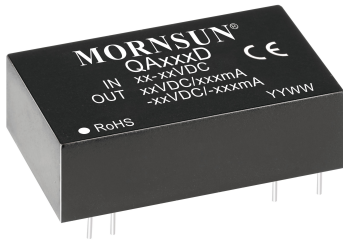


DC/DC Converter for IGBT driver



CE RoHS



FEATURES

- High efficiency up to 87%
- DIP package
- I/O isolation test voltage 4K VAC
- Isolation capacitance: 3pF
- Operating ambient temperature range: -40°C to +85°C
- Input under-voltage protection
- EN60950 approved

QA152D is DC-DC converters for IGBT drivers, offer 4.8W rated output power. The built-in common-ground mode of the unique asymmetric voltage output mode reduces the driver loss of IGBT driver. The converters offer short-circuit protection with auto-recovery and are widely used in applications such as:

1. Inverters in general
2. AC servo drive system
3. Electric welding machines
4. Uninterruptible power supplies (UPS)

Selection Guide

| Certification | Part No. | Input | | Output | | Full Load Efficiency(%) Min./Typ. | Max. Capacitive Load*(µF) |
|---------------|----------|-------------------|-------------------|--------------|-------------|--------------------------------------|---------------------------|
| | | Voltage(VDC) | Current(mA, Typ.) | Voltage | Current | | |
| | | Nominal(Range) | full load/no-load | (VDC)+Vo/-Vo | (mA)+lo/-lo | | |
| CE | QA152D | 15 (13.5-16.5) | 368/20 | +15/-9 | +200/-200 | 83/87 | 1000 |

Note:*The specified maximum capacitive load for positive and negative output is identical

Input Specifications

| Item | Operating Conditions | Min. | Typ. | Max. | Unit |
|--|----------------------|--------------------|------|------|------|
| Input Under-voltage Protection Voltage | Full load | 11.6 | 12.0 | 12.6 | VDC |
| Input Filter | | Capacitance filter | | | |
| Hot Plug | | Unavailable | | | |

Output Specifications

| Item | Operating Conditions | Min. | Typ. | Max. | Unit |
|-------------------------|--|--------------------------------------|------|-------|-------|
| Output Current* | +lo Vin=15VDC | 20 | 200 | 250 | mA |
| | -lo Vin=15VDC | -20 | -200 | -250 | |
| Output Voltage | +Vo Vin=15VDC, Pin16 & Pin14 +lo=+200mA | 13.5 | 15 | 16.5 | VDC |
| | -Vo Vin=15VDC, Pin11 & Pin9 -lo=-200mA | -8.1 | -9 | -9.9 | |
| Voltage Accuracy | | See output regulation curve (Fig. 1) | | | |
| Linear Regulation | Full load | -- | ±1.2 | ±1.5 | -- |
| Load Regulation | 10%-100% load | -- | ±8 | ±10 | % |
| Temperature Coefficient | Full load | -- | -- | ±0.03 | %/°C |
| Ripple & Noise** | Full load,20MHz bandwidth | -- | 80 | 120 | mVp-p |

Note: *The typical output current is the rated full-load current of the product, the maximum output current is the maximum over-load current which the product allowed.

** Ripple and noise are measured by "parallel cable" method, please see DC-DC Converter Application Notes for specific operation.

General Specifications

| Item | Operating Conditions | Min. | Typ. | Max. | Unit |
|-----------------------|---|------|------|------|------|
| Insulation Voltage | Input-output Electric Strength Test for 1 minute with a leakage current of 1mA max. | 4000 | -- | -- | VAC |
| Insulation Resistance | Input-output resistance at 500VDC | 1000 | -- | -- | MΩ |

| | | | | | |
|--------------------------------------|--|------|-----|-----|---------|
| Isolation Capacitance | Input-output, 1MHz/0.1V | -- | 3.0 | -- | pF |
| Operating Temperature | Full load | -40 | -- | 85 | °C |
| Storage Temperature | | -55 | -- | 125 | |
| Pin Soldering Resistance Temperature | Soldering spot is 1.5mm away from the case, 10 seconds | -- | -- | 300 | |
| Case Temperature Rise | Ta=25°C, nominal input, full load output | -- | 30 | -- | |
| Storage Humidity | Non-condensing | 5 | -- | 95 | %RH |
| Switching Frequency | Full load, nominal input voltage | -- | 280 | -- | KHz |
| MTBF | MIL-HDBK-217F@25°C | 1000 | -- | -- | K hours |

