IGBT Driver

Typical product features

- ◆ Fixed Voltage Input, Isolated Unregulated Output
- ◆ Conversion efficiency up to 82%
- ◆ Small SIP Package
- ◆ No additional components required
- ◆ Isolation voltage 3500VAC/6000VDC
- ◆ Working temperature: -40℃～+105℃
- ◆ Plastic housing, meet UL94-V0 requirements

Product Selection Guide

Certificate	Part no.	Input Voltage Range (VDC)		Input current (mA) Nominal Voltage		Input Voltage/Current(Vo/Io)		Max capacitive load	Ripple noise (Max)	efficiency(%)
		Nominal value	range value	Full load Typ	No Load Typ	Voltage (V)	Current (mA)	uF	Mvp-p	Min/Typ
-	QA121C2	12	10.8-13.2	210	10	+15/-3.5	+111/-111	220	120/80	79/81
-	QA151C3	15	13.5-16.5	151	15	+15/-4	+100/-100	220	120/80	80/82

Note 1: The test method of ripple and noise adopts the twisted pair test method. For the specific test method and collocation, please refer to the following (ripple & noise test description);

Note 2: Due to limited space, the above is only a partial list of products. If you need products other than the list, please contact the sales department of our company.

Input characteristics

	working conditions	MIN	TYP	MAX	UNIT
Input surge voltage (1sec max)	QA151M	-0.7	-	18	VDC
	QA151C3	-0.7	-	21	
input filter	-	Capacitive filtering			

Output characteristics

			working conditions		MIN	TYP	MAX	UNIT
Output Voltage Accuracy	QA121C2	+Vo	Vin=+15VDC,+Io=+111mA		-4	0	+5	%
		-Vo	Vin=-3.5VDC,-Io=-111mA		-5	+5	+15	
	QA151C3	+Vo	Vin=+15VDC,+Io=+100mA		-2	0	+2	
		-Vo	Vin=-4VDC,-Io=-100mA		-5	0	+5	
Load Regulation 10% to 100% load			QA121C2	+Vo	-	9	-	%
				-Vo	-	9	-	
			QA151C3	+Vo	-	5	-	
				-Vo	-	8	-	
Linear voltage regulation			input voltage change ±10%		-	±1.1	±1.3	%

Ripple & Noise	Nominal input, full load, 20MHZ bandwidth	-	+Vo 120 -Vo 80	-	mVp-p
Temperature Drift Coefficient	100% load	-	-	±0.03	%/°C
Output short circuit protection	-	sustainable, self-healing			
Note: The test method of ripple & noise adopts twisted pair method.					

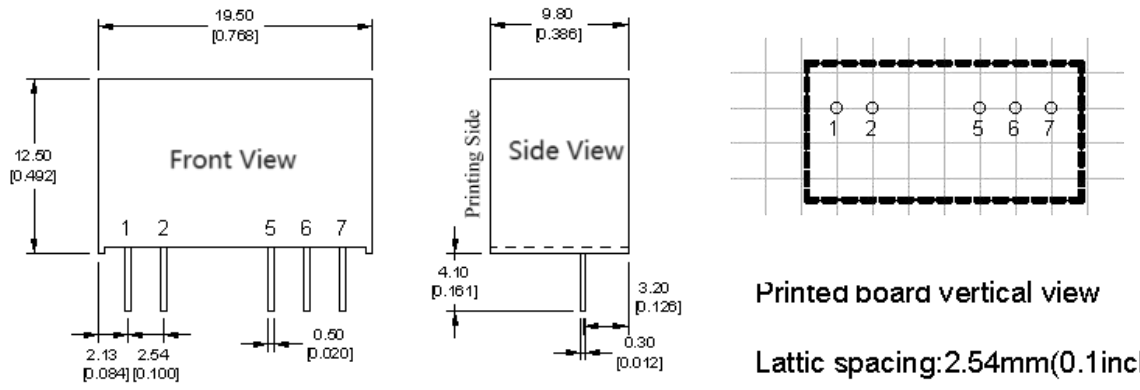
General characteristics

On-off frequency	TYP	100KHz (Typ)
Operating temperature	Reference temperature derating curve	-40℃ ~ +105℃
Storage temperature	-	-55℃ ~ +125℃
cover temperature rise during operation	Ta=25℃	30℃(Typ)
Storage humidity	no condensation	5%~95%
cover material	-	Black flame retardant heat resistant plastic（UL94-V0）
Weight	-	4.2g (Typ)
Isolation QA121C2	The test time is 1 minute, the leakage current is less than 1mA	3500VAC
Isolation QA151C3		3500VAC/6000VDC
Insulation resistance	Input-output, insulation voltage 500VDC	1000MΩ
Isolation Capacitor	Input/Output，100KHz/0.1V	3.5pF (Typ)
mean time between	MIL-HDBK-217F 25℃	35X10^{5}Hrs

Electromagnetic Compatibility Characteristics

EMI	Conducted disturbance	CISPR22/EN55032，CLASS B （Recommended circuit diagram 2）
	Radiation harassment	CISPR22/EN55032，CLASS B （Recommended circuit diagram 2）
EMS	electrostatic discharge	IEC/EN61000-4-2 ±6KV Perf.Criteria B

