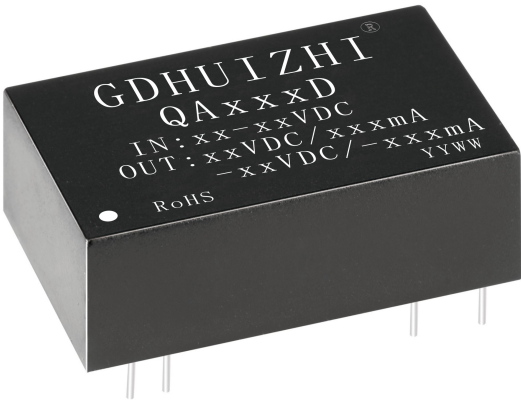


Typical Characteristics

DC/DC Power Module for IGBT Drivers

- Fixed-voltage input, isolated unregulated output, 2W power
- Isolation voltage: 4000VAC
- Low no-load power consumption: 0.025W(Typ.)
- Efficiency: up to 87% (Typ.)
- Operating ambient temperature: -40℃~+85℃
- MTBF≥3.5 million hours (3500000Hrs)
- Output short-circuit protection: Continuous short-circuit protection
- Compact DIP package, plastic housing
- Industry standard pin-out
- Ripple/noise (20MHz bandwidth): 30mVp-p(Typ.)



QA152D series is a DC-DC module power supply designed by Huizhi Electronics specifically for IGBT drivers. It features an asymmetric voltage output configuration to minimize IGBT drive losses as much as possible. It also provides output short-circuit protection and self-recovery capability. This product is suitable for:

- General-purpose variable-frequency drives
- AC servo drive systems
- Electric welding machine
- Uninterruptible power supplies (UPS)

Product selection table

Ce rt if ic at io n	Model number	Input voltage range (Vdc)	Output Voltage/Current		Ripple and Noise	Efficiency@ Full load	Max. capaci tive load
		Rated value ^② (Range)	Output Voltage (Vdc)	Output I (mA) (Max. Min.)	Full Load (mVp-p) Typ./Max	%, (Min./Typ.)	μ F
	QA152D	15 (13.5-16.5)	+15/-9.0	+200/-200	80/120	83/87	1000

Note: 1. Due to space limitations, the above is only a list of representative products. For products not included in this list, please contact our Sales Department.
2. The maximum capacitive load indicates the maximum capacitive load that can be connected to +Vo or -Vo. If this value is exceeded, the product will not start properly.

Test Conditions: Unless otherwise specified, all parameter measurements were taken at the nominal input voltage, with a purely resistive rated load, and at an ambient temperature of 25° C.

Input characteristics

Items	Working conditions	Min.	Typ.	Max.	Unit
Input under-voltage protection	Full load	11.6	12.0	12.6	

Input filter type		Capacitor filtering
Hot swap		Not supported

Output characteristics

Items		Working conditions	Min.	Typ.	Max.	Unit
Output current	+Vo	Vin=15VDC	20	200	250	VDC
	-Vo	Vin=15VDC	-20	-200	-250	
Output voltage	+Vo	Vin=15VDC, Pin16 & Pin14 +Io= +200mA	13.5	15	16.5	
	-Vo	Vin=15VDC, Pin11 & Pin9 -Io= -200mA	-8.1	-9	-9.9	
Output voltage accuracy			See the error envelope curve (Figure 1)			
Line Regulation		Full load	--	±1.2	±1.5	--
Load Regulation		10% -100% load	--	±8	±10	%
Temperature drift coefficient		Full load	--	--	±0.04	%/℃
Ripple & Noise		20MHz bandwidth	--	80	120	mVp-p
Output short-circuit protection			--	--	1	s

Note: *The test method for ripple and noise uses the twisted-pair test method; see the Test Application Reference.

