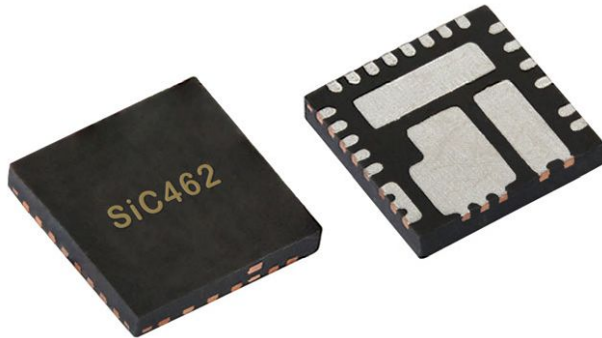


# Reference Board User's Manual for SiC464 (2 A), SiC463 (4 A), SiC462 (6 A), and SiC461 (10 A) Synchronous Buck Regulators



## DESCRIPTION

This reference board allows the user to evaluate the SiC461 (10 A), SiC462 (6 A), SiC463 (4 A), or the SiC464 (2 A) microBUCK<sup>®</sup> regulators for their features and functionalities. It can also be a reference design for a user's application. The board is configured for 4.5 V to 60 V input. Output is model dependent. The operating range may be modified by changing components such as the inductor, feedback resistor, and ripple injection networks.

The SiC46x family of microBUCK regulators is a wide input voltage high efficiency synchronous buck regulator with integrated high-side and low-side power MOSFETs. Its power stage is capable of supplying up to 10 A continuous current at up to 2 MHz switching frequency. These regulators produce an adjustable output voltage down to 0.8 V from 4.5 V to 60 V input rail to accommodate a variety of applications, including computing, consumer electronics, telecom, and industrial.

SiC46x's architecture delivers ultrafast transient response with minimum output capacitance and tight ripple regulation at very light load. The device is stable with any type of output capacitor. The device also incorporates a power saving scheme that significantly increases light load efficiency.

This board has UVLO capability on the input rail and a user programmable soft start.

## ORDERING INFORMATION

| BOARD PART NUMBER | MAX. OUTPUT CURRENT |
|-------------------|---------------------|
| SiC464EVB         | 2 A                 |
| SiC463EVB         | 4 A                 |
| SiC462EVB         | 6 A                 |
| SiC461EVB         | 10 A                |

## FEATURES

- Versatile
  - Single supply operation from 4.5 V to 60 V input voltage
  - Adjustable output voltage down to 0.8 V
  - Scalable solution
    - 2 A (SiC464), 4 A (SiC463), 6 A (SiC462), 10 A (SiC461)
  - Output voltage tracking and sequencing with pre-bias start up
  - $\pm 1\%$  output voltage accuracy at  $-40\text{ }^{\circ}\text{C}$  to  $+125\text{ }^{\circ}\text{C}$
- Highly efficient
  - 98 % peak efficiency
  - 5  $\mu\text{A}$  supply current at shutdown
  - 250  $\mu\text{A}$  operating current not switching
- Highly configurable
  - Adjustable switching frequency from 100 kHz to 2 MHz
  - Adjustable soft start and adjustable current limit
  - 3 modes of operation, forced continuous conduction, power save or ultrasonic
- Robust and reliable
  - Output over-voltage protection
  - Output under-voltage / short circuit protection with auto retry
  - Power good flag and over temperature protection
- Design support tool
  - PowerCAD online design simulation  
<https://vishay.transim.com>
  - Inductor selection tool  
[www.vishay.com/inductors/calculator/calculator/](http://www.vishay.com/inductors/calculator/calculator/)

## APPLICATIONS

- Industrial and automation
- Home automation
- Industrial computing
- Base station power supplies
- Wall transformer regulation
- Robotics
- Drones
- Battery management systems
- Power tools
- Vending, ATM, and slot machine

## SPECIFICATIONS

This reference board allows the end user to evaluate the SiC461 (10 A), SiC462 (6 A), SiC463 (4 A) or the SiC464 (2 A) microBUCK<sup>®</sup> regulators for their features and functionalities. It can also be a reference design for a user's application. The board is configured for 4.5 V to 60 V input with different output voltages depending on the model number of the board. The operating range may be modified by changing components such as the inductor, feedback resistor, and ripple injection networks.

## CONNECTION AND SIGNAL / TEST POINTS

### Power Terminals (J5)

- **V<sub>IN</sub>, GND (J5, Pin 1 and Pin 2):** (see Fig. 1 below)

Connect to a voltage source: 4.5 V to 60 V. **Note: output voltage will vary depending on model number of the board.** The value of R12 determines V<sub>OUT</sub>. The minimum input voltage will be ≈ 4.5 V with no UVLO and the output will be active but unregulated when V<sub>IN</sub>-V<sub>OUT</sub> is less than 2 V. A UVLO function can be instituted by inserting a suitable value resistor for R17. The start voltage will be reached when the voltage at the enable, pin 3, reaches ≈ 0.8 V. This will keep the output from coming up in an unregulated state during V<sub>OUT</sub> start up transitions.

