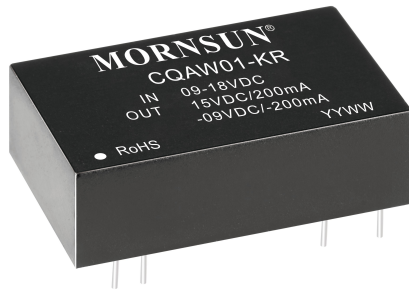


4.8W, Wide input, isolated & regulated
dual output, IGBT dedicated DC-DC converter



Patent Protection RoHS



FEATURES

- Wide input voltage range: 2:1
- High efficiency up to 85%
- Isolation voltage: 3kVDC
- Short Circuit Protection
- Output Over-voltage Protection
- Operating temperature range:-40℃ to +85℃
- International standard pin-out
- Regulated Converter for IGBT driver
- The production process meet IATF16949 system requirements

CQAW01-KR is DC-DC converters for IGBT drivers, offer 4.8W of output, with output over- voltage protection and short-circuit protection. General application includes:

- 1.General inverter
- 2.AC servo drive system
- 3.Electric welding machine
- 4.Uninterruptible power supply (UPS)

Selection Guide

Part No.	Input		Output		Efficiency (%,Typ.) @ Full Load	Max. Capacitive Load* (μF)
	Input Voltage (VDC)	Input Current (mA,Typ) Full Load/No Load	Output Voltage (VDC)+Vo/-Vo	Output Current (mA)+Io/-Io		
CQAW01-KR	12(9-18)	471/16	+15/-9	±200/±10	85	1000

Note: *For each output.

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Surge Voltage Input	12VDC input	-0.7	--	25	VDC
Starting Voltage	12VDC input	--	--	9	
Input Filter		π Filter			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Power		0.24	--	4.8	W
Output Voltage Accuracy	Main output(+15V output)	--	±1	±2	%
	Supplement output(-9V output)	--	±3	±5	
Line Regulation	Full load, the input voltage is from low to high	--	±0.2	±0.5	
Load Regulation	5%-100% load	--	±0.5	±1	
Transient Recovery Time	25% load step change	--	300	500	μs
Transient Response time		--	±3	±5	%
Temperature Coefficient	100% load	--	--	±0.03	%/℃
Ripple & Noise*	20MHz bandwidth	--	100	200	mVp-p
Output Over-voltage Protection	Input voltage range	110	120	140	% Vo
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.

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Insulation Voltage	Input-output, with the test time of 1 minute and the leak current lower than 1mA	3000	--	--	VDC
Insulation Resistance	Input-output, isolation voltage 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-output, 100kHz/0.1V	--	100	--	pF
Operating Temperature	Power derating $\geq 71^{\circ}\text{C}$, (see Fig. 1)	-40	--	85	$^{\circ}\text{C}$
Storage Temperature		-55	--	125	
Pin Welding Resistance Temperature	Welding spot is 1.5mm away from the casing, 10 seconds	--	--	300	
Casing Temperature Rise	$T_a=25^{\circ}\text{C}$	--	30	40	
Storage Humidity	Non-condensing	5	--	95	%RH
Switching Frequency	100% load, nominal input voltage	--	300	--	kHz
MTBF	MIL-HDFK-217F@25 $^{\circ}\text{C}$	1000	--	--	k hours

Physical Specifications

Casing Material	Black flame-retardant and heat-resistant plastic (UL94 V-0)
Dimensions	31.60*20.30*10.20 mm
Weight	14g (Typ.)
Cooling Method	Free air convection

