

# Bill of Materials

TI DESIGNS

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 Variant: SAT0027 REV E4  
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## IPNC Reference Design: Power Module

| Designator                                       | Quantity | Part Number           | Description   | Package Reference         | Manufacturer          | Value        | Alternate Part Number | Alternate Manufacturer |
|--|----------|-----------------------|---|---------------------------|-----------------------|--------------|-----------------------|------------------------|
| C1   | 1        | EEE-FC1V100R          | CAP, AL, 10uF, 35V, +/-20%, 1.8 ohm, SMD                        | SMT Radial C              | Panasonic             | 10uF         |                       |                        |
| C2, C11, C31                                     | 3        | GRM155R61A222KA01D    | CAP, CERM, 2200pF, 10V, +/-10%, X5R, 0402                       | 0402                      | MuRata                | 2200pF       |                       |                        |
| C3   | 1        | GRM31CR61E106KA12L    | CAP, CERM, 10uF, 25V, +/-10%, X5R, 1206                         | 1206                      | MuRata                | 10uF         |                       |                        |
| C4   | 1        | C0603C104K5RACTU      | CAP, CERM, 0.1uF, 50V, +/-10%, X7R, 0603                        | 0603                      | Kemet                 | 0.1uF        |                       |                        |
| C5   | 1        | C1005X5R0J104K        | CAP, CERM, 0.1uF, 6.3V, +/-10%, X5R, 0402                       | 0402                      | TDK                   | 0.1uF        |                       |                        |
| C6   | 1        | GRM155R61A474KE15D    | CAP, CERM, 0.47uF, 10V, +/-10%, X5R, 0402                       | 0402                      | MuRata                | 0.47uF       |                       |                        |
| C7   | 1        | C1005X7R1H472K        | CAP, CERM, 4700pF, 50V, +/-10%, X7R, 0402                       | 0402                      | TDK                   | 4700pF       |                       |                        |
| C8   | 1        | GRM1555C1H220JA01D    | CAP, CERM, 22pF, 50V, +/-5%, C0G/NP0, 0402                      | 0402                      | MuRata                | 22pF         |                       |                        |
| C9, C10, C45, C60, C61, C70, C71                 | 7        | LMK212BJ226MG-T       | CAP, CERM, 22uF, 10V, +/-20%, X5R, 0805                         | 0805                      | Taiyo Yuden           | 22uF         |                       |                        |
| C12  | 1        | GRM3195C2A102JA01D    | CAP, CERM, 1000pF, 100V, +/-5%, C0G/NP0, 1206                   | 1206                      | MuRata                | 1000pF       |                       |                        |
| C13  | 1        | EMVE101ADA220MHA0G    | CAP, AL, 22uF, 100V, +/-20%, SMD                                | HA0                       | Nippon Chemi-Con      | 22uF         |                       |                        |
| C14, C15   | 2        | C4532X7R2A225M        | CAP, CERM, 2.2uF, 100V, +/-20%, X7R, 1812                       | 1812                      | TDK                   | 2.2uF        |                       |                        |
| C16, C18   | 2        | 1206C104JAT2A         | CAP, CERM, 0.1uF, 100V, +/-5%, X7R, 1206                        | 1206                      | AVX                   | 0.1uF        |                       |                        |
| C17  | 1        | 06033C104JAT2A        | CAP, CERM, 0.1uF, 25V, +/-5%, X7R, 0603                         | 0603                      | AVX                   | 0.1uF        |                       |                        |
| C19  | 1        | GRM21BR71E224KA01L    | CAP, CERM, 0.22uF, 25V, +/-10%, X7R, 0805                       | 0805                      | MuRata                | 0.22uF       |                       |                        |
| C20  | 1        | EMVY250ADA100ME55G    | CAP, AL, 10uF, 25V, +/-20%, 1.8 ohm, SMD                        | E55                       | Nippon Chemi-Con      | 10uF         |                       |                        |
| C21  | 1        | GRM155R61A473KA01D    | CAP, CERM, 0.047uF, 10V, +/-10%, X5R, 0402                      | 0402                      | MuRata                | 0.047uF      |                       |                        |
| C22, C23, C79                                    | 2        | C4532X7R3D222K        | CAP, CERM, 2200pF, 2000V, +/-10%, X7R, 1812                     | 1812                      | TDK                   | 2200pF       |                       |                        |