- **V<sub>OUT</sub>, GND (J5, Pin 3 and Pin 4):** (see Fig. 1 below)

Connect to a load that draws no more than:

SiC461 - 10 A, SiC462 - 6 A, SiC463 - 3 A, SiC464 - 2 A

### Note

- The output capacitors are rated to 25 V. Should a higher output voltage be required, the output capacitors should be changed to an appropriate higher voltage.

### V<sub>DRV</sub> External Supply

**5 V, GND (J7):** this is the terminal that enables the user to supply an external MOSFET gate driver supply if an external 5 V supply is available. This should only be used in modes 3 and 4. R14 must also be inserted if an external V<sub>DRV</sub> is used. The standard version of the board does not have this component. See schematic.

### Enable

**J9:** this is the terminal that enables the part.

The EN pin has an internal pull down resistor and only requires an enable voltage. This needs to be greater than 1.4 V. An input voltage or a resistor connected across V<sub>IN</sub> and EN can be used. The internal pull down resistance is 5 MΩ. There is a pull up resistor, R3, of 560K which allows the board to start with no external stimulus.

**WARNING:** attaching the EN input to an external source requires careful consideration as this pin will be at V<sub>IN</sub> in series with R3. This will cause a standard GPIO to be damaged.

### Ultrasonic

**J8:** this is jumper that will enable the user to select the ultrasonic mode of operation. In ultrasonic mode the minimum frequency of operation is 20 kHz, above the audible range. When not in ultrasonic mode the frequency can drop below 20 kHz.

**OPEN J8** - Ultrasonic disabled

**SHORT J8** - Ultrasonic enabled

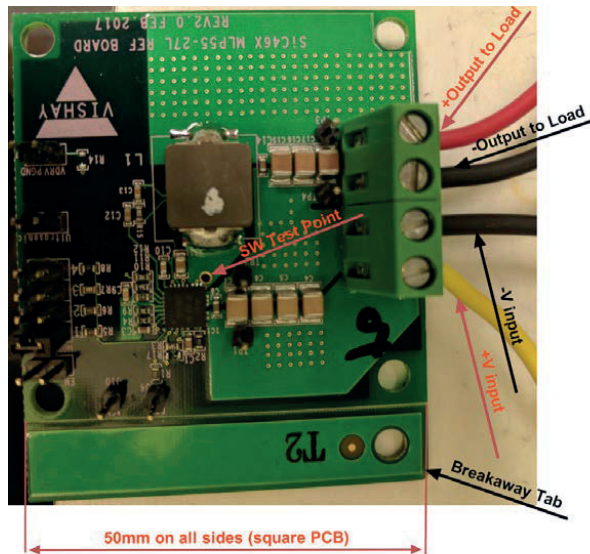


Fig. 1 - PCB Showing Power Terminal Connections

## SELECTION JUMPERS

### Mode Select

**J1, J2, J3, and J4:** there are 4 jumpers which allow the user to select one of four modes of operation.

**MODE 1 - SHORT J1** power save, V<sub>DRV</sub>, and pre-reg on

**MODE 2 - SHORT J2** forced PWM, V<sub>DRV</sub>, and pre-reg on

**MODE 3 - SHORT J3** forced PWM, V<sub>DRV</sub>, and pre-reg off - external 5 V supply

**MODE 4 - SHORT J4** power save, V<sub>DRV</sub>, and pre-reg off - external 5 V supply

## SIGNALS AND TEST LEADS

### Input Voltage Sense

**V<sub>IN\_SENSE</sub> (TP1), GND<sub>IN\_SENSE</sub> (TP2):** this allows the user to measure the voltage directly at the input of the regulator bypassing any losses generated by connections to the board. These test points can also be as a remote sense port of a power source with remote sense capability.

### Output Voltage Sense

**V<sub>OUT\_SENSE</sub> (TP5), GND<sub>OUT\_SENSE</sub> (TP6):** This allows the user to measure the output voltage directly at the sense point of the regulator bypassing any losses generated by connections to the board. These test points can also be as a remote sense port of an external load with remote sense capability.

### Power GOOD Indicator

**PGOOD:** is an open drain output and is pulled up with a 100 k $\Omega$  resistor, R1, to V<sub>DD1</sub> ( $\approx$  5 V). When FB or V<sub>OUT</sub> are within -10 % to +20 % of the set voltage this pin will go HI to indicate the output is okay.

