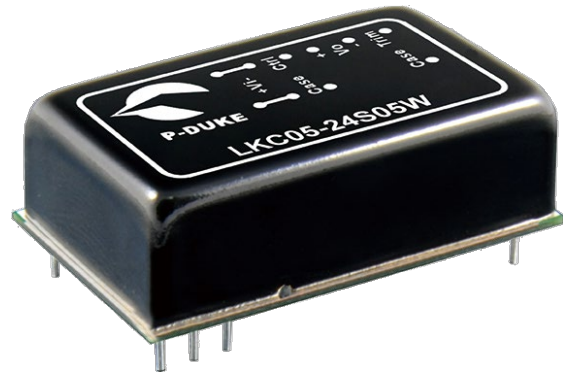


## Features

- Operating Temperature Range: -40~85°C
- Approved to CE, RoHS & REACH
- Safety Standards to IEC/ EN/ UL62368-1
- Efficiency up to 89%
- Single & Dual 5W Output
- Six-Sided Shielding



Ideal Power's 43LKC05-xyW 5W Series Pin Connection DC/DC Converters are certified to cURus, UKCA, CE, RoHS, REACH & IEC/UL/EN 62368-1 Standards and comply with Efficiency Regulations. These are primarily used in ITE, Video & Audio Industries and customised solutions are available upon request.

### Part Number Structure

| 43LCK05-    | 24  | S                              | 05   | W           | CS                                      |
|-------------|---|--------------------------------|--|-------------|---|
| Series Name | Input Voltage (VDC)                       | Output Quantity                | Output Voltage (VDC)                       | Input Range | Assembly Options                        |
|             | 05: 4.5 ~ 12<br>24: 9 ~ 36<br>48: 18 ~ 75 | S: Single                      | 3P3:3.3<br>05:5<br>12:12<br>15:15<br>24:24 | 4:1         | □: With Pin3<br>CS: Without Pin3, Pin12 |
|             |   | D: Dual                        | 05:±5<br>12:±12<br>15:±15<br>24:±24        |             |   |
|             |   | DS: Dual with output isolation | 05:05<br>12:12<br>15:15<br>24:24           |             |   |

## Models

| Model Number    | Input Range | Output Voltage | Output Current @Full Load mA | Input Current @No Load mA | Output Ripple & Noise | Efficiency % | Maximum Capacitor Load $\mu$ F |
|-----------------|-------------|----------------|------------------------------|---------------------------|-----------------------|--------------|--------------------------------|
| 43LKC05-05S3P3W | 4.5 ~ 12    | 3.3            | 1515                         | 25                        | 10                    | 79           | 2200                           |
| 43LKC05-05S05W  | 4.5 ~ 12    | 5              | 1000                         | 30                        | 10                    | 82           | 1000                           |
| 43LKC05-05S12W  | 4.5 ~ 12    | 12             | 416                          | 30                        | 10                    | 87           | 220                            |
| 43LKC05-05S15W  | 4.5 ~ 12    | 15             | 333                          | 35                        | 10                    | 87           | 150                            |
| 43LKC05-05S24W  | 4.5 ~ 12    | 24             | 208                          | 35                        | 10                    | 88           | 100                            |
| 43LKC05-05D05W  | 4.5 ~ 12    | $\pm$ 5        | $\pm$ 500                    | 30                        | 10                    | 84           | $\pm$ 680                      |
| 43LKC05-05D12W  | 4.5 ~ 12    | $\pm$ 12       | $\pm$ 208                    | 30                        | 10                    | 85           | $\pm$ 150                      |
| 43LKC05-05D15W  | 4.5 ~ 12    | $\pm$ 15       | $\pm$ 166                    | 40                        | 10                    | 86           | $\pm$ 150                      |
| 43LKC05-05D24W  | 4.5 ~ 12    | $\pm$ 24       | $\pm$ 104                    | 40                        | 10                    | 87           | $\pm$ 100                      |
| 43LKC05-05DS05W | 4.5 ~ 12    | Vout1: 5       | 500                          | 30                        | 10                    | 84           | 680                            |
|                 |             | Vout2: 5       | 500                          | 30                        | 10                    | 84           | 680                            |
| 43LKC05-05DS12W | 4.5 ~ 12    | Vout1: 12      | 208                          | 30                        | 10                    | 85           | 150                            |
|                 |             | Vout2: 12      | 208                          | 30                        | 10                    | 85           | 150                            |
| 43LKC05-05DS15W | 4.5 ~ 12    | Vout1:15       | 166                          | 40                        | 10                    | 86           | 150                            |
|                 |             | Vout2:15       | 166                          | 40                        | 10                    | 86           | 150                            |
| 43LKC05-05DS24W | 4.5 ~ 12    | Vout1: 24      | 104                          | 40                        | 10                    | 87           | 100                            |
|                 |             | Vout2: 24      | 104                          | 40                        | 10                    | 87           | 100                            |
| 43LKC05-24S3P3W | 9 ~ 36      | 3.3            | 1515                         | 6                         | 10                    | 81           | 2200                           |
| 43LKC05-24S05W  | 9 ~ 36      | 5              | 1000                         | 6                         | 10                    | 83           | 1000                           |
| 43LKC05-24S12W  | 9 ~ 36      | 12             | 416                          | 9                         | 10                    | 88           | 220                            |
| 43LKC05-24S15W  | 9 ~ 36      | 15             | 333                          | 10                        | 10                    | 88           | 150                            |
| 43LKC05-24S24W  | 9 ~ 36      | 24             | 208                          | 10                        | 10                    | 89           | 100                            |
| 43LKC05-24D05W  | 9 ~ 36      | $\pm$ 5        | $\pm$ 500                    | 6                         | 10                    | 84           | $\pm$ 680                      |
| 43LKC05-24D12W  | 9 ~ 36      | $\pm$ 12       | $\pm$ 208                    | 9                         | 10                    | 85           | $\pm$ 150                      |
| 43LKC05-24D15W  | 9 ~ 36      | $\pm$ 15       | $\pm$ 166                    | 10                        | 10                    | 86           | $\pm$ 150                      |
| 43LKC05-24D24W  | 9 ~ 36      | $\pm$ 24       | $\pm$ 104                    | 10                        | 10                    | 87           | $\pm$ 100                      |
| 43LKC05-24DS05W | 9 ~ 36      | Vout1: 5       | 500                          | 6                         | 10                    | 84           | 680                            |
|                 |             | Vout2: 5       | 500                          | 6                         | 10                    | 84           | 680                            |
| 43LKC05-24DS12W | 9 ~ 36      | Vout1: 12      | 208                          | 9                         | 10                    | 85           | 150                            |
|                 |             | Vout2: 12      | 208                          | 9                         | 10                    | 85           | 150                            |
| 43LKC05-24DS15W | 9 ~ 36      | Vout1: 15      | 166                          | 10                        | 10                    | 86           | 150                            |
|                 |             | Vout2: 15      | 166                          | 10                        | 10                    | 86           | 150                            |
| 43LKC05-24DS24W | 9 ~ 36      | Vout1: 24      | 104                          | 10                        | 10                    | 86           | 100                            |
|                 |             | Vout2: 24      | 104                          | 10                        | 10                    | 86           | 100                            |
| 43LKC05-48S3P3W | 18~ 75      | 3.3            | 1515                         | 4                         | 10                    | 80           | 2200                           |
| 43LKC05-48S05W  | 18~ 75      | 5              | 1000                         | 4                         | 10                    | 83           | 1000                           |
| 43LKC05-48S12W  | 18~ 75      | 12             | 416                          | 4                         | 10                    | 86           | 220                            |
| 43LKC05-48S15W  | 18~ 75      | 15             | 333                          | 4                         | 10                    | 87           | 150                            |
| 43LKC05-48S24W  | 18~ 75      | 24             | 208                          | 6                         | 10                    | 88           | 100                            |
| 43LKC05-48D05W  | 18~ 75      | $\pm$ 5        | $\pm$ 500                    | 6                         | 10                    | 83           | $\pm$ 680                      |
| 43LKC05-48D12W  | 18~ 75      | $\pm$ 12       | $\pm$ 208                    | 4                         | 10                    | 85           | $\pm$ 150                      |
| 43LKC05-48D15W  | 18~ 75      | $\pm$ 15       | $\pm$ 166                    | 5                         | 10                    | 86           | $\pm$ 150                      |
| 43LKC05-48D24W  | 18~ 75      | $\pm$ 24       | $\pm$ 104                    | 6                         | 10                    | 87           | $\pm$ 100                      |

