



## Bill of Materials for the NCP1568PDUHD90WGEVB Evaluation Board

| Designator                       | Quantity | Description   | Value        | Tolerance | Footprint                     | Manufacturer | Manufacturer Part Number | Substitution Allowed | Lead Free |
|----------------------------------|----------|---|--------------|-----------|-------------------------------|--------------|--------------------------|----------------------|-----------|
| Q6 Q19 Q25-26                    | 4        | NMOSFET   | c            |           | SOT23                         | ON           | 2N7002LT1G               | No                   | Yes       |
| C39 C44 C52 C54                  | 4        | Capacitor, Ceramic, 50V, 10%                        | 0.1uF        |           | 603                           | Wurth        | /885012206095            | Yes                  | Yes       |
| C37                              | 1        | Capacitor, Ceramic, 25V, 10%                        | 0.22uF,25V   |           | 603                           | Wurth        | /885012206073            | Yes                  | Yes       |
| C6 C26 C45<br>C48 49 C51         | 6        | Capacitor, Ceramic, Chip, 10%                       | 0.22uF,450V  |           | 1210                          | TDK          | C3225X7T2W224K           | Yes                  | Yes       |
| C1 C5                            | 2        |   | 0.68u,450v   |           | THT,10mm,<br>13mmx6mmx12mm    | Panasonic    | ECWFD2W684Q              | Yes                  | Yes       |
| C9 C33-34                        | 3        | Capacitor, Ceramic, 50V, 10%                        | 100pF        |           | 603                           | Wurth        | /885012206077            | Yes                  | Yes       |
| C31                              | 1        | Capacitor, Ceramic, SMD, 5%                         | 104.400V     |           | 1206                          | TDK          | C3216X7T2W104K           | Yes                  | Yes       |
| C18                              | 1        | Capacitor, Ceramic, 50V, 10%                        | 10nF         |           | 603                           | Wurth        | /885012206089            | Yes                  | Yes       |
| C55                              | 1        | Capacitor, Ceramic, 50V, 10%                        | 10pF         |           | 603                           | Wurth        | /885012006051            | Yes                  | Yes       |
| C42 C46                          | 2        | Capacitor, Ceramic, 50V, 10%                        | 1nF          |           | 603                           | Wurth        | /885012206083            | Yes                  | Yes       |
| C12                              | 1        | Capacitor, Ceramic, 250V, 10%                       | 1nF,250v     |           | 603                           | Wurth        | /885342206003            | Yes                  | Yes       |
| C8                               | 1        | Capacitor, Ceramic, 100V, 10%                       | 1uF,100v     |           | 805                           | TDK          | C2012X7S2A105K           | Yes                  | Yes       |
| C2 C7 C16-17<br>C29 C38 C43      | 7        | Capacitor, Ceramic, 25V, 10%                        | 1uF,25V      |           | 603                           | Wurth        | /885012206076            | Yes                  | Yes       |
| C35                              | 1        | Capacitor, Ceramic, 50V, 10%                        | 2.2nF        |           | 603                           | Wurth        | /885012206085            | Yes                  | Yes       |
| C36                              | 1        | Capacitor, Ceramic, 16V, 10%                        | 2.2uF,16V    |           | 603                           | Wurth        | /885012106018            | Yes                  | Yes       |
| C25                              | 1        | X2 capacitor, Safety standard approved, 10%         | 224,X2       |           | THT, 12.5mm,<br>15mmx7mmx12mm | Wurth        | /890324024002            | Yes                  | Yes       |
| <b>C11 C23 C28 C30</b>           | <b>4</b> | <b>Capacitor, Ceramic, 50V, 10%</b>                 | <b>330pF</b> |           | <b>603</b>                    | <b>Wurth</b> | <b>/885012206080</b>     | Yes                  | Yes       |