### Power Up Procedure

Before turning on the reference board, the user needs to select one of the four modes by shorting one jumper (see section on mode selection). If mode 3 or 4 is selected, make sure V<sub>DRV</sub> pin is supplied by external 5 V. There is no specific power sequence requirement to power up the board. The recommended power sequence is as follow:

V<sub>IN</sub>  $\rightarrow$  V<sub>DRV</sub> (if any)  $\rightarrow$  ENABLE. Enable is tied to V<sub>IN</sub> through R3 so in most instances and external enable is not required. See enable section before attaching an enable signal from an external source.

### Snubber Circuit

When applying higher than 48 V to the input it is reasonable to install a RC snubber from LX to GND if needed however this will affect efficiency. Snubbers are needed when the peak voltage during turn on of the high side switch may exceed the absolute maximum rating on the datasheet of the device under evaluation. There are place holders on the reference board, R16 and C21, for the snubber. Values of 4  $\Omega$  and 1 nF are a reasonable starting point.

### Adjustments to the Reference Board

An excel spread sheet is provided, if some adjustments are required to modify the board. Based on the spread sheet, user can modify output voltage; switching frequency; inductor value; input capacitance; output capacitance; soft start time; voltage injection network; compensation circuit, and overcurrent limit.

### A Note on Input and Output Capacitors

Input and output capacitors for the board are all ceramic. Should the user wish to add a larger POSCAP capacitor as a bulk capacitance on the output, the bottom layer of the board has a provision for both 2 terminal and 3 terminal POSCAPs (see bottom layer on page 5).

If the user's test set up has long leads or if the user wishes to conduct EMC testing using a Line Impedance Stabilization Network (LISN), it is recommended that a 100  $\mu$ F, 63 V Electrolytic Cap be used on the input as shown below (Cext in schematic shown on page 4). An example part number for this capacitor would be Vishay MAL215058101E3.

