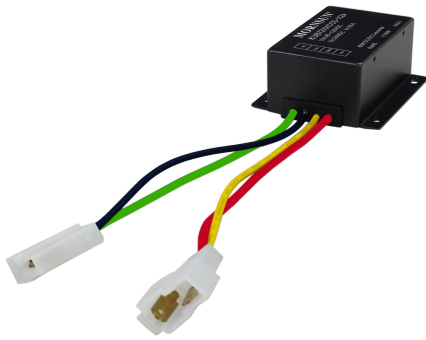


Non-isolated & regulated single output



Patent Protection



RoHS

FEATURES

- Chassis mounting, screw fixed installation
- Metal case, built-in EMC protection
- Meets the IP67 level
- Input voltage up to 120V
- Efficiency up to 96%
- Output continuous short-circuit protection
- Operating temperature range: -40°C to +85°C
- Low standby power consumption: 0.15W

KUB72_CCS-5A series are high efficiency switching regulators. The converters feature high efficiency, low loss and short circuit protection, low heat generation and no need for an external heat sink. These products are widely used in applications such as industrial control, instrumentation and electric power, especially all kinds of industrial vehicles, such as electric forklifts, golf carts, tourist cars, robotics, etc.

Selection Guide

| Certification | Part No. | Input Voltage (VDC) | Output | | Full Load Efficiency (%) Typ. Vin Min./Vin Nominal / Vin Max. | Capacitive Load(μF) Max. |
|---------------|----------------|---------------------|---------------|-------------------|--|--------------------------|
| | | Nominal (Range) | Voltage (VDC) | Current (mA) Max. | | |
| -- | KUB7212CCS-5A | 72 (45-120) | 12 | 5000 | 92/90/86 | 2000 |
| | KUB7224CCS-X2A | 72 (45-120) | 24 | 2500 | 96/94/91 | |

Input Specifications

| Item | Operating Conditions | Min. | Typ. | Max. | Unit |
|---------------------------|----------------------|--------------------------------------|------|------|------|
| No-load Power Consumption | Input voltage range | -- | 0.15 | -- | W |
| Input Filter | | Common mode filter | | | |
| Hot Plug | | Unavailable | | | |
| Ctrl | Module on | Ctrl pin pulled high (40V-120V) | | | |
| | Module off | Ctrl pin open or pulled low (0V-10V) | | | |

Output Specifications

| Item | Operating Conditions | Min. | Typ. | Max. | Unit |
|------------------------------|-------------------------------------|---------------------------|------|-------|-------|
| Voltage Accuracy | Full load, input voltage range | -- | ±2 | ±4 | % |
| Linear Regulation | Input voltage range | -- | ±0.5 | ±2 | |
| Load Regulation | 10% -100% load | -- | ±0.5 | ±2.5 | |
| Ripple & Noise* | 20MHz bandwidth | -- | 150 | 250 | mVp-p |
| Temperature Coefficient | -40°C to +85°C | -- | -- | ±0.03 | %/°C |
| Short Circuit Protection | | Continuous, self-recovery | | | |
| Transient Response Deviation | Nominal input, 25% load step change | -- | ±3 | ±5 | % |
| Transient Recovery Time | | -- | 0.2 | 0.5 | ms |

Note: * The "parallel cable" method is used for Ripple and Noise test, please refer to DC-DC Converter Application Notes for specific information.

