



Size: 0.55in x 0.55in x 0.31in (14mm x 14mm x 8mm)

FEATURES

- Wide 2:1 Input Voltage Range
- Ultra-Compact DIP-8 Package
- Full Regulated Output Voltage
- RoHS & REACH Compliant
- No Minimum Load Requirement
- Over Load and Short Circuit Protection
- UL/cUL/IEC/EN 60950-1 Safety Approval & CE Marking

DESCRIPTION

The DCMFW02 series of DC/DC converters offers up to 2 watts of output power in an ultra-compact 0.55" x 0.55" x 0.31" DIP-8 package. This series consists of both single and dual, fully-regulated output models and a wide 2:1 input voltage range. Each model in this series has over load and short circuit protection, is RoHS & REACH compliant, and requires no minimum load. This series has UL/cUL/IEC/EN 60905-1 safety approval & CE marking. Please contact factory for order details.

MODEL SELECTION TABLE

Single Output Models

Model Number	Input Voltage Range	Output Voltage	Max. Output Current	Input Current		Efficiency	Output Power	Maximum Capacitive Load	Ripple & Noise
				@Max Load	@No Load				
DCMFW02-05S033	5VDC (4.5~10VDC)	3.3VDC	400mA	334mA	40mA	79%	2 Watts	100µF	70mVp-p
DCMFW02-05S05		5VDC	400mA	494mA		81%			
DCMFW02-05S12		12VDC	167mA	472mA		85%			
DCMFW02-05S15		15VDC	134mA	462mA		87%			
DCMFW02-12S033	12VDC (9~18VDC)	3.3VDC	400mA	138mA	27mA	80%	2 Watts	100µF	70mVp-p
DCMFW02-12S05		5VDC	400mA	201mA		83%			
DCMFW02-12S12		12VDC	167mA	192mA		87%			
DCMFW02-12S15		15VDC	134mA	193mA		87%			
DCMFW02-24S033	24VDC (18~36VDC)	3.3VDC	400mA	70mA	15mA	79%	2 Watts	100µF	70mVp-p
DCMFW02-24S05		5VDC	400mA	99mA		84%			
DCMFW02-24S12		12VDC	167mA	97mA		86%			
DCMFW02-24S15		15VDC	134mA	96mA		87%			
DCMFW02-48S033	48VDC (36~75VDC)	3.3VDC	400mA	35mA	8mA	79%	2 Watts	100µF	70mVp-p
DCMFW02-48S05		5VDC	400mA	50mA		83%			
DCMFW02-48S12		12VDC	167mA	49mA		85%			
DCMFW02-48S15		15VDC	134mA	49mA		86%			

MODEL SELECTION TABLE

Dual Output Models

Model Number	Input Voltage Range	Output Voltage	Max. Output Current	Input Current		Efficiency	Output Power	Maximum Capacitive Load ⁽¹⁾	Ripple & Noise
				@Max Load	@No Load				
DCMFW02-05D05	5VDC (4.5~10VDC)	±5VDC	±200mA	482mA	40mA	83%	2 Watts	100µF	70mVp-p
DCMFW02-05D12		±12VDC	±83mA	469mA		85%			
DCMFW02-05D15		±15VDC	±67mA	473mA		85%			
DCMFW02-12D05	12VDC (9~18VDC)	±5VDC	±200mA	198mA	27mA	84%	2 Watts	100µF	70mVp-p
DCMFW02-12D12		±12VDC	±83mA	193mA		86%			
DCMFW02-12D15		±15VDC	±67mA	195mA		86%			
DCMFW02-24D05	24VDC (18~36VDC)	±5VDC	±200mA	99mA	15mA	84%	2 Watts	100µF	70mVp-p
DCMFW02-24D12		±12VDC	±83mA	97mA		86%			
DCMFW02-24D15		±15VDC	±67mA	97mA		86%			
DCMFW02-48D05	48VDC (36~75VDC)	±5VDC	±200mA	51mA	8mA	82%	2 Watts	100µF	70mVp-p
DCMFW02-48D12		±12VDC	±83mA	49mA		84%			
DCMFW02-48D15		±15VDC	±67mA	50mA		84%			

SPECIFICATIONS

All specifications are based on 25°C, Resistive Load, Nominal Input Voltage, and Rated Output Current unless otherwise noted.
We reserve the right to change specifications based on technological advances.

