCP1399APDR2G | No | Yes |
| U5 | 1 | Programmable Precision Reference | NCP431 | SOT-23-3 | ON Semiconductor | NCP431ACSNT1G | No | Yes |
| U10 | 1 | High Voltage High Efficiency Power Factor Correction Controller | NCP1615C | SOIC-16 | ON Semiconductor | NCP1615C | No | Yes |
| U6 U7 | 2 | Single Channel, DC Sensing Input, Phototransistor Optocoupler In Stretched Body SOP 4-Pin | FODM1008 | SOP 4-Pin | ON Semiconductor | FODM1008 | No | Yes |
| U8 | 1 | Operational Amplifier, Low Voltage, Dual | LM393 | SOIC-8 | ON Semiconductor | LM393D | No | Yes |
| U9 | 1 | 512Kb I2C CMOS Serial EEPROM | CAT24C512 | UDFN-8 | ON Semiconductor | CAT24C512HU5IGT3 | No | Yes |

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| C1 C4 C17 C20 C35 C47 C49 C95 C97 C102 C112 C113 C116 C131 C132 C137 C146 C148 C151 | 19 | CAP CER 1UF 16V X5R 0402 | 1uF | 0402 | Murata | GRM155Z71A105KE01 | Yes | Yes |
| C2 C9 C21 C25 C39 C53 | 6 | Nippon SMT Bulk Cap, 6.3mm-10mm Dia | 100uF | Bulk SMT | Panasonic | EEHZA1H101P | Yes | Yes |
| C3 C19 C34 C48 | 4 | Generic 0805 SMD Capacitor | 1uF | 0805 | Murata | GRM219R7YA105KA12 | Yes | Yes |
| C5 C6 C7 C10 C11 C13 C14 C15 C16 C18 C22 C23 C27 C28 C29 C30 C31 C32 C36 C37 C40 C42 C43 C44 C45 C46 C50 C51 C54 C56 C57 C58 C59 C60 | 34 | Generic 0603-1210 SMD Capacitor | 10uF | 1210 | Murata | GRM32ER71H106MA12 | Yes | Yes |

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|--|----|---|--------------------|--|---------------------------|------------------|--------------------|-----|-----|
| C8 C24 C38 C52 C85 C91 C108 C120 C126 C143 | 10 | Generic 0201 SMD Capacitor | 1nF | | 0201 | Murata | GRM033R71H102KA12 | Yes | Yes |
| C12 C26 C41 C55 | 4 | Monolithic Ceramic SMD Capacitor | 10uF | | 1210 | MuRata | GRM32ER71H106MA12 | Yes | Yes |
| C33 | 1 | CAP CER 1UF 16V X5R 0402 | 1uF | | 0402 | Murata | GRM155Z71A105KE01 | Yes | Yes |
| C61 C62 C63 C64 C65 C66 C67 C71 | 8 | CAP CER 470nF 6.3V X7R 0201 | 470nF | | 0201 | Yageo | CC0201KRX5R5BB474 | Yes | Yes |
| C68 C69 C70 | 3 | Generic 0603 SMD Capacitor | 10uF | | 0603 | Murata | GRM188D70J106MA73 | Yes | Yes |
| C72 | 1 | Generic 0201 SMD Capacitor | 0.1uF | | 0201 | Murata | GRM033C81E104KE14 | Yes | Yes |
| C73 | 1 | Generic 0603-1206 SMD Capacitor | 0.22uF | | 0603-1206 | Murata | GRM31C5C1H224GE02 | Yes | Yes |
| C74 C79 | 2 | CAP CER 4.7uF 50V X7R 1206 | 4.7uF | | 0603-1206 | Murata | GRM31CR71H475KA12 | Yes | Yes |
| C75 C77 C170 C171 | 4 | CAP CER 1UF 16V X5R 0402 | 1uF | | 0402 | Murata | GRM155R61C105KA12 | Yes | Yes |
| C76 | 1 | Generic 0201 SMD Capacitor | 0.1uF | | 0201 | Murata | GRM033R6YA104KE14 | Yes | Yes |
| C78 | 1 | Generic 0402 SMD Capacitor | 100nF | | 0402 | Murata | GRM155R60J104MA01 | Yes | Yes |
