



Bill of Materials for the STR-NCP164A-WDFN6-GEVB Evaluation Board

| Designator   | Quantity | Description  | Value              | Tolerance | Footprint                 | Manufacturer     | Manufacturer Part Number | Substitution Allowed | Lead Free |
|--|----------|--|--------------------|-----------|---------------------------|------------------|--------------------------|----------------------|-----------|
| C1 C4 C19 C29 C31<br>C36 C41 C44 C45<br>C48 C49 C52 C54<br>C57 | 14       | CAP CER 1UF 10V X7S 0402                           | 1uF                |           | 0402                      | Murata           | GCM155C71A105KE38        | Yes                  | Yes       |
| C2 C6 C13 C14 C23<br>C27                                       | 6        | CAP CER 2.2UF 16V X7S 0603                         | 2.2uF              |           | 0603                      | Murata           | GRM188C71C225KE11        | Yes                  | Yes       |
| C3 C5 C11 C12 C22<br>C24                                       | 0        | DNI  | DNI                |           | DNI                       |                  |                          | Yes                  | Yes       |
| C7 C30 C35   | 3        | CAP CER 1000PF 50V X7R 0402                        | 1nF                |           | 0402                      | Murata           | GCM155R71H102KA37D       | Yes                  | Yes       |
| C8 C9 C15 C17  | 4        | CAP CER 10UF 25V X5R 0603                          | 10uF               |           | 0603                      | Murata           | GRT188R61E106ME13        | Yes                  | Yes       |
| C10 C16 C18 C20<br>C21 C25 C26 C28                             | 8        | CAP CER 1UF 25V X7R 0603                           | 1uF                |           | 0603                      | Murata           | GCM188R71E105KA64        | Yes                  | Yes       |
| C32 C60  | 2        | CAP CER 1uF 25V X6S 0402                           | 1uF                |           | 0402                      | Murata           | GRM155C81E105KE11        | Yes                  | Yes       |
| C33 C34 C40 C64<br>C75   | 5        | CAP CER 0.1UF 50V X7R 0402                         | 0.1uF              |           | 0402                      | Murata           | GCM155R71H104ME02        | Yes                  | Yes       |
| C37 C38 C39 C42<br>C43   | 5        | CAP CER 10000PF 50V X7R 0402                       | 10nF               |           | 0402                      | Murata           | GRM155R71H103KA88        | Yes                  | Yes       |
| C46 C47 C51 C53  | 4        | CAP CER 10000PF 16V X7R 0402                       | 10nF               |           | 0402                      | Murata           | GRM155R71C103KA01D       | Yes                  | Yes       |
| C50  | 1        | CAP CER 220PF 50V C0G/NP0 0402                     | 220pF              |           | 0402                      | Murata           | GCM1555C1H221JA16        | Yes                  | Yes       |
| C55 C56  | 2        | CAP CER 10000PF 100V X7R 0603                      | 10nF               |           | 0603                      | Murata           | GCM188R72A103KA37D       | Yes                  | Yes       |
| C58 C62 C67 C70<br>C71 C77                                     | 6        | CAP CER 4.7UF 6.3V X5R 0402                        | 4.7uF              |           | 0402                      | Murata           | GRM155R60J475ME47D       | Yes                  | Yes       |
| C59 C61 C65 C66  | 4        | CAP CER 10UF 25V X5R 0603                          | 10uF               |           | 0603                      | Murata           | GRM188R61E106MA73        | Yes                  | Yes       |
| C63 C72 C76 C78  | 4        | CAP CER 1UF 16V X5R 0402                           | 1uF                |           | 0402                      | Murata           | GRM155R61C105KA12        | Yes                  | Yes       |