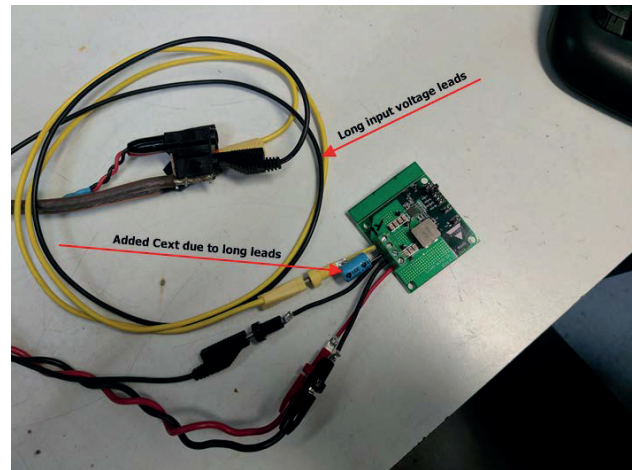


Fig. 2 - Capacitor external in Schematic







PCB LAYOUT

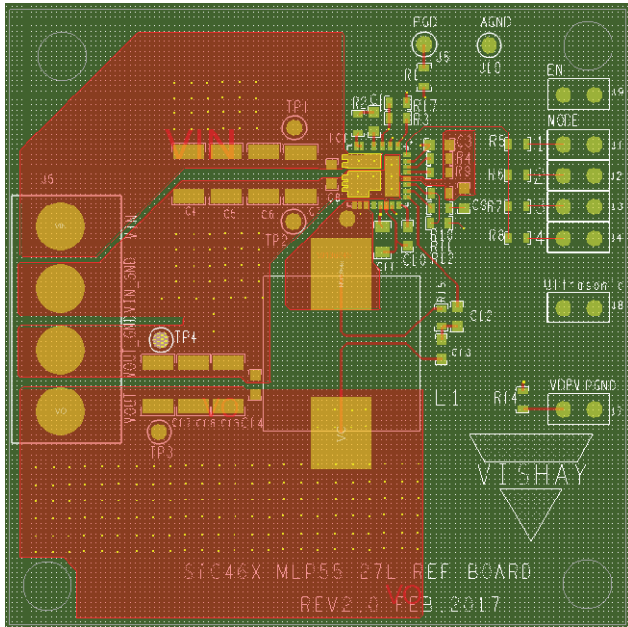


Fig. 4 - Top Layer

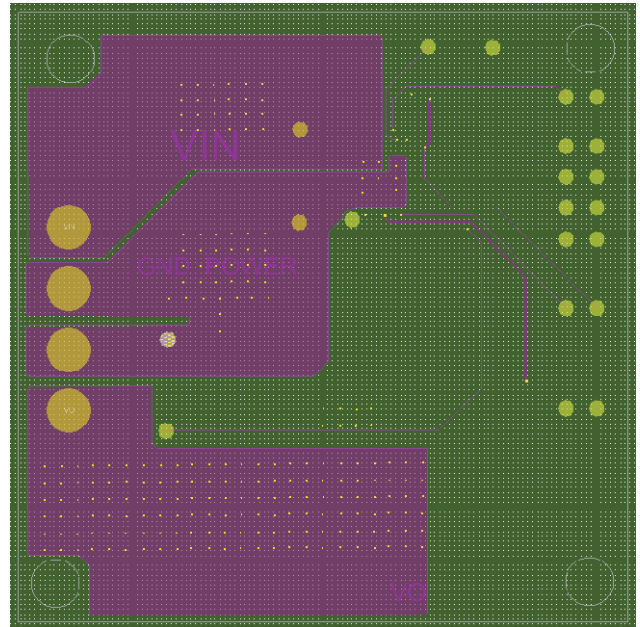


Fig. 6 - Inner Layer 3

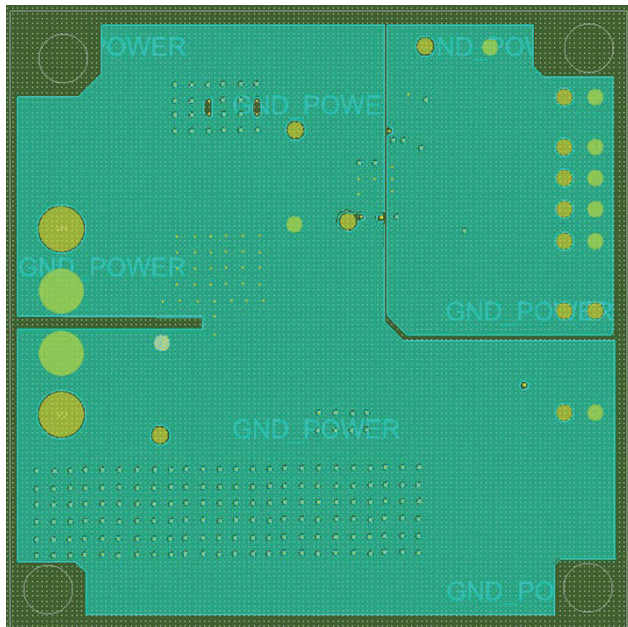


Fig. 5 - Inner Layer 2

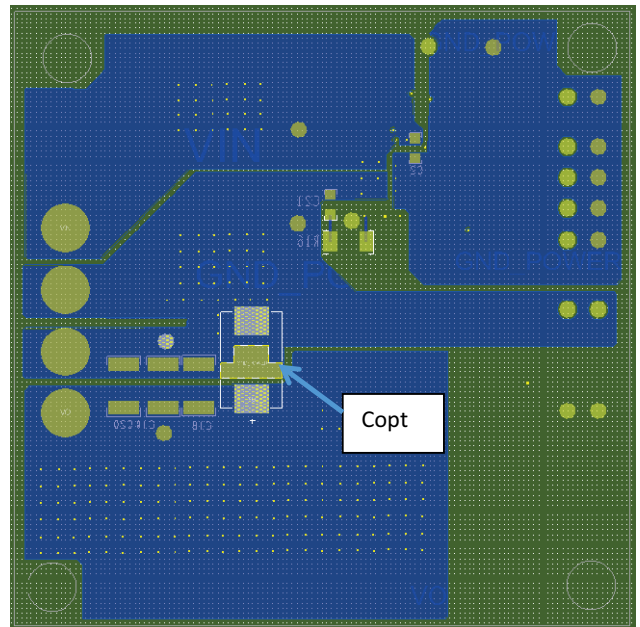


Fig. 7 - Bottom Layer



| BILL OF MATERIAL REPORT FOR 12 V <sub>OUT</sub> , f <sub>sw</sub> = 500 kHz |     |                  |  |                |                              |                             |
|---|-----|------------------|--|----------------|------------------------------|-----------------------------|
| DESIGNATOR  | QTY | VALUE            | DESCRIPTION  | PACKAGE        | MANUFACTURER PART NUMBER     | MANUFACTURER                |
| IC1<br>SiC461/2/3/4   | 1   | SiC46X           | 4.5 V to 60 V, 2 A to 10 A,<br>High Voltage microBUCK®     | 5 mm x<br>5 mm | SIC462CD-T1-GE3              | Vishay                      |
| C1, C2, C8  | 2   | 0.1 µF           | Ceramic cap: 0.1 µF / 100 V / X7R / 10 % / 0603            | 0603           | VJ0603Y104KXB                | Vishay                      |
| C3  | 1   | 1 µF             | Ceramic cap: 1 µF / 50 V / X7R / 0603 / 10 %               | 0603           | VJ0603Y105KXA                | Vishay                      |
| C4, C5, C6, C7  | 4   | 2.2 µF           | Ceramic cap: 2.2 µF/100 V/ X7R/ 10 %/1210                  | 1210           | VJ1210Y225MXX                | Vishay                      |
| C9  | 1   | 1 nF             | Ceramic cap: 1000 pF / 50 V / X7R / 0603 / 10 %            | 0603           | VJ0603Y102KXA                | Vishay                      |
| C10   | 1   | 10 nF            | Ceramic cap: 0.01 µF / 50 V / X7R / 0603 / 5 %             | 0603           | VJ0603Y103JXA                | Vishay                      |
| C11   | 1   | 4.7 µF           | Ceramic cap: 4.7 µF / 25 V / X7R / 10 % / 0805             | 0805           | VJ0805Y475KXX                | Vishay                      |
| C12   | 1   | 2.2 nF           | Ceramic cap: 2200 pF / 50 V / X7R / 0603 / 10 %            | 0603           | VJ0603Y222KXA                | Vishay                      |
