

Typical product features

- ◆ Fixed Voltage Input, Isolated Unregulated Output
- ◆ Conversion efficiency up to 83%
- ◆ Continuous short circuit protection
- ◆ Meet enhanced isolation
- ◆ Small SIP Package
- ◆ Isolation voltage 5000Vac/ 6000Vdc
- ◆ Working temperature: -40℃~+105℃
- ◆ Plastic housing, meet UL94-V0 requirements



Product Selection Guide

Certificate	Part no.	Input Voltage Range (VDC)		Input Voltage/Current (Vo/Io)		Input current (mA) Nominal Voltage		Max capacitive load uF	Ripple & Noise ^① (20MHz bandwidth) Max./ Typ. mVp-p	Efficiency (%)@full output load, nominal input voltage	
		Nominal value	range value	Voltage (V)	Current (mA)	Full load Typ	No Load Typ			Min.	Typ
-	*QA121R3	12	10.8-13.2	+15/-8	+120/-120	--	--	--	--	--	--
-	QA151R3	15	13.5-16.5	+15/-8	+120/-120	213	13	1000	150	78	83
-	QA241R3	24	21.6-26.4	+15/-8	+120/-120	135	13	1000	150	78	83

Note: ① The ripple & noise test method uses the twisted pair method.

Input characteristics

Item	Working conditions	MIN	TYP	MAX	UNIT
Input surge voltage (1sec max)	Input 12Vdc	-0.7	--	18	VDC
	Input 15Vdc	-0.7	--	21	
	Input 24Vdc	-0.7	--	30	
Input filter	Capacitive filtering				
Hot Plug	Unavailable				

Output characteristics

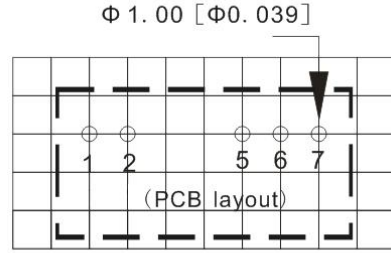
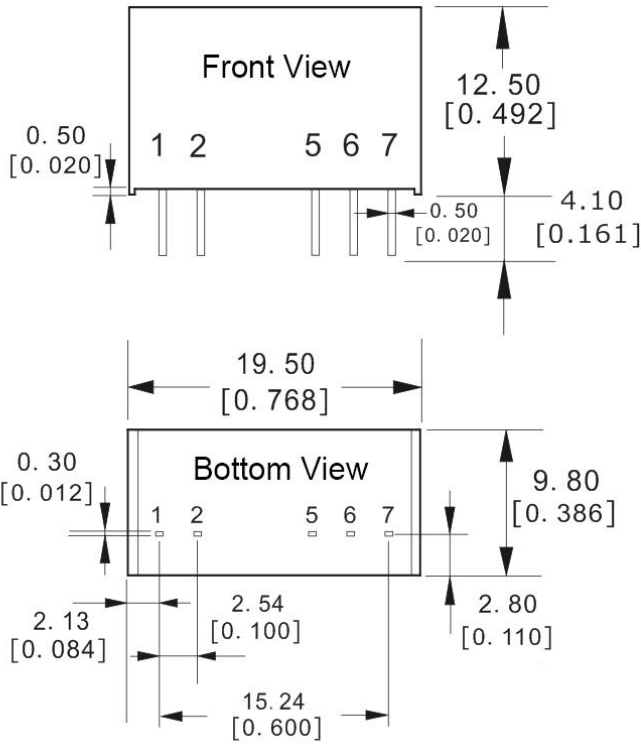
Item	Working conditions	MIN	TYP	MAX	UNIT
*QA121R3	+Vo Vin=12Vdc, Pin6 & Pin7 +Io= +120mA	-	-	-	VDC
	-Vo Vin=12Vdc, Pin5 & Pin6 -Io= -120mA	-	-	-	
QA151R3	+Vo Vin=15Vdc, Pin6 & Pin7 +Io= +120mA	14.4	15.15	15.90	
	-Vo Vin=15Vdc, Pin5 & Pin6 -Io= -120mA	7.60	8.02	8.40	
QA241R3	+Vo Vin=24Vdc, Pin6 & Pin7 +Io= +120mA	14.10	14.87	15.60	VDC
	-Vo Vin=24Vdc, Pin5 & Pin6 -Io= -120mA	7.44	7.81	8.24	

