

Renesas Electronics Corporation

**RAJ306102 Evaluation Board Rev1.01 BOM (RTK0EML2J0D01020BJ)**

| No | Parts Name                               | Parts Designator  |  | Quantity |         | Description  | Manufacturer   | Note  |
|----|--|---|--|----------|---------|--|--|---|
|    | Item                                     | Mount   | Unmount  | Mount    | Unmount | Part Number (Product Spec)   |  |   |
| 1  | RAJ306102                                | U1  | -  | 1        | -       | RAJ306102  | Renesas  |   |
| 2  | Comparator                               | CMP301  | -  | 1        | -       | UPC277MP-KAA<br>NJM2903CRB1<br>BA82903YFVM-C   | Renesas<br>JRC<br>ROHM   | Alternate parts<br>Alternate parts  |
| 3  | Amplifier (phase current detection)      | AMP301,AMP302   | -  | 2        | -       | READ2302GSP<br>READ2304GSP   | Renesas<br>Renesas   | Alternate parts   |
| 4  | 3.3VLDO                                  | U302,U502   | -  | 2        | -       | ISL9005AIRNZ-T   | Renesas  |   |
| 5  | 5.0VLDO                                  | U301  | -  | 1        | -       | NCP781BMN050TAG  | ON Semiconductor   |   |
| 6  | MOSFET                                   | Q1,Q2,Q3,Q4,Q5,<br>Q6                                     | -  | 6        | -       | TPH12008NH(80V, 24A)<br>TPH7R506NH(60V,22A)<br>TPH9R506PL(60V,34A)<br>TPH7R006PL(60V,60A)<br>TPH2R506PL(60V,100A)<br>TPH14006NH(60V,34A)<br>TPH1R306PL(60V,100A) | TOSHIBA<br>TOSHIBA<br>TOSHIBA<br>TOSHIBA<br>TOSHIBA<br>TOSHIBA   | Default Part<br>Compatible Parts<br>(Change by application specifications.) |
| 7  | Fuse (6.3x32m)                           | FU1   | -  | 1        | -       | 8020.0607.H(30A)<br>8020.0602.H(10A)<br>8020.0603.H(12A)<br>8020.0604.H(15A)<br>8020.0605.H(20A)<br>8020.0606.H(25A)<br>8020.0608.H(40A)<br>8020.0609.H(50A)     | Schurter Inc.<br>Schurter Inc.<br>Schurter Inc.<br>Schurter Inc.<br>Schurter Inc.<br>Schurter Inc.<br>Schurter Inc.<br>Schurter Inc. | Default Part<br>Compatible Parts<br>(Change by application specifications.) |
| 8  | Fuse terminal                            | TB1,TB2   | -  | 2        | -       | 01020071Z  | Littelfuse   |   |
| 9  | LED                                      | LED0,LED1,LED2,LED3,LED4,<br>LED5,LED6                    | -  | 7        | -       | SML-311UTT86   | ROHM   |   |
| 10 | Coil (33uH/>2A)                          | L1  | -  | 1        | -       | SPM6545VT-330M-D<br>XAL6060-333MEC   | TDK<br>Coilcraft   | Alternate parts   |
| 11 | Power terminal (RED)                     | J1,J2   | -  | 2        | -       | TM052_RED  | MSK  |   |
| 12 | Power terminal (BLACK)                   | J3,J4   | -  | 2        | -       | TM052_BLACK  | MSK  |   |
| 13 | Motor terminal                           | U,V,W   | -  | 3        | -       | 63849-1<br>63824-1   | TEConnectivity<br>TEConnectivity   | Alternate parts   |
| 14 | Connector (1*2) SMD                      | JP104,JP501   | -  | 2        | -       | TSM-102-01-L-SV  | SAMTEC   |   |
| 15 | Connector (1*3) SMD                      | JP101,JP102,JP103,JP301,JP302,<br>JP303,JP304,JP502,JP503 | -  | 9        | -       | TSM-103-01-L-SV  | SAMTEC   |   |
| 16 | Connector (1*4)                          | -   | TP_UART,TP_I2C   | -        | 2       | A2-4PA-2.54DSA   | HRS  |   |
| 17 | Connector (1*4) with guide               | -   | CN_UART,CN_I2C   | -        | 2       | B4B-XH-A(LF)(SN)   | JST  |   |
| 18 | Connector (1*5)                          | -   | TP_VOL   | -        | 1       | A2-5PA-2.54DSA   | HRS  |   |
| 19 | Connector (1*5) with guide               | -   | CN_VOL   | -        | 1       | B5B-XH-A(LF)(SN)   | JST  |   |
| 20 | Connector (1*6)                          | -   | TP_SPI,TP_HALL   | -        | 2       | A2-6PA-2.54DSA   | HRS  |   |