| C24  | 1        | 06031C681JAT2A        | CAP, CERM, 680pF, 100V, +/-5%, X7R, 0603                        | 0603                      | AVX                   | 680pF        |                       |                        |
| C25, C26   | 2        | C4532X5R1A476M        | CAP, CERM, 47uF, 10V, +/-20%, X5R, 1812                         | 1812                      | TDK                   | 47uF         |                       |                        |
| C27  | 1        | EEF-UD0J101R          | CAP, AL, 100uF, 6.3V, +/-20%, 0.015 ohm, SMD                    | UD                        | Panasonic             | 100uF        |                       |                        |
| C28  | 1        | 0805YC474JAT2A        | CAP, CERM, 0.47uF, 16V, +/-5%, X7R, 0805                        | 0805                      | AVX                   | 0.47uF       |                       |                        |
| C29  | 1        | 06033C101KAT2A        | CAP, CERM, 100pF, 25V, +/-10%, X7R, 0603                        | 0603                      | AVX                   | 100pF        |                       |                        |
| C30  | 1        | C1608C0G1E682J        | CAP, CERM, 6800pF, 25V, +/-5%, C0G/NP0, 0603                    | 0603                      | TDK                   | 6800pF       |                       |                        |
| C32, C33, C38, C41, C46, C48, C54, C62, C64, C72 | 10       | C1005X5R1A104K        | CAP, CERM, 0.1uF, 10V, +/-10%, X5R, 0402                        | 0402                      | TDK                   | 0.1uF        |                       |                        |
| C39, C49, C51, C52, C53, C55, C65                | 7        | LMK212BJ106KD-T       | CAP, CERM, 10uF, 10V, +/-10%, X5R, 0805                         | 0805                      | Taiyo Yuden           | 10uF         |                       |                        |
| C40  | 1        | C1005C0G1E821J        | CAP, CERM, 820pF, 25V, +/-5%, C0G/NP0, 0402                     | 0402                      | TDK                   | 820pF        |                       |                        |
| C42, C58, C68                                    | 3        | C1005X7R1C103K        | CAP, CERM, 0.01uF, 16V, +/-10%, X7R, 0402                       | 0402                      | TDK                   | 0.01uF       |                       |                        |
| C43, C59, C69                                    | 3        | C0603C104M4RACTU      | CAP, CERM, 0.1uF, 16V, +/-20%, X7R, 0603                        | 0603                      | Kemet                 | 0.1uF        |                       |                        |
| C44  | 1        | JMK212BJ226MD-T       | CAP, CERM, 22uF, 6.3V, +/-20%, X5R, 0805                        | 0805                      | Taiyo Yuden           | 22uF         |                       |                        |
| C47, C86   | 1        | C1005C0G1E102J        | CAP, CERM, 1000pF, 25V, +/-5%, C0G/NP0, 0402                    | 0402                      | TDK                   | 1000pF       |                       |                        |
| C50  | 1        | GRM1555C1H100JA01D    | CAP, CERM, 10pF, 50V, +/-5%, C0G/NP0, 0402                      | 0402                      | MuRata                | 10pF         |                       |                        |
| C56, C63, C66, C73                               | 4        | GRM155R61E102KA01D    | CAP, CERM, 1000pF, 25V, +/-10%, X5R, 0402                       | 0402                      | MuRata                | 1000pF       |                       |                        |
| C57, C67   | 2        | 06033D104KAT2A        | CAP, CERM, 0.1uF, 25V, +/-10%, X5R, 0603                        | 0603                      | AVX                   | 0.1uF        |                       |                        |
| C74, C75, C76, C77, C78, C80, C83, C91           | 6        | C1608X8R1E104K        | CAP, CERM, 0.1uF, 25V, +/-10%, X8R, 0603                        | 0603                      | TDK                   | 0.1uF        |                       |                        |
| C81, C82   | 2        | GRM155R60J225ME15D    | CAP, CERM, 2.2uF, 6.3V, +/-20%, X5R, 0402                       | 0402                      | MuRata                | 2.2uF        |                       |                        |
| C84, C85, C90                                    | 3        | GRM21BR60J226ME39L    | CAP, CERM, 22uF, 6.3V, +/-20%, X5R, 0805                        | 0805                      | MuRata                | 22uF         |                       |                        |
| C87, C88   | 2        | GRM31CR61A476KE15L    | CAP, CERM, 47uF, 10V, +/-10%, X5R, 1206                         | 1206                      | MuRata                | 47uF         |                       |                        |