| C80 | 1 | CAP CER 10UF 25V X5R 0603 | 10uF | | 0603 | Murata | GRM188R61E106MA73 | Yes | Yes |
| C81 | 1 | Generic 0201 SMD Capacitor | 330pF | | 0201 | Murata | GRM033R71H331KA12 | Yes | Yes |
| C82 | 1 | Generic 0402 SMD Capacitor | DNP | | 0402 | | | Yes | Yes |
| C83 | 1 | Generic 0402 SMD Capacitor | DNP | | 0402 | | | Yes | Yes |
| C84 | 1 | Generic 0603 SMD Capacitor | DNP | | 0603 | | | Yes | Yes |
| C86 C88 C103 C105 C121 C123 C138 C140 | 8 | Generic 0201 SMD Capacitor | 390pF | | 0201 | Murata | GRM0335C1E391JA01 | Yes | Yes |
| C87 C122 | 2 | Generic 0402 SMD Capacitor | 3300pF | | 0402 | Murata | GRM1555C1H332GE01 | Yes | Yes |
| C89 C106 C124 C142 | 4 | Generic 0402 SMD Capacitor | 1uF | | 0402 | Murata | GRM155R70J105KA12 | Yes | Yes |
| C90 C107 C125 C141 | 4 | Generic 0201 SMD Capacitor | 10pF | | 0201 | Murata | GRM0335C1H100GA01 | Yes | Yes |
| C92 C109 C127 C144 | 4 | Generic 0402 SMD Capacitor | 1uF | | 0402 | Murata | GRM155R61H105KE05 | Yes | Yes |
| C93 C110 C128 C145 | 4 | Generic 0805 SMD Capacitor | 10uF | | 0805 | Murata | GRM188D70J106MA73 | Yes | Yes |
| C94 C96 C111 C115 C129 C130 C147 C150 | 8 | Generic 0603 SMD Capacitor | 10nF | | 0603 | Murata | GRM1885C1H103JA01 | Yes | Yes |
| C98 C114 C133 C149 | 4 | Generic 0805 SMD Capacitor | 1uF | | 0805 | Murata | GRM21BC72A105KE01 | Yes | Yes |
| C99 C117 C134 C152 | 4 | Generic 0603 SMD Capacitor | 0.1uF | | 0603 | Yageo | CC0603KRXR7R9BB104 | Yes | Yes |
| C100 C101 C118 C119 C135 C136 C154 C155 | 8 | Generic 0805 SMD Capacitor | 4.7uF | | 0805 | Murata | GRM21BZ71H475KE15 | Yes | Yes |
| C104 C139 | 2 | Generic 0402 SMD Capacitor | 3300pF | | 0402 | Murata | GRM1555C1H332GE01 | Yes | Yes |
| C153 | 1 | Generic 0402 SMD Capacitor | 1uF | | 0402 | Murata | GRM155R70J105KA12 | Yes | Yes |
| C156 C157 C159 C161 C162 C163 | 6 | Generic 0402 SMD Capacitor | 4.7uF | | 0402 | Murata | GRM155R60J475ME47 | Yes | Yes |
| C158 C160 C168 C169 | 4 | Generic 0201 SMD Capacitor | 1uF | | 0201 | Murata | GRM033R61A105ME15 | Yes | Yes |
| C164 C165 | 2 | Generic 0201 SMD Capacitor | 12.5pF | | 0201 | Murata | GRM0335C1E120JA01 | Yes | Yes |
| C166 C167 | 2 | Generic 0201 SMD Capacitor | 7.5pF | | 0201 | Murata | GRM0335C1H7R5CA01 | Yes | Yes |
| D1 D3 D5 D7 D16 D17 D18 D19 | 8 | ESD Protection Diode Ultra Low Capacitance | SZESD7241 | | X2DFN2 | ON Semiconductor | SZESD7241N2 | No | Yes |
| D2 D4 D6 D8 | 4 | WL-SMSW SMD Green chip LED side view monochrome waterclear | 155124GS73200 | | 1204 | Würth Elektronik | 155124GS73200 | Yes | Yes |
| D9 | 1 | Yellow LED | 150060YS75000 | | 0603 | Würth Elektronik | 150060YS75000 | Yes | Yes |
| D10 | 1 | Blue - WL-SMSW SMD chip LED side view monochrome waterclear | 155124BS73200 | | 1204 | Würth Elektronik | 155124BS73200 | Yes | Yes |