| C53                              | 1        | Capacitor, Ceramic, 50V, 10%                        | 4.7nF        |           | 603                           | Wurth        | /885012206094            | Yes                  | Yes       |
| C3                               | 1        | Capacitor, Ceramic, 16V, 10%                        | 4.7uF,16v    |           | 603                           | TDK          | C1608X6S1C475M           | Yes                  | Yes       |
| C4 C24 C27                       | 3        | Capacitor, Ceramic, 25V, 10%                        | 4.7uF,25V    |           | 805                           | TDK          | C2012X7R1E475K           | Yes                  | Yes       |
| C50                              | 1        | Capacitor, Ceramic, 50V, 5%                         | 820pF        |           | 603                           | TDK          | C1608C0G1H821J           | Yes                  | Yes       |
| C10                              | 1        | HV Ceramic Capacitor, safety standard approved, 10% | 470pF,Y1     |           | Lead type                     | TDK          | CS65-B2GA101KYNKA        | Yes                  | Yes       |
| C47                              | 1        | Capacitor, Ceramic, 50V, 5%                         | 47nF         |           | 603                           | Wurth        | /885012206083            | Yes                  | Yes       |
| C19 C22                          | 2        | Capacitor, Ceramic, 50V, 10%                        | 68nF         |           | 603                           | Wurth        | /885012206094            | Yes                  | Yes       |
| C20                              | 1        | Capacitor, Ceramic, 50V, 10%                        | NC           |           | 603                           | std          | Std                      | Yes                  | Yes       |
| C40                              | 1        | Capacitor, Ceramic, Chip, 5%                        | nc           |           | 805                           | nc           | nc                       | Yes                  | Yes       |
| D2 D2A                           | 2        | Bridge Rectifier, 1000V, 4A                         | 4A,1000V     |           | Z4PAK                         | ZOWIE        | Z4GP40MH                 | Yes                  | Yes       |
| D9                               | 1        | General Rectifier                                   | 3A,600V      |           | SMC                           | ON           | S3J                      | No                   | Yes       |
| DNR                              | 1        | Varistor, 10D471K                                   | 10D471K      |           | TH                            | Wurth        | 820573011                | Yes                  | Yes       |
| D1 D8 D14 D16<br>D19 D23 D25 D30 | 8        | Switching diode, SMD                                | 0.2A,250V    |           | SOD323                        | ON           | BAS21HT1G                | No                   | Yes       |
| D4 D10 D15<br>D26 D29 D31        | 6        | Switching diode, SMD                                | 0.2A,30V     |           | SOD323                        | ON           | BAT54HT1G                | No                   | Yes       |
| D6,D11                           | 2        | Switching diode, SMD                                | 0.2A,350V    |           | SOD323                        | ON           | NSD350HT1G               | No                   | Yes       |

|                                |   |                                   |              |  |            |           |                      |     |     |
|--------------------------------|---|-----------------------------------|--------------|--|------------|-----------|----------------------|-----|-----|
| D12-13                         | 2 | Standard Rectifier, 0.8A, 600V    | 0.8A,600V    |  | SOD123FL   | ON        | RS1JFA               | No  | Yes |
| D7 D22                         | 2 | Ultrafast Rectifier, 1A, 600V     | 1A,600V      |  | SOD123FL   | ON        | US1JFA               | No  | Yes |
| D5 D17-18<br>D20 D21           | 5 | Switching diode, SMD              | 0.2A,250V    |  | SOD323     | ON        | BAS21HT1G            | No  | Yes |
| FB2                            | 1 | 300ohm@100MHz                     |              |  | 1206       | Wurth     | 742792121            | Yes | Yes |
| FB3                            | 1 | nc                                | nc           |  | 1206       | nc        |                      | Yes | Yes |