General characteristics

Items	Working conditions	Min.	Typ.	Max.	Unit
Insulation voltage	Input-output, test duration: 1 minute, leakage current less than 1 mA.	4000	--	--	VDC
Insulation resistance	Input-output, insulation voltage 500 VDC.	1000	--	--	MΩ
Isolation capacitor	Input-Output, 100 kHz/0.1 V	--	3.0	--	pF
Operating temperature	Full load	-40	--	85	℃
Storage temperature		-55	--	+125	
Operating case temperature rise	Ta=25℃, rated input, output full load	--	30	--	
Storage temperature	No condensation	-55	--	125	%RH
Pin soldering temperature resistance	The solder joint is 1.5 mm from the housing; 10 seconds	--	--	+300	℃
Switching frequency	Full load, rated voltage input	--	100	--	KHz
Vibration		10-55Hz, 10G, 30 Min. along X, Y and Z			

Housing material	Black flame-retardant, heat-resistant plastic (UL94 V-0)				
Minimum mean time between failures	MIL-HDBK-217F@25℃	3.5X10 ⁶	--	--	Hrs

Product Performance Curve

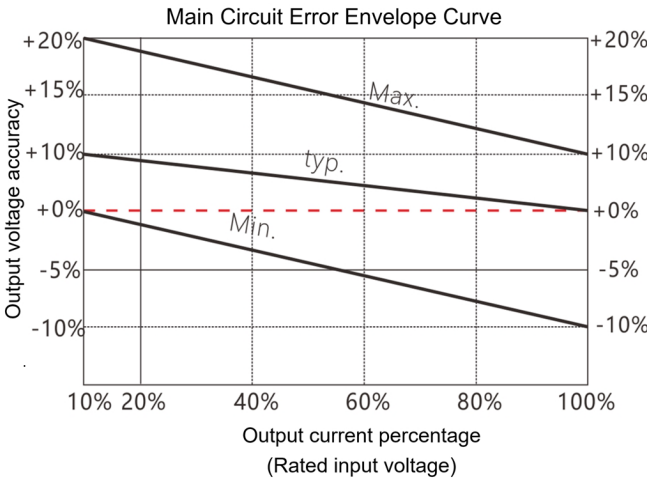
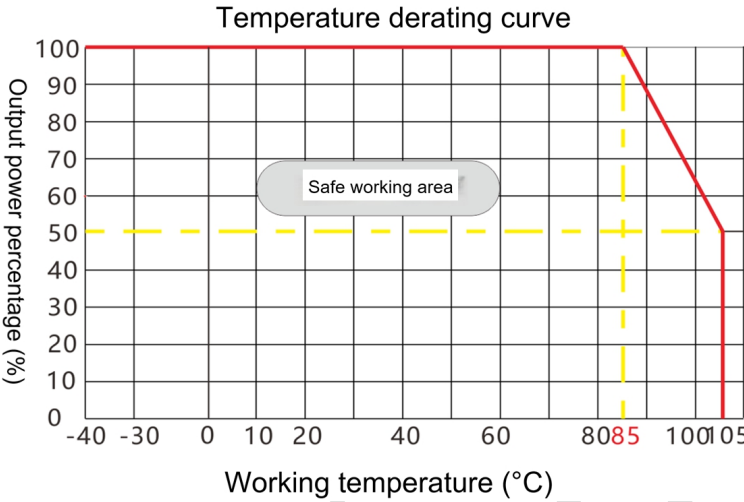
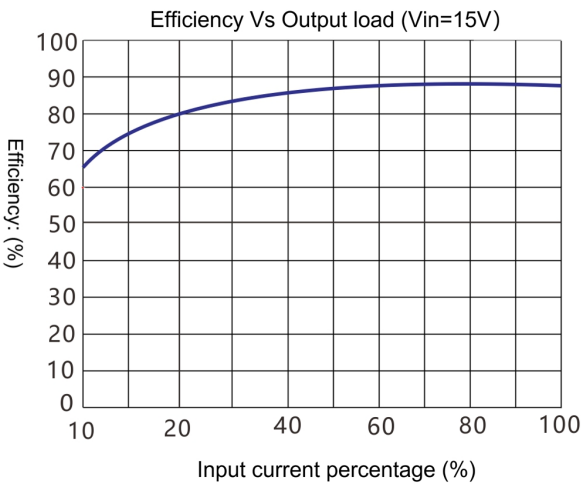
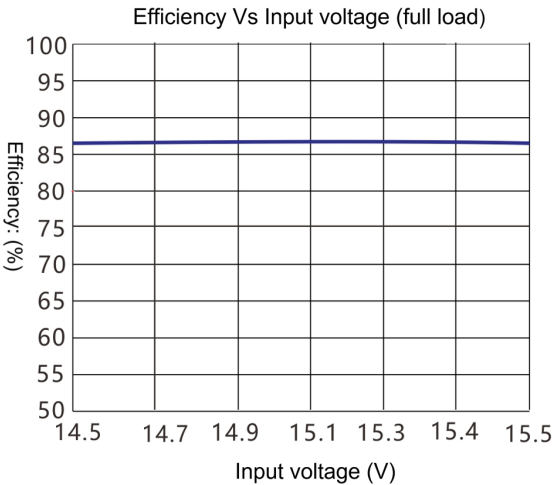


Figure 1



Typical Application Reference Circuit (Recommended Parameters)

1. General applications:

If further reduction of input and output ripple is required, a capacitor filter network can be connected across the input and output terminals; the circuit is shown in Figure 2.

