



P-DUKE POWER

LKC05W Series

Tiny-Ripple DC-DC Converter
Up to 5 Watts

3
YEARS
WARRANTY

ROHS
COMPLIANT

REACH
COMPLIANT



TINY
RIPPLE



Automation



Datacom



IPC



Industry



Measurement



Telecom



Automobile



Boat



Charger



Medical



PV



Railway

CE UK
CA

1600
VDC
Isolation
Voltage

4 : 1
Wide
Input
Range

6
sided
Shielding

Internal
EN55032
Class
Filter **B**

LOW
Standby
Power

REMOTE
ON
OFF

TINY
Output
Ripple

OCP

OVP

SCP

UVP

PART NUMBER STRUCTURE

| LKC05 | - | 24 | | S | | 05 | | W | - | CS |
|-------------|---|----------------------------------|--|--------------------------------|--|--|--|-------------|---|---|
| Series Name | | Input Voltage (VDC) | | Output Quantity | | Output Voltage (VDC) | | Input Range | | Assembly Options |
| | | 05:4.5~12 24:9~36 48:18~75 | | S:Single | | 3P3:3.3 05:5 12:12 15:15 24:24 | | 4:1 | | □: With Pin3 CS: Without Pin3, Pin12 |
| | | | | D: Dual | | 05:± 5 12:±12 15:±15 24:±24 | | | | |
| | | | | DS: Dual with output isolation | | 05:5/5 12:12/12 15:15/15 24:24/24 | | | | |

TECHNICAL SPECIFICATION All specifications are typical at nominal input, full load and 25°C unless otherwise noted

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

| Model Number | Input Range | Output Voltage | Output Current @ Full Load | Input Current @ No Load | Output Ripple & Noise | Efficiency | Maximum Capacitor Load |
|---------------|-------------|----------------|----------------------------|-------------------------|-----------------------|------------|------------------------|
| | VDC | VDC | mA | mA | mV | % | μF |
| LKC05-48DS05W | 18~ 75 | Vout1: 5 | 500 | 6 | 10 | 83 | 680 |
| | | Vout2: 5 | 500 | | | | 680 |
| LKC05-48DS12W | 18~ 75 | Vout1: 12 | 208 | 4 | | 85 | 150 |
| | | Vout2: 12 | 208 | | | | 150 |
| LKC05-48DS15W | 18~ 75 | Vout1: 15 | 166 | 5 | 86 | 150 | |
| | | Vout2: 15 | 166 | | | 150 | |
| LKC05-48DS24W | 18~ 75 | Vout1: 24 | 104 | 6 | 86 | 100 | |
| | | Vout2: 24 | 104 | | | 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) | | Pi type | | | |
| | 24Vin(nom) | | Common Choke | | | |
| | 48Vin(nom) | | Common Choke | | | |
| Remote ON/OFF | Referred to -Vin pin | Positive logic | DC-DC ON | Open or 3 ~ 12VDC | | |
| | | | DC-DC OFF | Short or 0 ~ 1.2VDC | | |
| | | 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 | □□ DS □□W | | | 10 | | % | |
| Line regulation | Low Line to High Line at Full Load | □□ S □□W | -0.2 | | +0.2 | % | |
| | | □□ D □□W | -0.2 | | +0.2 | | |
| | | □□ DS □□W | -0.2 | | +0.2 | | |
| | | | Vout 2(Main) Vout 1(Aux) | -1.0 | | | +1.0 |
| Load regulation | No Load to Full Load | □□ S □□W | -0.5 | | +0.5 | % | |
| | | □□ D □□W | -1.0 | | +1.0 | | |
| | 10% Full Load to Full Load | □□ DS □□W | -0.5 | | +0.5 | | |
| | | | Vout 2(Main) Vout 1(Aux) | -1.0 | | | +1.0 |
| Cross regulation | Asymmetrical load 25%/100% FL | □□ D □□W | -3.0 | | +3.0 | % | |
| | | □□ DS 05W | -0.5 | | +0.5 | | |
| | | | Vout 2(Main) Vout 1(Aux) | -6.0 | | | +6.0 |
| | | Others | Vout 2(Main) Vout 1(Aux) | -0.5 | | | +0.5 |
| Voltage adjustability | | | -10 | | +20 | % | |
| | | | -10 | | +10 | | |
| | | | -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 | | % | |
| Over load protection | % of Iout rated; Hiccup mode | | | 170 | | % | |
| Short circuit protection | | | Continuous, automatic recovery | | | | |