General Specifications

| Item | Operating Conditions | Min. | Typ. | Max. | Unit | |
|--------------------------------|--|--|------|------|---------|-----|
| Operating Temperature | Nominal input, derating when operating temperature up $\geq 40^{\circ}\text{C}$, (see Fig. 1) | -40 | -- | 85 | °C | |
| Storage Temperature | | -55 | -- | 125 | | |
| Max. Case Temperature | Temperature derating curve | -- | 100 | -- | | |
| Storage Humidity | Non-condensing | -- | -- | 95 | %RH | |
| Switching Frequency | Full load, input voltage range | KUB7212CCS-5A | -- | 250 | -- | kHz |
| | | KUB7224CCS-X2A | -- | 167 | -- | |
| MTBF | MIL-HDBK-217F@25°C | 1000 | -- | -- | k hours | |
| Dustproof and waterproof grade | Full input voltage Full output load | IP67 | | | | |
| Vibration | | EN 61373 - Category 2 EN 60068-2-6: 10-150Hz, 5G, 0.75mm, along X, Y and Z. | | | | |

Mechanical Specifications

| | |
|----------------|-----------------------|
| Case Material | Aluminum alloy |
| Dimension | 62.4 x 56.1 x 28.85mm |
| Weight | 138g (Typ.) |
| Cooling Method | Free air convection |

Electromagnetic Compatibility (EMC)

| | | | | |
|-----------|-------|------------------|---|--------------------------------|
| Emissions | RE | EN 12895 | 30-75MHz | 31db $\mu\text{V}/\text{m}$ |
| | | | 75-400MHz | 31-42db $\mu\text{V}/\text{m}$ |
| | | | 400-1000MHz | 42db $\mu\text{V}/\text{m}$ |
| | | | At 10m | |
| Immunity | ESD | IEC/EN 61000-4-2 | Contact $\pm 8\text{kV}$ | perf. Criteria A |
| | RS | IEC/EN 61000-4-3 | 10V/m | perf. Criteria A |
| | EFT | IEC/EN 61000-4-4 | $\pm 1\text{kV}$ | perf. Criteria B |
| | Surge | IEC/EN 61000-4-5 | $\pm 1\text{kV}$ | perf. Criteria B |
| | CS | IEC/EN 61000-4-6 | 3Vr.ms | perf. Criteria A |
| | PFM | IEC/EN61000-4-8 | 30 (50 Hz) A/m 3S 1000 (0 Hz) A/m 3S | perf. Criteria A |