However, care must be taken to select an appropriate filter capacitor. If the capacitor is too large, it is likely to cause startup issues. For each output channel, the recommended capacitive load values—which ensure safe and reliable operation—are listed in Table 1.

For C3 and C5, ceramic capacitors with capacitance values between 1 μ F and 10 μ F may be selected. Alternatively, the capacitance values of C2 and C4 may be appropriately increased, provided they remain below the product’s maximum capacitive load, in order to reduce ripple noise.

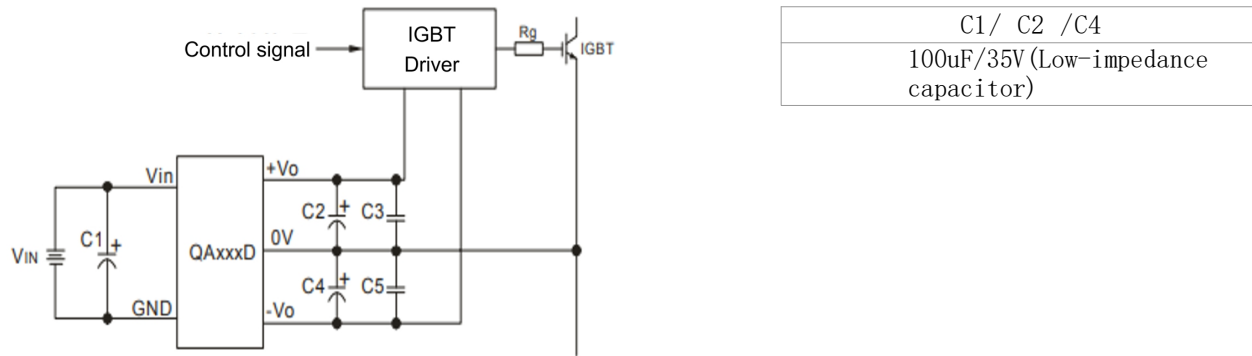
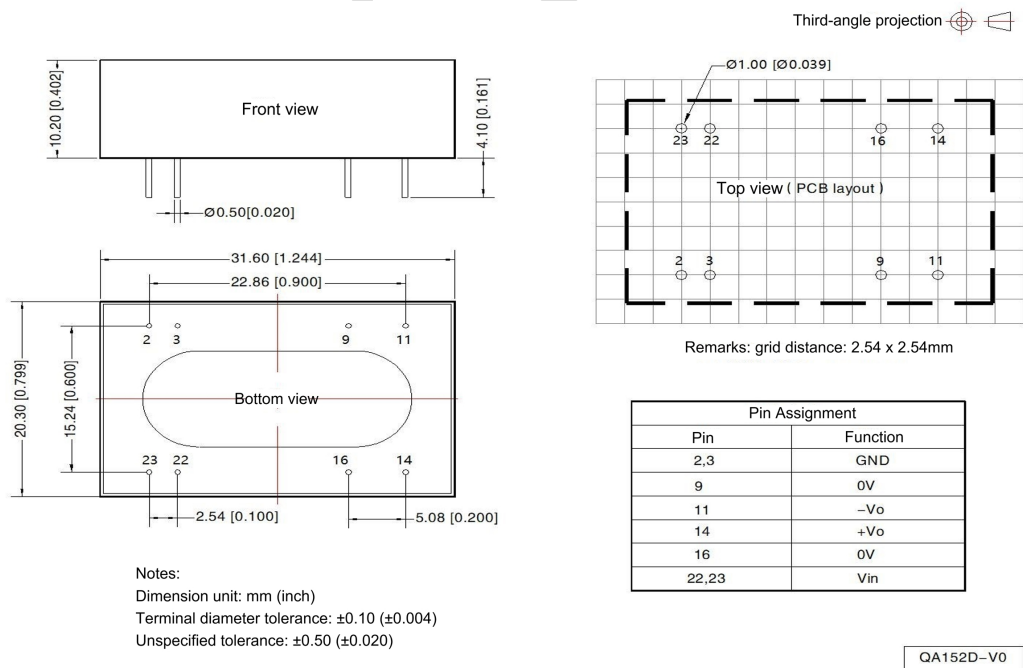


Figure 2

Appearance Dimensions and Pin Assignment, Recommended PCB Layout



*Note: If the pin definitions of the power module differ from those in the selection guide, refer to the labels on the actual product.