|                 |       |           |     |   |    |    |     |
|-----------------|-------|-----------|-----|---|----|----|-----|
| 43LKC05-48DS05W | 18~75 | Vout1: 5  | 500 | 6 | 10 | 83 | 680 |
|                 |       | Vout2: 5  | 500 | 6 | 10 | 83 | 680 |
| 43LKC05-48DS12W | 18~75 | Vout1:12  | 208 | 4 | 10 | 85 | 150 |
|                 |       | Vout2: 12 | 208 | 4 | 10 | 85 | 150 |
| 43LKC05-48DS15W | 18~75 | Vout1: 15 | 166 | 5 | 10 | 86 | 150 |
|                 |       | Vout2: 15 | 166 | 5 | 10 | 86 | 150 |
| 4LKC05-48DS24W  | 18~75 | Vout1: 24 | 104 | 6 | 10 | 86 | 100 |
|                 |       | Vout2: 24 | 104 | 6 | 10 | 86 | 100 |

### Input Specifications

| Parameter                     | Conditions                            | Min                                     | Typ       | Max                  | Unit |     |
|-------------------------------|---------------------------------------|---|-----------|----------------------|------|-----|
| Operating input voltage range | 5Vin(nom)                             | 4.5                                     | 5         | 12                   | VDC  |     |
|                               | 24Vin(nom)                            | 9                                       | 24        | 36                   |      |     |
|                               | 48Vin(nom)                            | 18                                      | 48        | 75                   |      |     |
| Start-up voltage              | 5Vin(nom)                             | --                                      | --        | 4.5                  | VDC  |     |
|                               | 24Vin(nom)                            | --                                      | --        | 9                    |      |     |
|                               | 48Vin(nom)                            | --                                      | --        | 18                   |      |     |
| Shutdown voltage              | 5Vin(nom)                             | 3                                       | 4         | 4.4                  | VDC  |     |
|                               | 24Vin(nom)                            | 7                                       | 8         | 8.8                  |      |     |
|                               | 48Vin(nom)                            | 15                                      | 16        | 17.5                 |      |     |
| Start-up time                 | Constant resistive load               | Power up                                | --        | 50                   | 75   | ms  |
|                               |                                       | Remote ON/OFF                           | --        | 50                   | 75   |     |
| Input surge voltage           | 1 second, max.                        | 5Vin(nom)                               | --        | --                   | 16   | VDC |
|                               |                                       | 24Vin(nom)                              | --        | --                   | 50   |     |
|                               |                                       | 48Vin(nom)                              | --        | --                   | 100  |     |
| Input filter                  | 5Vin(nom)<br>24Vin(nom)<br>48Vin(nom) | Pi type<br>Common Choke<br>Common Choke |           |                      |      |     |
| Remote ON/OFF                 | Referred to -Vin pin                  | Positive Logic                          | DC-DC ON  | Open or 3 ~ 12VDC    |      |     |
|                               |                                       |   | DC-DC OFF | Short or 0 ~ 1.2V DC |      |     |
|                               |                                       | Input current of Ctrl pin               | -0.5      | --                   | 1    | mA  |
|                               | Remote off input current              | --                                      | 3         | --                   | mA   |     |

