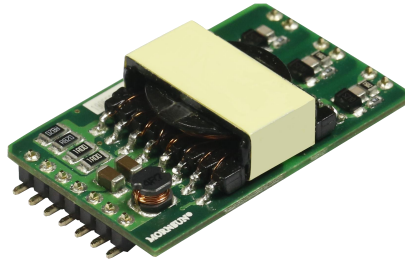


6W isolated DC-DC converter in SMD package
Wide input and regulated triple output



CE Patent Protection RoHS



FEATURES

- Wide input voltage range (9-18VDC)
- High efficiency up to 82%
- No-load power consumption as low as 0.12W
- I/O isolation test voltage 3k VDC
- Operating ambient temperature range: -40°C to +105°C
- Input under-voltage protection, output short-circuit, over-current, over-voltage protection
- Emissions meets EN55025/CISPR25 CLASS 4 standard
- SMD package
- Product meets AEC-Q100 standards
- EN62368 approved

CVRC1215JD-6WR3 of 6W DC-DC converter products with a wide range of voltage input of 9-18VDC, input to output isolation is tested with 3000 VDC, emissions meets EN55025/CISPR25 CLASS 4 standard, input under-voltage, output short-circuit, output over-current and over-voltage protection, products use SMD package process, it is easy for customers to automate machining and they are widely used in fields such as vehicle electronics, medical care, industrial control, electric power, instrumentation and communications.

Selection Guide

Certification	Part No.	Input Voltage (VDC)		Output						Full Load Efficiency ^② (%) Min./Typ.	Capacitive Load ^③ (μF)Max.
		Nominal (Range)	Max. ^①	Voltage (VDC)			Current (mA) Max./Min.				
				Vo1	Vo2	Vo3	Io1	Io2	Io3		
CE	CVRC1215JD-6WR3	12 (9-18)	20	15	15	15	200/0	100/0	100/0	80/82	100

Notes: ①Exceeding the maximum input voltage may cause permanent damage;
②Efficiency is measured at nominal input voltage and rated output load;
③The specified maximum capacitive load for triple output is identical.

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (full load / no-load)	Nominal input voltage	--	610/10	625/20	mA
Surge Voltage (1sec. max.)		-0.7	--	25	VDC
Start-up Voltage		--	--	9	
Input Under-voltage Protection		5.5	6.5	--	
Input Filter		Pi filter			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit	
Voltage Accuracy		Vo1	--	±1	±3	%
		Vo2, Vo3	--	±5	±8	
Linear Regulation	Input voltage variation from low to high at full load	Vo1	--	±0.2	±0.5	
		Vo2, Vo3	--	±0.5	±1	
Load Regulation ^①	5%-100% load	Vo1	--	±0.5	±1	
		Vo2, Vo3	--	±1	±2	
Cross Regulation	Three output with main output at 50% load and supplement output from 25%-100%	--	--	±8		
Transient Recovery Time	25% load step change	--	300	1000	μs	
Transient Response Deviation		--	±3	±5	%	

Temperature Coefficient	Full load	--	--	±0.03	%/°C
Ripple & Noise ^②	20MHz bandwidth	--	100	200	mVp-p
Over-voltage Protection	Input voltage range	110	--	160	%Vo
Over-current Protection		110	150	200	%Io
Short-circuit Protection		Continuous, self-recovery			

Notes: ①Load regulation for 0% -100% is ±5%;
②The "parallel cable" method is used for ripple and noise test, please refer to DC-DC Converter Application Notes for specific information.

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Isolation	Input-output Electric Strength Test for 1 minute with a leakage current of 1mA max.	3000	--	--	VDC
	Output-output Electric Strength Test for 1 minute with a leakage current of 1mA max.	1000	--	--	
Insulation Resistance	Input-output resistance at 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-output capacitance at 100kHz/0.1V	--	2500	--	pF
Operating Temperature	see Fig. 1	-40	--	105	°C
Storage Temperature		-55	--	125	
Storage Humidity	Non-condensing	5	--	95	%RH
Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from case for 10 seconds	--	--	300	°C
Reflow Soldering Temperature		Peak temp. ≤245°C, maximum duration time ≤60s over 217°C. For actual application, please refer to IPC/JEDEC J-STD-020D.1.			
Vibration		JEDEC JESD22-B103 (10-1000Hz, crossover frequency 70Hz, amplitude 1.0mm, acceleration 10g, each cycle is greater than 4.4 times in each direction, 1octave slope.)			
Switching Frequency *	PWM mode	--	210	--	kHz
MTBF	MIL-HDBK-217F@25°C	1000	--	--	k hours

Note: * Switching frequency is measured at full load. The module reduces the switching frequency for light load (below 50%) efficiency improvement.