| C13   | 1   | 22 nF            | Ceramic cap: 22 nF / 50 V / X7R / 0603 / 10 %              | 0603           | VJ0603Y223KXA                | Vishay                      |
| C14   | 1   | 0.1 µF           | Ceramic cap: 0.1 µF / 100 V / X7R / 10 % / 0603            | 0603           | VJ0603Y104KXB                | Vishay                      |
| C15, C16, C17,<br>C18, C19, C20   | 6   | 22 µF            | Ceramic cap: 22 µF / 25 V / X7R / 10 % / 1210              | 1210           | VJ1210Y226KXX                | Vishay                      |
| C21   | 1   | DNP              | DNP  | 0603           | DNP                          |                             |
| L1  | 1   | 10 µH            | Inductor: 10 µH / 20 % / 17.2 m DCR / 15.5 A<br>saturation | 5050           | IHLP5050FDER100M01           | Vishay                      |
| R1  | 1   | 100K             | SMD / 100K / 1 % / 0603                                    | 0603           | CRCW0603100KFKTA             | Vishay                      |
| R2  | 1   | 0                | SMD / 0 Ω / 0603   | 0603           | CRCW06030000ZSTA             | Vishay                      |
| R3  | 1   | 560K             | SMD / 560K / 1 % / 0603                                    | 0603           | CRCW0603560KFKTA             | Vishay                      |
| R4  | 1   | 53.6K            | SMD / 53.6K / 1 % / 0603                                   | 0603           | TNPW060353K6BEEN             | Vishay                      |
| R5  | 1   | 2K               | SMD / 2K / 1 % / 0603                                      | 0603           | CRCW06032K00FKTA             | Vishay                      |
| R6  | 1   | 301K             | SMD / 301K / 1 % / 0603                                    | 0603           | CRCW0603301KFKTA             | Vishay                      |
| R7  | 1   | 499K             | SMD / 499K / 1 % / 0603                                    | 0603           | CRCW0603499KFKTA             | Vishay                      |
| R8  | 1   | 1M               | SMD / 1000K / 1 % / 0603                                   | 0603           | CRCW06031M00FKTA             | Vishay                      |
| R9  | 1   | 127K             | SMD / 127K / 1 % / 0603                                    | 0603           | CRCW0603127KFKTA             | Vishay                      |