**Output Specifications**

| Parameter                        | Conditions  | Min                             | Typ  | Max   | Unit  |   |
|----------------------------------|---|---------------------------------|------|-------|-------|---|
| Voltage accuracy                 |   | -1.0                            | --   | +1.0  | %     |   |
| Minimum load                     | □□ <b>DS</b> □□W  |                                 | 10   |       | %     |   |
| Line regulation                  | Low Line to High Line at Full Load                          | □□ <b>S</b> □□W                 | -0.2 | --    | +0.2  | % |
|                                  |   | □□ <b>D</b> □□W                 | -0.2 | --    | +0.2  |   |
|                                  |   | □□ <b>DS</b> □□W Vout 2(Main)   | -0.2 | --    | +0.2  |   |
|                                  |   | Vout 1(Aux)                     | -1.0 | --    | +1.0  |   |
| Load regulation                  | No Load to Full Load  | □□ <b>S</b> □□W                 | -0.5 | --    | +0.5  | % |
|                                  |   | □□ <b>D</b> □□W                 | -1.0 | --    | +1.0  |   |
|                                  | 10% Full Load to Full Load                                  | □□ <b>DS</b> □□W Vout 2(Main)   | -0.5 | --    | +0.5  |   |
|                                  |   | Vout 1(Aux)                     | -1.0 | --    | +1.0  |   |
| Cross regulation                 | Asymmetrical load 25%/100% FL                               | □□ <b>D</b> □□W                 | -3.0 | --    | +3.0  | % |
|                                  |   | □□ <b>DS</b> 05W Vout 2(Main)   | -0.5 | --    | +0.5  |   |
|                                  |   | Vout 1(Aux)                     | -6.0 | --    | +6.0  |   |
|                                  |   | Others Vout 2(Main)             | -0.5 | --    | +0.5  |   |
|                                  |   | Vout 1(Aux)                     | -4.0 | --    | +4.0  |   |
| Voltage adjustability            |   | □□ <b>S</b> □□W                 | -10  | --    | +20   | % |
|                                  |   | □□ <b>D</b> □□W                 | -10  | --    | +10   |   |
|                                  |   | □□ <b>DS</b> □□W                | -10  | --    | +10   |   |
| Ripple and noise                 | Measured by 20MHz bandwidth                                 | --                              | 10   | 15    | mVp-p |   |
|                                  | Measured by 20MHz bandwidth, with additional 10µF Capacitor | --                              | 5    | 10    |       |   |
| Temperature coefficient          |   | -0.02                           |      | +0.02 | %/°C  |   |
| Transient response recovery time | 50% load step change  |                                 | 250  |       | µs    |   |
| Over voltage protection          | % Of Vout(nom)  |                                 | 135  |       | %     |   |
| Overload protection              | % Of Iout rated; Hiccup mode                                |                                 | 170  |       | %     |   |
| Short circuit protection         |   | Continuous, automatics recovery |      |       |       |   |

**General Specifications**

| Parameter             | Conditions               | Min                                    | Typ  | Max  | Unit |     |
|-----------------------|--------------------------|--|------|------|------|-----|
| Isolation voltage     | 1 minute                 | Input to Output                        | 1600 | --   | --   | VDC |
|                       |                          | Input (Output) to Case                 | 1600 | --   | --   |     |
|                       |                          | Vout 1 to Vout 2 □□ <b>DS</b> □□W only | 500  | --   | --   |     |
| Isolation resistance  | 500VDC                   | 1                                      | --   | --   | GΩ   |     |
| Isolation capacitance |                          | --                                     | --   | 1200 | pF   |     |
| Switching frequency   |                          | --                                     | 300  | --   | kHz  |     |
| Safety meets          |                          | IEC/ EN/ UL62368-1                     |      |      |      |     |
| Case material         |                          | Copper                                 |      |      |      |     |
| Base material         |                          | FR4 PCB                                |      |      |      |     |
| Potting material      |                          | Epoxy (UL94 V-0)                       |      |      |      |     |
| Weight                |                          | 15.3g(0.54oz)                          |      |      |      |     |
| MTBF                  | MIL-HDBK-217F, Full load | 4.446 x 10 <sup>6</sup> hrs            |      |      |      |     |

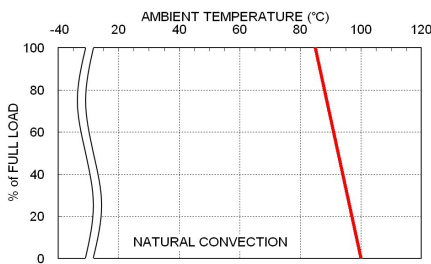
**Environmental Specifications**

| Parameter                        | Conditions       | Min | Typ | Max  | Unit         |
|----------------------------------|------------------|-----|-----|------|--------------|
| Operating base-plate temperature | Without derating | -40 | --  | +85  | °C           |
|                                  | With derating    | +85 | --  | +100 |              |
| Maximum case temperature         |                  | --  | --  | 105  | °C           |
| Storage temperature range        |                  | -55 | --  | +125 | °C           |
| Thermal impedance                |                  | --  | 20  | --   | °C/W         |
| Thermal shock                    |                  |     |     |      | MIL-STD-810F |
| Vibration                        |                  |     |     |      | MIL-STD-810F |
| Relative humidity                |                  |     |     |      | 5% to 95% RH |