Mechanical Specifications

Dimensions	42.10 x 25.00 x 11.20 mm
Weight	9.5g(Typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility (EMC)

Emissions	CE	EN55025/CISPR25: 2016	CLASS 4 (see Fig.3 or Fig.4 for recommended circuit)		
	RE	EN55025/CISPR25: 2016	CLASS 4 (see Fig.3 or Fig.4 for recommended circuit)		
Immunity	ESD	ISO10605: 2001	Contact ±6kV		perf. Criteria A
	Free field method	ISO11452-2: 2011	150V/m		perf. Criteria A
	BCI	ISO11452-4: 2011	1MHz-400MHz, 200mA		perf. Criteria A
	Electrical transient conduction along the power line	ISO7637-2: 2011			perf. Criteria A

Typical Characteristic Curve

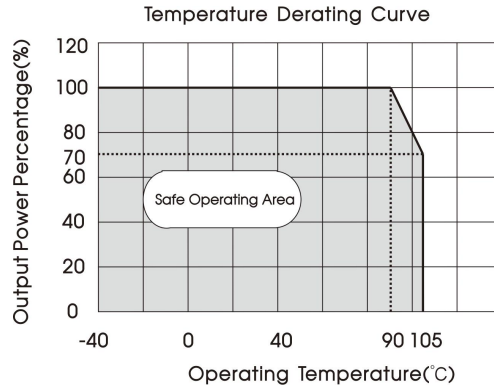


Fig. 1

Design Reference

1. Typical application

All the DC-DC converters of this series are tested before delivery using the recommended circuit shown in Fig. 2.

Input and/or output ripple can be further reduced by appropriately increasing the input & output capacitor values C_{in} and C_{out} and/or by selecting capacitors with a low ESR (equivalent series resistance). Also make sure that the capacitance is not exceeding the max. capacitive load value of the product.



Fig. 2

Vin(VDC)	Cin	Cout
12	100μF/25V	10μF/25V

2. EMC compliance circuit

Option one:

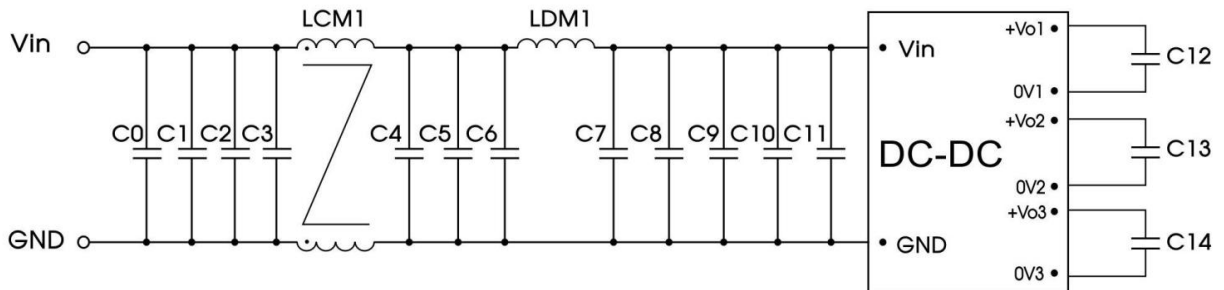


Fig. 3

Parameter description:

C0	1nF/50V
C1/C4	100nF/50V
C5	1μF/50V
C2/C6/C7	4.7μF/50V
C3/C8/C9/C10/C11/C12/C13/C14	10μF/50V
LCM1	470μH
LDM1	220μH

Option two:

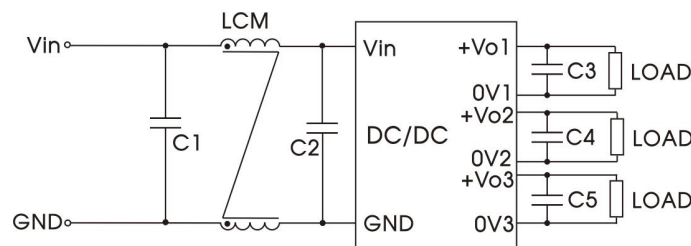


Fig. 4

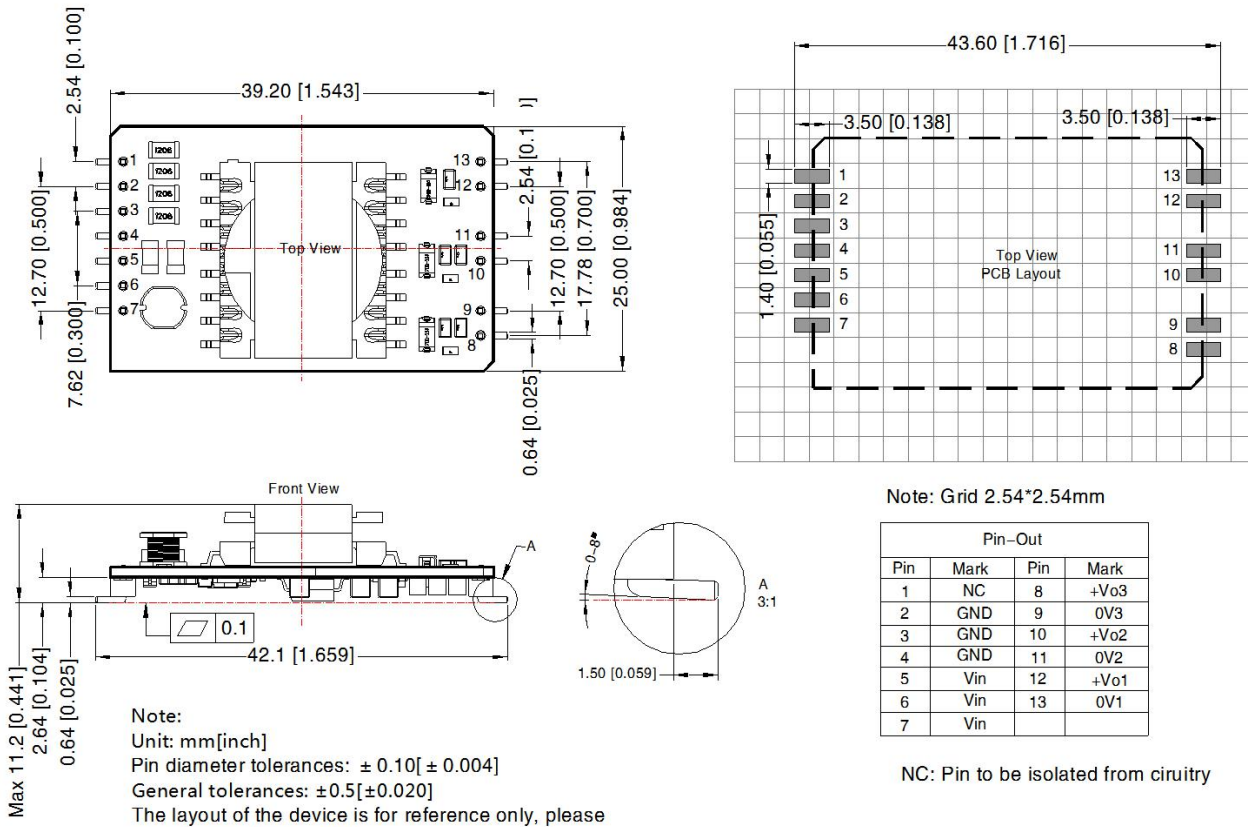
Parameter description:

C1/C2/C3/C4/C5	10uF/50V
LCM	1mH

- The products do not support parallel connection of their output
- For additional information please refer to DC-DC converter application notes on www.mornsun-power.com

Dimensions and Recommended Layout

THIRD ANGLE PROJECTION



Notes:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58210059;
2. If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
3. The maximum capacitive load offered were tested at input voltage range and full load;
4. Unless otherwise specified, parameters in this datasheet were measured under the conditions of $T_a=25^{\circ}\text{C}$, humidity<75%RH with nominal input voltage and rated output load;
5. All index testing methods in this datasheet are based on our company corporate standards;
6. We can provide product customization service, please contact our technicians directly for specific information;
7. Products are related to laws and regulations: see "Features" and "EMC";
8. 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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