| 21 | Connector (1*6) with guide               | CN_HALL   | CN_SPI   | 1        | 1       | B6B-XH-A(LF)(SN)   | JST  |   |
| 22 | Connector (1*8)                          | -   | TP_DIGI1,CN_DIGI1,TP_LED,<br>TP_ANA,CN_LED,CN_ANA                      | -        | 6       | A2-8PA-2.54DSA   | HRS  |   |
| 23 | Connector (2*4)                          | ICS_SEL   | -  | 1        | -       | TSM-104-01-L-DV  | SAMTEC   |   |
| 24 | Connector (2*10)                         | -   | CN_EXT_MOS   | -        | 1       | A1-20PA-2.54DSA  | HRS  |   |
| 25 | Chip capacitor (33pF/>10V/0603m-1005m)   | C302,C308,C314  | -  | 3        | -       | GRM0335C1E330JA01D(0603m)  | Murata   |   |
| 26 | Chip capacitor (100pF/>10V/0603m-1005m)  | C304,C310,C316  | -  | 3        | -       | GRM0335C1E101JA01(0603m)   | Murata   |   |
| 27 | Chip capacitor (330pF/>10V/0603m-1005m)  | C15,C16,C17   | -  | 3        | -       | GRM0335C1E331JA01D(0603m)  | Murata   |   |
| 28 | Chip capacitor (1000pF/>10V/0603m-1005m) | C319,C320,C330,C331,C332                                  | -  | 5        | -       | GRM0335C1E102JA01D(0603m)  | Murata   |   |
| 29 | Chip capacitor (2200pF/>10V/0603m-1005m) | C1  | C2,C301,C303,C305,C306,<br>C307,C309,C311,C312,C313,<br>C315,C317,C318 | 1        | 13      | GRM033R61A222KA01D(0603m)  | Murata   |   |

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| No | Parts Name                                | Parts Designator   |  | Quantity |         | Description                      | Manufacturer | Note            |
|----|---|--|--|----------|---------|----------------------------------|--------------|-----------------|
|    | Item                                      | Mount  | Unmount                                      | Mount    | Unmount | Part Number (Product Spec)       |              |                 |
| 30 | Chip capacitor (0.01uF/>10V/0603m-1005m)  | -  | C12,C13,C14,C511,C328                        | -        | 5       | GRM033R61A103KA01D(0603m)        | Murata       |                 |
| 31 | Chip capacitor (0.022uF/>10V/0603m-1005m) | C351,C352,C353   | -  | 3        | -       | GRM033R61A223KE84D(0603m)        | Murata       |                 |
| 32 | Chip capacitor (0.1uF/>10V/0603m-1005m)   | C101,C102,C103,C104,C105,<br>C106,C321,C322,C323,C401          | C327,C510                                    | 10       | 2       | GRM033R61E104KE14(0603m)         | Murata       |                 |
| 33 | Chip capacitor (1uF/>10V/1005m-1608m)     | C325,C326,C329,C403,C406,<br>C509,C512                         | -  | 7        | -       | MCASL105SB5105KFNA01(1005m)      | YUDEN        |                 |
|    |   |  |  |          |         | MCASL105SB5105KFNA1J(1005m)      | YUDEN        |                 |
|    |   |  |  |          |         | MMASL105SB5105KFNA01(1005m)      | YUDEN        |                 |
| 34 | Chip capacitor (10uF/>10V/1608m-2012m)    | -  | C29  | -        | 1       | GRM188D71A106MA73(1608m)         | Murata       |                 |
| 35 | Chip capacitor (22uF/>10V/1608m-2012m)    | C18,C19  | -  | 2        | -       | GRM21BD71A226ME44(2012m)         | Murata       |                 |
| 36 | Chip capacitor (4.7uF/25V/1005m-1608m)    | C9   | -  | 1        | -       | GRM188C81E475KE11(1608m)         | Murata       |                 |
| 37 | Chip capacitor (10uF/25V/2012m-3225m)     | C3   | -  | 1        | -       | CGA4J1X7S1E106K125AC(2012)       | TDK          |                 |
| 38 | Chip capacitor (1000pF/100V/1005m-1608m)  | -  | C28  | -        | 1       | GRM1885C2A102JA01(1608m)         | Murata       |                 |