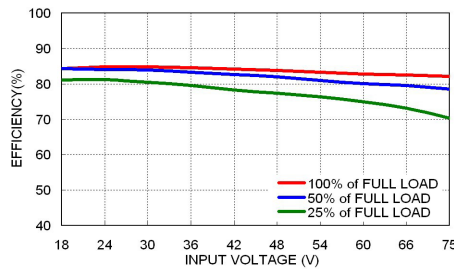
**EMC Specifications**

| Parameter                      | Conditions                       | Level  |                  |
|--------------------------------|----------------------------------|--|------------------|
| EMI                            | EN55032                          |  |                  |
|                                |                                  | Without external components  | Class A          |
|                                | 43LKC05-05□□□W<br>43LKC05-24□□□W | Do not need any external components.   |                  |
|                                | 43LKC05-48□□□W                   | Connect two 4.7μF/100V MLCCs in parallel to input pins   | Class B          |
| EMS                            | EN55024                          |  |                  |
| ESD                            | EN61000-4-2                      | Air ± 8kV and Contact ± 6kV  | Perf. Criteria A |
| Radiated immunity              | EN61000-4-3                      | 20 V/m   | Perf. Criteria A |
| Fast transient                 | EN61000-4-4                      | ± 2kV  |                  |
|                                | 43LKC05-05□□□W<br>43LKC05-24□□□W | With an aluminum electrolytic capacitor (Nippon chemi-con KY series, 220μF/100V) and a TVS (SMDJ70A, 70V, 3000Watt peak pulse power) in parallel.  | Perf. Criteria A |
|                                | 43LKC05-48□□□W                   | With an aluminum electrolytic capacitor (Nippon chemi-con KY series, 220μF/100V) and a TVS (SMDJ120A, 120V, 3000Watt peak pulsepower) in parallel. |                  |
| Surge                          | EN61000-4-5                      | ± 2kV  |                  |
|                                | 43LKC05-05□□□W<br>43LKC05-24□□□W | With an aluminum electrolytic capacitor (Nippon chemi-con KY series, 220μF/100V) and a TVS (SMDJ70A, 70V, 3000Watt peak pulse power) in parallel.  | Perf. Criteria A |
|                                | 43LKC05-48□□□W                   | With an aluminum electrolytic capacitor (Nippon chemi-con KY series, 220μF/100V) and a TVS (SMDJ120A, 120V, 3000Watt peak pulsepower) in parallel. |                  |
| Conducted immunity             | EN61000-4-6                      | 10 Vr.m.s  | Perf. Criteria A |
| Power frequency magnetic field | EN61000-4-8                      | 100A/m continuous; 1000A/m 1 second  | Perf. Criteria A |

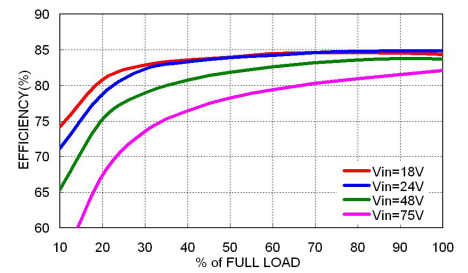
**CAUTION:** This power module is not internally fused. An input line fuse must always be used.

**Characteristic Curve**


43LKC05-48S05W Derating Curve



43LKC05-48S05W Efficiency vs. Input Voltage



43LKC05-48S05W Efficiency vs. Output Load

**Fuse Consideration**

This power module is not internally fused. An input line fuse must always be used.

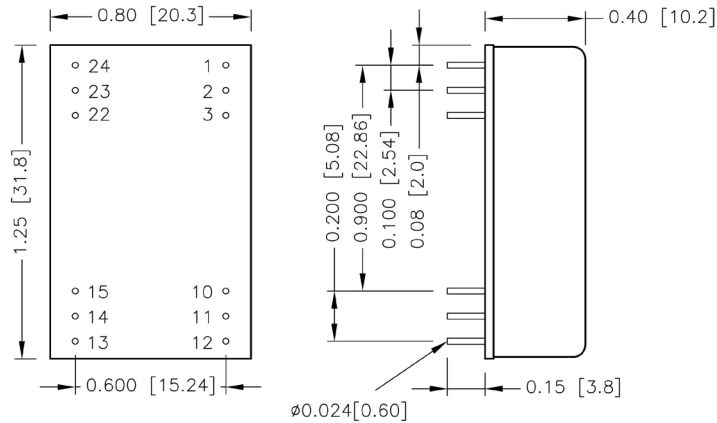
This encapsulated power module can be used in a wide variety of applications, ranging from simple stand-alone operation to an integrated part of sophisticated power architecture.

To maximum flexibility, internal fusing is not included; however, to achieve maximum safety and system protection, always use an input line fuse.

The input line fuse suggest as below :

| Model   | Fuse Rating (A) | Fuse Type |
|---|-----------------|-----------|
| 43LKC05-05S□□W, 43LKC05-05D□□W, 43LKC05-05DS□□W | 2.5             | Slow-Blow |
| 43LKC05-24S□□W, 43LKC05-24D□□W, 43LKC05-24DS□□W | 1.25            | Slow-Blow |
| 43LKC05-48S□□W, 43LKC05-48D□□W, 43LKC05-48DS□□W | 1.6             | Slow-Blow |

The table based on the information provided in this data sheet on inrush energy and maximum DC input current at low Vin.