Output Voltage Accuracy	See the error envelope curve (Figure 1)					
Load Regulation	10% to 100% load	+Vo	--	8	15	%
		-Vo	--	10	15	
Linear voltage regulation	input voltage change ±1%	+Vo	--	±1.2	±1.5	--
		-Vo	--	±1.2	±1.5	
Temperature Drift Coefficient	100% load	-	-	±0.03	%/°C	
Output short circuit protection	Continuous short circuit protection, self-recovery					

General characteristics					
Item	Working conditions	MIN	TYP	MAX	UNIT
Switching frequency	Nominal input voltage full load	--	240	--	KHz
Operating temperature	Refer to temperature derating curve (Figure 2)	-40	--	+105	°C
Storage temperature	-	-55	--	+125	
Shell temperature rise during operation	Ta=25°C	--	25	--	
Pin resistance soldering temperature	The distance between the soldering point and the shell is 1.5mm, 10 seconds	--	--	300	
Storage humidity	no condensation	5	--	95	%RH
Isolation Voltage	Input-output, test time 1 minute, leakage current less than 0.5mA	5000	--	--	Vac
		6000	--	--	Vdc
Insulation resistance	Input-output, insulation voltage 500VDC	1000			MΩ
Isolation Capacitor	Input/Output, 100KHz/0.1V	--	6	10	pF
Vibration	10-150Hz, 5G, 30 Min. along X, Y and Z				
MTBF	MIL-HDBK-217F@25°C	3500			K hours
Case Material	Black flame retardant heat resistant plastic (UL94-V0)				
Weight	3.7g (Typ.)				
Cooling Method	Natural air cooling				
Packaging	Single tube (525*18*10mm)	25PCS			
	Minimum packaging box (542*110*155mm)	1400PCS (total 80 tubes)			
Package dimension	L x W x H	19.50× 9.80 × 12.50mm		0.768 × 0.386 × 0.492inch	

Electromagnetic Compatibility Characteristics		
EMI	CS	CISPR32/EN55032, CLASS B (EMC Recommended Circuit)
	RS	CISPR32/EN55032, CLASS B (EMC Recommended Circuit)
EMS	ESD	IEC/EN61000-4-2 Air±8kV,Contact±6kV perf.Criteria B

Package Dimension



Note:
 Grid Spacing 2.54*2.54mm
 Unit: mm [inch]
 Terminal section tolerance: ±0.10 [±0.004]
 Unmarked tolerance: ±0.50 [±0.020]

Package description

Package code	L x W x H	
-	19.50 × 9.80 × 12.50mm	0.768 × 0.386 × 0.492inch

Pin Definition

Pin Description	1	2	3	4	5	6
Dual (D)	+Vin	GND	--	-Vo	0V	+Vo

Note: If the pin definitions of the power module are inconsistent with those in the selection manual, the markings on the actual label shall prevail.

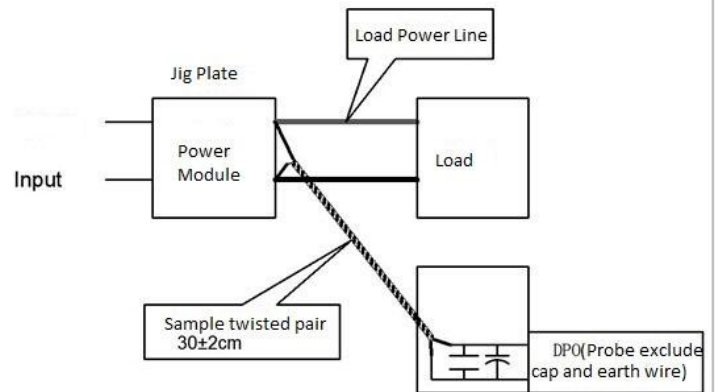
Ripple & Noise Test Instructions (Twisted Pair Method 20MHz Bandwidth)

Test Method:

1. Ripple noise is connected using 12# twisted pair cable, the oscilloscope bandwidth is set to 20MHz, 100M bandwidth probe, and 0.1uF polypropylene capacitor and 10uF high-frequency low-resistance electrolytic capacitor are connected in parallel on the probe end. The oscilloscope sampling uses the Sample sampling mode.

2. Output ripple noise test diagram:

Connect the power input to the input power supply, and the power output is connected to the electronic load through the fixture board. The test uses a 30cm±2 cm sampling line to directly sample from the power output port. The power line selects the corresponding wire diameter with insulated wire according to the output current.



