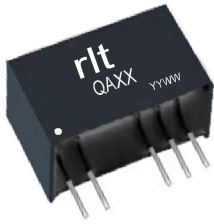


DC/DC Module Power Supply for IGBT Driver



Product Features

- Efficiency up to 90%
- Sustainable short circuit
- protection Can be used without load
- Isolation voltage 3000VAC SIP
- Operating temperature range:-40 °C ~ + 105 °C

QA series is a DC-DC module power supply specially designed for IGBT drivers. It adopts an asymmetric voltage output form internally to minimize the driving loss of IGBT. At the same time, it has output short circuit protection and self-recovery capabilities. The product is suitable for:

1. Universal frequency converter
2. AC servo drive system
3. Electric welding machine
4. Uninterruptible Power Supply (UPS)

Product model table

Product model	Input Voltage (VDC) Nominal (Range Value)	Input Current (mA, Typ.) Full/No Load	Output Voltage (VDC) + Vo/-Vo	Output Current (MA) + Io/-Io	Max capacitive load (uF)	Efficiency (% Min./Typ.) @ Full Load
QA01C	15 (14.5-15.5)	130/20	+15/-8.7	+80/-40	220	88/90
QA01-09		84/20	+9.0/--	+111/--	220	88/90
QA01-A09		84/20	+9.0/-9.0	+55/-55	220	88/90
QA01-17		143/20	+17/-8.7	+80/-40	220	88/90
QA02	12 (11.6-12.4)	162/20	+15/-8.7	+80/-40	220	88/90
QA03	24 (23.3-24.7)	81/20	+15/-8.7	+80/-40	220	88/90
QA04	12 (9-15)	223/20	+15/-8.0	+100/-80	220	88/90

Product input characteristics

Items		Working conditions	Min	Nominal	Max	Unit
Input voltage	QA01*	DC	-0.7	--	16	VDC
	QA02	DC	-0.7	--	13	
	QA03	DC	-0.7	--	26	
	QA04	DC	-0.7	--	15	
Input Filter Type			Capacitance filtering			
Hot swappable			Not supported			
Note: QA01 * refers to all models beginning with QA01.						

Product output characteristics

Items		Working conditions	Min	Nominal	Max	Unit	
Output voltage	QA01	+Vo	Vin=15VDC, Pin6&Pin7 +Io=+80mA		14.25	15	VDC
		-Vo	Vin=15VDC, Pin5&Pin6 -Io=-40mA		-8.00	-8.7	

Output voltage	QA01-09	+Vo	Vin=15VDC,Pin6&Pin7 +Io=+111mA	8.46	9	9.54	VDC	
		-Vo	--	--	--	--		
	QA01-A09	+Vo	Vin=15VDC,Pin6&Pin7 +Io=+55mA	8.55	9	9.45		
		-Vo	Vin=15VDC,Pin5&Pin6 -Io=-55mA	-8.28	-9	-9.72		
	QA01-17	+Vo	Vin=15VDC,Pin6&Pin7 +Io=+80mA	16.15	17	17.85		
		-Vo	Vin=15VDC,Pin5&Pin6 -Io=-40mA	-8.00	-8.7	-9.40		
	QA02	+Vo	Vin=12VDC,Pin6&Pin7 +Io=+80mA	14.25	15	15.75		
		-Vo	Vin=12VDC,Pin5&Pin6 -Io=-40mA	-8.00	-8.7	-9.40		
	QA03	+Vo	Vin=24VDC,Pin6&Pin7 +Io=+80mA	14.25	15	15.75		
		-Vo	Vin=24VDC,Pin5&Pin6 -Io=-40mA	-8.00	-8.7	-9.40		
QA04	+Vo	Vin=12VDC,Pin6&Pin7 +Io=+100mA	14.25	15	15.75			
	-Vo	Vin=12VDC,Pin5&Pin6 -Io=-80mA	-7.36	-8.0	-8.64			
Output voltage accuracy		QA01-09		-	±4	±6	%	
		Other models		See error envelope curve diagram Figure 1				
Linear regulation rate		Within input voltage range		-	±1.2	±1.5	%/%	
Load regulation rate		10% to 100% load	QA01-09		-	12	26	%
			Other models	Positive output	-	8	15	
				Negative output	-	10	15	
Ripple and Noise *		20MHz bandwidth		-	100	200	mVp-p	
Temperature drift coefficient		Fully loaded		-	-	±0.03	%/°C	
Output short circuit protection		Sustainable, self-recovering						
Remarks: * The test of ripple and noise adopts the docking test method of removing the ground wire of the oscilloscope probe.								