EMC Specifications

EMI	CE	CISPR32/EN55032	CLASS A (see Fig. 4-② for recommended circuit)
	RE	CISPR32/EN55032	CLASS A (see Fig. 4-② for recommended circuit)
EMS	ESD	IEC/EN61000-4-2	Contact $\pm 4\text{kV}$ perf. Criteria B
	RS	IEC/EN61000-4-3	10V/m perf. Criteria A
	EFT	IEC/EN61000-4-4	$\pm 2\text{kV}$ (see Fig. 4-① for recommended circuit) perf. Criteria B
	Surge	IEC/EN61000-4-5	$\pm 2\text{kV}$ (see Fig. 4-① for recommended circuit) perf. Criteria B
	CS	IEC/EN61000-4-6	3 V _{r.m.s} perf. Criteria A
	Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-29	0%, 70% perf. Criteria B

Product Characteristic Curve

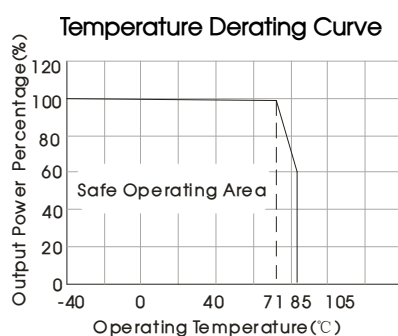
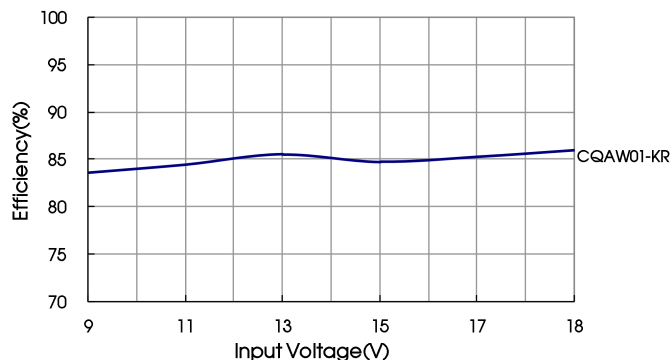
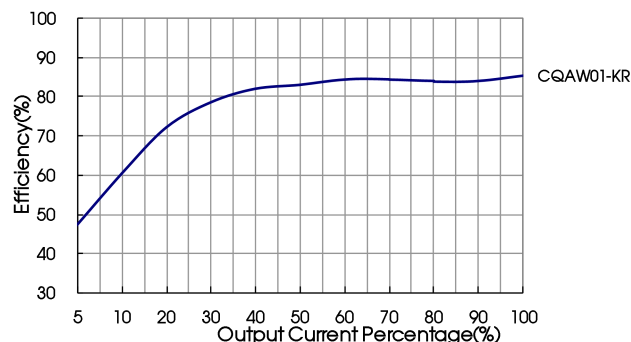


Fig. 1

Efficiency Vs Input Voltage (Full Load)



Efficiency Vs Output Load ($V_{in}=V_{in-nominal}$)



Design Reference

1. Typical application

It is tested according to the recommended circuit (see Fig. 2) before delivery.

If it is required to further reduce input and output ripple, properly increase the input & output of additional capacitors C_{in} and C_{out} or select capacitors of low equivalent impedance provided that the capacitance is no larger than the max. capacitive load of the product.



Fig. 2

V_{in}	12V
C_{in}	100 μ F
C_{out}	100 μ F

2. Application circuit

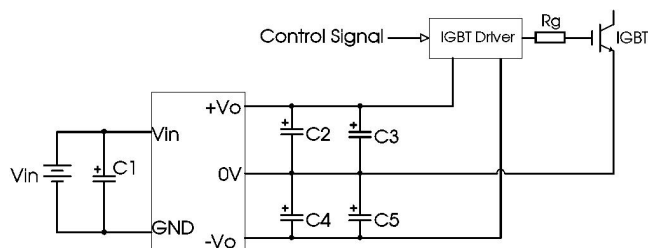


Fig. 3

C1	100 μ F/63V(Electrolytic capacitor)
C2 /C4	100 μ F/35V(Electrolytic capacitor)
C3/C5	10 μ F/25V(Ceramic capacitor)