Typical Characteristic Curves

Temperature Derating Curves

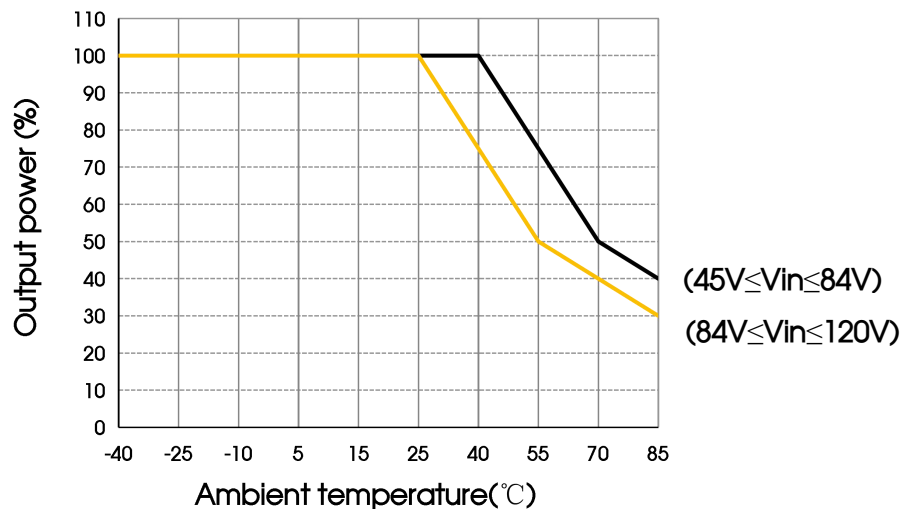
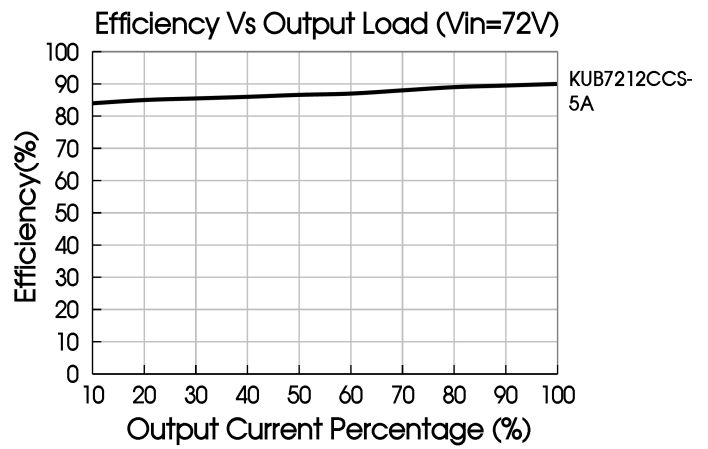
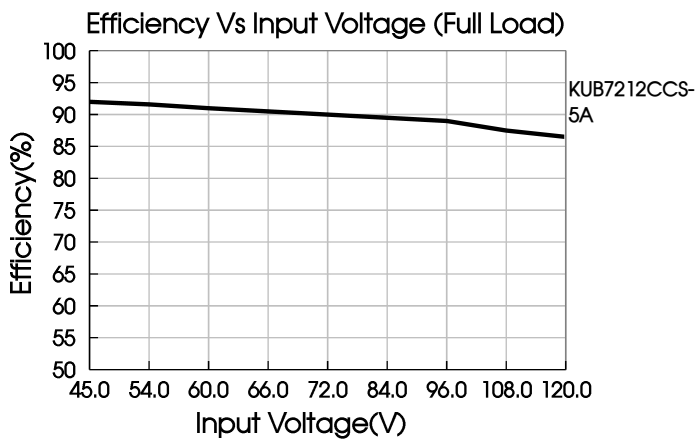
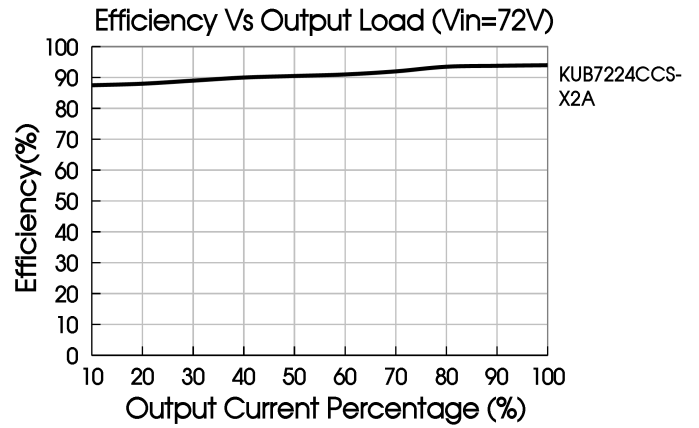
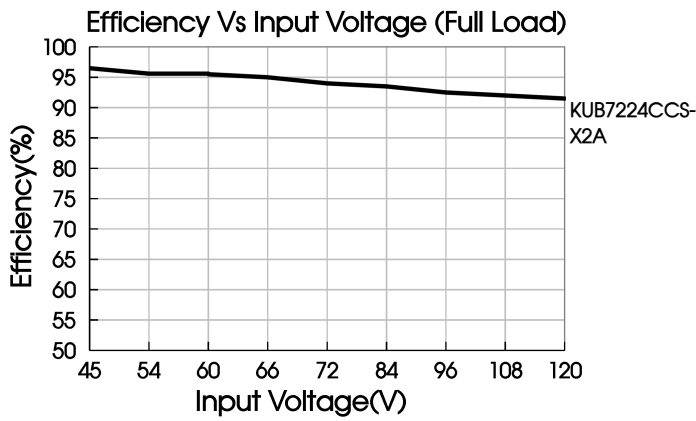