| R10   | 1   | 10K              | SMD / 10K / 0.1 % / 0603                                   | 0603           | TNPW060310K0BEEA             | Vishay                      |
| R11   | 1   | 42.2K            | SMD / 42.2K / 1 % / 0603                                   | 0603           | CRCW0603342K2FKTA            | Vishay                      |
| R12   | 1   | 140K             | SMD 1 W / 10 W 140 kΩ 0.1 %                                | 0603           | TNPW0603140KBEEN             | Vishay                      |
| R14   | 1   | DNP              | DNP  | DNP            | DNP                          |                             |
| R15   | 1   | 4.12K            | SMD / 4.12K / 1 % / 0603                                   | 0603           | CRCW06034K12FKTA             | Vishay                      |
| R16   | 1   | DNP              | DNP  | DNP            | DNP                          |                             |
| R17   | 1   | DNP              | DNP  | DNP            | DNP                          |                             |
| J1, J2, J3,<br>J4, J8   | 5   | JUMPER           | JUMPER_JUMPER2_JUMPER                                      |                | M20-9990246                  | Harwin                      |
| J5  | 1   | CON4             | TERMINAL BLOCK 5.08 mm VERT 4POS                           |                | ED120/4DS                    | On Shore<br>Technology Inc. |
| J6  | 1   | PGD              | Circuit Board Hardware -<br>PCB TEST POINT WHITE           |                | Keystone Electronics<br>5002 | Keystone<br>Electronics     |
| J7  | 1   | V <sub>DRV</sub> | Circuit Board Hardware -<br>PCB TEST POINT WHITE           |                | Keystone Electronics<br>5002 | Keystone<br>Electronics     |
| J9  | 1   | EN               | Circuit Board Hardware -<br>PCB TEST POINT WHITE           |                | Keystone Electronics<br>5002 | Keystone<br>Electronics     |
| J10   | 1   | GND              | Circuit Board Hardware -<br>PCB TEST POINT WHITE           |                | Keystone Electronics<br>5002 | Keystone<br>Electronics     |
| TP1, TP3,<br>TP2, TP4   | 4   | Test pin         | Circuit Board Hardware -<br>PCB TEST POINT WHITE           |                | Keystone Electronics<br>5002 | Keystone<br>Electronics     |