| 39 | Chip capacitor (4700pF/100V/1005m-1608m)  | -  | C21,C22,C23                                  | -        | 3       | GRM155R72A472KA01(1005m)         | Murata       |                 |
| 40 | Chip capacitor (0.1uF/100V/1005m-1608m)   | C5,C24   | -  | 2        | -       | GRM155R62A104KE14(1005m)         | Murata       |                 |
| 41 | Chip capacitor (0.22uF/100V/1608m-2012m)  | C4   | -  | 1        | -       | GRM21AR72A224KAC5K(2012m)        | Murata       |                 |
| 42 | Chip capacitor (1uF/>100V/2012m-3216m)    | C324   | -  | 1        | -       | GRM21BC72A105KE01L(2012m)        | Murata       |                 |
| 43 | Chip capacitor (10uF/100V/3216m-3225m)    | C6,C7,C25  | C26,C27                                      | 3        | 3       | GRM32EC72A106KE05(3225m)         | YUDEN        |                 |
| 44 | Chip capacitor (10uF/100V/3225m-5750m)    | -  | C8   | -        | 1       | GRM32EC72A106KE05(3225m)         | YUDEN        |                 |
| 45 | Electrolytic capacitor (220uF/100V) SMD   | C10  | -  | 1        | -       | EEEFK2A221AM                     | Panasonic    |                 |
|    |   |  |  |          |         | EEVFK2A221M                      | Panasonic    | Alternate parts |
|    |   |  |  |          |         | UCD2A221MNQ1MS                   | Nichicon     | Alternate parts |
| 46 | Electrolytic capacitor (220uF/100V)DIP    | -  | C11  | -        | 1       | EEUFS2A221                       | Panasonic    |                 |
| 47 | Chip resistor (0Ω/1005m-1608m)            | R15,R16,R23,R24,R25,<br>R26,R27,R42,R54,R79,                   | R17,R18,R19,R20,R21,<br>R22,R34,R35,R36,R37, | 83       | 36      | RK73Z1JTDD(1608m)                | KOA          | Alternate parts |
|    |   |  |  |          |         | RC0603JR-130RL                   | YAGEO        |                 |
| 48 | Chip resistor (50m/6432m-10052m/3W)       | SR1,SR2,SR3,SR4  | -  | 4        | -       | CRA2512-FZ-R050ELF(50m/6432m/3W) | Bourns Inc.  |                 |
| 49 | Chip resistor (5.1Ω/1005m-1608m)          | R6,R7,R8   | -  | 1        | -       | RK73B1JTDD5R1J(1608m)            | KOA          |                 |
| 50 | Chip resistor (100Ω/1005m-1608m)          | R322,R323  | -  | 2        | -       | RK73B1ETTP101J(1005m)            | KOA          |                 |
| 51 | Chip resistor (200Ω/1005m-1608m)          | R307,R314,R321,R332,R333,<br>R334                              | -  | 6        | -       | RK73B1ETTP201J(1005m)            | KOA          |                 |
| 52 | Chip resistor (300Ω/1005m-1608m)          | R497   | -  | 1        | -       | RK73B1ETTP301J(1005m)            | KOA          |                 |
| 53 | Chip resistor (510Ω/1005m-1608m)          | R176   | -  | 1        | -       | RK73B1ETTP511J(1005m)            | KOA          |                 |
| 54 | Chip resistor (1kΩ/1005m-1608m)           | R28,R29,R30,R177,R192,<br>R193,R493,R494                       | R55,R56,R57,R173,R174                        | 8        | 5       | RK73B1ETTP102J(1005m)            | KOA          |                 |
|    |   |  |  |          |         | RC0402JR-071KL (1005m)           | YAGEO        | Alternate parts |
| 55 | Chip resistor (1.8kΩ/1005m-1608m)         | R306,R313,R320   | -  | 3        | -       | RK73B1ETTP182J(1005m)            | KOA          |                 |
| 56 | Chip resistor (2kΩ/1005m-1608m)           | R194,R197,R303,R304,R310,<br>R311,R317,R318,R352,R355,<br>R358 | -  | 11       | -       | RK73B1ETTP202J(1005m)            | KOA          |                 |
| 57 | Chip resistor (3.48kΩ/1005m-1608m/1%)     | R3   | -  | 1        | -       | RK73H1ETTP3481F(1005m)           | KOA          |                 |