| C68 C69  | 2        | CAP CER 12PF 50V C0G/NP0 0402                      | 12pF               |           | 0402                      | Murata           | GJM1555C1H120JB01D       | Yes                  | Yes       |
| C73 C74  | 2        | CAP CER 7.5PF 50V C0G/NP0 0402                     | 7.5pF              |           | 0402                      | Murata           | GJM1555C1H7R5CB01D       | Yes                  | Yes       |
| D1 D5  | 2        | Green LED  | 150060GS75000      |           | 0603                      | Würth Elektronik | 150060GS75000            | Yes                  | Yes       |
| D2 D4  | 2        | Blue LED   | 150060BS75000      |           | 0603                      | Würth Elektronik | 150060BS75000            | Yes                  | Yes       |
| D3   | 1        | Yellow LED   | 150060YS75000      |           | 0603                      | Würth Elektronik | 150060YS75000            | Yes                  | Yes       |
| D6   | 1        | Red LED  | 150060RS75000      |           | 0603                      | Würth Elektronik | 150060RS75000            | Yes                  | Yes       |
| D7   | 1        | ESD Protection Diodes                              | ESD7L              |           | SOT-723                   | ON Semiconductor | ESD7L5.0                 | No                   | Yes       |
| D8 D9  | 2        | Schottky Barrier Diode, 2.0 A, 20 V                | NSR20F20NX         |           | DSN2 0603                 | ON Semiconductor | NSR20F20NX               | No                   | Yes       |
| FB1  | 1        | Ferrite bead 220 Ohm 0805 1LN                      | 220@100M           |           | 0805                      | Würth Elektronik | 782853221                | Yes                  | Yes       |
| J1 J2 J3   | 3        | Rectangle power pad 200x300 mils                   | DNI                |           | 200x300mil                |                  |                          | Yes                  | Yes       |
| J4   | 1        | Standard 1x3pin 100mil Pitch Header (I2C Specific) | 613 003 111 21     |           | 1x3pin 100mil             | Würth Elektronik | 613 003 111 21           | Yes                  | Yes       |
| J5 J6 J17 J18  | 4        | PLASTIC HEXAGON NUT M3                             | 709940300          |           | M3 Nut                    | Würth            | 709940300                | Yes                  | Yes       |
| J7 J8 J9 J10 J11 J12<br>J13 J14 J15 J16                        | 10       | Standard 1x2pin 100mil Pitch Header                | 613 002 111 21     |           | 1x2pin 100mil             | Würth Elektronik | 613 002 111 21           | Yes                  | Yes       |
| J19 J20 J27 J28  | 4        | PLASTIC SPACER STUD METRIC THREAD M3 15MM F-M      | 971150365          |           | M3 15MM Standoff          | Würth            | 971150365                | Yes                  | Yes       |
| J21 J22  | 2        | Red Insulated 4mm socket for banana plugs          | 571-0500           |           | Red Banana Rec            | Deltron          | 571-0500                 | Yes                  | Yes       |
| J23 J24  | 2        | Black Insulated 4mm socket for banana plugs        | 571-0100           |           | Black Banana Rec          | Deltron          | 571-0100                 | Yes                  | Yes       |
| J25  | 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       |

|  |    |  |              |  |               |                       |                    |     |     |
|--|----|--|--------------|--|---------------|-----------------------|--------------------|-----|-----|
| J26  | 1  | Mini USB1/2 Type-B Connector                                   | 65100516121  |  | Mini USB1/2 B | Würth Elektronik      | 65100516121        | Yes | Yes |
| JP1 JP2 JP3 JP4 JP5 JP6  | 0  | DNI  | DNI          |  | DNI           | DNI                   | DNI                | Yes | Yes |
| JP7  | 1  | Surface Mount High Current Jumper Chip Resistor                | 6.5A         |  | 0402          | Stackpole Electronics | HCJ0402ZT0R00      | Yes | Yes |
