DC/DC Converter for IGBT Driver
QA152D

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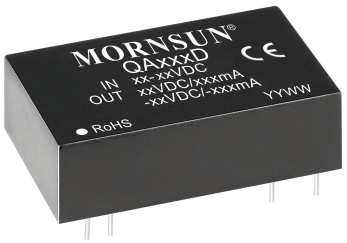


3 years Warranty

CE Report EN62368-1

RoHS

FEATURES

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

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) Nominal(Range)	Current(mA, Typ.) full load/no-load	Voltage (VDC)+Vo/-Vo	Current (mA)+Io/-Io		
EN	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*	+Io	Vin=15VDC	20	200	250	mA
	-Io	Vin=15VDC	-20	-200	-250	
Output Voltage	+Vo	Vin=15VDC, Pin16 & Pin14 +Io=+200mA	13.5	15	16.5	VDC
	-Vo	Vin=15VDC, Pin11 & Pin9 -Io=-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	%/℃
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	℃
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℃, nominal input, full load output	--	30	--	
Safety Standard		EN62368-1 (Report)			
Storage Humidity	Non-condensing	5	--	95	%RH
Switching Frequency	Full load, nominal input voltage	--	280	--	kHz
MTBF	MIL-HDBK-217F@25℃	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

Output Regulation Curve

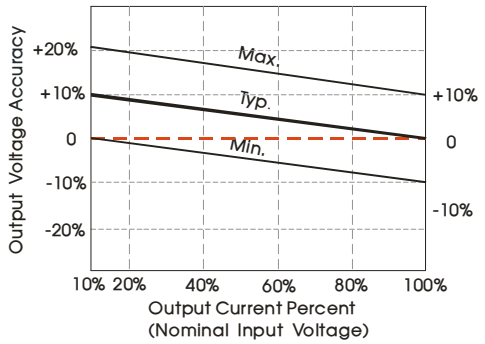
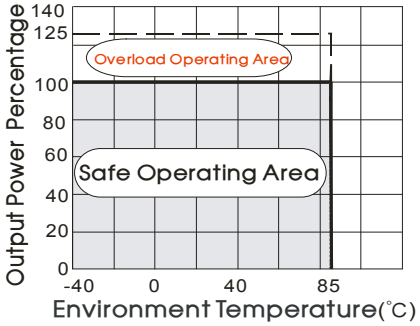
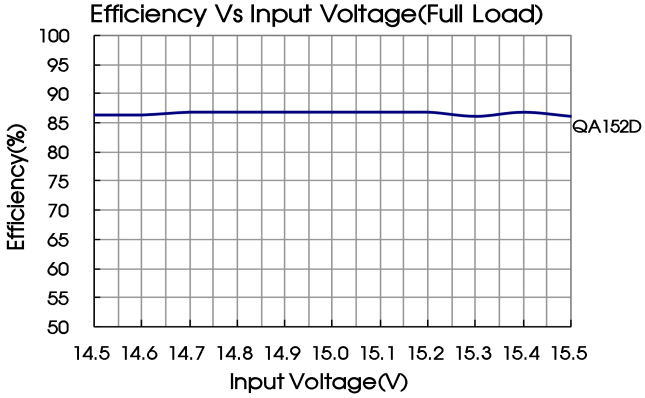


Fig. 1

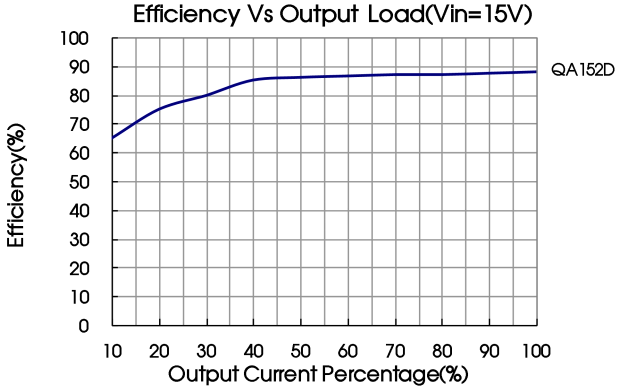
Operating Temperature Curve



Efficiency Vs Input Voltage(Full Load)