Mechanical Specifications

| | |
|----------------|---|
| Case Material | Black plastic; flame-retardant and heat-resistant |
| Dimension | 31.60 × 20.30 × 10.20mm |
| Weight | 11.4g (Typ.) |
| Cooling Method | Free air convection |

Electromagnetic Compatibility (EMC)

| | | | | |
|----------|-----|-----------------|--------------|------------------|
| Immunity | ESD | IEC/EN61000-4-2 | Contact ±4KV | perf. Criteria B |
|----------|-----|-----------------|--------------|------------------|

Typical Characteristic Curves

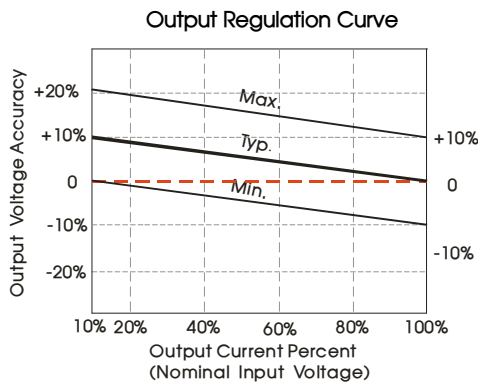
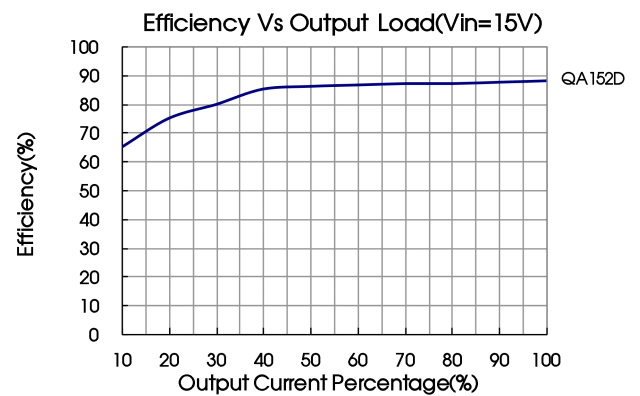
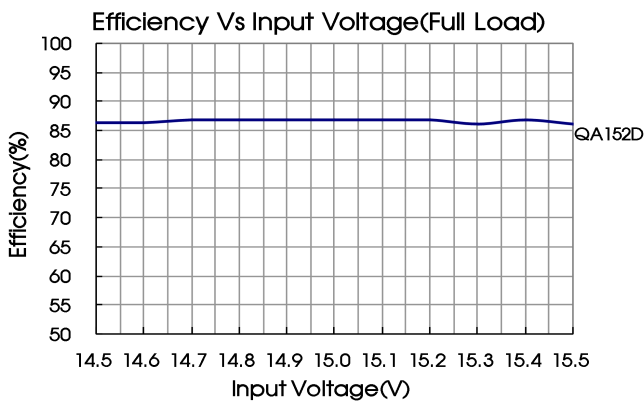
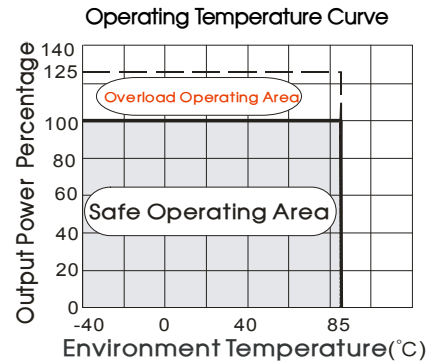