| 58 | Chip resistor (6.8kΩ/1005m-1608m)         | R53,R180,R181,R182,R183,<br>R184,R185                          | -  | 7        | -       | RK73B1ETTP682J(1005m)            | KOA          |                 |

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| No | Parts Name                            | Parts Designator  |                 | Quantity |         | Description                | Manufacturer        | Note            |
|----|---------------------------------------|---|-----------------|----------|---------|----------------------------|---------------------|-----------------|
|    | Item                                  | Mount   | Unmount         | Mount    | Unmount | Part Number (Product Spec) |                     |                 |
| 59 | Chip resistor (10kΩ/1005m-1608m)      | R31,R32,R33,R186,R187,<br>R189,R190,R302,R309,R316,<br>R324,R325,R326,R327,R328,<br>R329,R330,R331,R471,R495,<br>R496 | R171,R188,R191  | 21       | 3       | RK73B1ETTP103J(1005m)      | KOA                 |                 |
| 60 | Chip resistor (20kΩ/1005m-1608m)      | R179,R301,R305,R308,R312,<br>R315,R319  | -               | 7        | -       | RK73B1ETTP203J(1005m)      | KOA                 |                 |
| 61 | Chip resistor (39kΩ/1005m-1608m)      | R1  | -               | 1        | -       | RK73B1ETTP393J(1005m)      | KOA                 |                 |
|    |                                       |   |                 |          |         | RK73H1ETTP3902F(1005m)     | KOA                 | Alternate parts |
|    |                                       |   |                 |          |         | ERJ-2RKF3902X(1005m)       | Panasonic           | Alternate parts |
| 62 | Chip resistor (48.7kΩ/1005m-1608m/1%) | R2  | -               | 1        | -       | RK73H1ETTP4872F(1005m)     | KOA                 |                 |
|    |                                       |   |                 |          |         | ERJ-2RKF4872X(1005m)       | Panasonic           | Alternate parts |
| 63 | Chip resistor (91kΩ/1005m-1608m/1%)   | R5  | -               | 1        | -       | RK73H1ETTP9102F(1005m)     | KOA                 |                 |
|    |                                       |   |                 |          |         | ERJ-2RKF9102X(1005m)       | Panasonic           | Alternate parts |
| 64 | Chip resistor (100kΩ/1005m-1608m)     | R9,R10,R11,R12,R13,<br>R14  | -               | 6        | -       | RK73B1ETTP104J(1005m)      | KOA                 |                 |
| 65 | Chip resistor (160kΩ/1005m-1608m/1%)  | R4  | -               | 1        | -       | RK73H1ETTP1603F(1005m)     | KOA                 |                 |
|    |                                       |   |                 |          |         | ERJ-2RKF1603X(1005m)       | Panasonic           | Alternate parts |
| 66 | Chip resistor (470kΩ/1005m-1608m)     | R178,R195,R196,R353,R356,<br>R359,R373  | -               | 7        | -       | RK73B1ETTP474J(1005m)      | KOA                 |                 |
| 67 | Potentiometer (10Kohm)                | VR101   | -               | 1        | -       | RK09L114001T               | ALPS                |                 |
| 68 | Variable resistor (10Kohm)            | VR301   | -               | 1        | -       | ST4ETB103                  | Nidec Copal         |                 |
| 69 | Thermistor                            | Z101  | -               | 1        | -       | NXFT15XH103FEAB050         | Murata              |                 |
|    |                                       |   |                 |          |         | NXFT15XH103FEAB025         | Murata              | Alternate parts |
| 70 | Push switch                           | S401  | -               | 1        | -       | SKRPABE010                 | ALPS                |                 |