General features of products

Items	Working conditions	Min	Nominal	Max	Unit
Isolation voltage	Input-output, test time 1 minute, leakage current less than 1mA	3000	-	-	VAC
Insulation resistance	Input-Output, Insulation Voltage 500VDC	1000	-	-	MΩ
Isolation capacitance	Input-Output, 100KHz/0.1 V	-	6.6	-	pF
working temperature	Derated use at temperatures ≥ 85 °C (see Figure 2)	-40	-	105	°C
Storage temperature		-55	-	125	
Pin soldering resistance temperature	Solder joint 1.5 mm from housing for 10 seconds	-	-	300	
Enclosure temperature rise during operation	Ta = 25 °C Input nominal, output full load	-	25	-	
Storage humidity	No condensation	-	-	95	%RH
Switching frequency	100% load, input nominal voltage	-	100	300	Hz
Mean time to failure	MIL-HDBK-217F@25°C	3500	-	-	k hours

Product Physical Characteristics

EnclosureMaterial	Black flame-retardant and heat-resistant plastic (UL94-V0)
PackageDimensions	19.50*9.80*12.50mm
weight	4.2g(Typ.)
Cooling method	Natural air cooling

EMC Characteristics

EMI	Conducted disturbance	CISPR32/EN55032 CLASS B (ee Figure 4 for recommended circuit)
	Radiation disturbance	CISPR32/EN55032 CLASS B (see Figure 4 for recommended circuit)
EMS	ESD	EC/EN61000-4-2 Contact±8kV perf. Criteria B

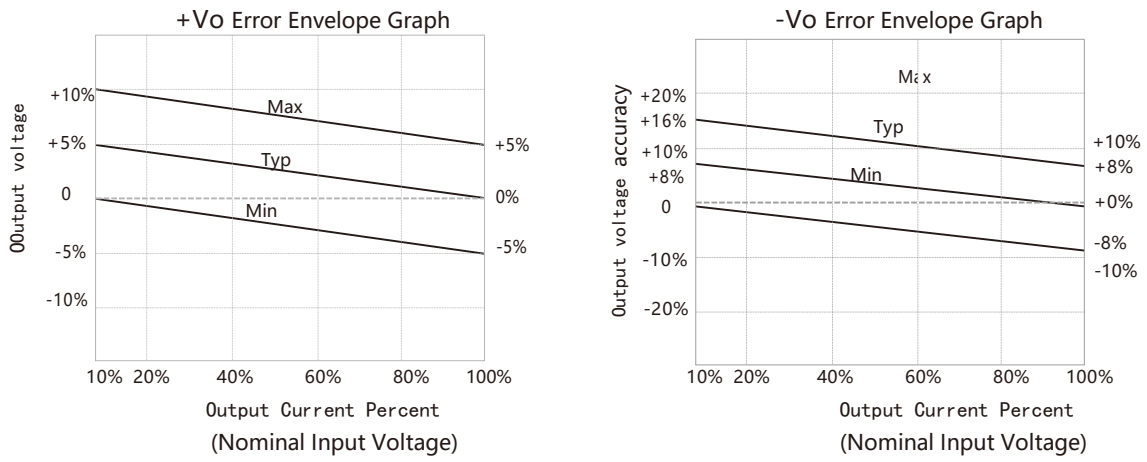


Figure 1 (Model QA01-09)