Fig. 1



Design Reference

1. Typical application

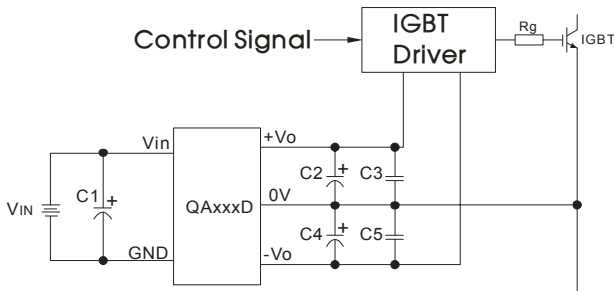


Fig. 2

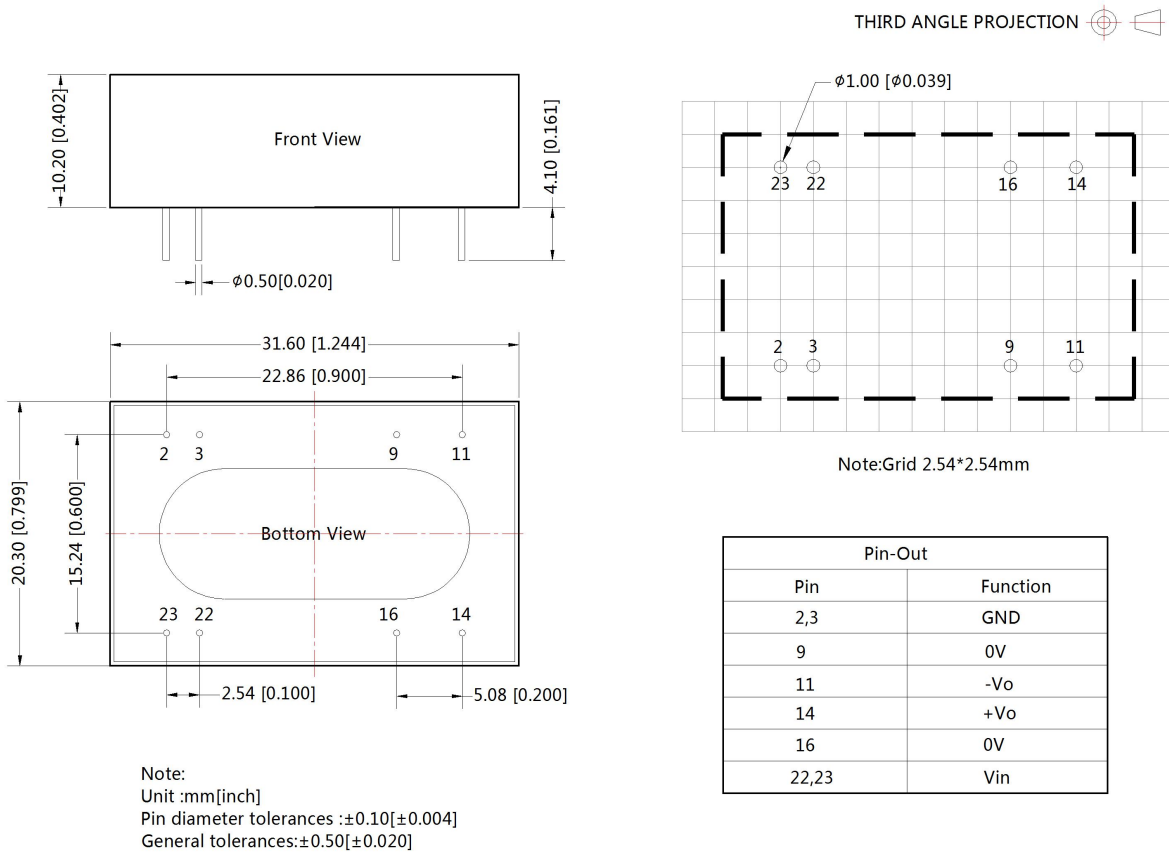
| |
|---|
| C1/ C2 /C4 |
| 100uF/35V (Low internal resistance capacitance) |

Note: C3 and C5 could be ceramic capacitors with values from 1uF to 10uF. It is suggested to increase the capacitance of C2 and C4, but less than the maximum capacitive load of the product to reduce ripple & noise.

2. The products do not support parallel connection of their output.

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

Dimensions and Recommended Layout



Notes:

- 1.For additional information on Product Packaging please refer to www.mornsun-power.com.Packaging bag number: 58210008;
- 2.The connection between the power supply module and IGBT driver should be kept as short as possible;
- 3.The output filtering capacitor should be as close as possible to the power supply module and IGBT driver;
- 4.The peak of the IGBT driver gate drive current is high, so low internal resistance electrolytic capacitor is recommended to be used for the power supply module output filter capacitor;
- 5.The average output power of the driver must be lower than that of the power supply module;
- 6.Consider fixing in place with glue near the module if being used in vibration occasions;
- 7.The maximum capacitive load offered were tested at nominal input voltage and full load;
- 8.Unless otherwise specified, parameters in this datasheet were measured under the conditions of $T_a=25^{\circ}\text{C}$, humidity<75%RH with nominal input voltage and rated output load;
- 9.All index testing methods in this datasheet are based on company corporate standards;
- 10.We can provide product customization service, please contact our technicians directly for specific information;
- 11.Specifications are subject to change without prior notice.

MORNSUN Guangzhou Science & Technology Co., Ltd.

Address: No. 5, Kehui St. 1, Kehui Development Center, Science Ave., Guangzhou Science City, Huangpu District, Guangzhou, P. R. China
Tel: 86-20-38601850 Fax: 86-20-38601272 E-mail: info@mornsun.cn www.mornsun-power.com