Temperature Derating Curve

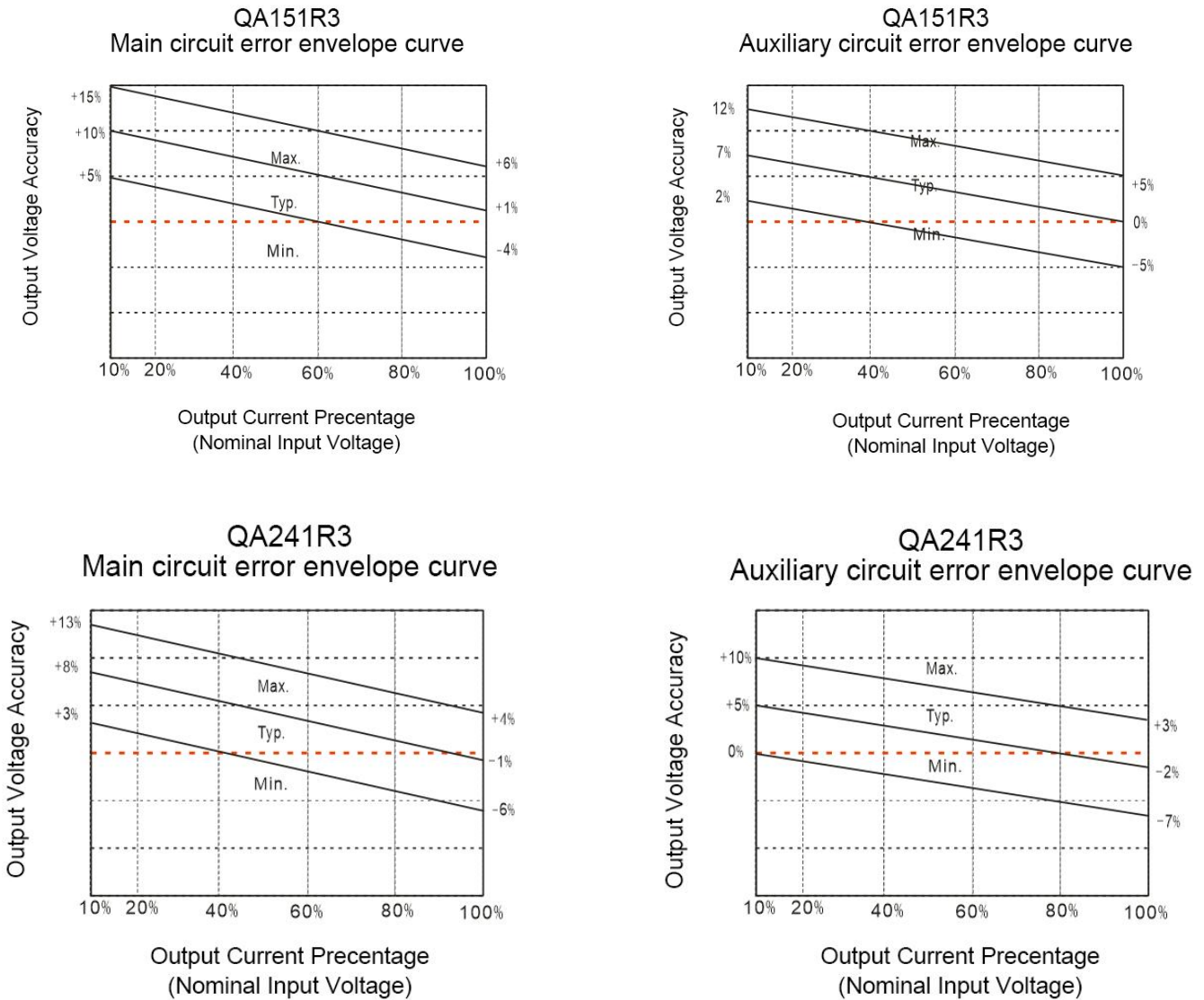


Figure 1

Temperature Derating Curve

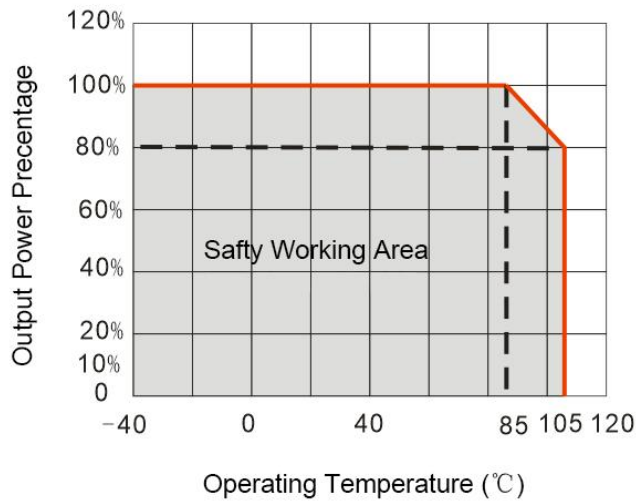
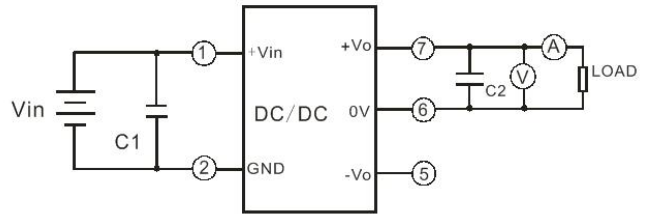
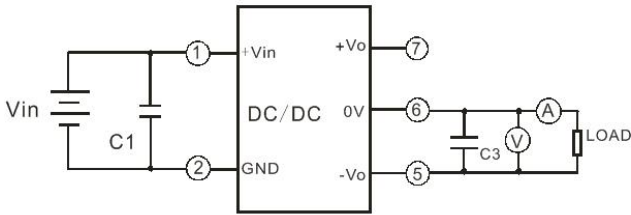


Figure 2

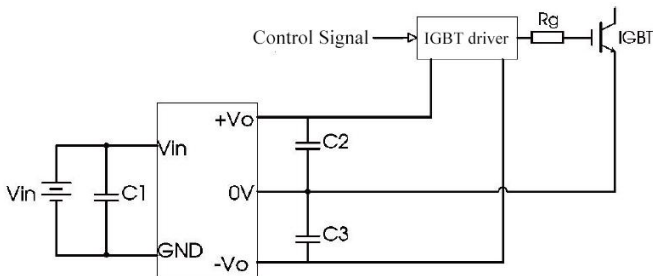
Design and Application Reference

① Test method



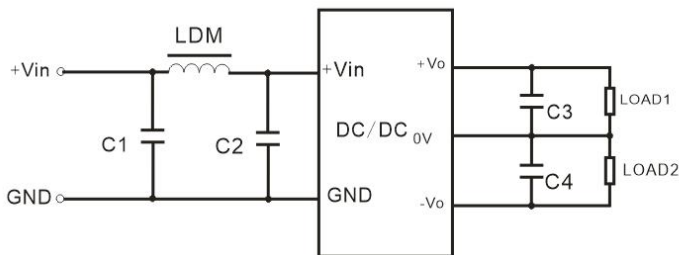
Note: C1, C2, C3 are 100μF/35V (low internal resistance capacitors)

② Typical applications



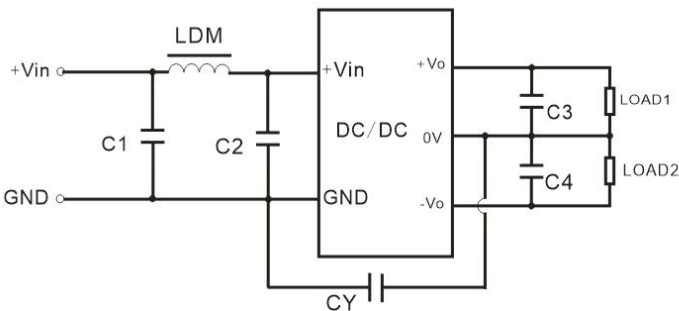
C1/ C2 /C3
100uF/35V (Low internal resistance capacitor)

③ EMC typical recommended circuit



Input voltage		5VDC	12/15/24VDC
EMI	C1/C2	4.7 μF/16V	1 μF/50V
	C3/C4	10 μF/50V	100 μF/30V
	LDM	6.8 μH	33 μH

Note: C3/C4 are low internal resistance capacitors



Input voltage		5VDC	12/15/24VDC
EMI	C1/C2	4.7 μF/16V	1 μF/50V
	C3/C4	10 μF/50V	100 μF/30V
	LDM	6.8 μH	33 μH
	CY	330pF	330pF

Note: C3/C4 are low internal resistance capacitors

Note:

1. This product cannot be used in parallel and does not support hot plugging;
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) should be close to the module power supply and the IGBT driver;
4. The average output power of the driver must be less than the output power of the power module;
5. It is recommended to use ceramic capacitors or electrolytic capacitors for external capacitors at the input or output of the product. Tantalum capacitors are not recommended, otherwise there will be a certain risk of failure;
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 indicator test methods in this article are based on the company's corporate standards;
8. Product specifications are subject to change without prior notice.

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