**Mechanical Drawing**


1. All dimensions in inch [mm] BOTTOM VIEW
2. Tolerance:  $x.xx \pm 0.02$  [ $x.x \pm 0.5$ ]  
 $x.xxx \pm 0.01$  [ $x.xx \pm 0.25$ ]
3. Pin dimension tolerance  $\pm 0.004 [0.10]$

**Pin Connection**
**43LKC05-□□S□□W**

| Pin | Define | Pin | Define |
|-----|--------|-----|--------|
| 1   | +Vin   | 24  | -Vin   |
| 2   | +Vin   | 23  | -Vin   |
| 3   | Case   | 22  | Ctrl   |
| 10  | No pin | 15  | +Vout  |
| 11  | No pin | 14  | -Vout  |
| 12  | Case   | 13  | Trim   |

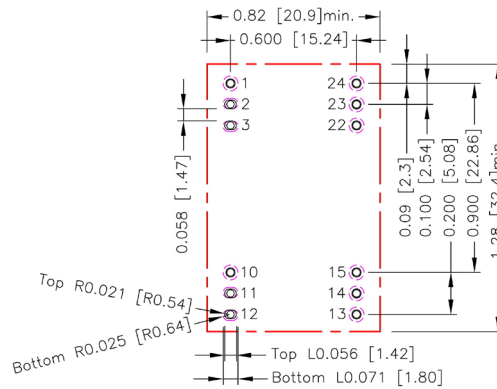
**43LKC05-□□D□□W**

|    |         |    |         |
|----|---------|----|---------|
| 1  | +Vin    | 24 | -Vin    |
| 2  | +Vin    | 23 | -Vin    |
| 3  | Case    | 22 | Ctrl    |
| 10 | Com     | 15 | Com     |
| 11 | +Vout 1 | 14 | -Vout 2 |
| 12 | Case    | 13 | Trim    |

**43LKC05-□□DS□□W**

|    |              |    |               |
|----|--------------|----|---------------|
| 1  | +Vin         | 24 | -Vin          |
| 2  | +Vin         | 23 | -Vin          |
| 3  | Case         | 22 | Ctrl          |
| 10 | -Vout 1(Aux) | 15 | +Vout 2(Main) |
| 11 | +Vout 1(Aux) | 14 | -Vout 2(Main) |
| 12 | Case         | 13 | Trim          |

## Recommended Pad Layout



All dimensions in inch[mm]

Pad size (lead free recommended)

Through hole 1.2.3.10.11.12.13.14.15.22.23.24:  $\Phi 0.035[0.90]$

Top view pad 1.10.13.14.15.22.23.24:  $\Phi 0.044[1.13]$

Top view pad 2.3.11.12: Groove R0.021[0.54] L0.056[1.42]

Bottom view pad 1.10.13.14.15.22.23.24:  $\Phi 0.071[1.80]$

Bottom view pad 2.3.11.12: Groove R0.025[0.64] L0.071[1.80]

## Thermal Considerations

The power module operates in a variety of thermal environments.

However, sufficient cooling should be provided to help ensure reliable operation of the unit.

Heat is removed by conduction, convection, and radiation to the surrounding Environment.

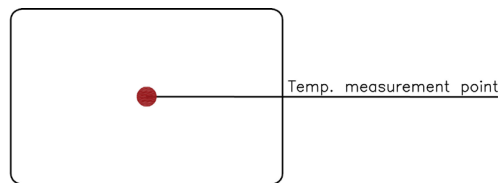
Proper cooling can be verified by measuring the point as the figure below.

The temperature at this location should not exceed "Maximum case temperature".

When operating, adequate cooling must be provided to maintain the test point temperature at or below "Maximum case temperature".

You can limit this Temperature to a lower value for extremely high reliability.

- Thermal test condition with vertical direction by natural convection (20LFM).



Top View



**Output Voltage Adjustment**

Output voltage set point adjustment allows the user to increase or decrease the output voltage set point of the module.

**43LKC05-□□S□□W**

This is accomplished by connecting an external resistor between the Trim pin and either the +Vout or -Vout pins. With an external resistor between the Trim and -Vout pin, the output voltage set point increases.

With an external resistor between the Trim and +Vout pin, the output voltage set point decreases.

**43LKC05-□□D□□W**

This is accomplished by connecting an external resistor between the Trim pin and either the +Vout 1 or -Vout 2 pins. With an external resistor between the Trim and -Vout 2 pin, the output voltage set point increases.

With an external resistor between the Trim and +Vout 1 pin, the output voltage set point decreases.

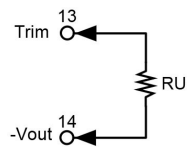
**43LKC05-□□DS□□W**

This is accomplished by connecting an external resistor between the Trim pin and either the +Vout 2(Main) or -Vout 2(Main) pins. With an external resistor between the Trim and -Vout 2(Main) pin, the output voltage set point increases.

With an external resistor between the Trim and +Vout 2(Main) pin, the output voltage set point decreases. The external TRIM resistor needs to be at least 1/16W of rated power.

**EXTERNAL OUTPUT TRIMMING**

Output can be externally trimmed by using the method shown below.

**Trim Up**
**43LKC05-□□S□□W**

**□□S3P3W**

| $\Delta V$ (%)   | 1       | 2       | 3       | 4      | 5      | 6      | 7      | 8      | 9      | 10     |
|------------------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|
| Vout (V)         | 3.333   | 3.366   | 3.399   | 3.432  | 3.465  | 3.498  | 3.531  | 3.564  | 3.597  | 3.630  |
| RU (k $\Omega$ ) | 385.837 | 191.894 | 127.246 | 94.922 | 75.527 | 62.598 | 53.362 | 46.436 | 41.049 | 36.739 |
| $\Delta V$ (%)   | 11      | 12      | 13      | 14     | 15     | 16     | 17     | 18     | 19     | 20     |
| Vout (V)         | 3.663   | 3.696   | 3.729   | 3.762  | 3.795  | 3.828  | 3.861  | 3.894  | 3.927  | 3.960  |
| RU (k $\Omega$ ) | 33.212  | 30.274  | 27.787  | 25.656 | 23.809 | 22.192 | 20.766 | 19.499 | 18.365 | 17.344 |