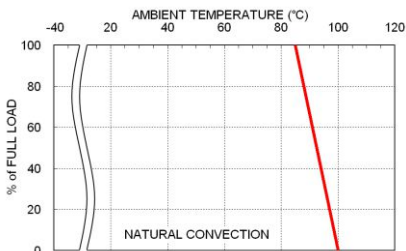
| GENERAL SPECIFICATIONS | | | | | | |
|------------------------|--------------------------|---|------|------|----------------------------|------|
| Parameter | Conditions | | Min. | Typ. | Max. | Unit |
| Isolation voltage | 1 minute | Input to Output | 1600 | | | VDC |
| | | Input (Output) to Case | 1600 | | | |
| | | Vout 1 to Vout 2; □□ DS □□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 | | | | 4.44 x 10 ⁶ hrs | |

| ENVIRONMENTAL SPECIFICATIONS | | | | | | |
|-------------------------------|------------------|--|------|------|--------------|------|
| Parameter | Conditions | | Min. | Typ. | Max. | Unit |
| Operating ambient 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 | |

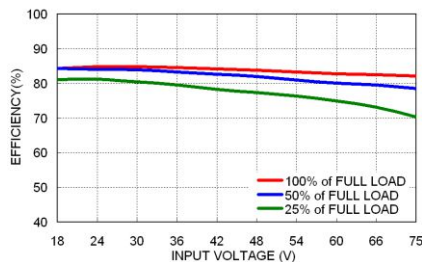
| EMC SPECIFICATIONS | | | |
|--------------------------------|------------------------------|--|------------------|
| Parameter | Conditions | Level | |
| EMI | EN55032 | | |
| | Without external components | Class A | |
| | LKC05-05□□□W LKC05-24□□□W | Do not need any external components. | Class B |
| | LKC05-48□□□W | Connect two 4.7μF/100V MLCCs in parallel to input pins | |
| EMS | EN55035 | | |
| 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 | Perf. Criteria A |
| | LKC05-05□□□W LKC05-24□□□W | With an aluminum electrolytic capacitor (Nippon chemi-con KY series, 220μF/100V) and a TVS(SMDJ70A, 70V, 3000Watt peak pulse power) in parallel. | |
| | LKC05-48□□□W | With an aluminum electrolytic capacitor (Nippon chemi-con KY series, 220μF/100V) and a TVS(SMDJ120A, 120V, 3000Watt peak pulse power) in parallel. | |
| Surge | EN61000-4-5 | ± 2kV | Perf. Criteria A |
| | LKC05-05□□□W LKC05-24□□□W | With an aluminum electrolytic capacitor (Nippon chemi-con KY series, 220μF/100V) and a TVS(SMDJ70A, 70V, 3000Watt peak pulse power) in parallel. | |
| | LKC05-48□□□W | With an aluminum electrolytic capacitor (Nippon chemi-con KY series, 220μF/100V) and a TVS(SMDJ120A, 120V, 3000Watt peak pulse power) 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.

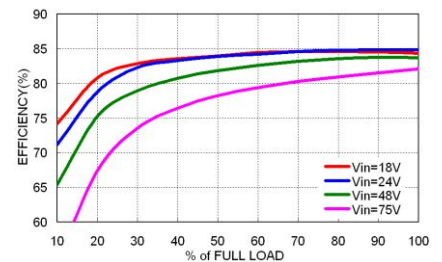
CHARACTERISTIC CURVE



LKC05-48S05W Derating Curve



LKC05-48S05W Efficiency vs. Input Voltage



LKC05-48S05W 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.

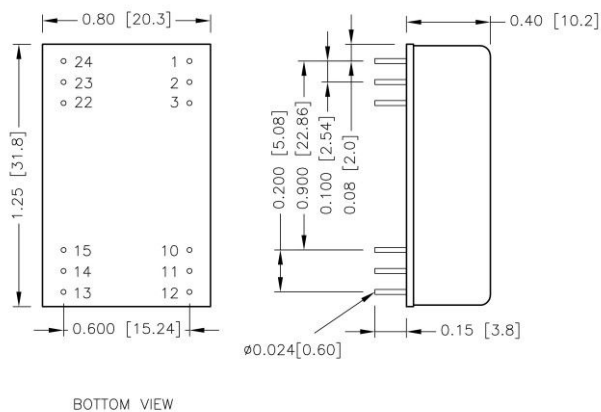
To maximum flexibility, internal fusing is not included; however, to achieve maximum safety and system protection, always use an input line fuse.