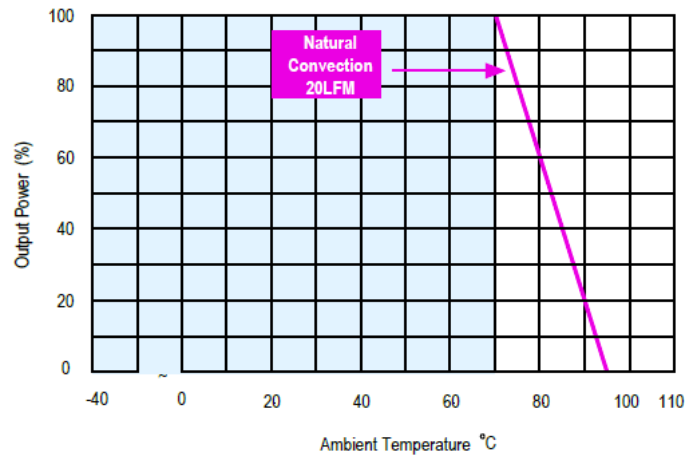
SPECIFICATION	TEST CONDITIONS	Min	Typ	Max	Unit
INPUT SPECIFICATIONS					
Input Voltage Range		See Table			
Input Surge Voltage (1 sec. max)	5V Input Models	-0.7		12	VDC
	12V Input Models	-0.7		25	
	24V Input Models	-0.7		50	
	48V Input Models	-0.7		100	
Start-Up Threshold Voltage	5V Input Models			4.5	VDC
	12V Input Models			9	
	24V Input Models			18	
	48V Input Models			36	
Short Circuit Input Power	All Models			0.5	W
Input Filter		Internal Capacitor			
OUTPUT SPECIFICATIONS					
Output Voltage		See Table			
Voltage Accuracy				±1.5	%Vnom.
Line Regulation	Vin=Min. to Max. @Full Load			±0.2	%
Load Regulation	Io=0% to 100%			±1.0	%
Output Voltage Balance	Dual Output, Balanced Loads			±2.0	%
Cross Regulation (Dual)	Asymmetrical Load 25%/100% FL			±5.0	%
Output Power		See Table			
Output Current		See Table			
Minimum Load		No Minimum Load Requirement			
Maximum Capacitive Load		See Table			
Ripple & Noise	0-20MHz Bandwidth		70		mVp-p
Transient Recovery	25% Load Step Change		250	500	µsec
Transient Response Deviation	25% Load Step Change		±3	±5	%
Temperature Coefficient			±0.01	±0.02	%/°C
PROTECTION					
Short Circuit Protection		Continuous, Automatic Recovery			
Over Load Protection	Foldback		180		%
ENVIRONMENTAL SPECIFICATIONS					
Operating Ambient Temperature	Natural Convection	-40		+80	°C
Storage Temperature		-50		+125	°C
Case Temperature				+95	°C
Humidity	Non-Condensing			95	%RH
Lead Temperature	1.5mm from case for 10Sec.			260	°C
Cooling		Natural Convection			
Vibration					
MTBF (Calculated)	MIL-HDBK0217F@25°C, Ground Benign	4,226,000			
GENERAL SPECIFICATIONS					
Efficiency		See Table			
Switching Frequency		100			KHz
Isolation Voltage	60 Seconds	1500			VDC
	1 Second	1800			
Isolation Resistance	500VDC	1000			MΩ
Isolation Capacitance	100KHz, 1V		100		pF
PHYSICAL SPECIFICATIONS					
Weight		0.14oz (3.9g)			
Dimensions (L x W x H)		0.55in x 0.55in x 0.31in (14mm x 14mm x 8mm)			
Case Material		Non-Conductive Black Plastic (Flammability to UL 94V-0)			
Pin Material		Tinned Copper			
SAFETY CHARACTERISTICS					
Safety Approvals	UL/cUL 60950-1 Recognition (UL Certificate) ⁽⁷⁾ , IEC/EN 60950-1 (CB-Report)				
EMI	Conduction & Radiation	EN5022, FCC Part 15			Class A, B ⁽⁵⁾
EMS	EN55024				
	ESD	EN61000-4-2	Air ±8kV, Contact ±6kV		A
	Radiated Immunity	EN61000-4-3	10V/m		A
	Fast Transient ⁽⁴⁾	EN61000-4-4 ⁽⁴⁾	±2kV		A
	Surge ⁽⁴⁾	EN61000-4-5 ⁽⁴⁾	±1kV		A
	Conducted Immunity	EN61000-4-6	10Vrms		A
PFMF	EN61000-4-8	3A/M		A	

NOTES

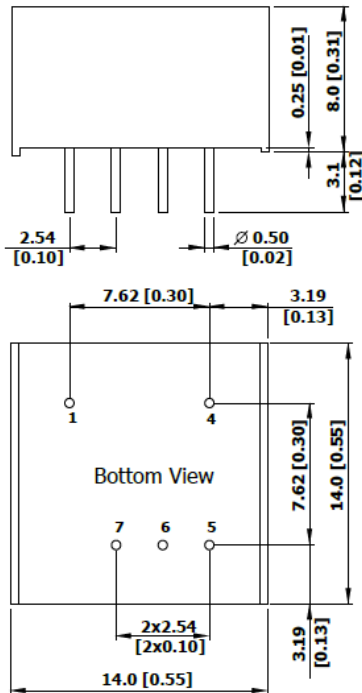
1. # for each output.
2. It is recommended to protect the converter by a slow blow fuse in the input supply line.
3. Other inputs and outputs may be available, please contact factory.
4. To meet EN61000-4-4 & EN61000-4-5 and external capacitor across the input pins is required. Suggested capacitor: 220µF/100V.
5. To meet EN55022 Class A, B an external filter is necessary. Please contact factory.
6. Natural Convection is about 20LFM but is not equal to still air (0 LFM).
7. This product is Listed to applicable standards and requirements by UL.