| BILL OF MATERIAL REPORT FOR 5 V <sub>OUT</sub> , f <sub>sw</sub> = 500 kHz |     |                  |   |                |                              |                             |
|--|-----|------------------|---|----------------|------------------------------|-----------------------------|
| DESIGNATOR   | QTY | VALUE            | DESCRIPTION   | PACKAGE        | MANUFACTURER PART NUMBER     | MANUFACTURER                |
| IC1<br>SiC461/2/3/4  | 1   | SiC46X           | 4.5 V to 60 V, 2 A to 10 A,<br>High Voltage microBUCK®  | 5 mm x<br>5 mm | SIC462CD-T1-GE3              | Vishay                      |
| C1, C2, C8   | 2   | 0.1 µF           | Ceramic cap: 0.1 µF / 100 V / X7R / 10 % / 0603         | 0603           | VJ0603Y104KXB                | Vishay                      |
| C3   | 1   | 1 µF             | Ceramic cap: 1 µF / 50 V / X7R / 0603 / 10 %            | 0603           | VJ0603Y105KXA                | Vishay                      |
| C4, C5, C6, C7   | 4   | 2.2 µF           | Ceramic cap: 2.2 µF/100 V/ X7R/ 10 %/1210               | 1210           | VJ1210Y225MXX                | Vishay                      |
| C9   | 1   | 1 nF             | Ceramic cap: 1000 pF / 50 V / X7R / 0603 / 10 %         | 0603           | VJ0603Y102KXA                | Vishay                      |
| C10  | 1   | 10 nF            | Ceramic cap: 0.01 µF / 50 V / X7R / 0603 / 5 %          | 0603           | VJ0603Y103JXA                | Vishay                      |
| C11  | 1   | 4.7 µF           | Ceramic cap: 4.7 µF / 35 V / X7R / 10 % / 0805          | 0805           | VJ0805Y475KXX                | Vishay                      |
| C12  | 1   | 2.2 nF           | Ceramic cap: 2200 pF / 50 V / X7R / 0603 / 10 %         | 0603           | VJ0603Y222KXA                | Vishay                      |
| C13  | 1   | 22 nF            | Ceramic cap: 0.02 µF / 50 V / X7R / 0603 / 10 %         | 0603           | VJ0603Y223KXA                | Vishay                      |
| C14  | 1   | 0.1 µF           | Ceramic cap: 0.1 µF / 100 V / X7R / 10 % / 0603         | 0603           | VJ0603Y104KXB                | Vishay                      |
| C15, C16, C17,<br>C18, C19, C20  | 6   | 22 µF            | Ceramic cap: 22 µF / 25 V / X7R / 10 % / 1210           | 1210           | VJ1210Y226KXX                | Vishay                      |
| C21  | 1   | DNP              | DNP   | 0603           | DNP                          |                             |
| L1   | 1   | 5.6 µH           | Inductor: 5.6 µH / 20 % / 19 m DCR / 16 A<br>saturation | 4040           | IHLP4040DZER5R6M01           | Vishay                      |
| R1   | 1   | 100K             | SMD / 100K / 1 % / 0603                                 | 0603           | CRCW0603100KFKTA             | Vishay                      |
| R2   | 1   | 0                | SMD / 0 Ω / 0603  | 0603           | CRCW06030000ZSTA             | Vishay                      |
| R3   | 1   | 560K             | SMD / 560K / 1 % / 0603                                 | 0603           | CRCW0603560KFKTA             | Vishay                      |
| R4   | 1   | 53.6K            | SMD / 53.6K / 1 % / 0603                                | 0603           | TNPW060353K6BEEN             | Vishay                      |
| R5   | 1   | 2K               | SMD / 2K / 1 % / 0603                                   | 0603           | CRCW06032K00FKTA             | Vishay                      |
| R6   | 1   | 301K             | SMD / 301K / 1 % / 0603                                 | 0603           | CRCW0603301KFKTA             | Vishay                      |
| R7   | 1   | 499K             | SMD / 499K / 1 % / 0603                                 | 0603           | CRCW0603499KFKTA             | Vishay                      |
| R8   | 1   | 1M               | SMD / 1000K / 1 % / 0603                                | 0603           | CRCW06031M00FKTA             | Vishay                      |
| R9   | 1   | 52.3K            | SMD / 52.3K / 1 % / 0603                                | 0603           | CRCW060352K3FKTA             | Vishay                      |
| R10  | 1   | 10K              | SMD / 10K / 0.1 % / 0603                                | 0603           | TNPW060310K0BEEA             | Vishay                      |
| R11  | 1   | 31.6K            | SMD / 31.6K / 1 % / 0603                                | 0603           | CRCW060331K6FKEA             | Vishay                      |
| R12  | 1   | 52.3K            | SMD 1 W / 10 W 52.3 kΩ 0.1 %                            | 0603           | TNPW060352K3BEEA             | Vishay                      |
| R14  | 1   | DNP              | DNP   | DNP            | DNP                          |                             |
| R15  | 1   | 2.05K            | SMD / 2.05K / 1 % / 0603                                | 0603           | CRCW06032K05FKTA             | Vishay                      |
| R16  | 1   | DNP              | DNP   | DNP            | DNP                          |                             |
| R17  | 1   | DNP              | DNP   | DNP            | DNP                          |                             |
| IC1  | 1   | SiC46X           | SIC462W_SIC46X5X5WC_SIC46X                              |                |                              |                             |
| J1, J2, J3,<br>J4, J8  | 5   | JUMPER           | JUMPER_JUMPER2_JUMPER                                   |                | M20-9990246                  | Harwin                      |
| J5   | 1   | CON4             | TERMINAL BLOCK 5.08 mm VERT 4POS                        |                | ED120/4DS                    | On Shore<br>Technology Inc. |
| J6   | 1   | PGD              | Circuit Board Hardware -<br>PCB TEST POINT WHITE        |                | Keystone Electronics<br>5002 | Keystone<br>Electronics     |
| J7   | 1   | V <sub>DRV</sub> | Circuit Board Hardware -<br>PCB TEST POINT WHITE        |                | Keystone Electronics<br>5002 | Keystone<br>Electronics     |
| J9   | 1   | EN               | Circuit Board Hardware -<br>PCB TEST POINT WHITE        |                | Keystone Electronics<br>5002 | Keystone<br>Electronics     |
| J10  | 1   | GND              | Circuit Board Hardware -<br>PCB TEST POINT WHITE        |                | Keystone Electronics<br>5002 | Keystone<br>Electronics     |
| TP1, TP3,<br>TP2, TP4  | 4   | Test pin         | Circuit Board Hardware -<br>PCB TEST POINT WHITE        |                | Keystone Electronics<br>5002 | Keystone<br>Electronics     |