| L2                             | 1 | CM Filter, T type core            | 18mH         |  | TH type    | std       | T12x8x7              | Yes | Yes |
| L1                             | 1 | T type, 9*5*3, 0.5 wire           | 600uH        |  | TH         | std       | T9*5*3               | Yes | Yes |
| F1                             | 1 | Micro Fuse, 1.6A/250V             | 1.6A, 250Vac |  | Axial lead | Hollyfuse | 5ET-016H             | Yes | Yes |
| Q1-2 Q7 Q12-13                 | 5 | General NPN Transistor, SMD       |              |  | SOT23      | ON        | MMBT3904LT1G         | No  | Yes |
| Q5 Q4 Q10                      | 3 | General NPN Transistor, SMD       |              |  | SOT23      | ON        | MMBTA06LT1G          | No  | Yes |
| Q9                             | 1 | General PNP Transistor, SMD       |              |  | SOT23      | ON        | MMBTA56LT1G          | No  | Yes |
| Q14-15 Q17                     | 3 | General PNP Transistor, SMD       |              |  | SOT23      | ON        | MMBT3906LT1G         | No  | Yes |
| D3                             | 1 | Ultrafast Rectifier, 5A, 520V     | 5A, 520V     |  | DPAK       | ON        | MURD550PFG           | No  | Yes |
| U5                             | 1 | PROGRAMMABLE PRECISION REFERENCE  |              |  | SOT23      | ON        | NCP431ASNT1G         | No  | Yes |
| U2                             | 1 | ACF Controller                    |              |  | TSSOP16    | ON        | NCP1568S01DBR2G      | No  | Yes |
| U1                             | 1 | PFC Controller                    |              |  | TSOP6      | ON        | NCP1622AEC           | No  | Yes |
| U7                             | 1 | Syn. Rectified Controller         |              |  | SO8        | ON        | NCP4306AADZZADR2G    | No  | Yes |
| U3                             | 1 |                                   |              |  | DFN10      | ON        | NCP51530AMNTWVG      | No  | Yes |
| NTC1                           | 1 | replaced by 13k resistor or nc    | 100k         |  | 603        | Shunlord  | SDNT1608X104J4250HTF | Yes | Yes |
| NTC2                           | 1 | replacment of 100k resistor       | 100k         |  | 603        | Shunlord  | SDNT1608X104J4250HTF | Yes | Yes |
| U4 U11                         | 2 | optical coupler                   |              |  | LSOP4      | ON        | FODM1009             | No  | Yes |
| Q20                            | 1 |                                   | 60V          |  | SOT23      | ON        | BSS84LT1G            | No  | Yes |
| L3                             | 1 | Toroidal Line Choke,15.8x8.5,2.5A | 100uH        |  | TH type    | Wurth     | 7447021              | Yes | Yes |
| L5                             | 1 | SMD inductor                      | 4.7uH        |  | 603        | Shunlord  | MCL1608S4R7MT        | Yes | Yes |
| Q3                             | 1 | MOSFET, NChan, 600V               |              |  | PQFN-4     | ON        | FCMT299N60           | No  | Yes |
| R13 R84                        | 2 | Resistor, Chip, 1/8W, 1%          | 0            |  | 603        | Std       | Std                  | Yes | Yes |
| R6 R72                         | 2 | Resistor, Chip, 1/8W, 1%          | 1            |  | 603        | Std       | Std                  | Yes | Yes |
| R15                            | 1 | Resistor, Chip, 1/8W, 1%          | 1.64K        |  | 603        | Std       | Std                  | Yes | Yes |
| R32 R49 R59 R85<br>R91-92 R98  | 7 | Resistor, Chip, 1/8W, 1%          | 100K         |  | 603        | Std       | Std                  | Yes | Yes |
| R18 R24 R35 R62<br>R67 R70 R94 | 7 | Resistor, Chip, 1/8W, 1%          | 10K          |  | 603        | Std       | Std                  | Yes | Yes |
| R36                            | 1 | Resistor, Chip, 1/8W, 1%          | 10k          |  | 603        | Std       | Std                  | Yes | Yes |
| R37                            | 1 | Resistor, Chip, 1/8W, 1%          | 120K         |  | 603        | Std       | Std                  | Yes | Yes |
| R78                            | 1 | Resistor, Chip, 1/8W, 1%          | 12K          |  | 603        | Std       | Std                  | Yes | Yes |
| R88                            | 1 | Resistor, Chip, 1/8W, 1%          | 130K         |  | 603        | Std       | Std                  | Yes | Yes |