| C89  | 1        | GRM188R60J106ME47D    | CAP, CERM, 10uF, 6.3V, +/-20%, X5R, 0603                        | 0603                      | MuRata                | 10uF         |                       |                        |
| C92  | 1        | C0603C105K8PACTU      | CAP, CERM, 1uF, 10V, +/-10%, X5R, 0603                          | 0603                      | Kemet                 | 1uF          |                       |                        |
| C93  | 0        | GRM1555C1H102JA01D    | CAP, CERM, 1000pF, 50V, +/-5%, C0G/NP0, 0402                    | 0402                      | MuRata                | 1000pF       |                       |                        |
| C94  | 1        | 08053D474KAT2A        | CAP, CERM, 0.47uF, 25V, +/-10%, X5R, 0805                       | 0805                      | AVX                   | 0.47uF       |                       |                        |
| C95  | 1        | GRM188R71E104KA01D    | CAP, CERM, 0.1uF, 25V, +/-10%, X7R, 0603                        | 0603                      | MuRata                | 0.1uF        |                       |                        |
| C96, C100, C101                                  | 3        | GRM155R61A105KE15D    | CAP, CERM, 1uF, 10V, +/-10%, X5R, 0402                          | 0402                      | MuRata                | 1uF          |                       |                        |
| C97, C98, C103, C104                             | 4        | GRM155R61C104KA88D    | CAP, CERM, 0.1uF, 16V, +/-10%, X5R, 0402                        | 0402                      | MuRata                | 0.1uF        |                       |                        |
| C99, C105, C106                                  | 3        | C1608X5R1A106M        | CAP, CERM, 10uF, 10V, +/-10%, C0G/NP0, 0603                     | 0603                      | TDK                   | 10uF         |                       |                        |
| C102   | 1        | GRM1555C1E470JA01D    | CAP, CERM, 47pF, 25V, +/-5%, C0G/NP0, 0402                      | 0402                      | MuRata                | 47pF         |                       |                        |
| D1   | 1        | SMAJ58A               | Diode, TVS, 58V, 400W, 4.3A, 5%, SMT                            |                           | Littelfuse            |              |                       |                        |
| D2   | 1        | MURS140-13-F          | Diode, Ultrafast, 400V, 1A, SMB                                 | SMB                       | Diodes Inc.           | 1.25V        |                       |                        |
| D3   | 1        | BAS16-7-F             | Diode, Ultrafast, 75V, 0.3A, SOT-23                             | SOT-23                    | Diodes Inc.           | 1.125V       |                       |                        |
| D4   | 1        | B540C-13-F            | Diode, Schottky, 40V, 5A, SMC                                   | SMC                       | Diodes Inc.           | 0.55V        |                       |                        |
| D5   | 1        | BAT54S-7-F            | Diode, Schottky, 30V, 0.2A, SOT-23                              | SOT-23                    | Diodes Inc.           | 0.65V        |                       |                        |
| D6   | 1        | TLV431ACDBZR          | IC VREF SHUNT PREC ADJ SOT-23-3                                 | TO-236-3, SC-59, SOT-23-3 | Texas Instruments     |              |                       |                        |
| D9   | 1        | 1SS35TE-17            | DIODE SWITCHING 80V 100MA SOD323                                | SC-90, SOD-323F           | Rohm Semiconductor    | 1.2V @ 100mA |                       |                        |
| DIPSW1   | 1        | BPA02SB               | Switch, SPST, 2Pos, Side Actuated, Dip-switch, SMT              |                           | C&K Components        |              |                       |                        |
| J1   | 1        | PJ-052D               | Connector, Barrel Power Jack, 1.3mm x 3.8mm, w/Power Switch, TH |                           | CUI Inc               |              |                       |                        |
| J2   | 1        | TB-F022C00            | OO 2.5MM 90 SERIES  |                           | OnnTek                |              |                       |                        |
| J3   | 1        | BM08B-SRSS-TB(LF)(SN) | Female Connector, 8 Pos, 1mm Pitch, Singel Row, SMT             |                           | JST Sales America Inc |              |                       |                        |
| J4   | 1        | FW-25-01-G-D-630-115  | .050" Flex Stack, Flexible Micro Board Stacker, Through-hole    |                           | Samtec                |              |                       |                        |
