IGBT Driver DC/DC Converter
QA Series

Typical Features

- ◆ Fixed input voltage, Isolated & unregulated output
- ◆ Transfer efficiency up to 80%
- ◆ Small compact SIP packing
- ◆ No external component required
- ◆ Isolation Voltage 3000VAC
- ◆ Operating Temperature:-40℃～+105℃
- ◆ Plastic Case, meet UL94 V-0 standard

Test Condition: Unless otherwise specified, data in the datasheet should be tested under the conditions of inputting nominal voltage, pure resistance rated load and Ta=25℃

Intput Specifications

Item	Operating Condition	Min.	Typ.	Max.	Unit
Input Overshoot Voltage (1Second.max.)	QA01	-0.7	--	16	Vdc
	QA02	-0.7	--	13	
	QA03	-0.7	--	26	
	QA04	-0.7	--	15	
Input filter		Capacitor filter			

Output Specifications

Item			Operating Condition	Min.	Typ.	Max.	Unit
Output Voltage	QA01	+Vo	Vin=15Vdc,+Io=+80mA	14.25	15	15.75	Vdc
		-Vo	Vin=15Vdc,-Io=-40mA	-8.00	-8.70	-9.40	
	QA01-09	+Vo	Vin=15Vdc,+Io=+111mA	8.46	9	9.54	
		-Vo	--	--	--	--	
	QA01-A09	+Vo	Vin=15Vdc,+Io=+55mA	8.55	9	9.45	
		-Vo	Vin=15Vdc,-Io=-55mA	-8.28	-9	-9.72	
	QA01-17	+Vo	Vin=15Vdc,+Io=+80mA	16.15	17	17.85	
		-Vo	Vin=15Vdc,-Io=-40mA	-8.00	-8.70	-9.40	
	QA02	+Vo	Vin=12Vdc,+Io=+80mA	14.25	15	15.75	
		-Vo	Vin=12Vdc,-Io=-40mA	-8.00	-8.70	-9.40	
	QA03	+Vo	Vin=24Vdc,+Io=+80mA	14.25	15	15.75	
		-Vo	Vin=24Vdc,-Io=-40mA	-8.00	-8.70	-9.40	
	QA04	+Vo	Vin=12Vdc,+Io=+100mA	14.25	15	15.75	
		-Vo	Vin=12Vdc,-Io=-80mA	-7.36	-8	-8.64	
Output voltage accuracy			Nominal input, full load	--	±2	±5	%
Load regulation			10% ~100% load QA01-09	--	12	26	
			10% ~100% load Other output	--	8	15	
Line regulation			Input voltage range	--	±1.2	±1.5	
Ripple & Noise			Nominal input, full load,20MHZ	--	100	200	mVp-p
Temperature Drift Coefficient			100% load	--	--	±0.03	%/°C
Output Short Circuit Protection				Continuous, self-recovery			

NOTE:① Ripple & Noise Tested by twisted-pair method

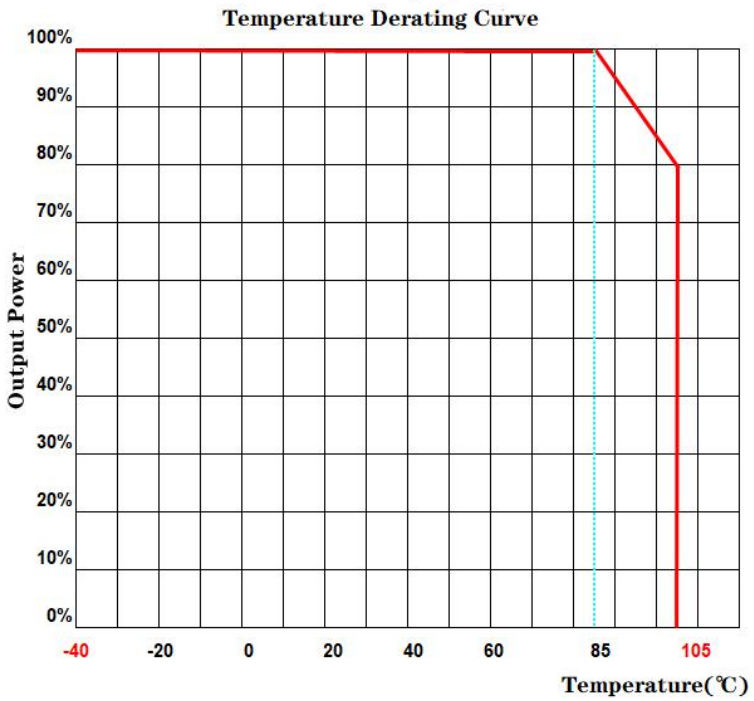
General Specifications

Switching Frequency	typical	100KHz (Typ.)
Operating Temperature	Refer to Temperature Derating	-40℃ ~ +105℃
Storage Temperature		-55℃ ~ +125℃
Shell temperature rise	Within Temperature Derating	25℃(Typ.)
Relative Humidity	No condensing	5%~95%
Case Material		Black flame-retardant heat-resistant Plastic(UL94 V-0)
Product Weight		4.2g (Typ.)
Isolation Voltage	Test 1 minute, leakage current＜ 0.5mA	3000Vac
Isolation Capacitor	Input/Output, 100KHz/0.1V	6pF (Typ.)
MTBF	MIL-HDBK-217F@25℃	35X10^{5}Hrs