| 71 | Toggle switch                         | SW101,SW102   | -               | 2        | -       | ATE1D-2M3-10-Z             | Nidec Copal         |                 |
| 72 | Varistor diode                        | -   | VS1             | -        | 1       | V120MLA1210N               | Littelfuse          |                 |
| 73 | Zener diode                           | ZD1,ZD2,ZD3,ZD4,ZD5,ZD6   | -               | 6        | -       | MM5Z18V                    | Onsemi              |                 |
| 74 | Zener diode (13V, 1W)                 | -   | ZD7             | -        | 1       | 1SMB5928BT3G               | ON Semiconductor    |                 |
|    |                                       |   |                 |          |         | SML4743-E3/61              | Vishay              | Alternate parts |
| 75 | Diode (single, 80V or100V/2A)         | D2,D3,D4  | -               | 3        | -       | B280-13-F(80V)             | Diodes Incorporated |                 |
|    |                                       |   |                 |          |         | B2100-13-F(100V)           | Diodes Incorporated | Alternate parts |
| 76 | Diode (single)                        | D401,D501   | -               | 2        | -       | PMEG2005EH,115             | NXP                 |                 |
| 77 | Diode (series,SOT-323,>150mA,>20V)    | D101,D102,D301,D302,D303,<br>D304,D305,D306,D307,D308,<br>D309,D351,D352,D353   | -               | 14       | -       | BAV99WT1G                  | ON Semiconductor    |                 |
|    |                                       |   |                 |          |         | BAV99W-7-F                 | DiodesZetex         | Alternate parts |
|    |                                       |   |                 |          |         | BAV99W,115                 | Nexperia            | Alternate parts |
| 78 | Diode (0.6V 100V/2A)                  | D1  | -               | 1        | -       | STPS5H100AF                | STMicroelectronics  |                 |
|    |                                       |   |                 |          |         | NRV TSA4100E               | ON Semiconductor    | Alternate parts |
| 79 | Ferrite bead                          | FB1   | -               | 1        | -       | MPZ1608S102ATA00           | TDK                 |                 |
| 80 | Test terminal                         | TP_GND1,TP_GND2,TP_GND3,<br>TP_GND4   | -               | 4        | -       | JP-1                       | MAC8                |                 |
| 81 | Test terminal                         | -   | TP1,TP2,TP_65_S | -        | 3       | LC-22-G                    | MAC8                |                 |
| 82 | Potentiometer knob                    | VR101   | -               | 1        | -       | 1101                       | Davies Molding      |                 |
| 83 | Jumper cap                            | JP101,JP102,JP103,JP104,JP301,<br>JP302,JP303,JP304,JP501,JP502,<br>JP503,ICS_SEL(x4)                                 | -               | 15       | -       | SNT-100-BK-T               | Samtec              |                 |
|    |                                       |   |                 |          |         | 251-8503                   | RS-PRO              | Alternate parts |
|    |                                       |   |                 |          |         | HIF3GA-2.54SP              | HIROSE              | Alternate parts |

## Revision History

| Revision | Date        | Description      |
|----------|-------------|------------------|
| 1.00     | Oct.11.2023 | ·Initial release |
|          |             |                  |