| J5   | 1        | ETB63070H200Z         | Edge Connector, 7 PIN   |                           | ECE                   |              |                       |                        |
| J6   | 1        | SJ-3523-SMT-TR        | CONN AUDIO JACK 3.5MM STEREO SMD                                |                           | CUI Inc               |              |                       |                        |

| Designator   | Quantity | Part Number              | Description   | Package Reference         | Manufacturer                     | Value   | Alternate Part Number | Alternate Manufacturer |
|--|----------|--------------------------|---|---------------------------|----------------------------------|---------|-----------------------|------------------------|
| J7   | 1        | BM04B-SRSS-TB(LF)(SN)(P) | Connector, 4Pos, 1.00mm Pitch, Shrouded, SMT                              |                           | JST Sales America Inc            |         |                       |                        |
| J8   | 1        | BM02B-SRSS-TB(LF)(SN)(P) | Connector, 2Pos, Female, Shrouded, 1mm Pitch, SMT                         |                           | JST Sales America Inc            |         |                       |                        |
| J9   | 1        | 0533980371               | Plug, SMT, Vertical, 1.25mm, 1x3  | 0533980371                | Molex                            | 1x3     |                       |                        |
| L1   | 1        | VLC6045T-4R7M            | Inductor, Shielded, Ferrite, 4.7uH, 3.8A, 0.027 ohm, SMD                  |                           | TDK                              | 4.7uH   |                       |                        |
| L2   | 1        | 744042100                | Inductor, Shielded Drum Core, Ferrite, 10uH, 1A, 0.12 ohm, SMD            | WE-TPC-M1                 | Würth Elektronik eiSos           | 10uH    |                       |                        |
| L3   | 1        | ELL-6RH1R0M              | Inductor, Shielded Drum Core, Ferrite, 1uH, 3A, 0.019 ohm, SMD            | ELL6RH                    | Panasonic                        | 1uH     |                       |                        |
| L6, L8, L9   | 3        | VLC6045T-6R8M            | Inductor, Shielded, Ferrite, 6.8uH, 3A, 0.041 ohm, SMD                    |                           | TDK                              | 6.8uH   |                       |                        |
| L7   | 1        | LPS3015-152MLB           | Inductor, Shielded Drum Core, Ferrite, 1.5uH, 1.7A, 0.1 ohm, SMD          | LPS3015                   | Coilcraft                        | 1.5uH   |                       |                        |
| L10, L11   | 2        | GLFR1608T220M-LR         | INDUCTOR 22UH 50MA 20% 0603   | 0603 (1608 Metric)        | TDK Corporation                  |         |                       |                        |
| L12, L13   | 2        | MP21608S601A             | FERRITE CHIP BEAD 600 OHM SMD   | 0603 (1608 Metric)        | TDK Corporation                  |         |                       |                        |
| L14  | 1        | GLFR2012T100M-LR         | INDUCTOR 10UH 100MA 20% 0805  | 0805 (2012 Metric)        | TDK Corporation                  |         |                       |                        |
| L15, L16, L17  | 3        | BLM18PG181SN1D           | FILTER CHIP 180 OHM 1500MA  | 0603 (1608 Metric)        | Murata Electronics North America |         |                       |                        |
| L18  | 1        | MSS5121-332MLB           | Inductor, Shielded Drum Core, Ferrite, 3.3uH, 2A, 0.07 ohm, SMD           | MSS5121                   | Coilcraft                        | 3.3uH   |                       |                        |
| LED1, LED2   | 2        | LTST-S326KJJSKT          | LED, Green/Yellow, 20mA, 2V, 130° Angle Right Angle, 3.00mm x 2.00mm, SMT |                           | Liteon                           |         |                       |                        |
| Q1, Q2, Q4, Q14  | 4        | CSD16409Q3               | MOSFET, N-CH, 25V, 60A, SON 3.3x3.3mm                                     | SON 3.3x3.3mm             | Texas Instruments                | 25V     |                       |                        |
| Q3   | 1        | FDMC86240                | MOSFET, N-CH, 150V, 16A, MLP08S   | MLP08S                    | Fairchild Semiconductor          | 150V    |                       |                        |
| Q5, Q6, Q7   | 3        | DTC123JETL               | TRANS NPN 50V 100MA SOT-416   | SC-75, SOT-416            | Rohm Semiconductor               |         |                       |                        |