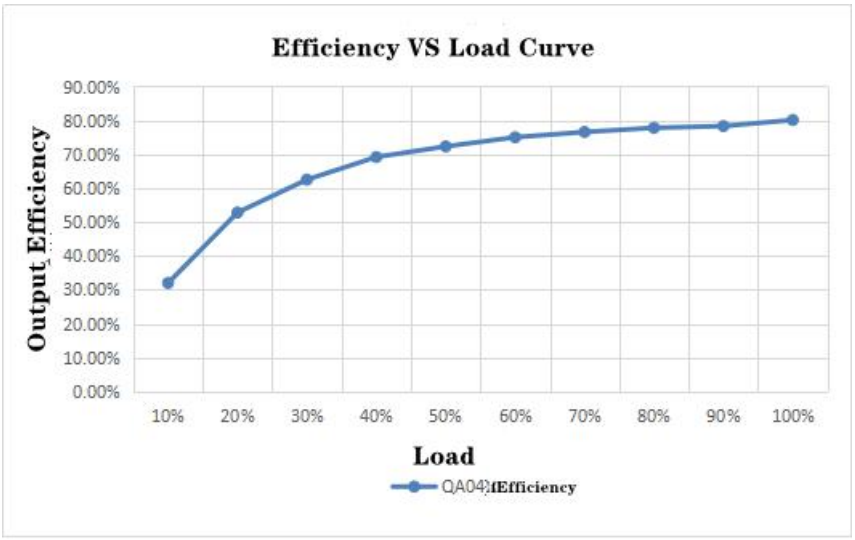
Typical Product List

Part No.	Input Voltage Range (VDC)		Input current（mA） Nominal voltage		Output Voltage/Current (Vo/Io)		Max. Capacitive Load	Ripple & Noise (Max.)	Efficiency(%)
	Nominal	Range	Full load Typ	No lad Typ	Voltage (VDC)	Current (mA)	uF	Mvp-p	Typ
QA01	15	14.5-15.5	130	20	+15/-8.7	+80/-40	220	200	80
QA01-09			84		+9.0	+111			80
QA01-A09			84		+9.0/-9.0	+55/-55			80
QA01-17			143		+17/-8.7	+80/-40			80
QA02	12	11.6-12.4	162		+15/-8.7	+80/-40			80
QA03	24	23.3-24.7	81		+15/-8.7	+80/-40			80
QA04	12	9-15	223		+15/-8.0	+100/-80			80

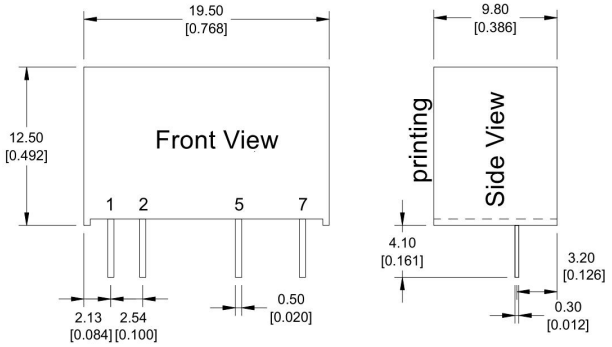
Temperature Curve

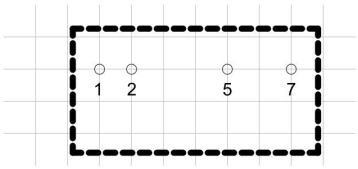


Efficiency Curve



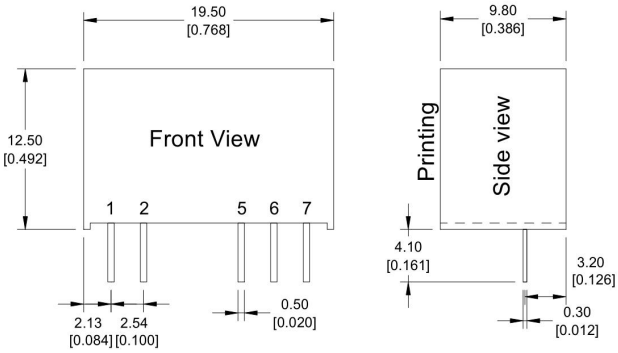
Packing Dimension

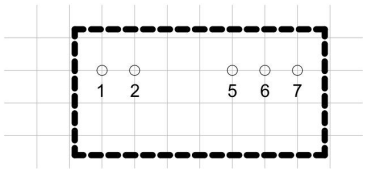




Printed board vertical view

Lattic spacing:2.54mm(0.1inch)





Printed board vertical view

Lattic spacing:2.54mm(0.1inch)

Pin function									
	Single(S)	1	2	5	6	7			
		+Vin	GND	-Vo	--	+Vo			
	Dual(D)	+Vin	GND	-Vo	COM	+Vo			

Note: if the definition of pin is not in accordance with the model selection manual, please refer to the label on actual item.