| D11 | 1 | Green LED | 150060GS75000 | | 0603 | Würth Elektronik | 150060GS75000 | Yes | Yes |
| D12 | 1 | Red LED | 150060RS75000 | | 0603 | Würth Elektronik | 150060RS75000 | Yes | Yes |
| D13 | 1 | Schottky Barrier Diode | NSR05F40NX | | DSN2 0402 | ON Semiconductor | NSR05F40NXT5G | No | Yes |
| D14 | 1 | Schottky Power Diode 5A 60V | MBR560MFS | | SO8-FL | ON Semiconductor | MBR560MFST1G | No | Yes |
| D15 | 1 | Blue LED | 150060BS75000 | | 0603 | Würth Elektronik | 150060BS75000 | Yes | Yes |
| D20 | 1 | WL-SMSW SMD Yellow chip LED side view monochrome waterclear | 155124YS73200 | | 1204 | Würth Elektronik | 155124YS73200 | Yes | Yes |
| D21 | 1 | Zener Voltage Regulator 300mW | MM3Z20VT1G | | SOD-323 | ON Semiconductor | MM3Z20VT1G | No | Yes |
| D22 | 1 | Auto ESD Protection Diodes | SESD7L | | SOT-723 | ON Semiconductor | SESD7L5.0 | No | Yes |
| D23 D24 | 2 | Schottky Barrier Diode, 2.0 A, 20 V | NSR20F20NX | | DSN2 0603 | ON Semiconductor | NSR20F20NX | No | Yes |
| FB1 FB2 FB3 FB4 | 4 | Ferrite Bead 50 Ohm 12A | 50 Ohm | | 1206 | Murata | BLM31SN500SN1 | Yes | Yes |
| FB5 | 1 | Ferrite bead/Impedance type filter | 220@100M | | 0805 | Murata | BLM21AG221SN1 | Yes | Yes |
| J1 J8 J10 J13 J16 J18 | 6 | Standard 1x2pin 100mil Pitch Header | 613 002 111 21 | | 1x2pin 100mil | Würth Elektronik | 613 002 111 21 | Yes | Yes |
| J2 J3 J19 J20 | 4 | PLASTIC SPACER STUD METRIC THREAD M3 30MM | 970300365 | | M3 30MM | Würth | 970300365 | Yes | Yes |
| J4 J7 J9 J12 | 4 | USB 3.1 Type C Receptacle - Horizontal THT/SMT | 632 723 300 011 | | USB3.1 C PD | Würth | 632 723 300 011 | Yes | Yes |
| J5 J6 | 2 | Rectangle power pad 200x300 mils | DNI | | 200x300mil | | | Yes | Yes |
| J11 | 1 | CONN HEADER DUAL 20 POS RA 2.54 FEMALE | 613020243121 | | 2x10pin 100mil RA | Würth Elektronik | 613020243121 | Yes | Yes |
| J14 | 1 | Spyglass Assisted (SGA) 16pin Header Module Side | 61301621021 | | SGAM0 | Würth Elektronik | 61301621021 | Yes | Yes |
| J15 | 1 | Standard Arm Cortex Debug Connector | FTSH-105-01-F-DV-K | | 2x5pin 50mil Cortex Debug | Samtec | FTSH-105-01-F-DV-K | Yes | Yes |

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|---|----|---|-------------|--|---------------|-----------------------|--------------------|-----|-----|
| J17 | 1 | Mini USB1/2 Type-B Connector | 65100516121 | | Mini USB1/2 B | Würth Elektronik | 65100516121 | Yes | Yes |
| J21 J22 J23 J24 | 4 | PLASTIC SPACER STUD METRIC THREAD M3 10MM | 971100365 | | M3 10MM | Würth | 971100365 | Yes | Yes |
| JP1 | 1 | Surface Mount High Current Jumper Chip Resistor | DNP | | 0402 | Stackpole Electronics | HJCJ0402ZT0R00 | Yes | Yes |
| L1 L3 L5 L6 | 4 | Panasonic Auto Shielded 17A 6.6mohm | 3.3uH | | 10.9x10mm | Panasonic | ETQP6M3R3YLC | Yes | Yes |