| Q8   | 1        | 2SK3019TL                | SILICON N-CHANNEL MOS FET HIGH SPEED POWER SWITCHING                      | SC-75, SOT-416            | Rohm Semiconductor               |         |                       |                        |
| Q9, Q10, Q11, Q12, Q13   | 5        | 2SC4713KT146S            | TRANS NPN 6V 50MA SOT-346   | TO-236-3, SC-59, SOT-23-3 | Rohm Semiconductor               |         |                       |                        |
| Q15, Q16   | 2        | 2N7002KW                 | MOSFET, N-CH, 60V, 0.31A, SOT-323   | SOT-323                   | Fairchild Semiconductor          | 60V     |                       |                        |
| R1   | 1        | CRM0805-FW-R050ELF       | RES, 0.05 ohm, 1%, 0.25W, 0805  | 0805                      | Bourns                           | 0.05    |                       |                        |
| R2, R5, R24  | 3        | CRCW0402154KFKE          | RES, 154k ohm, 1%, 0.063W, 0402   | 0402                      | Vishay-Dale                      | 154k    |                       |                        |
| R3   | 1        | CRCW0402124KFKE          | RES, 124k ohm, 1%, 0.063W, 0402   | 0402                      | Vishay-Dale                      | 124k    |                       |                        |
| R4   | 1        | CRCW040222K1FKE          | RES, 22.1k ohm, 1%, 0.063W, 0402  | 0402                      | Vishay-Dale                      | 22.1k   |                       |                        |
| R6   | 1        | CRCW080524K9FKEA         | RES, 24.9k ohm, 1%, 0.125W, 0805  | 0805                      | Vishay-Dale                      | 24.9k   |                       |                        |
| R7   | 1        | CRCW080559K0FKEA         | RES, 59.0k ohm, 1%, 0.125W, 0805  | 0805                      | Vishay-Dale                      | 59.0k   |                       |                        |
| R8   | 1        | CRCW080580K6FKEA         | RES, 80.6k ohm, 1%, 0.125W, 0805  | 0805                      | Vishay-Dale                      | 80.6k   |                       |                        |
| R9   | 1        | CRCW080590R9FKEA         | RES, 90.9 ohm, 1%, 0.125W, 0805   | 0805                      | Vishay-Dale                      | 90.9    |                       |                        |
| R10  | 1        | CRCW080539K0JNEA         | RES, 39k ohm, 5%, 0.125W, 0805  | 0805                      | Vishay-Dale                      | 39k     |                       |                        |
| R11, R12   | 2        | CRCW060310R0FKEA         | RES, 10.0 ohm, 1%, 0.1W, 0603   | 0603                      | Vishay-Dale                      | 10.0    |                       |                        |
| R13  | 1        | CRCW06031K00JNEA         | RES, 1.0k ohm, 5%, 0.1W, 0603   | 0603                      | Vishay-Dale                      | 1.0k    |                       |                        |
| R14  | 1        | CRCW0603402R2FKEA        | RES, 402 ohm, 1%, 0.1W, 0603  | 0603                      | Vishay-Dale                      | 402     |                       |                        |
| R15  | 1        | RC0603FR-072KL           | RES, 2.00k ohm, 1%, 0.1W, 0603  | 0603                      | Yageo America                    | 2.00k   |                       |                        |
| R16  | 1        | CSR1206FKR330            | RES, 0.33 ohm, 1%, 0.5W, 1206   | 1206                      | Stackpole Electronics Inc        | 0.33    |                       |                        |
| R17  | 1        | CRCW08051K00JNEA         | RES, 1.0k ohm, 5%, 0.125W, 0805   | 0805                      | Vishay-Dale                      | 1.0k    |                       |                        |
| R18  | 1        | CRCW080510K0JNEA         | RES, 10k ohm, 5%, 0.125W, 0805  | 0805                      | Vishay-Dale                      | 10k     |                       |                        |
| R19  | 1        | CRCW120620R0FKEA         | RES, 20.0 ohm, 1%, 0.25W, 1206  | 1206                      | Vishay-Dale                      | 20.0    |                       |                        |
| R20, R99, R101   | 3        | RC0603FR-0710KL          | RES, 10.0k ohm, 1%, 0.1W, 0603  | 0603                      | Yageo America                    | 10.0k   |                       |                        |
| R21, R28, R29, R30, R36  | 2        | CRCW08050000Z0EA         | RES, 0 ohm, 5%, 0.125W, 0805  | 0805                      | Vishay-Dale                      | 0       |                       |                        |
| R22  | 1        | RT0603DRE0744K2L         | RES, 44.2k ohm, 0.5%, 0.1W, 0603  | 0603                      | Yageo America                    | 44.2k   |                       |                        |