**□□S05W**

| $\Delta V$ (%)   | 1       | 2       | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     |
|------------------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|
| Vout (V)         | 5.050   | 5.100   | 5.150  | 5.200  | 5.250  | 5.300  | 5.350  | 5.400  | 5.450  | 5.500  |
| RU (k $\Omega$ ) | 252.301 | 125.126 | 82.734 | 61.538 | 48.820 | 40.342 | 34.286 | 29.744 | 26.211 | 23.385 |
| $\Delta V$ (%)   | 11      | 12      | 13     | 14     | 15     | 16     | 17     | 18     | 19     | 20     |
| Vout (V)         | 5.550   | 5.600   | 5.650  | 5.700  | 5.750  | 5.800  | 5.850  | 5.900  | 5.950  | 6.000  |
| RU (k $\Omega$ ) | 21.073  | 19.146  | 17.515 | 16.118 | 14.907 | 13.847 | 12.912 | 12.081 | 11.337 | 10.668 |

**□□S12W**

| $\Delta V$ (%)   | 1       | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     |
|------------------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Vout (V)         | 12.120  | 12.240 | 12.360 | 12.480 | 12.600 | 12.720 | 12.840 | 12.960 | 13.080 | 13.200 |
| RU (k $\Omega$ ) | 202.645 | 98.772 | 64.148 | 46.836 | 36.449 | 29.524 | 24.578 | 20.868 | 17.983 | 15.674 |
| $\Delta V$ (%)   | 11      | 12     | 13     | 14     | 15     | 16     | 17     | 18     | 19     | 20     |
| Vout (V)         | 13.320V | 13.440 | 13.560 | 13.680 | 13.800 | 13.920 | 14.040 | 14.160 | 14.280 | 14.400 |
| RU (k $\Omega$ ) | 13.786  | 12.212 | 10.880 | 9.739  | 8.750  | 7.884  | 7.120  | 6.441  | 5.834  | 5.287  |

Ideal Power Limited

14 Larks Way, Tree Beech Enterprise Park, Gunn, Barnstaple, Devon, England, EX32 7NZ.

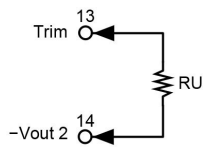
[www.idealpower.co.uk](http://www.idealpower.co.uk) | +44 (0) 845 260 3400

**Trim Up (Continued)**
**□□S15W**

| $\Delta V$ (%)   | 1       | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     |
|------------------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Vout (V)         | 15.150  | 15.300 | 15.450 | 15.600 | 15.750 | 15.900 | 16.050 | 16.200 | 16.350 | 16.500 |
| RU (k $\Omega$ ) | 161.024 | 77.962 | 50.275 | 36.431 | 28.125 | 22.587 | 18.632 | 15.665 | 13.358 | 11.512 |
| $\Delta V$ (%)   | 11      | 12     | 13     | 14     | 15     | 16     | 17     | 18     | 19     | 20     |
| Vout (V)         | 16.650  | 16.800 | 16.950 | 17.100 | 17.250 | 17.400 | 17.550 | 17.700 | 17.850 | 18.000 |
| RU (k $\Omega$ ) | 10.002  | 8.744  | 7.679  | 6.766  | 5.975  | 5.283  | 4.672  | 4.129  | 3.643  | 3.206  |

**□□S24W**

| $\Delta V$ (%)   | 1       | 2       | 3       | 4       | 5       | 6      | 7      | 8      | 9      | 10     |
|------------------|---------|---------|---------|---------|---------|--------|--------|--------|--------|--------|
| Vout (V)         | 24.240  | 24.480  | 24.720  | 24.960  | 25.200  | 25.440 | 25.680 | 25.920 | 26.160 | 26.400 |
| RU (k $\Omega$ ) | 568.197 | 277.598 | 180.732 | 132.299 | 103.239 | 83.866 | 70.028 | 59.650 | 51.577 | 45.120 |
| $\Delta V$ (%)   | 11      | 12      | 13      | 14      | 15      | 16     | 17     | 18     | 19     | 20     |
| Vout (V)         | 26.640  | 26.880  | 27.120  | 27.360  | 27.600  | 27.840 | 28.080 | 28.320 | 28.560 | 28.800 |
| RU (k $\Omega$ ) | 39.836  | 35.433  | 31.707  | 28.514  | 25.746  | 23.325 | 21.188 | 19.289 | 17.589 | 16.060 |

**43LKC05-□□D□□W**

**□□D05W**

| $\Delta V$ (%)   | 1           | 2           | 3           | 4           | 5           | 6           | 7           | 8           | 9           | 10          |
|------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Vout (V)         | $\pm 5.050$ | $\pm 5.100$ | $\pm 5.150$ | $\pm 5.200$ | $\pm 5.250$ | $\pm 5.300$ | $\pm 5.350$ | $\pm 5.400$ | $\pm 5.450$ | $\pm 5.500$ |
| RU (k $\Omega$ ) | 71.844      | 34.422      | 21.948      | 15.711      | 11.969      | 9.474       | 7.692       | 6.356       | 5.316       | 4.484       |

**□□D12W**

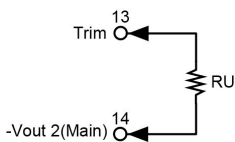
| $\Delta V$ (%)   | 1            | 2            | 3            | 4            | 5            | 6            | 7            | 8            | 9            | 10           |
|------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Vout (V)         | $\pm 12.120$ | $\pm 12.240$ | $\pm 12.360$ | $\pm 12.480$ | $\pm 12.600$ | $\pm 12.720$ | $\pm 12.840$ | $\pm 12.960$ | $\pm 13.080$ | $\pm 13.200$ |
| RU (k $\Omega$ ) | 568.197      | 277.598      | 180.732      | 132.299      | 103.239      | 83.866       | 70.028       | 59.650       | 51.577       | 45.120       |