| L1   | 1  | 1uH Shielded Multilayer Inductor 2.3A 63mOhm                   | 1.0uH        |  | 2.5mmx2mm     | Murata                | LQM2HPN1R0MJHL     | Yes | Yes |
| Q1 Q2 Q7 Q8 Q9   | 5  | Small Signal MOSFET 60V 340mA 2.5 Ohm Single N-Channel SOT-323 | 2N7002W      |  | SOT-323       | ON Semiconductor      | 2N7002W            | No  | Yes |
| Q3 Q4  | 2  | P-Channel Digital FET -25V, -0.46A, 1.1Ohm                     | FDV304P      |  | SOT-23-3      | ON Semiconductor      | FDV304P            | No  | Yes |
| Q5 Q6  | 2  | Single N-Channel, 60V, 27.5mOhm, 21A                           | NVMFS5C680NL |  | SO8-FL DFN-5  | ON Semiconductor      | NVMFS5C680NL1G     | No  | Yes |
| Q10  | 1  | Single N-Channel, PowerTrench SyncFET 30V, 22A, 5.0mOhm        | FDMS0312AS   |  | SO8-FL DFN-5  | ON Semiconductor      | FDMS0312AS         | No  | Yes |
| R1 R15 R16 R17 R18 R19 R21 R22 R23 R33 R38 R39 R40 R49 R52 R60 R64 R65 R70 R75 R79 R80 R85 R89 | 24 | RES SMD 10K OHM 1% 1/16W 0402                                  | 10K          |  | 0402          | Vishay Dale           | CRCW040210K0FKED   | Yes | Yes |
| R2   | 1  | RES SMD 17.8K OHM 1% 1/16W 0402                                | 17.8K        |  | 0402          | Vishay Dale           | CRCW040217K8FKED   | Yes | Yes |
| R3   | 1  | RES SMD 14K OHM 1% 1/16W 0402                                  | 14K          |  | 0402          | Vishay Dale           | CRCW040214K0FKED   | Yes | Yes |
| R4 R6 R9   | 3  | RES SMD 9.31K OHM 1% 1/10W 0603                                | 9.31K        |  | 0603          | Vishay Dale           | CRCW06039K31FKEA   | Yes | Yes |
| R5 R7 R10  | 3  | RES SMD 22.1K OHM 1% 1/10W 0603                                | 22.1K        |  | 0603          | Vishay Dale           | CRCW060322K1FKEA   | Yes | Yes |
| R8 R11   | 2  | RES SMD 47m OHM 1% 1W 1206                                     | 47m          |  | 1206          | Panasonic             | ERJ-8CWF047        | Yes | Yes |
| R12  | 1  | RES SMD 1.37K OHM 1% 1/10W 0402                                | 1.37K        |  | 0402          | Panasonic             | ERJ-2RKF1371       | Yes | Yes |
| R13 R14  | 2  | RES SMD 220 OHM 5% 0.4W 0805                                   | 220          |  | 0805          | Rohm Semiconductor    | ESR10EZPJ221       | Yes | Yes |
| R20 R26 R28 R62  | 4  | RES SMD 100K OHM 1% 1/16W 0402                                 | 100K         |  | 0402          | Vishay Dale           | CRCW0402100KFKED   | Yes | Yes |
| R24  | 1  | RES SMD 2.32K OHM 1% 1/16W 0402                                | 2.32K        |  | 0402          | Vishay Dale           | CRCW04022K32FKED   | Yes | Yes |
| R25  | 1  | RES SMD 100 OHM 1% 1/10W 0603                                  | 100          |  | 0603          | Vishay Dale           | CRCW0603100RFKEA   | Yes | Yes |
| R27 R32 R81 R84  | 4  | RES SMD 100 OHM 1% 1/16W 0402                                  | 100          |  | 0402          | Vishay Dale           | CRCW0402100RFKEA   | Yes | Yes |
| R29 R43  | 2  | RES SMD 1K OHM 1% 1/16W 0402                                   | 1K           |  | 0402          | Vishay Dale           | CRCW04021K00FKED   | Yes | Yes |
| R30  | 1  | RES SMD 56.2K OHM 0.1% 1/16W 0402                              | 56.2K        |  | 0402          | Panasonic             | ERA-2AEB5622X      | Yes | Yes |
| R31 R35  | 2  | RES SMD 33.2K OHM 1% 1/16W 0402                                | 33.2K        |  | 0402          | Vishay Dale           | CRCW040233K2FKED   | Yes | Yes |
| R34  | 1  | RES SMD 16.5K OHM 1% 1/16W 0402                                | 16.5K        |  | 0402          | Vishay Dale           | CRCW040216K5FKED   | Yes | Yes |
| R36  | 1  | RES SMD 23.7K OHM 0.1% 1/16W 0402                              | 23.7K        |  | 0402          | Panasonic             | ERA-2AEB2372X      | Yes | Yes |
| R37 R41  | 2  | RES SMD 4.75K OHM 1% 1/16W 0402                                | 4.75K        |  | 0402          | Vishay Dale           | CRCW04024K75FKED   | Yes | Yes |
