



## Bill of Materials for the NCP1611GEVB Evaluation Board

| Designator             | Quantity | Description   | Value     | Tolerance  | Footprint    | Manufacturer      | Manufacturer Part Number  | Substitution Allowed | Lead Free |
|------------------------|----------|---|-----------|------------|--------------|-------------------|---------------------------|----------------------|-----------|
| <b>Power Section</b>   |          |   |           |            |              |                   |                           |                      |           |
|                        | 3        | "ALT1", "ALT2" and "EARTH" pins                         | -         | -          | -            | MILL-MAX          | 0149-0-15-15-30-27-04-0   | YES                  | YES       |
|                        | 4        | Board supports  | -         | -          | -            | RICHCO            | TCBS-801                  | YES                  | YES       |
|                        | 2        | "V <sub>LINE</sub> " and "V <sub>IN</sub> " test points | -         | -          | -            | Keystone          | 5010                      | YES                  | YES       |
| J4                     | 1        | Vcc socket  | -         | -          | -            | WEIDMULLER        | PM5.08/2/90               | YES                  | YES       |
|                        | 1        | VBULK connector   | -         | -          | -            | Multicomp         | 23.3200-22                | YES                  | YES       |
|                        | 1        | GND connector   | -         | -          | -            | Multicomp         | 23.3200-21                | YES                  | YES       |
| HS1                    | 1        | Heatsink with fixation clips to PCB                     | -         | -          | -            | COLUMBIA-STAVER   | TP207ST,120,12.5,NA,SP,03 | NO                   | YES       |
|                        | 1        | Heatsink MOSFET clip                                    | -         | -          | -            | COLUMBIA-STAVER   | W950                      | NO                   | YES       |
|                        | 1        | Heatsink diodes bridge clip                             | -         | -          | -            | COLUMBIA-STAVER   | W936R                     | NO                   | YES       |
| F1                     | 1        | 4-A fuse  | 4A        | 250 V      | Through-hole | Multicomp         | MCPEP 4A 250V             | NO                   | YES       |
| C1, C2                 | 2        | Y2 capacitors (note)                                    | 1 nF      | 275 V      | Through-hole | EPCOS             | B32021A3102               | NO                   | YES       |
| C3                     | 1        | X2 capacitor  | 680 nF    | 277V       | Through-hole | EPCOS             | B32922C3684K              | NO                   | YES       |
| C4                     | 1        | X2 capacitor  | 220 nF    | 277V       | Through-hole | EPCOS             | B32922C3224K              | NO                   | YES       |
| C5                     | 1        | Filtering capacitor                                     | 470 nF    | 450V       | Through-hole | EPCOS             | B32592C6474K              | NO                   | YES       |
| C6a, C6b               | 2        | Bulk capacitor  | 68 µF     | 450 V      | Through-hole | Rubycon           | 450QXW68M12.5X40          | NO                   | YES       |
| C7                     | 1        | Electrolytic capacitor                                  | 22 µF     | 50V        | Through-hole | Various           | Various                   | YES                  | YES       |
| U1                     |          | Diodes Bridge   | GBU406    | 4A, 600V   | Through-hole | LITE-ON           | GBU406                    | NO                   | YES       |
| L1                     | 1        | DM Choke  | 117 µH    | 75mW       | Through-hole | Pulse Engineering | PH9081NL                  | NO                   | YES       |
| CM1                    | 1        | Common Mode Filter                                      | 8.5 mH    | 85mW       | Through-hole | Pulse Engineering | PH9080NL                  | NO                   | YES       |
| L2                     | 1        | Boost inductor  | 200 µH    | 6Apk       | Through-hole | Wurth Elektronik  | 750370081 (EFD30)         | NO                   | YES       |
| Q1                     | 1        | Power MOSFET  | IPA50R250 | 550V       | TO220        | Infineon          | IPA50R250CP               | NO                   | YES       |
| D1                     | 1        | Boost diode   | MUR550    | 5A, 520V   | Axial        | ON Semiconductor  | MUR550APFG                | NO                   | YES       |
| D2                     | 1        | Bypass diode  | 1N5406    | 3A, 600 V  | Axial        | ON Semiconductor  | 1N5406G                   | NO                   | YES       |
| DZ2                    | 1        | 33-V zener diode  | MMSZ33T1  | 33V, 0.5W  | SOD-123      | ON Semiconductor  | MMSZ33T1G                 | NO                   | YES       |
| Rth1                   | 1        | Inrush Current Limiter                                  | 15 W      | 1.8Amax    | Through-hole | EPCOS             | B57153S0150M000           | NO                   | YES       |
