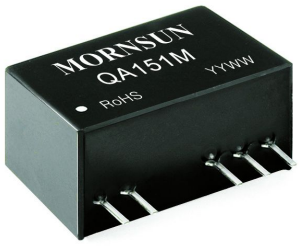
MOSFET SiC Driver Dedicated Power Supply

QA151M

MOSFET SiC Driver Dedicated Power Supply



Continuous Short Circuit Protection

Patent Protection RoHS

FEATURES

- High efficiency up to 80%
- SIP package
- Isolation voltage: 3.5kVAC
- Ultra low isolation capacitance
- Operating temperature range: -40℃ to +105℃
- Continuous short circuit protection
- International standard pin-out

QA151M is DC-DC module power supplie designed for MOSFET SiC driver requiring two set of isolation power supply. The mode of mutual connection after two independent outputs is adopted internally for better energy provision of SiC turn-on and turn-off. Output short circuit protection and self-recovery capabilities are also provided. General application includes:

1.Universal converter

2.AC servo drive system

3.Electric welding machine

4.Uninterruptible power supply (UPS)

Selection Guide

Part No.	Input Voltage (VDC)	Output		Efficiency (%,Min./Typ.) @ Full Load	Max. Capacitive Load*(μF)
	Nominal (Range)	Output Voltage (VDC)+Vo/-Vo	Output Current (mA)+Io/-Io		
QA151M	15 (13.5-16.5)	+15/-5	+100/-100	76/80	220

Note:*The capacitive loads of positive and negative outputs are identical.

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (full load / no-load)	15V input	--	162/15	--	mA
Surge Voltage (1sec. max.)		-0.7	--	21	VDC
Input Filter		Capacitor filter			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage	Vin=15VDC, Pin6 & Pin7 +Io=+100mA	+Vo	14.4	15	15.9	VDC
	Vin=15VDC, Pin5 & Pin6 -Io=-100mA	-Vo	-4.75	-5	-5.75	
Output Voltage Accuracy	Vin=15VDC, Pin6 & Pin7 +Io=+100mA	+Vo	-4% to +6%			
	Vin=15VDC, Pin5 & Pin6 -Io=-100mA	-Vo	-5% to +15%			
	10%-100% load		See tolerance envelope curve (Fig. 1)			
Line Regulation	Input voltage change: ±1%		--	±1.1	--	--
Load Regulation	10%-100% load	+Vo	--	7	--	%
		-Vo	--	10	--	
Ripple & Noise*	20MHz bandwidth	+Vo	--	120	--	mVp-p
		-Vo	--	80	--	
Temperature Drift Coefficient	100% load		--	±0.02	--	%/℃
Output Short Circuit Protection			Continuous, self-recovery			

Note:*Ripple and noise tested with "parallel cable" method, please see *DC-DC Converter Application Notes* for specific operation methods.

MORNSUN Guangzhou Science & Technology Co., Ltd. reserves the copyright and right of final interpretation

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Isolation Voltage	Input-output, with the test time of 1 minute and the leak current lower than 1mA	3500	--	--	VAC
Insulation Resistance	Input-output, isolation voltage 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-output, 100KHz/0.1V	--	3.5	--	pF
Operating Temperature	Derating when operating temperature up to 85℃, (see Fig. 2)	-40	--	105	℃
Storage Temperature		-55	--	125	
Pin Welding Resistance Temperature	Welding spot is 1.5mm away from the casing, 10 seconds	--	--	300	
Casing Temperature Rise	Ta=25℃	--	30	--	
Storage Humidity	Non-condensing	--	--	95	%RH
Switching Frequency	100% load, nominal input voltage	--	83	--	KHz
MTBF	MIL-HDBK-217F@25℃	3500	--	--	K hours