**□□D15W**

| $\Delta V$ (%)   | 1            | 2            | 3            | 4            | 5            | 6            | 7            | 8            | 9            | 10           |
|------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Vout (V)         | $\pm 15.150$ | $\pm 15.300$ | $\pm 15.450$ | $\pm 15.600$ | $\pm 15.750$ | $\pm 15.900$ | $\pm 16.050$ | $\pm 16.200$ | $\pm 16.350$ | $\pm 16.500$ |
| RU (k $\Omega$ ) | 236.249      | 111.625      | 70.083       | 49.312       | 36.850       | 28.542       | 22.607       | 18.156       | 14.694       | 11.925       |

**□□D24W**

| $\Delta V$ (%)   | 1            | 2            | 3            | 4            | 5            | 6            | 7            | 8            | 9            | 10           |
|------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Vout (V)         | $\pm 24.240$ | $\pm 24.480$ | $\pm 24.720$ | $\pm 24.960$ | $\pm 25.200$ | $\pm 25.440$ | $\pm 25.680$ | $\pm 25.920$ | $\pm 26.160$ | $\pm 26.400$ |
| RU (k $\Omega$ ) | 609.713      | 298.357      | 194.571      | 142.678      | 111.543      | 90.786       | 75.959       | 64.839       | 56.190       | 49.271       |

**43LKC05-□□DS□□W**

**□□DS05W**

| $\Delta V$ (%)   | 1       | 2       | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     |
|------------------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|
| Vout (V)         | 5.050   | 5.100   | 5.150  | 5.200  | 5.250  | 5.300  | 5.350  | 5.400  | 5.450  | 5.500  |
| RU (k $\Omega$ ) | 252.301 | 125.126 | 82.734 | 61.538 | 48.820 | 40.342 | 34.286 | 29.744 | 26.211 | 23.385 |

**□□DS12W**

| $\Delta V$ (%)   | 1       | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     |
|------------------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Vout (V)         | 12.120  | 12.240 | 12.360 | 12.480 | 12.600 | 12.720 | 12.840 | 12.960 | 13.080 | 13.200 |
| RU (k $\Omega$ ) | 202.645 | 98.772 | 64.148 | 46.836 | 36.449 | 29.524 | 24.578 | 20.868 | 17.983 | 15.674 |

**Trim Up (Continued)**

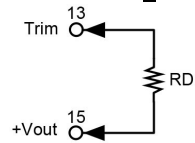
| □□DS15W  |         |        |        |        |        |        |        |        |        |        |
|----------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| ΔV (%)   | 1       | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     |
| Vout (V) | 15.150  | 15.300 | 15.450 | 15.600 | 15.750 | 15.900 | 16.050 | 16.200 | 16.350 | 16.500 |
| RU (kΩ)  | 161.024 | 77.962 | 50.275 | 36.431 | 28.125 | 22.587 | 18.632 | 15.665 | 13.358 | 11.512 |

| □□DS24W  |         |         |         |         |         |        |        |        |        |        |
|----------|---------|---------|---------|---------|---------|--------|--------|--------|--------|--------|
| ΔV (%)   | 1       | 2       | 3       | 4       | 5       | 6      | 7      | 8      | 9      | 10     |
| Vout (V) | 24.240  | 24.480  | 24.720  | 24.960  | 25.200  | 25.440 | 25.680 | 25.920 | 26.160 | 26.400 |
| RU (kΩ)  | 568.197 | 277.598 | 180.732 | 132.299 | 103.239 | 83.866 | 70.028 | 59.650 | 51.577 | 45.120 |

**Trim Down**

43LKC05-□□S□□W



| □□S3P3W  |         |        |        |        |        |        |        |       |       |       |
|----------|---------|--------|--------|--------|--------|--------|--------|-------|-------|-------|
| ΔV (%)   | 1       | 2      | 3      | 4      | 5      | 6      | 7      | 8     | 9     | 10    |
| Vout (V) | 3.267   | 3.234  | 3.201  | 3.168  | 3.135  | 3.102  | 3.069  | 3.036 | 3.003 | 2.970 |
| RU (kΩ)  | 114.963 | 53.906 | 33.554 | 23.378 | 17.273 | 13.202 | 10.295 | 8.114 | 6.418 | 5.061 |

| □□S05W   |         |         |        |        |        |        |        |        |        |        |
|----------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|
| ΔV (%)   | 1       | 2       | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     |
| Vout (V) | 4.950   | 4.900   | 4.850  | 4.800  | 4.750  | 4.700  | 4.650  | 4.600  | 4.550  | 4.500  |
| RU (kΩ)  | 248.499 | 120.674 | 78.066 | 56.762 | 43.980 | 35.458 | 29.371 | 24.806 | 21.255 | 18.415 |

| □□S12W   |         |         |         |         |         |         |        |        |        |        |
|----------|---------|---------|---------|---------|---------|---------|--------|--------|--------|--------|
| ΔV (%)   | 1       | 2       | 3       | 4       | 5       | 6       | 7      | 8      | 9      | 10     |
| Vout (V) | 11.880  | 11.760  | 11.640  | 11.520  | 11.400  | 11.280  | 11.160 | 11.040 | 10.920 | 10.800 |
| RU (kΩ)  | 777.155 | 381.028 | 248.985 | 182.964 | 143.351 | 116.943 | 98.079 | 83.932 | 72.928 | 64.126 |