| R23  | 1        | CRCW060314K3FKEA         | RES, 14.3k ohm, 1%, 0.1W, 0603  | 0603                      | Vishay-Dale                      | 14.3k   |                       |                        |
| R25, R26, R27  | 1        | ERJ-8GEY0R00V            | RES, 0 ohm, 5%, 0.25W, 1206   | 1206                      | Panasonic                        | 0       |                       |                        |
| R32  | 1        | CRCW0402665KFKE          | RES, 665k ohm, 1%, 0.063W, 0402   | 0402                      | Vishay-Dale                      | 665k    |                       |                        |
| R33, R45   | 2        | CRCW0402287KFKE          | RES, 287k ohm, 1%, 0.063W, 0402   | 0402                      | Vishay-Dale                      | 287k    |                       |                        |
| R34  | 1        | CRCW0402604KFKE          | RES, 604k ohm, 1%, 0.063W, 0402   | 0402                      | Vishay-Dale                      | 604k    |                       |                        |
| R35  | 1        | CRCW0402118KFKE          | RES, 118k ohm, 1%, 0.063W, 0402   | 0402                      | Vishay-Dale                      | 118k    |                       |                        |
| R39, R103, R104, R105  | 4        | CRCW04021K00FKE          | RES, 1.00k ohm, 1%, 0.063W, 0402  | 0402                      | Vishay-Dale                      | 1.00k   |                       |                        |
| R40, R48   | 2        | CRCW040249R9FKE          | RES, 49.9 ohm, 1%, 0.063W, 0402   | 0402                      | Vishay-Dale                      | 49.9    |                       |                        |
| R41, R44, R49, R53, R55, R56, R57, R58, R82, R83, R86, R87, R116 | 13       | CRCW040210K0FKE          | RES, 10.0k ohm, 1%, 0.063W, 0402  | 0402                      | Vishay-Dale                      | 10.0k   |                       |                        |
| R42  | 1        | CRCW04028K25FKE          | RES, 8.25k ohm, 1%, 0.063W, 0402  | 0402                      | Vishay-Dale                      | 8.25k   |                       |                        |
| R43, R122  | 2        | CRCW040210R0FKE          | RES, 10.0 ohm, 1%, 0.063W, 0402   | 0402                      | Vishay-Dale                      | 10.0    |                       |                        |
| R46  | 1        | CRCW040251K1FKE          | RES, 51.1k ohm, 1%, 0.063W, 0402  | 0402                      | Vishay-Dale                      | 51.1k   |                       |                        |
| R47, R51   | 2        | CRCW0402750R2FKE         | RES, 750 ohm, 1%, 0.063W, 0402  | 0402                      | Vishay-Dale                      | 750     |                       |                        |
| R50, R54   | 2        | CRCW040215K0FKE          | RES, 15.0k ohm, 1%, 0.063W, 0402  | 0402                      | Vishay-Dale                      | 15.0k   |                       |                        |
| R52, R140  | 2        | RR1220Q-49R9-D-M         | RES, 49.9 ohm, 0.5%, 0.1W, 0805   | 0805                      | Susumu Co Ltd                    | 49.9    |                       |                        |
| R59, R113, R117  | 3        | CRCW0402100KFKE          | RES, 100k ohm, 1%, 0.063W, 0402   | 0402                      | Vishay-Dale                      | 100k    |                       |                        |
| R60, R61, R63, R73, R74, R75, R141                               | 7        | CRCW04021K00JNE          | RES, 1.0k ohm, 5%, 0.063W, 0402   | 0402                      | Vishay-Dale                      | 1.0k    |                       |                        |
| R62, R67, R68, R69, R70  | 5        | CRCW0402220RJNE          | RES, 220 ohm, 5%, 0.063W, 0402  | 0402                      | Vishay-Dale                      | 220     |                       |                        |
| R64, R65   | 2        | RC1206FR-07330RL         | RES, 330 ohm, 1%, 0.25W, 1206   | 1206                      | Yageo America                    | 330     |                       |                        |
| R66  | 1        | CRCW04020000Z0ED         | RES, 0 ohm, 5%, 0.063W, 0402  | 0402                      | Vishay-Dale                      | 0       |                       |                        |
| R71, R72, R76  | 2        | CRCW040247K0JNE          | RES, 47k ohm, 5%, 0.063W, 0402  | 0402                      | Vishay-Dale                      | 47k     |                       |                        |
| R77, R80   | 2        | CRCW060375R0FKEA         | RES, 75.0 ohm, 1%, 0.1W, 0603   | 0603                      | Vishay-Dale                      | 75.0    |                       |                        |
| R78, R79, R123, R135   | 2        | CRCW060320K0FKEA         | RES, 20.0k ohm, 1%, 0.1W, 0603  | 0603                      | Vishay-Dale                      | 20.0k   |                       |                        |