Packing

Code	L x W x H	
	19.50× 9.80 × 12.50mm	0.768 × 0.386 × 0.492inch

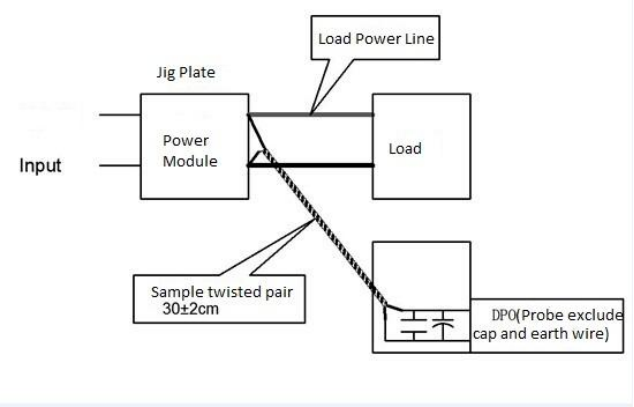
Design and Application Circuit Recommended

① **Ripple& Noise Test: (Twisted Pair Method 20MHZ bandwidth)**

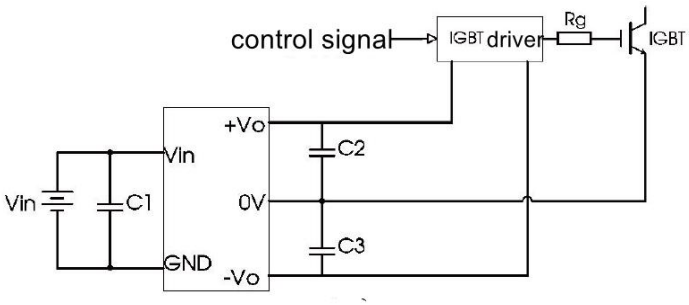
Test Method:

a.12# twisted pair to connect, Oscilloscope bandwidth set as 20MHz, 100M bandwidth probe, terminated with 0.1uF polypropylene capacitor and 47uF high frequency low resistance electrolytic capacitor in parallel, oscilloscope set as Sample pattern.

b. Input terminal connect to power supply, output terminal connect to electronic load through jig plate, Use 30cm±2 cm sampling line, Power line selected from corresponding diameter wire with insulation according to the flow of output current.



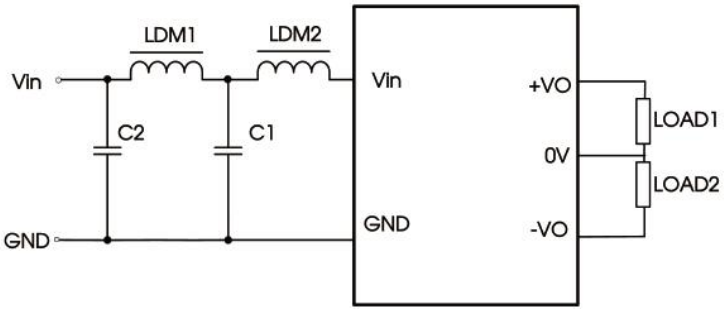
② **Typical Application**



C1/ C2 /C3
100uF/35V(low internal resistance capacitor

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

③ **EMC Recommended circuit**



Input Voltage(VDC)		12/15/24
EMI	C1、C2	4.7μF /50V
	LDM1	12μH
	LDM2	47μH

Note:

1. This product cannot be used in parallel and does not support hot swapping;
2. The connection line between the module power supply and the IGBT driver should be as short as possible;
3. The output filter capacitor (low internal resistance electrolytic capacitor) is close to the module power supply and IGBT driver;
4. The average output power of the driver must be less than the output power of the power module;
5. If the product works below the minimum required load, it cannot be guaranteed that the product performance meets all the performance indicators in this manual;
6. All index testing methods in this article are based on the company's corporate standards;
7. Product specifications are subject to change without notice.

Guangzhou Aipu Electron Technology Co., Ltd

Address: Building 4, HEDY Park, No.63, Punan Road, Huangpu Dist, Guangzhou, China.

Tel: 86-20-84206763 Fax: 86-20-84206762 HOTLINE: 400-889-8821

E-mail: sales@aipu-elec.com Website: www.aipupower.com

