multicomp PRO

3W isolated DC-DC converter in SIP package Ultra-wide input and regulated single/dual output

RoHS Compliant



Features

- · Ultra-wide 8:1 input voltage range
- High efficiency up to 79%
- · No-load power consumption as low as 0.12W
- I/O isolation test voltage 3K VDC
- · Input under-voltage protection, output short circuit, over-current protection
- Operating ambient temperature range: -40°C to +105°C
- · Industry standard pin-out
- · EN62368 approved

These series of isolated 3W DC-DC products with an ultra-wide 8:1 input voltage range. They feature efficiencies of up to 79%, 3000VDC input to output isolation, operating ambient temperature range of -40°C to +105°C, input under-voltage protection, output over-current, short circuit protection and they are widely used in applications such as medical care, industrial control, electric power, instruments and communication fields.

Selection Guid	de					
	Input Volta	ge (VDC)	С	utput	Full Load Efficiency	Canacitiva Laad/uE*
Part Number	Nominal (Range)	Max.	Voltage (VDC)	Current (mA) Max./Min.	Full Load Efficiency (%) Min./Typ.	Capacitive Load(μF)* Max.
MPWE1205S-3W			±5	±300	75/77	470
MPWE1212S-3W			±12	±125	77/79	220
MPWE1215S-3W	12	40	±15	±100	77/79	100
MPWF1205S-3W	(4.5 to 36)	40	5	600	75/77	1000
MPWF1212S-3W			12	250	77/79	330
MPWF1215S-3W			15	200	77/79	220

Note: 1. Exceeding the maximum input voltage may cause permanent damage;

- 2. Efficiency is measured at nominal input voltage and rated output load;
- 3. The specified maximum capacitive load for positive and negative output is identical.

Input Specifications					
Item	Operating Conditions	Min.	Тур.	Max.	Unit
	5V/±5V output		324/8	334/16	
Current (full load / no-load)	Others		316/8	325/16	mA
(lair load / flo load)			50		
Reflected Ripple Current		-0.7		50	
Surge Voltage(1sec. max.)				4.5	V DC
Start-up Voltage		2.5	3.5		VDC
Input Under-voltage Protection					
Input Filter		Ca	apacitance	filter	
Hot Plug			Unavailal	ole	



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Output Specifications

Item	Operating Cor	nditions	Min.	Тур.	Max.	Unit
Voltage Accuracy	0% -100% load			±1	±3	
Linear Regulation	Input voltage variation	Vo1			±0.5]
Linear Regulation	from low to high at full load	Vo2			±1]
Load Domitation	50/ 4000/ load	Vo1			±1	%
Load Regulation	5% -100% load	Vo2			±1.5]
Cross Regulation	Dual outputs, Vo1 load at 50 range of 25%-100%	0%, Vo2 load at	-		±5	
Transient Recovery Time	25% load step change, nom	inal input voltag		300	500	μs
Transient Response	25% load step change,	5V/±5V output		±5	±8	- %
Deviation	nominal input voltage	Others		±3	±5	70
Temperature Coefficient	Full load				±0.03	%/°C
Ripple & Noise*	20MHz bandwidth, 5% -100	% load		60	100	mVp-p
Over-current Protection	Input voltage range		110		300	%/°C
Short-Circuit Protection	Tinput voltage range		Contir	nuous, se	lf-recovery	y
Ripple & Noise* Over-current Protection	+	% load		60	100 300	

Note: 1. Ripple & Noise at <5% load is 5%Vo max. The "parallel cable" method is used for ripple and noise test, please refer to DC-DC Converter Application Notes for specific information.

General Specification	ons				
Item	Operating Conditions	Min.	Тур.	Max.	Unit
Isolation	Input-output electric strength test for 1 minute with a leakage current of 1mA max.	3000	-	-	VDC
Insulation Resistance	Input-output resistance at 500VDC	1000	-	-	ΜΩ
Isolation Capacitance	Input-output capacitance at 100kHz/0.1V	-	40	-	pF
Operating Temperature	See Fig. 1	-40	-	+105	
Storage Humidity	Without condensation	5	-	95]
Storage Temperature		-55	-	+125	°C
Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from case for 10 seconds	-	-	+300	
Vibration		10-150Hz	z, 5G, 0.75	mm. along	X, Y and Z
Switching Frequency	PWM mode	-	300	-	kHz
MTBF	MIL-HDBK-217F@25°C	1000	-	-	k hours
Nata-*Conitalaina fra accessor in	managered at full load. The module reduces the s	i to a la i sa au fua	f.	. liadat la a al /l	I - · · · · F O 0 / \