| R42 R55  | 2  | RES SMD 8.25K OHM 0.1% 1/16W 0402                              | 8.25K        |  | 0402          | Panasonic             | ERA-2AEB8251X      | Yes | Yes |
| R44  | 1  | RES SMD 220m OHM 1% 2W 2512                                    | 220m         |  | 2512          | Bourns Inc.           | CRM2512-FX-R220ELF | Yes | Yes |
| R45  | 1  | RES SMD 11K OHM 0.1% 1/16W 0402                                | 11K          |  | 0402          | Panasonic             | ERA-2AEB113X       | Yes | Yes |
| R46 R47 R48 R50 R54  | 5  | RES SMD 10K OHM 0.1% 1/16W 0402                                | 10K          |  | 0402          | Panasonic             | ERA-2AEB103X       | Yes | Yes |
| R51 R53  | 2  | RES SMD 1K OHM 1% 1/10W 0603                                   | 1K           |  | 0603          | Vishay Dale           | CRCW06031K00FKEA   | Yes | Yes |
| R56  | 1  | RES SMD 10.2K OHM 0.1% 1/16W 0402                              | 10.2K        |  | 0402          | Panasonic             | ERA-2AEB1022X      | Yes | Yes |
| R57  | 1  | RES SMD 7.5K OHM 0.1% 1/16W 0402                               | 7.5K         |  | 0402          | Panasonic             | ERA-2AEB752X       | Yes | Yes |
| R58  | 1  | RES SMD 8.87K OHM 1% 1/16W 0402                                | 8.87K        |  | 0402          | Vishay Dale           | CRCW04028K87FKED   | Yes | Yes |
| R59  | 1  | RES SMD 3.32K OHM 1% 1/16W 0402                                | 3.32K        |  | 0402          | Vishay Dale           | CRCW04023K32FKED   | Yes | Yes |
| R61 R63 R72  | 3  | RES SMD 16.2K OHM 1% 1/16W 0402                                | 16.2K        |  | 0402          | Vishay Dale           | CRCW040216K2FKED   | Yes | Yes |
| R66  | 0  | DNI  | DNI          |  | DNI           | DNI                   | DNI                | Yes | Yes |
| R67  | 1  | RES SMD 16K OHM 1% 1/16W 0402                                  | 16K          |  | 0402          | Vishay Dale           | CRCW040216K0FKED   | Yes | Yes |
| R68  | 1  | RES SMD 0 OHM JUMPER 1/16W 0402                                | 0            |  | 0402          | Vishay Dale           | CRCW04020000Z0ED   | Yes | Yes |
| R69  | 1  | RES SMD 3.09K OHM 1% 1/16W 0402                                | 3.09K        |  | 0402          | Vishay Dale           | CRCW04023K09FKED   | Yes | Yes |
| R71  | 1  | RES SMD 21.5K OHM 1% 1/16W 0402                                | 21.5K        |  | 0402          | Vishay Dale           | CRCW040221K5FKED   | Yes | Yes |
| R73 R74 R76 R77  | 4  | RES SMD 4.75 OHM 1% 1/10W 0603                                 | 4.75         |  | 0603          | Vishay Dale           | CRCW06034R75FKEA   | Yes | Yes |
| R78  | 1  | RES SMD 681 OHM 1% 1/16W 0402                                  | 681          |  | 0402          | Vishay Dale           | CRCW0402681RFKEA   | Yes | Yes |

|   |    |   |                 |  |                |                  |  |     |     |
|---|----|---|-----------------|--|----------------|------------------|--|-----|-----|
| R82   | 1  | RES SMD 9.31K OHM 1% 1/16W 0402   | 9.31K           |  | 0402           | Vishay Dale      | CRCW04029K31FKED                         | Yes | Yes |
| R83   | 1  | RES SMD 4.99K OHM 1% 1/16W 0402   | 4.99K           |  | 0402           | Vishay Dale      | CRCW04024K99FKED                         | Yes | Yes |
| R86   | 1  | RES SMD 0 OHM JUMPER 1/10W 0603   | 0               |  | 0603           | Vishay Dale      | CRCW06030000Z0EA                         | Yes | Yes |
| R87 R88   | 2  | RES SMD 3 OHM 1% 1W 2512  | 3               |  | 2512           | Panasonic        | ERJ-1TRQF3R0                             | Yes | Yes |
| SW1   | 1  | SWITCH TACTILE SPST-NO 0.05A 12V  | 434153017835    |  | MOM1 SMD       | Würth Elektronik | 434153017835                             | Yes | Yes |