Efficiency Vs Output Load(Vin=15V)



Design Reference

1. Typical application

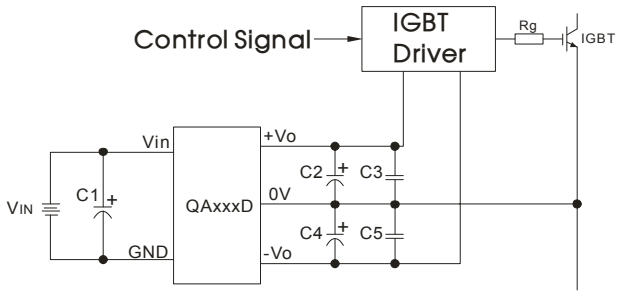


Fig. 2

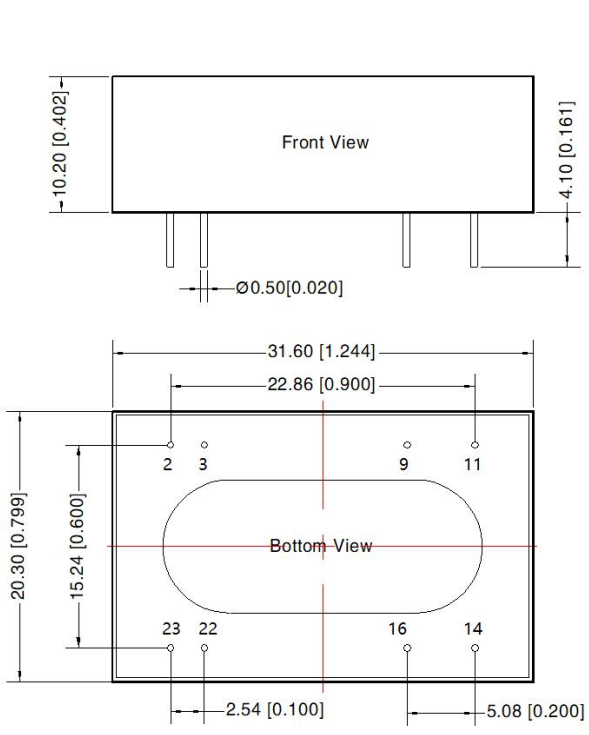
C1/ C2 /C4
100uF/35V (Low internal resistance capacitance)

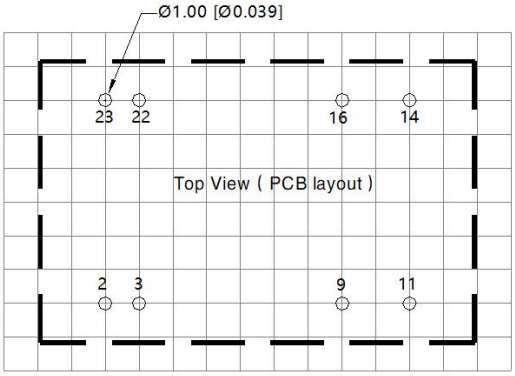
Note: C3 and C5 could be ceramic capacitors with values from 1uF to 10uF. It is suggested to increase the capacitance of C2 and C4, but less than the maximum capacitive load of the product to reduce ripple & noise.

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





Note: Grid 2.54*2.54mm

Note:
Unit: mm[inch]
Pin diameter tolerances: ± 0.10[± 0.004]
General tolerances: ± 0.50[± 0.020]

Pin-Out	
Pin	Mark
2,3	GND
9	0V
11	-Vo
14	+Vo
16	0V
22,23	Vin

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 Ta=25℃, 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.

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