| L2 L4 | 2 | Generic 7x7mm Inductor | 160nH | | 7x7mm | Coilcraft | XAL5030-161ME | Yes | Yes |
| L7 | 1 | WE-MAPI SMD Shielded Power Inductor | 4.7uH | | 4.1x4.1mm | Würth Elektronik | 74438357047 | Yes | Yes |
| Q1 Q2 Q4 Q5 Q7 Q8 Q10 Q11 | 8 | Generic u8-FL N-Channel Power MOSFET | NTTFS5C453 | | u8-FL | ON Semiconductor | NTTFS5C453 | No | Yes |
| Q3 Q6 Q9 Q12 Q17 Q18 | 6 | Automotive Small Signal MOSFET 60V 340mA 2.5 Ohm Single N-Channel SOT-323 | 2V7002W | | SOT-323 | ON Semiconductor | 2V7002W | No | Yes |
| Q13 Q14 Q15 Q16 Q19 | 5 | Small Signal MOSFET 60V 340mA 2.5 Ohm Single N-Channel SOT-323 | 2N7002W | | SOT-323 | ON Semiconductor | 2N7002W | No | Yes |
| R1 R12 R13 R23 R34 R35 | 6 | RES SMD 10.2K OHM 1% 1/16W 0402 | DNP | | 0402 | Vishay | | Yes | Yes |
| R2 R3 R10 R14 R21 R24 R25 R32 R36 R43 R61 R63 R70 R85 R106 R129 R150 R180 R183 R184 | 20 | RES SMD 10K OHM 1% 1/16W 0402 | 10K | | 0402 | Vishay | CRCW040210K0FK | Yes | Yes |
| R4 R6 R7 R15 R17 R18 R26 R28 R29 R37 R39 R40 | 12 | Generic 2512 SMD Resistor | 0.003 | | 2512 | Panasonic | ERJ-M1WSF3M0U | Yes | Yes |
| R5 R16 R27 R38 R86 R87 R107 R108 R109 R130 R131 R151 R152 R153 | 14 | RES SMD 0 OHM 1% 1/16W 0402 | 0 | | 0402 | Vishay | CRCW04020000Z0 | Yes | Yes |
| R8 R19 R30 R41 | 4 | Generic 0805 SMD Resistor | 1 | | 0805 | Vishay | CRCW08051R00JNEAHP | Yes | Yes |
| R9 R20 R31 R42 | 4 | RES SMD 4.99K OHM 1% 1/16W 0402 | 4.99K | | 0402 | Vishay | CRCW04024K99FK | Yes | Yes |
| R11 R22 R33 R44 | 4 | RES SMD 8.87K OHM 1% 1/16W 0402 | 8.87K | | 0402 | Vishay | CRCW04028K87FK | Yes | Yes |
| R45 R46 R47 R49 R50 R51 R53 R56 | 8 | RES SMD 1K OHM 1% 1/16W 0402 | 1K | | 0402 | Vishay | CRCW04021K00FK | Yes | Yes |
| R48 | 1 | Generic 0402 SMD Resistor | 1.43k | | 0402 | Yageo | RC0402FR-071K43L | Yes | Yes |
| R52 R54 R55 R57 R58 R59 R60 R73 R74 R95 R96 R117 R118 R139 R140 R177 | 16 | RES SMD 49.9K OHM 1% 1/16W 0402 | 49.9K | | 0402 | Vishay | CRCW040249K9FK | Yes | Yes |
| R62 R186 | 2 | RES SMD 2.74K OHM 1% 1/16W 0402 | 2.74K | | 0402 | Vishay | CRCW04022K74FK | Yes | Yes |
| R64 | 1 | RES SMD 165 OHM 1% 1/16W 0402 | 165 | | 0402 | Vishay | CRCW0402165RFKED | Yes | Yes |
| R65 | 1 | RES SMD 15K OHM 1% 1/16W 0402 | 15K | | 0402 | Vishay | CRCW040215K0FK | Yes | Yes |
| R66 R68 R83 R104 R126 R148 | 6 | RES SMD 100 OHM 1% 1/16W 0402 | 100 | | 0402 | Vishay | CRCW0402100RFK | Yes | Yes |
| R67 | 1 | RES SMD 31.6 OHM 1% 1/16W 0402 | 31.6 | | 0402 | Vishay | CRCW040231R6FKED | Yes | Yes |
| R69 | 1 | RES SMD 2.32K OHM 1% 1/16W 0402 | 2.32K | | 0402 | Vishay | CRCW04022K32FK | Yes | Yes |
| R71 | 1 | RES SMD 9.76K OHM 1% 1/16W 0402 | 9.76K | | 0402 | Vishay | CRCW04029K76FK | Yes | Yes |
| R72 | 1 | Generic 0402 SMD Resistor | 100 | | 0402 | Yageo | RC0402FR-07100RL | Yes | Yes |