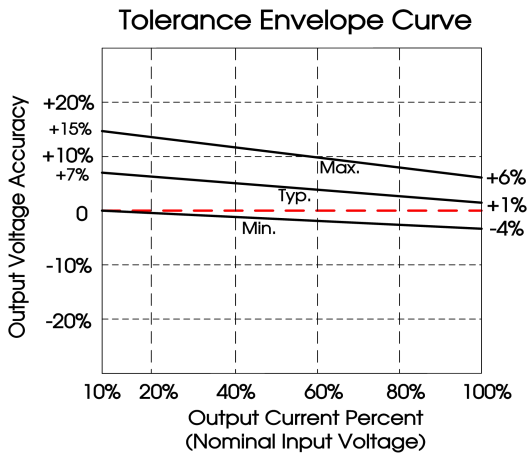
Physical Specifications

Casing Material	Black flame-retardant and heat-resistant plastic
Dimensions	19.50*9.80*12.50mm
Weight	4.2g (Typ.)
Cooling Method	Free air convection

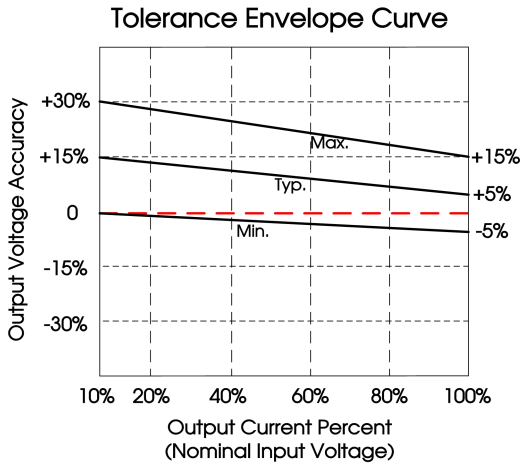
EMC Specifications

EMI	CE	CISPR32/EN55032 CLASS B (see Fig. 5 for recommended circuit)
	RE	CISPR32/EN55032 CLASS B (see Fig. 5 for recommended circuit)
EMS	ESD	IEC/EN61000-4-2 Contact ±6KV perf. Criteria B

Product Characteristic Curve



+Vo tolerrance envelope curve



-Vo tolerrance envelope curve

Fig. 1

MORNSUN Guangzhou Science & Technology Co., Ltd. reserves the copyright and right of final interpretation

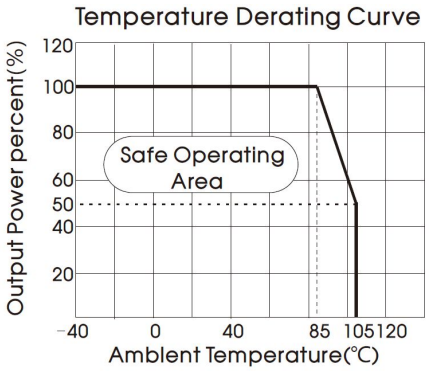
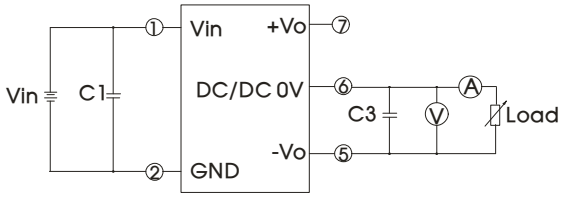


Fig. 2

Design Reference

1. Test configurations



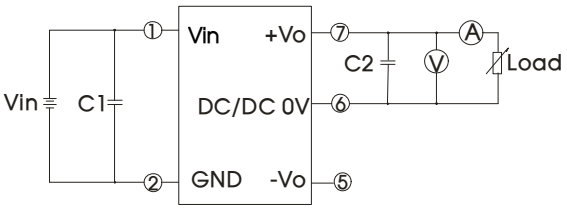


Fig. 3

Note: C1,C2,C3: 100uF/35V (Low internal resistance capacitance)

2. Typical application

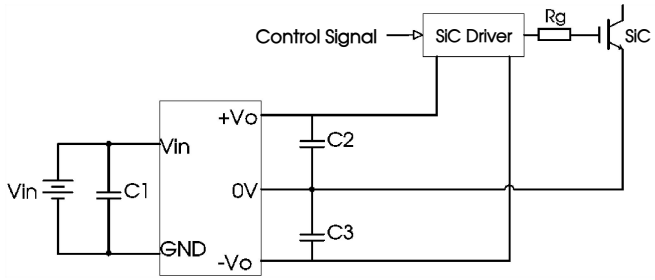


Fig. 4

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

3. EMC typical recommended circuit

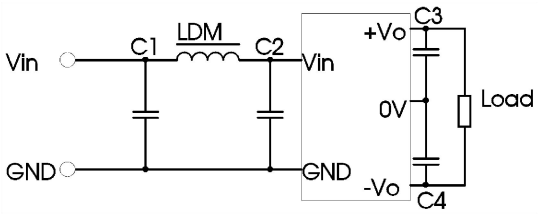


Fig. 5

Input voltage (VDC)		15
EMI	C1/C2	4.7μF /50V
	C3/C4	100μF /35V (Low internal resistance capacitance)
	LDM	6.8μH