**Due to advances in technology, specifications subject to change without notice.*

DERATING CURVES



MECHANICAL DRAWINGS



PIN CONNECTIONS

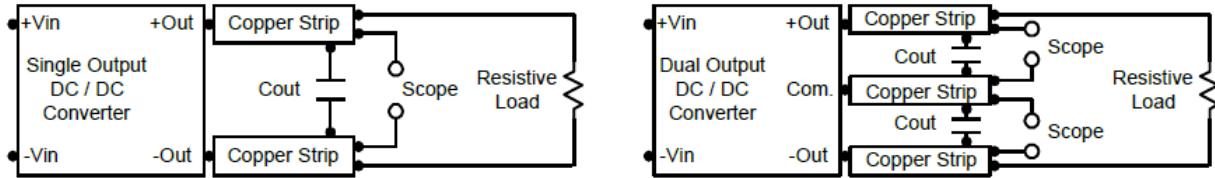
Pin	Single Output	Dual Output
1	-Vin	-Vin
4	+Vin	+Vin
5	+Vout	+Vout
6	No Pin	Common
7	-Vout	-Vout

All dimensions in mm (inches)
 Tolerance: X.X±0.5 (X.XX±0.02)
 X.XX±0.25 (X.XXX±0.01)
 Pin Diameter $\varnothing 0.5 \pm 0.05$ (0.02±0.002)

TEST SETUP

Peak-to-Peak Output Noise Measurement Test

Use a Cout 0.47µF ceramic capacitor. Scope measurement should be made by using a BNC socket, measurement bandwidth is 0-20MHz. Position the load between 50mm and 75mm from the DC/DC converter.



TECHNICAL NOTES

Maximum Capacitive Load

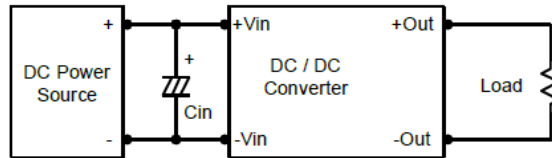
The DCMFW02 series has limitation of maximum connected capacitance at the output. The power module may be operated in current limiting mode during start-up, affecting the ramp-up and the startup time. Maximum capacitance can be found in datasheet.

Overload Protection

To provide protection in a fault (output overload) condition, the unit is equipped with internal current limiting circuitry and can endure current limiting for an unlimited duration. At the point of current-limit inception, the unit shifts from voltage control to current control. The unit operates normally once the output current is brought back into specified range.

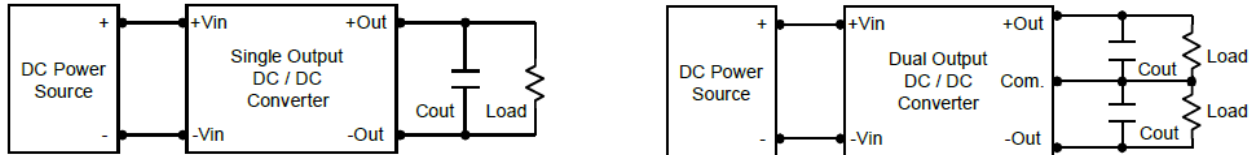
Input Source Impedance

The power module should be connected to a low ac-impedance input source. Highly inductive source impedances can affect the stability of the power module. In applications where power is supplied over long lines and output loading is high, it may be necessary to use a capacitor at the input to ensure startup. Capacitor mounted close to the power module helps ensure the stability of the unit, it is recommended to use a good quality low Equivalent Series Resistance (ESR < 1.0Ω at 100KHz) capacitor of a 8.2µF for the 5V input device, a 3.3µF for the 12V input devices and a 1.5µF for the 24V and 48V devices.



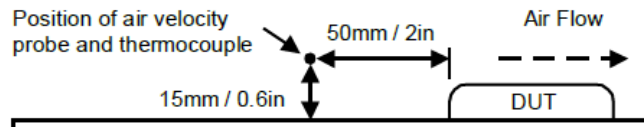
Output Ripple Reduction

A good quality low ESR capacitor placed as close as practically possible across the load will give the best ripple and noise performance. To reduce output ripple, it is recommended to use 3.3µF capacitors at the output.



Thermal Considerations

Many conditions affect the thermal performance of the power module, such as orientation, airflow over the module, and board spacing. To avoid exceeding the maximum temperature rating of the components inside the power module, the case temperature must be kept below 105°C. The derating curves are determined from measurements obtained in a test setup.



COMPANY INFORMATION

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