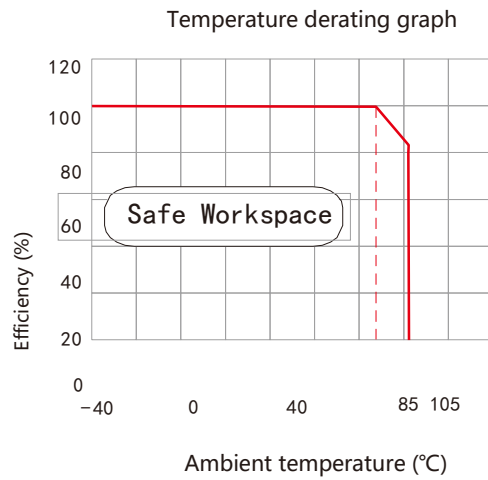
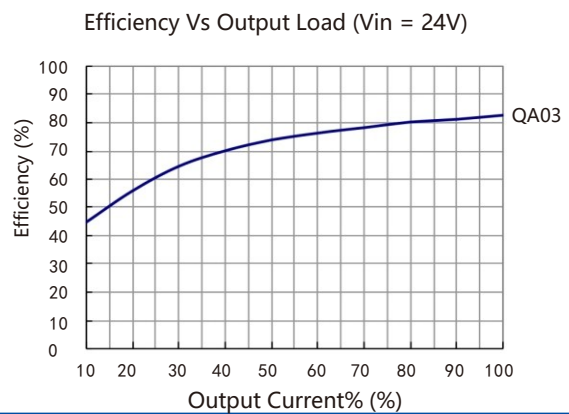
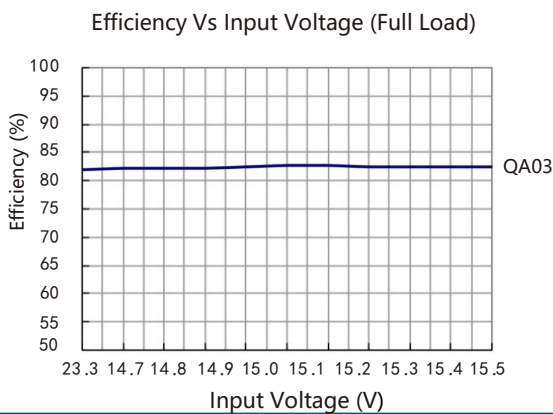
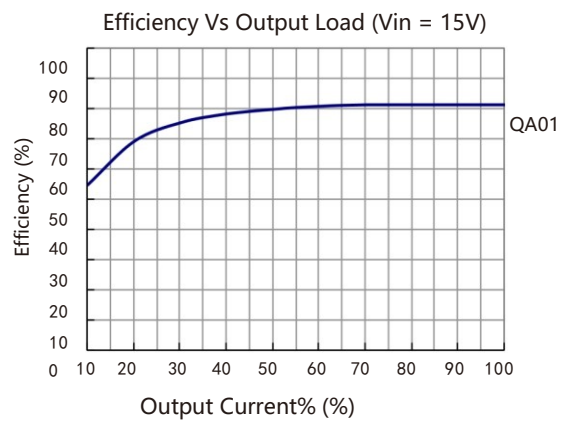
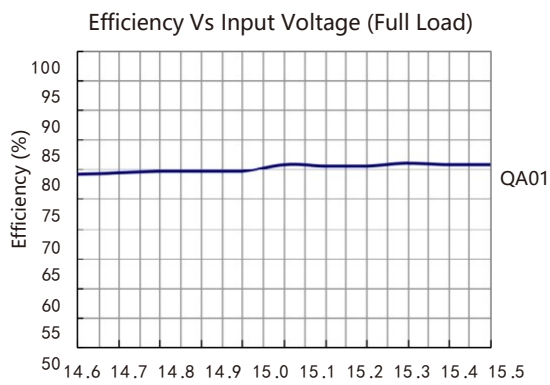
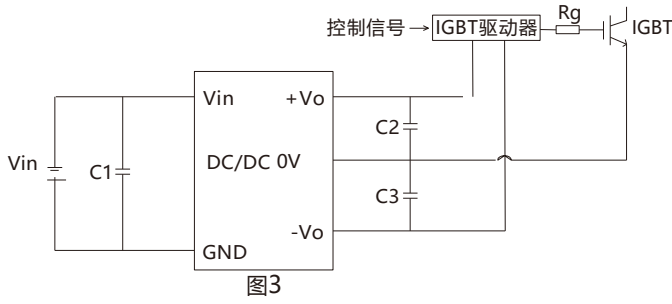