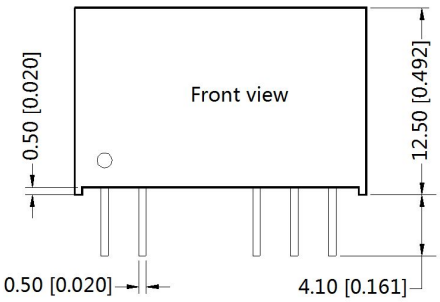
5. The product does not support output in parallel with power per liter or hot-swappable use

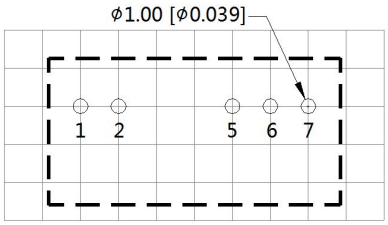
6. The input and the output of the product are recommended to be connected to use low ESR series of electrolytic capacitor.

7. For more information please find the application notes on www.mornsun-power.com

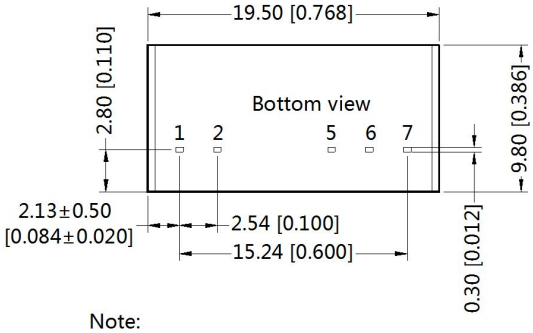
MORNSUN Guangzhou Science & Technology Co., Ltd. reserves the copyright and right of final interpretation

Dimensions and Recommended Layout





Note:Grid 2.54*2.54mm



Pin-Out	
Pin	Function
1	Vin
2	GND
5	-Vo
6	0V
7	+Vo

Note:
Unit :mm[inch]
Pin section tolerances:±0.10[±0.004]
General tolerances:±0.25[±0.010]

Notes:

1. Packing information please refer to Product Packing Information which can be downloaded from www.mornsun-power.com. Packing bag number: 58200013;
2. The lead connecting the power supply module and SiC driver should be as short as possible during use;
3. The output filtering capacitor should be as close as possible to the power supply module and SiC driver;
4. The peak of the MOSFET SiC driver dedicated power supply gate drive current is high, so low internal resistance electrolytic capacitor is recommended to be used for the power supply module output filter capacitor;
5. The average output power of the driver must be lower than that of the power supply module;
6. Consider fixing with glue near the module if being used in vibration occasion;
7. The max. capacitive load should be tested within the input voltage range and under full load conditions;
8. Unless otherwise specified, data in this datasheet should be tested under the conditions of Ta=25° C, humidity<75%RH when inputting nominal voltage and outputting rated load;
9. All index testing methods in this datasheet are based on our Company's corporate standards;
10. The performance indexes of the product models listed in this manual are as above, please directly contact our technicians for specific information;
11. We can provide product customization service;
12. Products are related to laws and regulations: see "Features" and "EMC";
13. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

MORNSUN Guangzhou Science & Technology Co., Ltd.
Address: No. 5, Kehui St. 1, Kehui Development Center, Science Ave., Guangzhou Science City, Luogang District, Guangzhou, P. R. China
Tel: 86-20-38601850-8801 Fax: 86-20-38601272 E-mail: info@mornsun.cn

MORNSUN Guangzhou Science & Technology Co., Ltd. reserves the copyright and right of final interpretation