Fig. 1



Design Reference

1. Typical application circuit

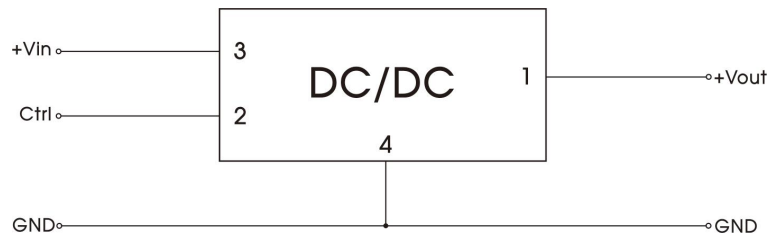
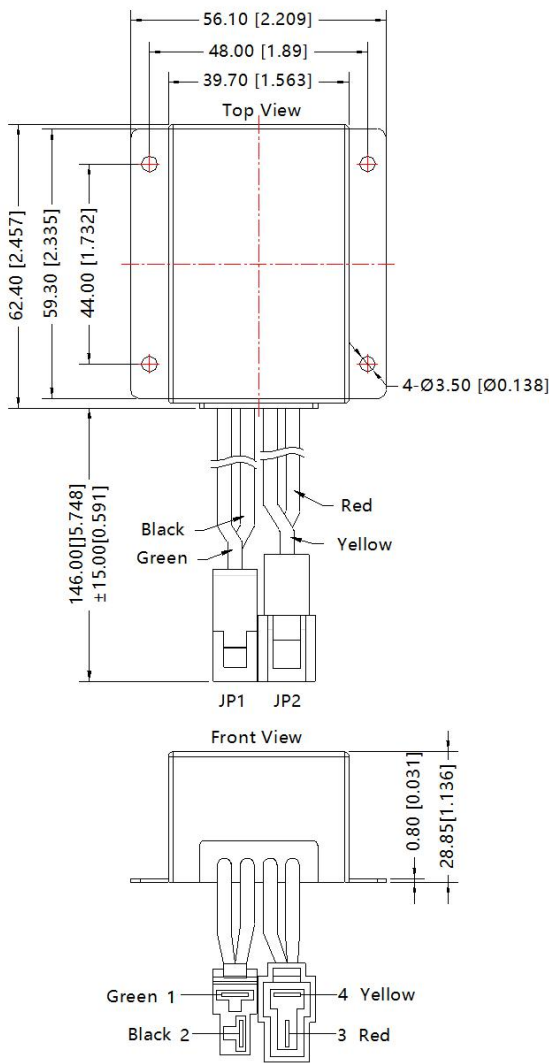


Fig. 2

Note: If the temperature is below -20°C, the internal electrolytic capacitor value of the product will decrease. Depending on the situation, add a capacitor (100µF/200V) between pins 3 & 4.

2. For additional information please refer to DC-DC converter application notes on www.mornsun-power.com

Dimensions and Recommended Layout



THIRD ANGLE PROJECTION

| Pin-Out | | | |
|------------|-----|------|---|
| Connectors | Pin | Mark | Client Connectors |
| JP1 | 1 | Vo | Housing: DJ7021-6.3-11 Contact: DJ611-6.3D |
| | 2 | Ctrl | |
| JP2 | 3 | Vin | Housing: DJ7021-6.3-21 Contact: DJ621-6.3D |
| | 4 | GND | |

Note:
 JP1 connector brand: HONGXING ELECTRICAL
 Spec.: DJ7021-6.3-21&DJ621-6.3D
 JP2 connector brand: HONGXING ELECTRICAL
 Spec.: DJ7021-6.3-11&DJ621-6.3D
 Unit: mm[inch]
 General tolerances: ± 1.00[± 0.039]

Notes:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number 58220121;
2. The maximum capacitive load offered were tested at input voltage range and full load;
3. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25°C, humidity<75%RH with nominal input voltage and rated output load;
4. All index testing methods in this datasheet are based on our company corporate standards;
5. We can provide product customization service, please contact our technicians directly for specific information;
6. Products are related to laws and regulations: see "Features" and "EMC";
7. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

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