Package Description

Package code	L x W x H	
QA	31.6 x 20.3x 10.16 mm	1.244 × 0.799 × 0.40inch

Test Application Reference

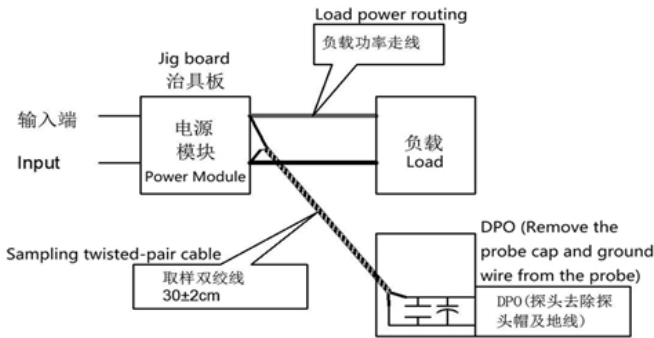
Ripple & Noise Testing: (Twisted-pair method, 20 MHz bandwidth)

Test Method:

1. For ripple and noise testing, use a Category 12 twisted-pair cable. Set the oscilloscope bandwidth to 20 MHz and use a 100 MHz bandwidth probe. Connect a 0.1 μF polypropylene capacitor and a 4.7 μF high-frequency, low-impedance electrolytic capacitor in parallel at the probe tip. Set the oscilloscope to “Sample” mode.

2. Schematic diagram for output ripple and noise testing:

Connect the power supply input to the input power source. Connect the power supply output to the electronic load via the fixture board. For testing, use a 30 cm ± 2 cm sampling lead to take a direct sample from the power supply output port. Select insulated wires with appropriate gauge based on the magnitude of the output current.



Application Precautions

1. Input Requirements: Ensure that the output voltage fluctuation range of the power supply does not exceed the input requirements of the DC/DC module itself; the output power of the input power supply must be greater than the output power of the DC/DC module.
2. Recommended Circuit 1: For applications with general ripple and noise requirements, a filter capacitor can be connected in parallel at both the input and output terminals. The external circuit is shown in Figure (1) below; refer to Table (1). Output Load Requirements: Avoid operating under no-load conditions whenever possible. When the actual power consumption of the load is less than 10% of the module's rated output power or no-load conditions occur, it is recommended to connect a dummy load to the output. The dummy load (resistor) can be calculated based on 5 - 10% of the module's rated power, where the resistance value = $U_{out} / (1W \times R3 \times 10\%)$;
3. Overload Protection: Under normal operating conditions, the product's output circuit does not provide overload protection. Prolonged overload will trigger over-temperature protection, causing the output to shut down;
4. The output features continuous short-circuit protection with automatic recovery.
5. The capacitance of the external capacitor connected to the output should not be too large, as this may cause overcurrent or poor startup during module startup;
6. If the product operates below the minimum required load, performance compliance with all specifications in this manual cannot be guaranteed;
7. Maximum capacitive loads are tested within the input voltage range and under full-load conditions;
8. Unless otherwise specified, all specifications in this manual are measured at Ta=25° C, humidity <75% RH, nominal input voltage, and rated output load;
9. All test methods for the specifications in this manual are based on our company's standards;
10. We offer product customization; please contact our technical staff directly for details;
11. Product specifications are subject to change without notice.

Contact

GDHUIZHI®

广东汇智电子技术有限公司

[Guangdong Huizhi Electronic Technology Co., Ltd.](#)

地地址：广东省肇庆市端州区 11 区肇庆大道北侧厂房、办公楼(二期)3 楼

Add.: 3rd floor, factory and office building (phase II) on the north side of Zhaoqing Avenue,
District 11, Duanzhou District, Zhaoqing City, Guangdong Province, China

Homepage: www.huizhi-elec.com/www.chinaebizal.com

Tel: +86 - 758 - 2566 585

E-mail: sales@huizhi-elec.com