3. EMC solution-recommended circuit

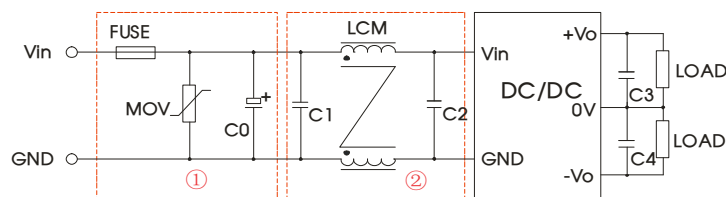


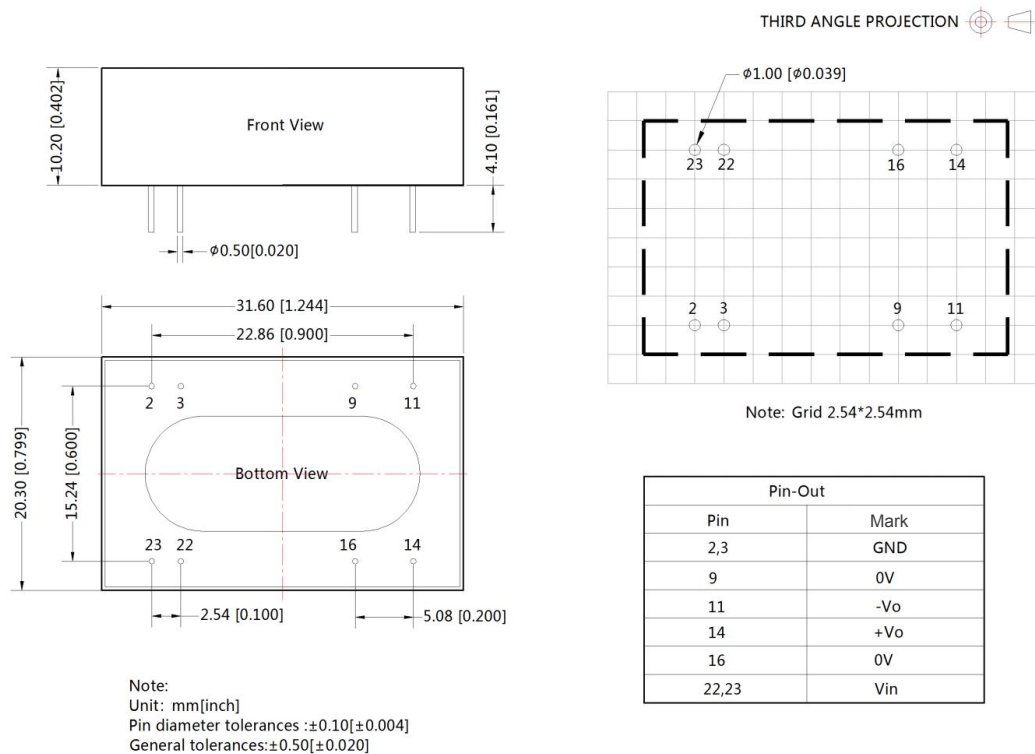
Fig. 4

	CQAW01-KR
FUSE	Choose according to practical input current
MOV	S14k25
C0	680 μ F/25V
C1, C2	4.7 μ F/50V
C3, C4	Refer to the C_{out} in Fig.2
LCM	1mH

4. It is not allowed to connect modules output in parallel to enlarge the power

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

Dimensions and Recommended Layout



Notes:

1. Packaging information please refer to Product Packing Information which can be downloaded from www.mornsun-power.com. Packing bag number: 58210008;
2. The lead connecting the power supply module and IGBT 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 IGBT driver;
4. The peak of the IGBT driver 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 $T_a=25^\circ\text{C}$, humidity<75% when inputting nominal voltage and outputting rated load;
9. All index testing methods in this datasheet are based on our company corporate standards;
10. The performance indexes of the product models listed in this manual are as above, but some indexes of non-standard model products will exceed the above-mentioned requirements, and 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

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