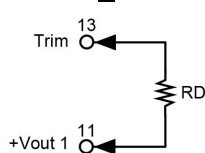
  

| □□S15W   |         |         |         |         |         |         |         |        |        |        |
|----------|---------|---------|---------|---------|---------|---------|---------|--------|--------|--------|
| ΔV (%)   | 1       | 2       | 3       | 4       | 5       | 6       | 7       | 8      | 9      | 10     |
| Vout (V) | 14.850  | 14.700  | 14.550  | 14.400  | 14.250  | 14.100  | 13.950  | 13.800 | 13.650 | 13.500 |
| RU (kΩ)  | 818.776 | 401.838 | 262.859 | 193.369 | 151.675 | 123.879 | 104.025 | 89.135 | 77.553 | 68.288 |

| □□S24W   |          |          |          |          |         |         |         |         |         |         |
|----------|----------|----------|----------|----------|---------|---------|---------|---------|---------|---------|
| ΔV (%)   | 1        | 2        | 3        | 4        | 5       | 6       | 7       | 8       | 9       | 10      |
| Vout (V) | 23.760   | 23.520   | 23.280   | 23.040   | 22.800  | 22.560  | 22.320  | 22.080  | 21.840  | 21.600  |
| RU (kΩ)  | 4949.803 | 2440.402 | 1603.934 | 1185.701 | 934.761 | 767.467 | 647.972 | 558.350 | 488.645 | 432.880 |

43LKC05-□□D□□W



| □□D05W   |         |         |        |        |        |        |        |        |        |        |
|----------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|
| ΔV (%)   | 1       | 2       | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     |
| Vout (V) | ±4.950  | ±4.900  | ±4.850 | ±4.800 | ±4.750 | ±4.700 | ±4.650 | ±4.600 | ±4.550 | ±4.500 |
| RU (kΩ)  | 219.156 | 106.578 | 69.052 | 50.289 | 39.031 | 31.526 | 26.165 | 22.144 | 19.017 | 16.516 |

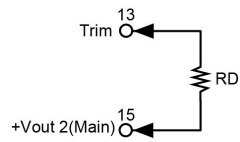
| □□D12W   |          |          |          |          |         |         |         |         |         |         |
|----------|----------|----------|----------|----------|---------|---------|---------|---------|---------|---------|
| ΔV (%)   | 1        | 2        | 3        | 4        | 5       | 6       | 7       | 8       | 9       | 10      |
| Vout (V) | ±11.880  | ±11.760  | ±11.640  | ±11.520  | ±11.400 | ±11.280 | ±11.160 | ±11.040 | ±10.920 | ±10.800 |
| RU (kΩ)  | 4949.803 | 2440.402 | 1603.934 | 1185.701 | 934.761 | 767.467 | 647.972 | 558.350 | 488.645 | 432.880 |

**Trim Down (Continued)**
**□□D15W**

| $\Delta V$ (%)   | 1        | 2        | 3       | 4       | 5       | 6       | 7       | 8       | 9       | 10      |
|------------------|----------|----------|---------|---------|---------|---------|---------|---------|---------|---------|
| Vout (V)         | ±14.850  | ±14.700  | ±14.550 | ±14.400 | ±14.250 | ±14.100 | ±13.950 | ±13.800 | ±13.650 | ±13.500 |
| RU (k $\Omega$ ) | 2707.751 | 1332.375 | 873.917 | 644.688 | 507.150 | 415.458 | 349.964 | 300.844 | 262.639 | 232.075 |

**□□D24W**

| $\Delta V$ (%)   | 1        | 2        | 3        | 4        | 5        | 6        | 7        | 8        | 9        | 10       |
|------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Vout (V)         | ±23.760  | ±23.520  | ±23.280  | ±23.040  | ±22.800  | ±22.560  | ±22.320  | ±22.080  | ±21.840  | ±21.600  |
| RU (k $\Omega$ ) | 11244.29 | 5555.643 | 3659.429 | 2711.322 | 2142.457 | 1763.214 | 1492.327 | 1289.161 | 1131.143 | 1004.729 |

**43LKC05-□□DS□□W**

**□□DS05W**

| $\Delta V$ (%)   | 1       | 2       | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     |
|------------------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|
| Vout (V)         | 4.950   | 4.900   | 4.850  | 4.800  | 4.750  | 4.700  | 4.650  | 4.600  | 4.550  | 4.500  |
| RU (k $\Omega$ ) | 248.499 | 120.674 | 78.066 | 56.762 | 43.980 | 35.458 | 29.371 | 24.806 | 21.255 | 18.415 |

**□□DS12W**

| $\Delta V$ (%)   | 1       | 2       | 3       | 4       | 5       | 6       | 7      | 8      | 9      | 10     |
|------------------|---------|---------|---------|---------|---------|---------|--------|--------|--------|--------|
| Vout (V)         | 11.880  | 11.760  | 11.640  | 11.520  | 11.400  | 11.280  | 11.160 | 11.040 | 10.920 | 10.800 |
| RU (k $\Omega$ ) | 777.155 | 381.028 | 248.985 | 182.964 | 143.351 | 116.943 | 98.079 | 83.932 | 72.928 | 64.126 |

**□□DS15W**

| $\Delta V$ (%)   | 1       | 2       | 3       | 4       | 5       | 6       | 7       | 8      | 9      | 10     |
|------------------|---------|---------|---------|---------|---------|---------|---------|--------|--------|--------|
| Vout (V)         | 14.850  | 14.700  | 14.550  | 14.400  | 14.250  | 14.100  | 13.950  | 13.800 | 13.650 | 13.500 |
| RU (k $\Omega$ ) | 818.776 | 401.838 | 262.859 | 193.369 | 151.675 | 123.879 | 104.025 | 89.135 | 77.553 | 68.288 |

**□□DS24W**

| $\Delta V$ (%)   | 1        | 2        | 3        | 4        | 5       | 6       | 7       | 8       | 9       | 10      |
|------------------|----------|----------|----------|----------|---------|---------|---------|---------|---------|---------|
| Vout (V)         | 23.760   | 23.520   | 23.280   | 23.040   | 22.800  | 22.560  | 22.320  | 22.080  | 21.840  | 21.600  |
| RU (k $\Omega$ ) | 4949.803 | 2440.402 | 1603.934 | 1185.701 | 934.761 | 767.467 | 647.972 | 558.350 | 488.645 | 432.880 |