| D3, D4                 | 2        | Switching diode   | D1N4148   | 100 V      | SOD123       | Vishay            | 1N4148W-V                 | NO                   | YES       |
| R1, R2                 | 2        | X2 Capacitors discharge resistor                        | 1 MW      | 1%, 500V   | SMD, 1206    | Vishay            | CRCW12061M00FKEA          | YES                  | YES       |
| R3                     | 1        | Current sense resistor                                  | 80 mW     | 1%, 3W     | Through-hole | Vishay            | LVR03R0800FE12            | NO                   | YES       |
| R4                     | 1        | SMD resistor, 1206, 1/4W                                | 10 kW     | 10%, 1/4W  | SMD, 1206    | Various           | Various                   | YES                  | YES       |
| R5                     | 1        | SMD resistor, 1206, 1/4W                                | 2.2 W     | 10%, 1/4W  | SMD, 1206    | Various           | Various                   | YES                  | YES       |
| R6                     | 1        | SMD resistor, 1206, 1/4W                                | 22 W      | 10%, 1/4W  | SMD, 1206    | Various           | Various                   | NO                   | YES       |
| <b>Control Section</b> |          |   |           |            |              |                   |                           |                      |           |
| R7, R13                | 2        | SMD resistor, 1206, 1/4W                                | 0 Ω       | 1%         | SMD, 1206    | Various           | Various                   | YES                  | YES       |
| R8                     | 1        | SMD resistor, 1206, 1/4W                                | 680 kΩ    | 1%         | SMD, 1206    | Various           | Various                   | YES                  | YES       |
| R9, R10, R23, R24, R25 | 5        | SMD resistor, 1206, 1/4W                                | 1.8 MΩ    | 1%         | SMD, 1206    | Various           | Various                   | YES                  | YES       |
| R11                    | 1        | SMD resistor, 1206, 1/4W                                | 27 kΩ     | 1%         | SMD, 1206    | Various           | Various                   | YES                  | YES       |
| R12                    | 1        | SMD resistor, 1206, 1/4W                                | 22 kΩ     | 1%         | SMD, 1206    | Various           | Various                   | YES                  | YES       |
| R14                    | 1        | SMD resistor, 1206, 1/4W                                | 270 kΩ    | 1%         | SMD, 1206    | Various           | Various                   | YES                  | YES       |
| R15, R16, R17          | 3        | SMD resistor, 1206, 1/4W                                | 120 kΩ    | 10%, 250 V | SMD, 1206    | Vishay            | CRCW1206120KJNEA          | YES                  | YES       |
| R18                    | 1        | SMD resistor, 1206, 1/4W                                | 27 Ω      | 10%        | SMD, 1206    | Various           | Various                   | YES                  | YES       |
| R20, R21               | 2        | SMD resistor, 1206, 1/4W                                | 4.7 kΩ    | 5%         | SMD, 1206    | Various           | Various                   | YES                  | YES       |
| R22                    | 1        | SMD resistor, 1206, 1/4W                                | 560 kΩ    | 1%         | SMD, 1206    | Various           | Various                   | YES                  | YES       |
| R26                    | 1        | SMD resistor, 1206, 1/4W                                | 120 kΩ    | 1%         | SMD, 1206    | Various           | Various                   | YES                  | YES       |
| C8                     | 1        | Capacitor   | 1 nF      | 25V, 10%   | SMD, 1206    | Various           | Various                   | YES                  | YES       |
| C9                     | 1        | Capacitor   | 2.2 µF    | 25V, 10%   | SMD, 1206    | Various           | Various                   | YES                  | YES       |
| C10, C15               | 2        | Capacitor   | 220 nF    | 25V, 10%   | SMD, 1206    | Various           | Various                   | YES                  | YES       |
| C11, C16               | 2        | Capacitor   | 470 pF    | 25V, 10%   | SMD, 1206    | Various           | Various                   | YES                  | YES       |
| C13                    | 1        | Capacitor   | 10 nF     | 100V, 10%  | SMD, 1206    | Various           | Various                   | YES                  | YES       |
| D5, D6, D7             | 3        | Switching diode   | D1N4148   | 100 V      | SOD123       | Vishay            | 1N4148W-V                 | NO                   | YES       |
| DZ1                    | 1        | 22-V zener diode  | MMSZ22T1  | 22V, 0.5W  | SOD-123      | ON Semiconductor  | MMSZ22T1G                 | NO                   | YES       |
| U2                     | 1        | PFC Controller  | NCP1611   | -          | SOIC-8       | ON Semiconductor  | NCP1611B                  | NO                   | YES       |

## Notes:

- C12 is not connected
- S3, S4, S6: not connected
- S1, S2, S5, S7 shorted. S1 insulated wire.
- Applications require the use of Y1 capacitors. In this case, CD12-E2GA102MYNSA from TDK or DE1E3KX102MA5B01 from muRata may be a good option for C1 and C2.