The input line fuse suggest as below :

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



PIN CONNECTION

LKC05-□□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 |

LKC05-□□D□□W

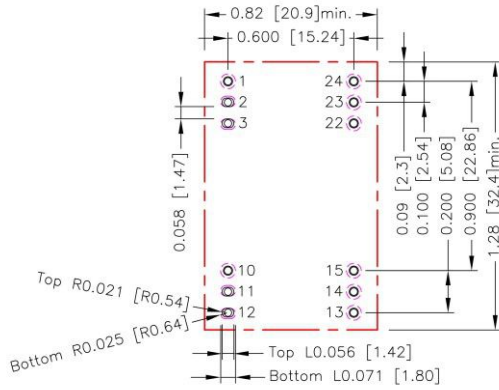
| PIN | DEFINE | PIN | DEFINE |
|-----|---------|-----|---------|
| 1 | +Vin | 24 | -Vin |
| 2 | +Vin | 23 | -Vin |
| 3 | Case | 22 | Ctrl |
| 10 | Com | 15 | Com |
| 11 | +Vout 1 | 14 | -Vout 2 |
| 12 | Case | 13 | Trim |

LKC05-□□DS□□W

| PIN | DEFINE | PIN | DEFINE |
|-----|--------------|-----|---------------|
| 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 |

- All dimensions in inch [mm]
- Tolerance :x.xx±0.02 [x.x±0.5]
x.xxx±0.01 [x.xx±0.25]
- Pin dimension tolerance ±0.004[0.10]

RECOMMENDED PAD LAYOUT

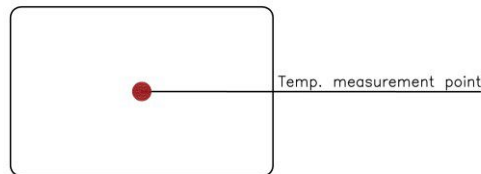


All dimensions in inch[mm]
 Pad size(lead free recommended)
 Through hole 1.2.3.10.11.12.13.14.15.22.23.24: $\Phi 0.035[0.90]$
 Top view pad 1.10.13.14.15.22.23.24: $\Phi 0.044[1.13]$
 Top view pad 2.3.11.12: Groove R0.021[0.54]L0.056[1.42]
 Bottom view pad 1.10.13.14.15.22.23.24: $\Phi 0.071[1.80]$
 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.

LKC05-□□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.

LKC05-□□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.

LKC05-□□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.

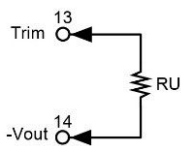
The external TRIM resistor needs to be at least 1/16W of rated power.

EXTERNAL OUTPUT TRIMMING

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

Trim-up

LKC05-□□S□□W



□□S3P3W

| | | | | | | | | | | |
|------------------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|
| ΔV (%) | 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 Ω) | 385.837 | 191.894 | 127.246 | 94.922 | 75.527 | 62.598 | 53.362 | 46.436 | 41.049 | 36.739 |
| ΔV (%) | 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 Ω) | 33.212 | 30.274 | 27.787 | 25.656 | 23.809 | 22.192 | 20.766 | 19.499 | 18.365 | 17.344 |

□□S05W

| | | | | | | | | | | |
|------------------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|
| ΔV (%) | 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 Ω) | 252.301 | 125.126 | 82.734 | 61.538 | 48.820 | 40.342 | 34.286 | 29.744 | 26.211 | 23.385 |
| ΔV (%) | 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 Ω) | 21.073 | 19.146 | 17.515 | 16.118 | 14.907 | 13.847 | 12.912 | 12.081 | 11.337 | 10.668 |

□□S12W

| | | | | | | | | | | |
|------------------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| ΔV (%) | 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 Ω) | 202.645 | 98.772 | 64.148 | 46.836 | 36.449 | 29.524 | 24.578 | 20.868 | 17.983 | 15.674 |
| ΔV (%) | 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 Ω) | 13.786 | 12.212 | 10.880 | 9.739 | 8.750 | 7.884 | 7.120 | 6.441 | 5.834 | 5.287 |

□□S15W

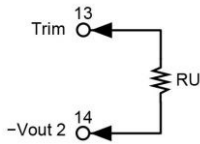
| | | | | | | | | | | |
|------------------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| ΔV (%) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Vout (V) | 15.150 | 15.300 | 15.450 | 15.600 | 15.750 | 15.900 | 16.050 | 16.200 | 16.350 | 16.500 |
| RU (k Ω) | 161.024 | 77.962 | 50.275 | 36.431 | 28.125 | 22.587 | 18.632 | 15.665 | 13.358 | 11.512 |
| ΔV (%) | 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 Ω) | 10.002 | 8.744 | 7.679 | 6.766 | 5.975 | 5.283 | 4.672 | 4.129 | 3.643 | 3.206 |

□□S24W

| | | | | | | | | | | |
|------------------|---------|---------|---------|---------|---------|--------|--------|--------|--------|--------|
| 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 (k Ω) | 568.197 | 277.598 | 180.732 | 132.299 | 103.239 | 83.866 | 70.028 | 59.650 | 51.577 | 45.120 |
| ΔV (%) | 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 Ω) | 39.836 | 35.433 | 31.707 | 28.514 | 25.746 | 23.325 | 21.188 | 19.289 | 17.589 | 16.060 |