| BILL OF MATERIAL REPORT FOR 3.3 V <sub>OUT</sub> , f <sub>sw</sub> = 500 kHz |     |                  |   |                |                              |                             |
|--|-----|------------------|---|----------------|------------------------------|-----------------------------|
| DESIGNATOR   | QTY | VALUE            | DESCRIPTION   | PACKAGE        | MANUFACTURER PART NUMBER     | MANUFACTURER                |
| IC1<br>SiC461/2/3/4  | 1   | SiC46X           | 4.5 V to 60 V, 2 A to 10 A,<br>High Voltage microBUCK®    | 5 mm x<br>5 mm | SiC462CD-T1-GE3              | Vishay                      |
| C1, C2, C8   | 2   | 0.1 µF           | Ceramic cap: 0.1 µF / 100 V / X7R / 10 % / 0603           | 0603           | VJ0603Y104KXB                | Vishay                      |
| C3   | 1   | 1 µF             | Ceramic cap: 1 µF / 50 V / X7R / 0603 / 10 %              | 0603           | VJ0603Y105KXA                | Vishay                      |
| C4, C5, C6, C7   | 4   | 2.2 µF           | Ceramic cap: 2.2 µF/100 V/ X7R/ 10 %/1210                 | 1210           | VJ1210Y225MXX                | Vishay                      |
| C9   | 1   | 1 nF             | Ceramic cap: 1000 pF / 50 V / X7R / 0603 / 10 %           | 0603           | VJ0603Y102KXA                | Vishay                      |
| C10  | 1   | 10 nF            | Ceramic cap: 0.01 µF / 50 V / X7R / 0603 / 5 %            | 0603           | VJ0603Y103JXA                | Vishay                      |
| C11  | 1   | 4.7 µF           | Ceramic cap: 4.7 µF / 35 V / X7R / 10 % / 0805            | 0805           | VJ0805Y475KXX                | Vishay                      |
| C12  | 1   | 2.2 nF           | Ceramic cap: 2200 pF / 50 V / X7R / 0603 / 10 %           | 0603           | VJ0603Y222KXA                | Vishay                      |
| C13  | 1   | 22 nF            | Ceramic cap: 0.02 µF / 50 V / X7R / 0603 / 10 %           | 0603           | VJ0603Y223KXA                | Vishay                      |
| C14  | 1   | 0.1 µF           | Ceramic cap: 0.1 µF / 100 V / X7R / 10 % / 0603           | 0603           | VJ0603Y104KXB                | Vishay                      |
| C15, C16, C17,<br>C18, C19, C20  | 6   | 22 µF            | Ceramic cap: 22 µF / 25 V / X7R / 10 % / 1210             | 1210           | VJ1210Y226KXX                | Vishay                      |
| C21  | 1   | DNP              | DNP   | 0603           | DNP                          |                             |
| L1   | 1   | 3.3 µH           | Inductor: 3.3 µH / 20 % / 14 m DCR / 18.6 A<br>saturation |                | IHLP4040DZER3R3M11           | Vishay                      |
| R1   | 1   | 100K             | SMD / 100K / 1 % / 0603                                   | 0603           | CRCW0603100KFKTA             | Vishay                      |
| R2   | 1   | 0                | SMD / 0 Ω / 0603  | 0603           | CRCW06030000ZSTA             | Vishay                      |
| R3   | 1   | 560K             | SMD / 560K / 1 % / 0603                                   | 0603           | CRCW0603560KFKTA             | Vishay                      |
| R4   | 1   | 53.6K            | SMD / 53.6K / 1 % / 0603                                  | 0603           | TNPW060353K6BEEN             | Vishay                      |
| R5   | 1   | 2K               | SMD / 2K / 1 % / 0603                                     | 0603           | CRCW06032K00FKTA             | Vishay                      |
| R6   | 1   | 301K             | SMD / 301K / 1 % / 0603                                   | 0603           | CRCW0603301KFKTA             | Vishay                      |
| R7   | 1   | 499K             | SMD / 499K / 1 % / 0603                                   | 0603           | CRCW0603499KFKTA             | Vishay                      |
| R8   | 1   | 1M               | SMD / 1000K / 1 % / 0603                                  | 0603           | CRCW06031M00FKTA             | Vishay                      |
| R9   | 1   | 34.8K            | SMD / 34.8K / 1 % / 0603                                  | 0603           | CRCW060334K8FKTA             | Vishay                      |
| R10  | 1   | 10K              | SMD / 10K / 0.1 % / 0603                                  | 0603           | TNPW060310K0BEEA             | Vishay                      |
| R11  | 1   | 24.3K            | SMD / 24.3K / 1 % / 0603                                  | 0603           | CRCW060324K3FKTA             | Vishay                      |
| R12  | 1   | 31.2K            | SMD 1 W / 10 W 31.2 kΩ 0.1 %                              | 0603           | TNPW060331K2BEEA             | Vishay                      |
| R14  | 1   | DNP              | DNP   | DNP            | DNP                          |                             |
| R15  | 1   | 1.4K             | SMD / 1.4K / 1 % / 0603                                   | 0603           | CRCW06031K4FKTA              | Vishay                      |
| R16  | 1   | DNP              | DNP   | DNP            | DNP                          |                             |
| R17  | 1   | DNP              | DNP   | DNP            | DNP                          |                             |
| J1, J2, J3,<br>J4, J8  | 5   | JUMPER           | JUMPER_JUMPER2_JUMPER                                     |                | M20-9990246                  | Harwin                      |
| J5   | 1   | CON4             | TERMINAL BLOCK 5.08 mm VERT 4POS                          |                | ED120/4DS                    | On Shore<br>Technology Inc. |
| J6   | 1   | PGD              | Circuit Board Hardware -<br>PCB TEST POINT WHITE          |                | Keystone Electronics<br>5002 | Keystone<br>Electronics     |
| J7   | 1   | V <sub>DRV</sub> | Circuit Board Hardware -<br>PCB TEST POINT WHITE          |                | Keystone Electronics<br>5002 | Keystone<br>Electronics     |
| J9   | 1   | EN               | Circuit Board Hardware -<br>PCB TEST POINT WHITE          |                | Keystone Electronics<br>5002 | Keystone<br>Electronics     |
| J10  | 1   | GND              | Circuit Board Hardware -<br>PCB TEST POINT WHITE          |                | Keystone Electronics<br>5002 | Keystone<br>Electronics     |
| TP1, TP3,<br>TP2, TP4  | 4   | Test pin         | Circuit Board Hardware -<br>PCB TEST POINT WHITE          |                | Keystone Electronics<br>5002 | Keystone<br>Electronics     |

Vishay Siliconix maintains worldwide manufacturing capability. Products may be manufactured at one of several qualified locations. Reliability data for Silicon Technology and Package Reliability represent a composite of all qualified locations. For related documents such as package / tape drawings, part marking, and reliability data, see [www.vishay.com/ppg?76257](http://www.vishay.com/ppg?76257).





Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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