



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
- Fully Regulated Output Voltage
- No Minimum Load Requirement
- Over Load and Short Circuit Protection
- RoHS and REACH Compliant
- UL/cUL/IEC/EN 60950-1 Safety Approval & CE Marking

DESCRIPTION

The DCMFW03 series of DC/DC converters offers up to 3 watts of output power in an ultra-compact 0.55" x 0.55" x 0.31" DIP-8 package. This series consists of single and dual fully regulated outputs and a wide 2:1 input voltage range. Each model in this series is RoHS and REACH compliant, has over load and short circuit protection, and requires no minimum load. This series has UL/cUL/IEC/EN 60950-1 safety approvals and CE marking.

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				
DCMFW03-05S033	5VDC (4.5~10VDC)	3.3VDC	600mA	501mA	45mA	79%	3 Watts	100µF	70mVp-p
DCMFW03-05S05		5VDC	600mA	741mA		81%			
DCMFW03-05S12		12VDC	250mA	706mA		85%			
DCMFW03-05S15		15VDC	200mA	706mA		85%			
DCMFW03-12S033	12VDC (9~18VDC)	3.3VDC	600mA	206mA	27mA	80%	3 Watts	100µF	70mVp-p
DCMFW03-12S05		5VDC	600mA	301mA		83%			
DCMFW03-12S12		12VDC	250mA	287mA		87%			
DCMFW03-12S15		15VDC	200mA	287mA		87%			
DCMFW03-24S033	24VDC (18~36VDC)	3.3VDC	600mA	103mA	16mA	80%	3 Watts	100µF	70mVp-p
DCMFW03-24S05		5VDC	600mA	151mA		83%			
DCMFW03-24S12		12VDC	250mA	144mA		87%			
DCMFW03-24S15		15VDC	200mA	144mA		87%			
DCMFW03-48S033	48VDC (36~75VDC)	3.3VDC	600mA	600mA	10mA	79%	3 Watts	100µF	70mVp-p
DCMFW03-48S05		5VDC	600mA	600mA		82%			
DCMFW03-48S12		12VDC	250mA	250mA		86%			
DCMFW03-48S15		15VDC	200mA	200mA		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				
DCMFW03-05D05	5VDC (4.5~10VDC)	±5VDC	±300mA	732mA	454mA	82%	3 Watts	100#µF	70mVp-p
DCMFW03-05D12		±12VDC	±125mA	714mA		84%			
DCMFW03-05D15		±15VDC	±100mA	706mA		85%			
DCMFW03-12D05	12VDC (9~18VDC)	±5VDC	±300mA	298mA	27mA	84%	3 Watts	100#µF	70mVp-p
DCMFW03-12D12		±12VDC	±125mA	291mA		86%			
DCMFW03-12D15		±15VDC	±100mA	287mA		87%			
DCMFW03-24D05	24VDC (18~36VDC)	±5VDC	±300mA	149mA	16mA	84%	3 Watts	100#µF	70mVp-p
DCMFW03-24D12		±12VDC	±125mA	145mA		86%			
DCMFW03-24D15		±15VDC	±100mA	144mA		87%			
DCMFW03-48D05	48VDC (36~75VDC)	±5VDC	±300mA	76mA	10mA	82%	3 Watts	100#µF	70mVp-p
DCMFW03-48D12		±12VDC	±125mA	74mA		85%			
DCMFW03-48D15		±15VDC	±100mA	74mA		85%			

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.

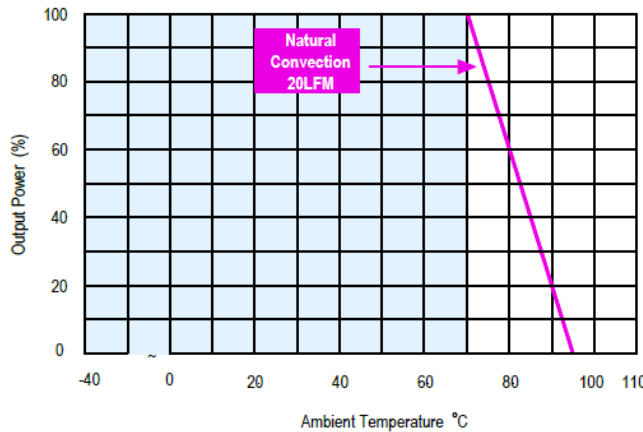
SPECIFICATION	TEST CONDITIONS	Min	Typ	Max	Unit
INPUT SPECIFICATIONS					
Input Voltage Range		See Table			
Input Surge Voltage (1 Sec. Max)	5V Input Models	-0.7		12	VDC
	12V Input Models	-0.7		25	
	24V Input Models	-0.7		50	
	48V Input Models	-0.7		100	
Start-Up Threshold Voltage	5V Input Models			4.5	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 Time	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		170		%
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			
MTBF (Calculated)	MIL-HDBK-217F@25°C, Ground Benign	3,450,000			Hours
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 rated)			
Pin Material		Tinned Copper			
SAFETY CHARACTERISTICS					
Safety Approvals ⁽⁷⁾	UL/cUL 60950-1 Recognition (UL Certificate), IEC/EN60950-1 (CB-Report)				
EMI	Conduction & Radiation	EN55022, 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	EN61000-4-4 ⁽⁴⁾	±2kV		A
	Surge	EN61000-4-5 ⁽⁴⁾	±1kV		A
	Conducted Immunity	EN61000-4-6	10Vrms		A
	PFMF	EN61000-4-8	3A/M		A