Package Dimensions, Pin Functions, Recommended Board Drawings



Pin Definition

Pin Description	1	2	5	6	7
Dual Output	+Vin	GND	-Vo	COM	+Vo

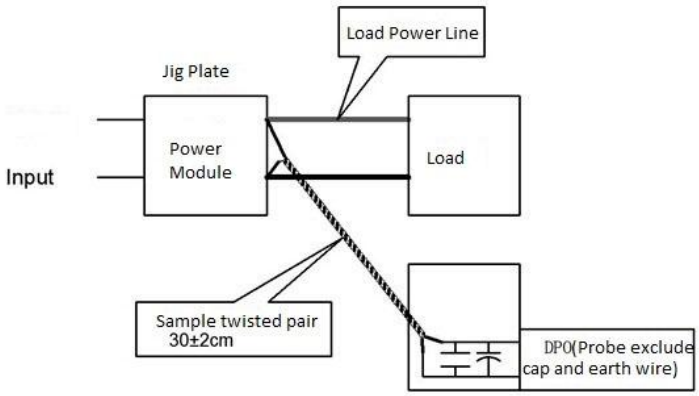
Ripple & Noise Test Instructions (Twisted Pair Method 20MHz Bandwidth)

Test Method:

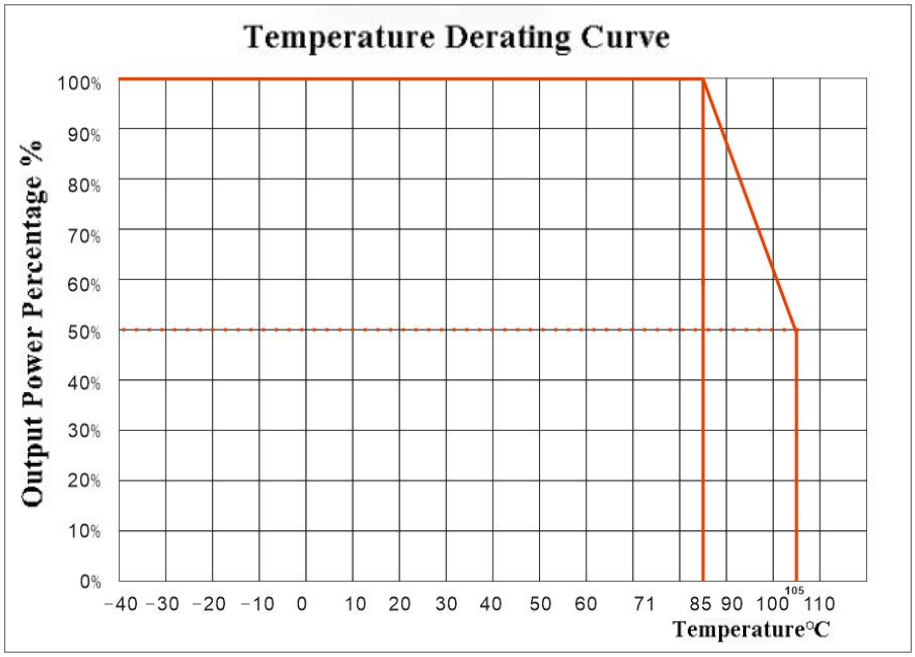
1.12# twisted pair to connect, Oscilloscope bandwidth set as 20MHz, 100M bandwidth probe, terminated with 0.1uF polypropylene capacitor and 47uF high frequency low resistance electrolytic capacitor in parallel, oscilloscope set as Sample pattern.

2. Output Ripple& Noise Test Method:

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.

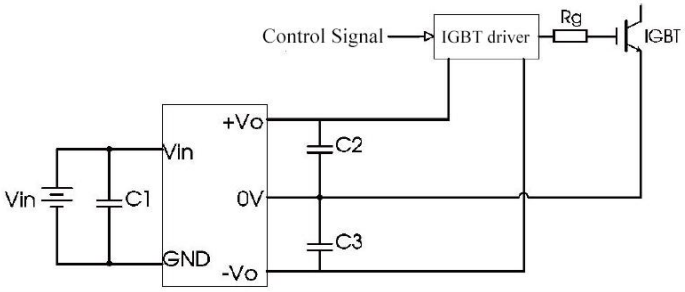


Temperature Derating Curve



Design and Application Reference

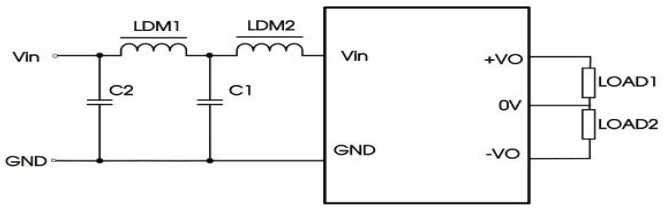
Typical application



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

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

EMC Recommended circuit



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

Diagram 2

Note:

1. The product should be used within the specification range, otherwise it will cause permanent damage to the product;
2. This product cannot be used in parallel and does not support hot swapping;
3. The connection line between the module power supply and the IGBT driver should be as short as possible;
4. The output filter capacitor (low internal resistance electrolytic capacitor) is close to the module power supply and IGBT driver;
5. The average output power of the driver must be less than the output power of the power module;
6. 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;
7. All the index testing methods in this article are based on the company's corporate standards;
8. Our company can provide product customization;
9. Product specifications are subject to change without notice. Please pay attention to the latest manual published on our official website.

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