| R63 R69 R82                    | 3 | Resistor, Chip, 1/8W, 1%          | 150K         |  | 603        | Std       | Std                  | Yes | Yes |
| R8                             | 1 | Resistor, Chip, 1/8W, 1%          | 15M          |  | 603        | Std       | Std                  | Yes | Yes |
| R17                            | 1 | Resistor, Chip, 1/8W, 1%          | 16K          |  | 603        | Std       | Std                  | Yes | Yes |
| R7                             | 1 | Resistor, Chip, 1/8W, 1%          | 180K         |  | 603        | Std       | Std                  | Yes | Yes |
| R46                            | 1 | Resistor, Chip, 1/8W, 1%          | 18K          |  | 603        | Std       | Std                  | Yes | Yes |
| R1 R21 R44                     | 3 | Resistor, Chip, 1/8W, 1%          | 1K           |  | 603        | Std       | Std                  | Yes | Yes |
| R22                            | 1 | Resistor, Chip, 1/8W, 1%          | 1K           |  | 603        | Std       | Std                  | Yes | Yes |
| R30 R68                        | 2 | Resistor, Chip, 1/8W, 1%          | 1M           |  | 603        | Std       | Std                  | Yes | Yes |
| R79                            | 1 | Resistor, Chip, 1/8W, 1%          | 200K         |  | 603        | Std       | Std                  | Yes | Yes |
| R57                            | 1 | Resistor, Chip, 1/8W, 1%          | 20K          |  | 603        | Std       | Std                  | Yes | Yes |
| R9 R19 R27 R47                 | 4 | Resistor, Chip, 1/8W, 1%          | 22           |  | 603        | Std       | Std                  | Yes | Yes |
| R56                            | 1 | Resistor, Chip, 1/8W, 1%          | 22K          |  | 603        | Std       | Std                  | Yes | Yes |
| R58                            | 1 | Resistor, Chip, 1/8W, 1%          | 24K          |  | 603        | Std       | Std                  | Yes | Yes |
| R76                            | 1 | Resistor, Chip, 1/8W, 1%          | 2K           |  | 603        | Std       | Std                  | Yes | Yes |
| R55 R71                        | 2 | Resistor, Chip, 1/8W, 1%          | 300K         |  | 603        | Std       | Std                  | Yes | Yes |
| R16                            | 1 | Resistor, Chip, 1/8W, 1%          | 30K          |  | 603        | Std       | Std                  | Yes | Yes |
| R45                            | 1 | Resistor, Chip, 1/8W, 1%          | 33K          |  | 603        | Std       | Std                  | Yes | Yes |
| R75                            | 1 | Resistor, Chip, 1/8W, 1%          | 360K         |  | 603        | Std       | Std                  | Yes | Yes |
| R2                             | 1 | Resistor, Chip, 1/8W, 1%          | 39K          |  | 603        | Std       | Std                  | Yes | Yes |
| R10 R26 R28 R48 R74 R89-90     | 7 | Resistor, Chip, 1/8W, 1%          | 4.7          |  | 603        | Std       | Std                  | Yes | Yes |
| R23                            | 1 | Resistor, Chip, 1/8W, 1%          | 4.7K         |  | 603        | Std       | Std                  | Yes | Yes |
| R61                            | 1 | Resistor, Chip, 1/8W, 1%          | 43K          |  | 603        | Std       | Std                  | Yes | Yes |
| R54                            | 1 | Resistor, Chip, 1/8W, 1%          | 47           |  | 603        | Std       | Std                  | Yes | Yes |
| R11 R81                        | 2 | Resistor, Chip, 1/8W, 1%          | 470K         |  | 603        | Std       | Std                  | Yes | Yes |
| R25 R38 R80                    | 3 | Resistor, Chip, 1/8W, 1%          | 47K          |  | 603        | Std       | Std                  | Yes | Yes |
| R3 R73                         | 2 | Resistor, Chip, 1/8W, 1%          | 510          |  | 603        | Std       | Std                  | Yes | Yes |
| R77                            | 1 | Resistor, Chip, 1/8W, 1%          | 510K         |  | 603        | Std       | Std                  | Yes | Yes |
| R93                            | 1 | Resistor, Chip, 1/8W, 1%          | 56K          |  | 603        | Std       | Std                  | Yes | Yes |
| R52                            | 1 | Resistor, Chip, 1/8W, 1%          | 6.8K         |  | 603        | Std       | Std                  | Yes | Yes |
| R20                            | 1 | Resistor, Chip, 1/8W, 1%          | 62K          |  | 603        | Std       | Std                  | Yes | Yes |