OUTPUT VOLTAGE ADJUSTMENT(CONTINUED)

Trim-up

 LKC05-□□**D**□□W

 □□**D05W**

| ΔV (%) | 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 Ω) | 71.844 | 34.422 | 21.948 | 15.711 | 11.969 | 9.474 | 7.692 | 6.356 | 5.316 | 4.484 |

 □□**D12W**

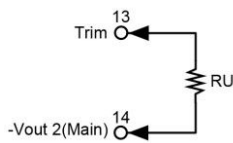
| ΔV (%) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Vout (V) | ±12.120 | ±12.240 | ±12.360 | ±12.480 | ±12.600 | ±12.720 | ±12.840 | ±12.960 | ±13.080 | ±13.200 |
| RU (k Ω) | 568.197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

 □□**D15W**

| 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 (k Ω) | 236.249 | 111.625 | 70.083 | 49.312 | 36.850 | 28.542 | 22.607 | 18.156 | 14.694 | 11.925 |

 □□**D24W**

| 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 (k Ω) | 609.713 | 298.357 | 194.571 | 142.678 | 111.543 | 90.786 | 75.959 | 64.839 | 56.190 | 49.271 |

 LKC05-□□**DS**□□W

 □□**DS05W**

| ΔV (%) | 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 Ω) | 252.301 | 125.126 | 82.734 | 61.538 | 48.820 | 40.342 | 34.286 | 29.744 | 26.211 | 23.385 |

 □□**DS12W**

| ΔV (%) | 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 Ω) | 202.645 | 98.772 | 64.148 | 46.836 | 36.449 | 29.524 | 24.578 | 20.868 | 17.983 | 15.674 |

 □□**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 (k Ω) | 161.024 | 77.962 | 50.275 | 36.431 | 28.125 | 22.587 | 18.632 | 15.665 | 13.358 | 11.512 |

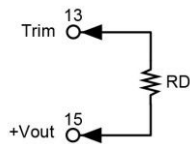
 □□**DS24W**

| 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 (k Ω) | 568.197 | 277.598 | 180.732 | 132.299 | 103.239 | 83.866 | 70.028 | 59.650 | 51.577 | 45.120 |

OUTPUT VOLTAGE ADJUSTMENT(CONTINUED)

Trim-down

LKC05-□□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 |
| RD (k Ω) | 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 |
| RD (k Ω) | 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 |
| RD (k Ω) | 777.155 | 381.028 | 248.985 | 182.964 | 143.351 | 116.943 | 98.079 | 83.932 | 72.928 | 64.126 |

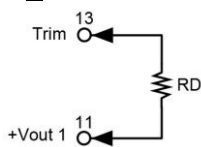
□□S15W

| 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 |
| RD (k Ω) | 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 |
| RD (k Ω) | 4949.803 | 2440.402 | 1603.934 | 1185.701 | 934.761 | 767.467 | 647.972 | 558.350 | 488.645 | 432.880 |

LKC05-□□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 |
| RD (k Ω) | 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 |
| RD (k Ω) | 4949.803 | 2440.402 | 1603.934 | 1185.701 | 934.761 | 767.467 | 647.972 | 558.350 | 488.645 | 432.880 |

□□D15W

| 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 |
| RD (k Ω) | 2707.751 | 1332.375 | 873.917 | 644.688 | 507.150 | 415.458 | 349.964 | 300.844 | 262.639 | 232.075 |

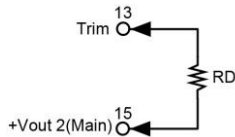
□□D24W

| 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 |
| RD (k Ω) | 11244.29 | 5555.643 | 3659.429 | 2711.322 | 2142.457 | 1763.214 | 1492.327 | 1289.161 | 1131.143 | 1004.729 |

OUTPUT VOLTAGE ADJUSTMENT(CONTINUED)

Trim-down

LKC05-□□DS□□W



□□DS05W

| 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 |
| RD (k Ω) | 248.499 | 120.674 | 78.066 | 56.762 | 43.980 | 35.458 | 29.371 | 24.806 | 21.255 | 18.415 |

□□DS12W

| 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 |
| RD (k Ω) | 777.155 | 381.028 | 248.985 | 182.964 | 143.351 | 116.943 | 98.079 | 83.932 | 72.928 | 64.126 |

□□DS15W

| 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 |
| RD (k Ω) | 818.776 | 401.838 | 262.859 | 193.369 | 151.675 | 123.879 | 104.025 | 89.135 | 77.553 | 68.288 |

□□DS24W

| 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 |
| RD (k Ω) | 4949.803 | 2440.402 | 1603.934 | 1185.701 | 934.761 | 767.467 | 647.972 | 558.350 | 488.645 | 432.880 |