| R81  | 0        | RG1608P-221-B-T5         | RES, 220 ohm, 0.1%, 0.1W, 0603  | 0603                      | Susumu Co Ltd                    | 220     |                       |                        |
| R84, R120, R127, R128, R129, R130, R131, R132, R136, R137        | 7        | CRCW06030000Z0EA         | RES, 0 ohm, 5%, 0.1W, 0603  | 0603                      | Vishay-Dale                      | 0       |                       |                        |
| R85  | 1        | RC0603JR-072K2L          | RES, 2.2k ohm, 5%, 0.1W, 0603   | 0603                      | Yageo America                    | 2.2k    |                       |                        |
| R88, R91, R93  | 0        | CRCW060310K0FKEA         | RES, 10.0k ohm, 1%, 0.1W, 0603  | 0603                      | Vishay-Dale                      | 10.0k   |                       |                        |
| R89, R90, R96  | 1        | RC0603FR-0747KL          | RES, 47.0k ohm, 1%, 0.1W, 0603  | 0603                      | Yageo America                    | 47.0k   |                       |                        |
| R92  | 1        | RC0603FR-0715KL          | RES, 15.0k ohm, 1%, 0.1W, 0603  | 0603                      | Yageo America                    | 15.0k   |                       |                        |
| R94, R95   | 1        | RC0603FR-071KL           | RES, 1.0k ohm, 5%, 0.1W, 0603   | 0603                      | Yageo America                    | 1.0k    |                       |                        |
| R97  | 1        | RC0603FR-072K2L          | RES, 2.2k ohm, 1%, 0.1W, 0603   | 0603                      | Yageo America                    | 2.2k    |                       |                        |
| R98, R106, R125  | 2        | RC0603FR-0720KL          | RES, 20.0k ohm, 1%, 0.1W, 0603  | 0603                      | Yageo America                    | 20.0k   |                       |                        |
| R100   | 1        | CRCW06032K20JNEA         | RES, 2.2k ohm, 5%, 0.1W, 0603   | 0603                      | Vishay-Dale                      | 2.2k    |                       |                        |
| R102   | 1        | RC0603FR-071ML           | RES, 1.00Meg ohm, 1%, 0.1W, 0603  | 0603                      | Yageo America                    | 1.00Meg |                       |                        |
| R107   | 1        | CRCW08055R10JNEA         | RES, 5.1 ohm, 5%, 0.125W, 0805  | 0805                      | Vishay-Dale                      | 5.1     |                       |                        |
| R108, R109   | 2        | CRCW06034K02FKEA         | RES, 4.02k ohm, 1%, 0.1W, 0603  | 0603                      | Vishay-Dale                      | 4.02k   |                       |                        |
| R110   | 1        | CRCW04026K81FKE          | RES, 6.81k ohm, 1%, 0.063W, 0402  | 0402                      | Vishay-Dale                      | 6.81k   |                       |                        |
| R112   | 1        | CRA2512-FZ-R020ELF       | RES, 133k ohm, 1%, 0.63W, 0402  | 0402                      | Vishay-Dale                      | 133k    |                       |                        |
| R114, R118   | 1        | CRA2512-FZ-R020ELF       | RES, 0.02 ohm, 1%, 3W, 2512   | 2512                      | Bourns                           | 0.02    |                       |                        |
| R115   | 2        | CRCW040232K4FKE          | RES, 32.4k ohm, 1%, 0.063W, 0402  | 0402                      | Vishay-Dale                      | 32.4k   |                       |                        |
| R119   | 1        | CRCW040230K9FKE          | RES, 30.9k ohm, 1%, 0.063W, 0402  | 0402                      | Vishay-Dale                      | 30.9k   |                       |                        |
| R121, R124, R126   | 1        | CSR1206FK10L0            | RES, 0.01 ohm, 1%, 0.5W, 1206   | 1206                      | Stackpole Electronics Inc        | 0       |                       |                        |
| R138   | 0        | CRCW04024K99FKE          | RES, 0 ohm, 5%, 0.25W, 0402   | 0402                      | Vishay-Dale                      | 0       |                       |                        |
| R142   | 1        | CRCW04026K65FKE          | RES, 4.99k ohm, 1%, 0.063W, 0402  | 0402                      | Vishay-Dale                      | 4.99k   |                       |                        |
| R143   | 1        | CRCW04026K65FKE          | RES, 66.5k ohm, 1%, 0.063W, 0402  | 0402                      | Vishay-Dale                      | 66.5k   |                       |                        |
| SW1  | 1        | CRCW04024K64FKE          | RES, 46.4k ohm, 1%, 0.063W, 0402  | 0402                      | Vishay-Dale                      | 46.4k   |                       |                        |