| TP1 TP2 TP3 TP4 TP5 TP6 TP7 TP8 TP9 TP12 TP13 TP14 TP16 TP19 TP20 TP21 TP22 TP23 TP24 TP25 TP26 TP27 TP28 TP29 TP30 TP31 TP32 TP33 TP34 TP35 TP38 TP39 TP40 TP41 TP42 TP43 TP44 | 37 | Passive Probe Tip Tektronix P5050B (Black) Tip  | DNI             |  | 0.9mm          |                  |  | Yes | Yes |
| TP10 TP11 TP17 TP18   | 4  | PC TEST POINT COMPACT   | 5016            |  | Test Loop      | Keystone         | 5016                                     | Yes | Yes |
| TP15  | 1  | 63mil Hole 100mil Pad   | DNI             |  | 63mil          |                  |  | Yes | Yes |
| TP36 TP37 TP46 TP50 TP51  | 5  | Passive Probe Tip Tektronix P5050 (Tan) Tip   | DNI             |  | 0.75mm         |                  |  | Yes | Yes |
| TP45 TP47 TP48 TP49 TP52  | 5  | Surface Mount 1mm Circle Test Point   | DNI             |  | 1mm Circle     |                  |  | Yes | Yes |
| U1 U5 U12 U14   | 4  | Digital Temperature Sensor with 2-wire Interface  | NCT375          |  | DFN8 2x2mm     | ON Semiconductor | NCT375MNR2G                              | No  | Yes |
| U13   | 1  | Operational Amplifier, 3 MHz, Low Power, Rail to Rail, Dual Micro8                          | NCS20062        |  | Micro8         | ON Semiconductor | NCS20062DMR2G                            | No  | Yes |
| U2  | 1  | Low Quiescent Current, Programmable Delay Time, Supervisory Circuit                         | NCP308MTADJ     |  | WDFN6 2x2mm    | ON Semiconductor | NCP308MTADJTBG                           | No  | Yes |
| U3  | 0  | DNI   | DNI             |  | DNI            |                  | DNI                                      |     | Yes |
| U4  | 1  | 300mA, Ultra-Low Noise and High PSRR Adjustable LDO A Version 5V5IN                         | NCP164A-ADJ     |  | WDFN6          | ON Semiconductor | NCP164AMTADJTAG                          | No  | Yes |
| U6 U8 U10   | 3  | IntelliMAX 3 A-Capable, Slew-Rate-Controlled Load Switch with True Reverse Current Blocking | FPF1048         |  | WLCSP6         | ON Semiconductor | FPF1048BUCX                              | No  | Yes |
| U7  | 1  | Synchronous Buck Converter, 3 MHz, 2 A  | NCV6324C        |  | WDFN8          | ON Semiconductor | NCV6324CMTAATBG                          | No  | Yes |
| U9  | 0  | DNI   | DNI             |  | DNI            |                  | DNI                                      |     | Yes |
| U11   | 1  | Full-Function Load Switch with Adjustable Current Limit                                     | FPF2193         |  | WLCSP          | ON Semiconductor | FPF2193                                  | No  | Yes |
| U15 U16 U18   | 3  | 0.9V Supply, Rail to Rail I/O, Single Op-Amp with Enable                                    | NCS2002         |  | TSSOP-6        | ON Semiconductor | NCS2002SN1T1G                            | No  | Yes |
| U17   | 1  | Operational Amplifier, 50 uV Offset, 0.25 uV/C, Zero-Drift Precision, Low Power             | NCS325          |  | SOT23-5        | ON Semiconductor | NCS325SN2T1G                             | No  | Yes |
| U19 U20   | 2  | Current-Shunt Monitor, Voltage Output, Bi-Directional Zero-Drift, Gain = 100V/V             | NCS214R         |  | SC-70-6        | ON Semiconductor | NCS214RSQT2G                             | No  | Yes |
| U21   | 1  | 100mA 5Vout Charge Pump Regulated 1MHz DC/DC Converter                                      | FAN5602         |  | MLP-8 3x3      | ON Semiconductor | FAN5602MP5X                              | No  | Yes |
| U22   | 1  | EFM32 Giant Gecko 32-bit Microcontroller  | EFM32GG380F1024 |  | QFP100 14x14   | Silicon Labs     | EFM32GG380F1024G-E-QFP100R               | Yes | Yes |
| U23   | 1  | Single Channel 10A High Speed Low-side Fet Driver   | NCP81074A       |  | SOIC-8         | ON Semiconductor | NCP81074ADR2G                            | No  | Yes |
| U24   | 1  | USB to BASIC UART IC  | FT230X          |  | QFN16 4x4      | FTDI             | FT230XQ-R                                | Yes | Yes |
| U25   | 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-48.00000MHZ-LN-CD-1             | Yes | Yes |