NOTES

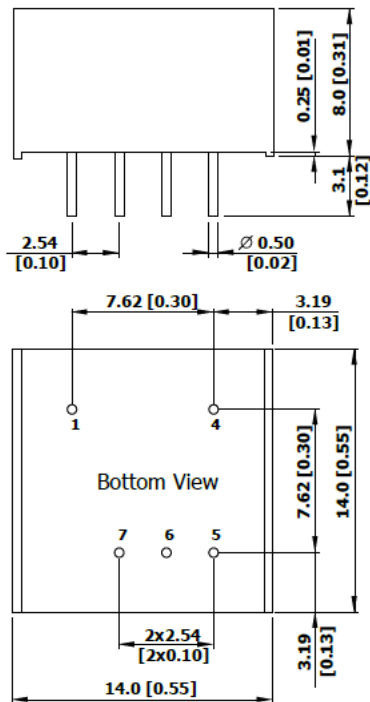
1. # for each output.
2. It is recommended to protect the converter by a slow blow fuse in the input supply line.
3. Other input and output voltages may be available, please contact factory.
4. To meet EN61000-4-4 & EN61000-4-5 an external capacitor across the input pins is required. Suggested capacitor: 220µF/100V.
5. To meet EN55022 Class A, B an external filter, 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

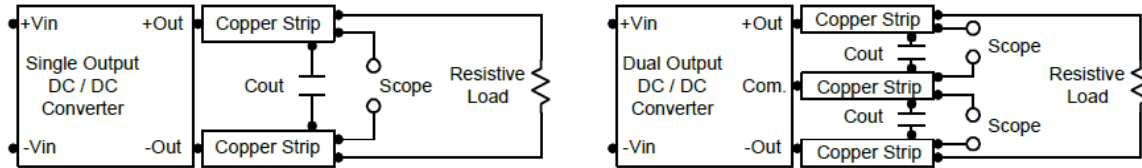
Notes:

All dimensions in mm (inches)
Tolerance: X.X±0.5 (X.XX±0.02)
 X.XX±0.25 (X.XXX±0.01)
Pin Diameter Ø0.5±0.05 (0.02±0.002)

TEST SETUP

Peak-to-Peak Output Noise Measurement Test

Use a C_{out} 0.47 μ F 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

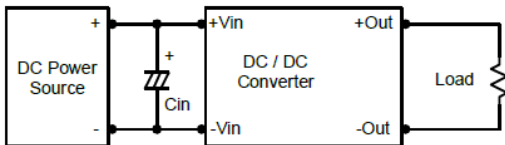
The DCMFW03 series has limitation of maximum connected capacitance at the output. The power module may be operated in current limiting mode during start-up, affecting the ramp-up and the startup time. The maximum capacitance can be found in the data sheet.

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 its specified range.

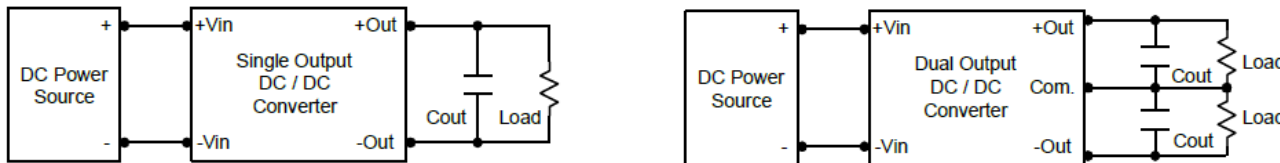
Input Source Impedance

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 stability of the unit, it is recommended to use a good quality low Equivalent Series Resistance (ESR <math><1.0\Omega</math> at 100KHz) capacitor of a 8.2 μ F for the 5V input device, a 3.3 μ F for the 12V input devices and a 1.5 μ F for the 24V and 48V devices.



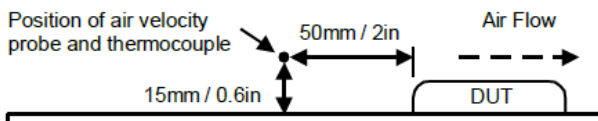
Output Ripple Reduction

A good quality low ESR capacitor placed as close as practicable across the load will give the best ripple and noise performance. To reduce output ripple, it is recommended to use 3.3 μ F 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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