| R75 R119 | 2 | Generic 0402 SMD Resistor | 15.4k | | 0402 | Vishay | CRCW040215K4FKED | Yes | Yes |
| R76 R97 R120 R141 | 4 | Generic 0402 SMD Resistor | 14k | | 0402 | Vishay | CRCW040214K0FKED | Yes | Yes |
| R77 R98 R121 R142 | 4 | Generic 0402 SMD Resistor | 22.6k | | 0402 | Vishay | CRCW040222K6FKED | Yes | Yes |
| R78 R99 R122 R143 | 4 | Generic 0402 SMD Resistor | 10k | | 0402 | Vishay | CRCW040210K0FKED | Yes | Yes |
| R79 R100 R123 R144 | 4 | Generic 0402 SMD Resistor | 90.9k | | 0402 | Vishay | CRCW040290K9FKED | Yes | Yes |
| R80 R101 R124 R145 | 4 | RES SMD 1 OHM 1% 1/10W 0603 | 1 | | 0603 | Vishay | CRCW06031R00FK | Yes | Yes |
| R81 R102 R125 R146 | 4 | Generic 0402 SMD Resistor | 20k | | 0402 | Vishay | CRCW040220K0FKED | Yes | Yes |
| R82 R103 R127 R147 | 4 | Generic 0402 SMD Resistor | 20.5k | | 0402 | Vishay | CRCW040220K5FKED | Yes | Yes |
| R84 R88 R89 R91 R105 R110 R111 R112 R128 R132 R133 R135 R149 R154 R155 R156 | 16 | Generic 0402 SMD Resistor | 10 | | 0402 | Vishay | CRCW040210R0JNTD | Yes | Yes |
| R90 R92 R94 R113 R114 R116 R134 R136 R138 R157 R158 R161 | 12 | Generic 0402 SMD Resistor | 0 | | 0402 | Vishay | CRCW04020000Z0ED | Yes | Yes |
| R93 R115 R137 R159 | 4 | Generic 0402 SMD Resistor | 1 | | 0402 | Vishay | CRCW04021R00JNEDIF | Yes | Yes |
| R160 | 1 | RES SMD 665 OHM 1% 1/16W 0402 | 665 | | 0402 | Vishay | CRCW0402665RFK | Yes | Yes |
| R162 | 1 | RES SMD 100K OHM 1% 1/16W 0402 | 100K | | 0402 | Vishay | CRCW0402100KFK | Yes | Yes |
| R163 R165 R167 R169 R171 | 5 | RES SMD 30.1K OHM 1% 1/16W 0402 | 30.1K | | 0402 | Vishay | CRCW040230K1FK | Yes | Yes |
| R164 R166 R168 R172 | 4 | RES SMD 3.01K OHM 1% 1/16W 0402 | 3.01K | | 0402 | Vishay | CRCW04023K01FK | Yes | Yes |
| R170 | 1 | RES SMD 301K OHM 1% 1/16W 0402 | 301K | | 0402 | Vishay | CRCW0402301KFK | Yes | Yes |

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|--|----|---|-----------------|--|----------------------------|------------------|--|-----|-----|
| R173 | 1 | RES SMD 6.04K OHM 1% 1/16W 0402 | 6.04K | | 0402 | Vishay | CRCW04026K04FK | Yes | Yes |
| R174 R176 R179 R182 | 4 | RES SMD 1K OHM 1% 1/10W 0603 | 1K | | 0603 | Vishay | CRCW06031K00FK | Yes | Yes |
| R175 | 1 | RES SMD 10.5K OHM 1% 1/16W 0402 | 10.5K | | 0402 | Vishay | CRCW040210K5FK | Yes | Yes |
| R178 | 1 | Generic 0402 SMD Resistor | 21.5k | | 0402 | Yageo | RC0402FR-0721K5L | Yes | Yes |
| R181 | 1 | Generic 0402 SMD Resistor | 12.1k | | 0402 | Yageo | RC0402FR-0712K1L | Yes | Yes |
| R185 | 1 | Generic 0402 SMD Resistor | 10k | | 0402 | Yageo | RC0402FR-0710K1L | Yes | Yes |
| SW1 | 1 | SWITCH TACTILE SPST-NO 0.05A 12V | 434153017835 | | MOM1 SMD | Würth Elektronik | 434153017835 | Yes | Yes |