Figure 2



Design reference

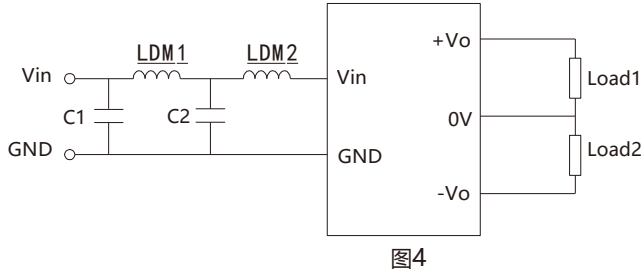
1. Typical applications



C1/C2/C3
100uF/35V (low internal)

Note: A ceramic capacitor with a capacitance value of 1uF-10uF can be connected in parallel at both ends of capacitors C2 and C3 to reduce ripple noise.

2. EMC Typical Recommended

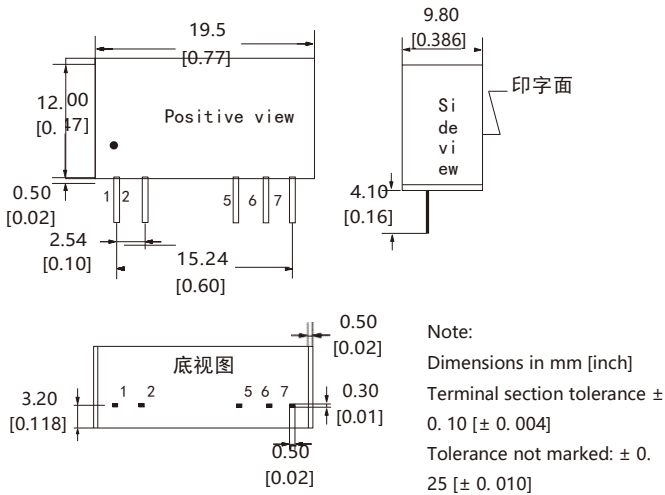


输入电压(VDC)	12/15/24	
EMI	C1/C2	4.7uF/50V
	LDM1	12uH
	LDM2	47uH

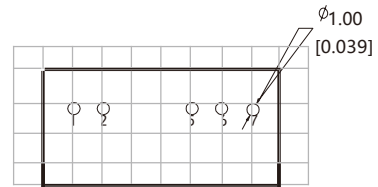
1. It is recommended to use ceramic capacitors or electrolytic capacitors for external capacitors at the input or output ends of the products, and it is not recommended to use tantalum capacitors, otherwise there will be a certain risk of failure.
2. The product does not support output parallel power connection or hot plug use.

产品外观尺寸及引脚定义、建议印刷版图、包装管尺寸。

Appearance dimensions



Suggested printing layout



Pin definition							
Pin	1	2	3	4	5	6	7
Function	+Vin 输入正	GND 输入负	No Pin 无引脚	No Pin 无引脚	-Vout 输出负	Com 公共地	+Vout 输出正

Product usage precautions

1. Unless otherwise specified, all indicators in this manual are measured at $T_a = 25^\circ\text{C}$, humidity $< 75\% \text{ RH}$, nominal input voltage and output rated load;
2. Keep the leads connecting the power module and the IGBT driver as short as possible when in use;
3. The output filter capacitor is as close as possible to the power module and the IGBT driver;
4. The peak value of the gate driving current of IGBT driver is high, so it is suggested that the output filter capacitor of the power module should be a low internal resistance electrolytic capacitor.
5. The average driver output power must be less than the power module output power;

6. If used in vibration occasions, please consider fixing it with glue next to the module;
7. The maximum capacitive load is tested under the input voltage range and full load conditions;
8. All index test methods in this manual are based on the company's corporate standards;
9. Our company can provide product customization. For specific information, please contact our technical staff directly.