| R43                            | 1 | Resistor, Chip, 1/8W, 1%          | 75K          |  | 603        | Std       | Std                  | Yes | Yes |
| R53 R96                        | 2 | Resistor, Chip, 1/8W, 1%          | 91K          |  | 603        | Std       | Std                  | Yes | Yes |
| R29                            | 1 | Resistor, Chip, 1/8W, 1%          | nc           |  | 603        | Std       | Std                  | Yes | Yes |
| R33                            | 1 | Resistor, Chip, 1/8W, 1%          | nc           |  | 603        | Std       | Std                  | Yes | Yes |
| R50-51                         | 2 | Resistor, Chip, 1/2W, 1%          | 0.3          |  | 1206       | Panasonic | ERJ8BQFR30V          | Yes | Yes |

|         |   |                          |           |             |           |                     |     |     |
|---------|---|--------------------------|-----------|-------------|-----------|---------------------|-----|-----|
| R4-5    | 2 | Resistor, Chip, 1/2W, 1% | 0.56      | 1206        | Panasonic | ERJ8BQFR56V         | Yes | Yes |
| R64     | 1 | Resistor, Chip, 1/2W, 1% | 100K      | 1206        | Std       | Std                 | Yes | Yes |
| R83     | 1 | Resistor, Chip, 1/2W, 1% | 10M       | 1206        | Std       | Std                 | Yes | Yes |
| R65-66  | 2 | Resistor, Chip, 1/2W, 1% | 160K      | 1206        | Std       | Std                 | Yes | Yes |
| R31     | 1 | Resistor, Chip, 1/2W, 1% | 1K        | 1206        | Std       | Std                 | Yes | Yes |
| R39     | 1 | Resistor, Chip, 1/2W, 1% | nc        | 1206        | Std       | Std                 | Yes | Yes |
| R41-42  | 2 | Resistor, Chip, 1/2W, 1% | 2M        | 1206        | Std       | Std                 | Yes | Yes |
| R12 R34 | 2 | Resistor, Chip, 1/5W, 1% | 47        | 805         | Std       | Std                 | Yes | Yes |
| R14     | 1 | Resistor, Chip, 1/2W, 1% | 5mohm     | 1206        | Std       | Std                 | Yes | Yes |
| R40     | 1 | Resistor, Chip, 1/2W, 1% | 680K      | 1206        | Std       | Std                 | Yes | Yes |
| T1      | 1 | RM8, 6Pin                |           | TH type     | WE-midcon | 750344067           | Yes | Yes |
| L4      | 1 | RM8, 6Pin                |           | TH type     | WE-midcon | 750344048           | Yes | Yes |
| C41     | 1 | size:5mmx11mm            | 10uF,25V  | 5mmx11mm    | CapXon    | KF Series           | Yes | Yes |
| C21     | 1 | size:6.3mmx11mm          | 22uF,100V | 6.3mmx11mm  | CapXon    | KF Series           | Yes | Yes |
| C13-15  | 3 | size:8mmx15mm            | 680uF,25V | 8mmx12mm    | CapXon    | PS681M025F080P      | Yes | Yes |
| C32     | 1 | size:16mmx30mm           | 68uF,420V | 16mmx30mm   | CapXon    | KL680M420J300A00H   | Yes | Yes |
| Q8      | 1 | MOSFET, NChan, 3.4mohm   |           | QFN5X6mm    | ON        | NTMFS4C05NT1G       | No  | Yes |
| Q18     | 1 | MOSFET, NChan, 120V      |           | PQFN8L      | ON        | FDMT800120DC        | No  | Yes |
| Q23-24  | 2 | MOSFET, NChan, 600V      |           | ThinPAK-8*8 | INFINEON  | IPL60R385CP         | Yes | Yes |
| J1      | 1 | Type C connector, SMT    |           | SMD         | CSCONN    | CUS31738616001      | Yes | Yes |
| U8      | 1 | PD protocol controller   |           | DFN5X5      | Weitrend  | WT6636F-UG16CWT-S90 | Yes | Yes |
| ZD4     | 1 | GENERIC ZENER-DIODE      | 10V       | SOD323      | ON        | MM3Z10VT1G          | No  | Yes |
| ZD5     | 1 | GENERIC ZENER-DIODE      | 11V       | SOD323      | ON        | MM3Z11VT1G          | No  | Yes |
| ZD12    | 1 | GENERIC ZENER-DIODE      | 12V       | SOD323      | ON        | MM3Z12VT1G          | No  | Yes |
| ZD8     | 1 | GENERIC ZENER-DIODE      | 13V       | SOD323      | ON        | MM3Z13VT1G          | No  | Yes |
| ZD2     | 1 | GENERIC ZENER-DIODE      | 15V       | SOD323      | ON        | MM3Z15VT1G          | No  | Yes |
| ZD11    | 1 | GENERIC ZENER-DIODE      | 16V       | SOD323      | ON        | MM3Z16VT1G          | No  | Yes |
| ZD3 ZD9 | 2 | GENERIC ZENER-DIODE      | 5.6V      | SOD323      | ON        | MM3Z5V6T1G          | No  | Yes |
| ESD1-4  | 4 | ESD protection device    | 5V        | SOD323      | ON        | SD05T1G             | No  | Yes |
| ZD10    | 1 | GENERIC ZENER-DIODE      | 6.2v      | SOD323      | ON        | MM3Z6V2T1G          | No  | Yes |