| TP1 TP4 TP6 TP8 TP10 TP26 TP35 | 7 | 63mil Hole 100mil Pad | TP | | 63mil | | | Yes | Yes |
| TP2 TP3 TP5 TP7 TP9 TP11 TP12 TP13 TP15 TP16 TP17 TP18 TP19 TP21 TP22 TP23 TP29 TP33 TP34 TP36 | 20 | Passive Probe Tip Tektronix P5050 (Tan) Tip | TP | | 0.75mm | | | Yes | Yes |
| TP14 TP24 TP27 TP37 TP39 TP40 | 6 | Surface Mount 1mm Circle Test Point | TP | | 1mm Circle | DNI | DNI | Yes | Yes |
| TP20 TP25 TP32 TP38 | 4 | Passive Probe Tip Tektronix P5050 (Tan) Tip | DNI | | 0.75mm | | | Yes | Yes |
| TP28 TP30 TP31 | 3 | Surface Mount 1mm Circle Test Point | DNI | | 1mm Circle | | | Yes | Yes |
| U1 U4 U7 U10 | 4 | Current-Shunt Monitor, Voltage Output, Bi-Directional Zero-Drift, Gain = 100V/V | NCS213R | | SC-70-6 | ON Semiconductor | NCS213RSQT2G | No | Yes |
| U2 U5 U8 U11 | 4 | Digital Output Temperature Sensor with On-board SPD EEPROM | N34TS04 | | TDFN-8 | ON Semiconductor | N34TS04MT | No | Yes |
| U3 U6 U9 U12 | 4 | 28V/5A Rated Current Limit Switch with OVP and TRCP | FPF2895C | | 24-Ball, 0.4mm Pitch WLCSP | ON Semiconductor | FPF2895CUCX | No | Yes |
| U13 U34 | 2 | Full-Function Load Switch with Adjustable Current Limit | FPF2194 | | WLCSP | ON Semiconductor | FPF2194 | No | Yes |
| U14 | 1 | 2 Amp, 2 MHz Automotive Buck Switching Regulator | NCV890200 | | SOIC-8 | ON Semiconductor | NCV890200 | No | Yes |
| U15 U19 U23 U27 | 4 | Type-C CC with High Speed Digital (HSD) Port Protection Switch | FUSB252 | | UMLP | ON Semiconductor | FUSB252UMX | No | Yes |
| U16 U20 U24 U28 | 4 | USB Type-CV Port Controller with USB-PD | FUSB307B | | QFN16 3x3 | ON Semiconductor | FUSB307BMPX | No | Yes |
| U17 U25 | 2 | 4-Switch Buck-Boost Controller | NCP81239 | | QFN32 5x5 | ON Semiconductor | NCP81239MNTXG | No | Yes |
| U18 U22 U26 U30 | 4 | Current-Shunt Monitor, Voltage Output, Bi-Directional Zero-Drift, Gain = 50V/V | NCS213R | | SC-70-6 | ON Semiconductor | NCS213RSQT2G | No | Yes |
| U21 U29 | 2 | USB-PD Buck Controller | NCP81231 | | QFN32 5x5 | ON Semiconductor | NCP81231MNTXG | No | Yes |
| U31 | 1 | 8-Bit, 8-Channel ADC with I2C Serial Interface | NCD9830 | | TSSOP-16 | ON Semiconductor | NCD9830DBR | No | Yes |
| U32 | 1 | EFM32 Giant Gecko 32-bit Microcontroller | EFM32GG380F1024 | | QFP100 14x14 | Silicon Labs | EFM32GG380F1024G-E-QFP100R | Yes | Yes |
| U33 | 1 | USB to BASIC UART IC | FT230X | | QFN16 4x4 | FTDI | FT230XQ-R | Yes | Yes |
| U35 | 1 | 3.3V Voltage Regulator, LDO, Ultra Low Noise, Ultra Low Iq, 500 mA | NCP705 | | WDFN6 | ON Semiconductor | NCP705MT33TCG | No | Yes |
| Y1 | 1 | Crystals 32.768 kHz 12.5 pF +/-20 PPM -40/+85C | 32.768 kHz | | 2 pin w/ shell | Micro Crystal | MS3V-T1R-32.768kHz-12.5pF-20PPM-TA-QC-Au | Yes | Yes |
| Y2 | 1 | CRYSTAL 48.0000MHZ 8PF SMD | 48MHZ | | 5x3.2mm | NDK | NX5032GA-48.000000MHZ-LN-CD-1 | Yes | Yes |