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

Mechanical Specifications	
Case Material	Black plastic; flame-retardant and heat-resistant (UL94-V0)
Dimensions	22mm × 9.5mm × 12mm
Weight	4.5g (Typ.)
Cooling Method	Free air convection

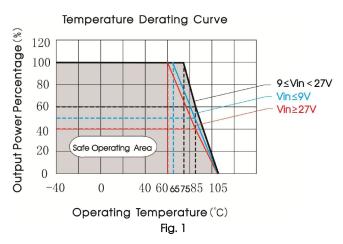


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Electromagnetic Compatibility (EMC)

	i			
Emissions	CE	CISPR32/EN55032	CLASS B (see Fig.3-2 for recommended circuit)/CLASS A recommended circuit)	(see Fig.4 for
EIIIISSIOIIS	RE	CISPR32/EN55032	CLASS B (see Fig.3-2 for recommended circuit)/CLASS A recommended circuit)	(see Fig.4 for
	ESD	IEC/EN61000-4-2	Contact ±4KV	perf. Criteria B
	RS	IEC/EN61000-4-3	10V/m	perf. Criteria A
Immunity	EFT	IEC/EN61000-4-4	±2KV (see Fig.3-1 for recommended circuit)	perf. Criteria B
	Surge	IEC/EN61000-4-5	line to line ±2KV (see Fig.3-1 for recommended circuit)	perf. Criteria B
	CS	IEC/EN61000-4-6	3 Vr.m.s	perf. Criteria A

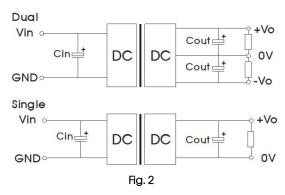
Typical Characteristic Curves



Design Reference

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 Cin and Cout and/or by selecting capacitors with a low ESR (equivalent series resistance). Also make sure that the capacitance is not exceeding the specified max. capacitive load value of the product.



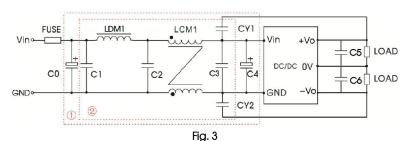
Parameter description:

Single Vout	Cout	Cin	Dual Vout	Cout	Cin
(VDC)	(µF)	(µF)	(VDC)	(µF)	(µF)
5/12/15	22 (25V)	100 (50V)	±5/±12/±15	22 (25V)	100 (50V)



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EMC compliance circuit

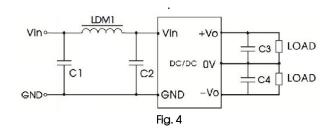


Notes: For EMC tests we use Part ① in Fig. 3 for immunity and part ② for emissions test.

Selecting based on needs

Parameter description:

Components	Vin:12V
FUSE	Choose according to actual input current
C0	1000μF/50V
C4	330µF/50V
C1/C2/C3	10μF/50V
LCM1	3.3mH, recommended to use MORNSUN's FL2D-10-332
LDM1	4.7µH
CY1/CY2	1nF/3KV
C5/C6	Refer to the Cout in Fig.2

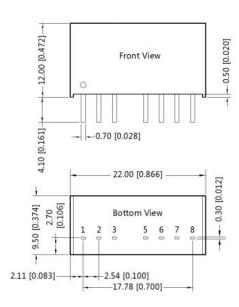


Parameter description:

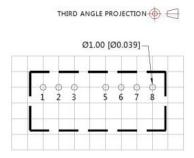
Components	Vin:12V
FUSE	Choose according to actual input current
C1/C2	10μF/50V
LDM1	22µH
C3/C4	Refer to the Cout in Fig.2

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Dimensions and Recommended Layout



Note: Unit:mm[inch] Pin section tolerances:±0.10[±0.004] General tolerances:±0.50[±0.020]



Note: Grid 2.54*2.54mm

	Pin-Out	
Pin	Single	Dual
1	GND	GND
2	Vin	Vin
3	NC	NC
5	NC	NC
6	+Vo	+Vo
7	0V	0V
8	NC	-Vo

NC: Not available for electrical connection

Notes:

- 1. The maximum capacitive load offered were tested at input voltage range and full load;
- 2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25°C, humidity<75%RH with nominal input voltage and rated output load;
- 3. All index testing methods in this datasheet are based on company corporate standards;
- 4. We can provide product customization service, please contact our technicians directly for specific information;
- 5. Products are related to laws and regulations: see "Features" and "EMC";
- 6. 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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