|  |          | TL3330AF260QG            | Switch, Push Button, Side Mount, SPST, 0.05A @12V, SMT                    |                           | E-Switch                         |         |                       |                        |
| T1   | 1        | ACM7060-701-2PL-TL       | TDK - ACM7060-701-2PL - CHIP INDUCTOR, 4A                                 | Horizontal, 4 J-Lead      | TDK Corporation                  |         |                       |                        |

| Designator  | Quantity | Part Number         | Description   | Package Reference                        | Manufacturer                | Value    | Alternate Part Number | Alternate Manufacturer |
|---|----------|---------------------|---|--|-----------------------------|----------|-----------------------|------------------------|
| T2  | 1        | ACM4532-601-2P-T001 | CHOKE COMMON MODE 600 OHM SMD   | 1812 (4532 Metric), 6 Lead               | TDK Corporation             |          |                       |                        |
| T3  | 1        | POE13P-50L          | POE Transformer 5.0V 2.6A   |  | Coilcraft                   |          |                       |                        |
| TP1, TP2, TP3, TP4, TP5, TP6, TP7, TP8, TP9, TP10, TP11, TP12, TP13, TP14, TP15, TP16, TP17, TP20, TP21, TP23 | 20       | 5001                | Test Point, TH, Miniature, Black  | Keystone5001                             | Keystone                    | Black    |                       |                        |
| U1, U3, U6  | 3        | TPS2419D            | IC, N+1 and Oring Power Rail Controller W/ Enable                                     | SO-8                                     | TI                          | TPS2419D |                       |                        |
| U2  | 1        | TPS54339DDA         | 4.5V to 23V Input, 3-A Synchronous Step-Down SWIFT Converter, DDA0008E                | DDA0008E                                 | Texas Instruments           |          |                       |                        |
| U4  | 1        | TPS23753APW         | IEEE 802.3 PoE INTERFACE AND CONVERTER CONTROLLER WITH ENHANCED ESD IMMUNITY, PW0014A | PW0014A                                  | Texas Instruments           |          |                       |                        |
| U5  | 1        | FODM121             | Full Pitch Mini-Flat Package Transistor Output Optocoupler                            | FOD121                                   | Fairchild Semiconductor     |          |                       |                        |
| U7  | 1        | TPS3839G33DQNR      | IC LP SUPERVISRY CIRCUIT 4X2SON   |  | Texas Instruments           |          |                       |                        |
| U8, U9  | 2        | TPS3897ADRYR        | IC SUPERVISOR MPU ADJ 6SON  |  | Texas Instruments           |          |                       |                        |
| U11, U13, U14   | 3        | TPS5432DDA          | IC REG BUCK SYNC ADJ 3A 14QFN   |  | Texas Instruments           |          |                       |                        |
| U12   | 1        | TPS63036YFGR        | IC REG BUCK BST SYNC ADJ 8WCSP  |  | Texas Instruments           |          |                       |                        |
| U15, U16  | 2        | SN74AVC2T45DCUR     | IC BUS TRANSCVR TRI-ST 2B 8VSSOP  |  | Texas Instruments           |          |                       |                        |
| U17   | 1        | SN65HVD11DR         | IC RS485 TRANSCEIVER 3.3V 8-SOIC  |  | Texas Instruments           |          |                       |                        |
| U18, U19, U20   | 3        | TCMT1107            | OPTOCPL PHOTOTRANS 1CH 160% 4SOP  | 4-SOIC (0.170", 4.40mm)                  | Vishay Semiconductor Opto D |          |                       |                        |
| U21   | 1        | OPA360AIDCK         | IC VIDEO AMP 3V SC70-6  |  | Texas Instruments           |          |                       |                        |
| U22   | 1        | OPA2357AIDGSR       | IC OPAMP VFB R-R 100MHZ 10MSOP  | 10-TFSOP, 10-MSOP (0.118", 3.00mm Width) | Texas Instruments           |          |                       |                        |
| U23   | 1        | LMV722IDGKR         | IC OPAMP GP R-R 10MHZ DUAL 8MSOP  | 8-TSSOP, 8-MSOP (0.118", 3.00mm Width)   | Texas Instruments           |          |                       |                        |
| U24   | 1        | BQ24170RGYT         | IC LH-ON/POL CHARGE MGMT 24VQFN   | 24-VQFN Exposed Pad                      | Texas Instruments           |          |                       |                        |

Notes:  
Unless otherwise noted in the Alternate PartNumber and/or Alternate Manufacturer columns, all parts may be substituted with equivalents.