

Size: 0.45in x 0.30in x 0.40in (11.5mm x 7.55mm x 10.2mm)

**FEATURES**

- Industrial Standard SIP-3 Package
- Fully Regulated Output Voltage
- Low Ripple & Noise
- High Efficiency up to 97%
- Short Circuit and Over Temperature Protection
- No Minimum Load Requirement
- RoHS & REACH Compliant

**DESCRIPTION**

The DCMAR05 series of DC/DC switching regulators offers 0.5A output current in a compact 0.45" x 0.30" x 0.40" standard SIP-3 package. This series consists of fully regulated single output models with high efficiency and low ripple & noise. Each model in this series has short circuit and over temperature protection, no minimum load requirement, and is RoHS & REACH compliant. Please contact factory for order details.

**MODEL SELECTION TABLE**

Model Number	Input Voltage Range <sup>(1)</sup>	Output Voltage	Max. Output Current	Ripple & Noise	Max. Line Regulation	Max. Load Regulation	Maximum Capacitive Load	Typ. Efficiency	
								@Min. Vin.	@Max. Vin
DCMAR05-015	4.75~32VDC	1.5VDC	500mA	30mVp-p	±0.4%	±0.6%	220µF	73%	63%
DCMAR05-018		1.8VDC	500mA	30mVp-p	±0.4%	±0.6%	220µF	82%	71%
DCMAR05-025		2.5VDC	500mA	30mVp-p	±0.4%	±0.6%	220µF	87%	77%
DCMAR05-033		3.3VDC	500mA	30mVp-p	±0.4%	±0.6%	220µF	91%	81%
DCMAR05-05	6.5~32VDC	5VDC	500mA	30mVp-p	±0.4%	±0.6%	220µF	94%	86%
DCMAR05-065	8~32VDC	6.5VDC	500mA	30mVp-p	±0.4%	±0.6%	220µF	95%	88%
DCMAR05-09	11~32VDC	9VDC	500mA	40mVp-p	±0.2%	±0.4%	220µF	96%	92%
DCMAR05-12	15~32VDC	12VDC	500mA	40mVp-p	±0.2%	±0.4%	220µF	97%	94%
DCMAR05-15	18~32VDC	15VDC	500mA	40mVp-p	±0.2%	±0.4%	220µF	97%	95%

**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
<b>INPUT SPECIFICATIONS</b>					
Input Voltage Range		See Table			
Input Surge Voltage	1 sec. max	-0.3		34	VDC
Input Current	@No Load		5		mA
Input Filter	All Models	Internal Capacitor			
Internal Filter Type		Capacitor			
Short Circuit Input Power				1.5	W
<b>OUTPUT SPECIFICATIONS</b>					
Output Voltage		See Table			
Voltage Accuracy			±2.0	±3.0	%Vnom.
Line Regulation	Vin=Min. to Max. @Full Load		±0.2	±0.4	%
Load Regulation	Io=10% to 100%		±0.1	±0.2	%
			±0.4	±0.6	
			±0.25	±0.4	%
Output Current		See Table			
Minimum Load		No Minimum Load Requirement			
Maximum Capacitive Load		See Table			
Ripple & Noise	0-20MHz Bandwidth	See Table			
Transient Recovery Time	50% Load Step Change		100		µsec
Transient Response Deviation	50% Load Step Change		±2		%
Temperature Coefficient				±0.015	%/°C
<b>PROTECTION</b>					
Short Circuit Protection		Continuous, Automatic Recovery			
Over Temperature Protection		Yes			

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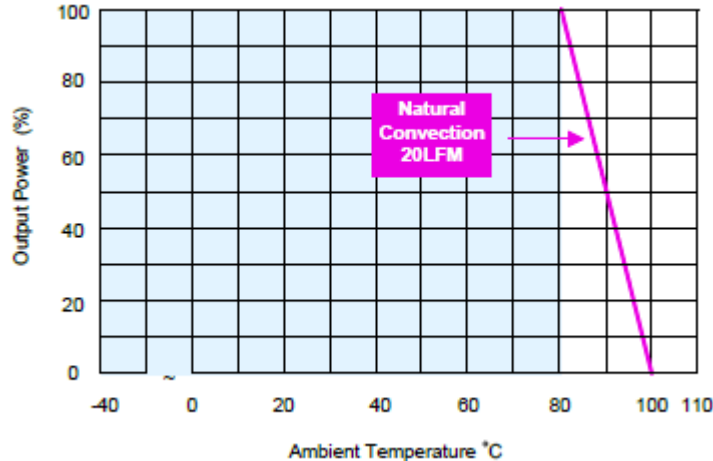
SPECIFICATION		TEST CONDITIONS	Min	Typ	Max	Unit
<b>ENVIRONMENTAL SPECIFICATIONS</b>						
Operating Ambient Temperature	Natural Convection		-40		+90	°C
Storage Temperature			-55		+125	°C
Case Temperature					+100	°C
Humidity	Non Condensing				95	%RH
Thermal Shutdown	Internal IC Junction			160		°C
Cooling <sup>(4)</sup>				Natural Convection		
Lead-Free Reflow Solder Process	1.5mm from case for 10sec				260	°C
MTBF (Calculated)	MIL-HDBK-217F@25°C, Ground Benign			2,000,000		Hours
<b>GENERAL SPECIFICATIONS</b>						
Typical Efficiency				See Table		
Switching Frequency			280	330	380	KHz
<b>PHYSICAL SPECIFICATIONS</b>						
Weight			0.069oz (1.95g)			
Dimensions (L x W x H)			0.45in x 0.30in x 0.40in (11.5mm x 7.55mm x 10.2mm)			
Case Material			Non-Conductive Black Plastic (Flammability to UL94V-0 rated)			
Pin Material			Alloy 42			
<b>SAFETY CHARACTERISTICS</b>						
EMI	Radiation without adding external components		EN55022, FCC Part 15			Class B
	Conduction with external components					
EMS	ESD		EN61000-4-2 Air±8kV			A
	Radiated Immunity		EN61000-4-3 3V/m			A
	Fast Transient <sup>(5)</sup>		EN61000-4-4 ±0.5kV			A
	Conducted Immunity		EN61000-4-6 3Vrms			A
	PFMF		EN61000-4-8 3A.m			A

**NOTES**

1. With an input capacitor 22µF/50V for input voltage >28VDC, input voltage allows 32VDC, max.
2. Other input and output voltages may be available, please contact factory.
3. It is recommended to protect the converter by a slow blow fuse in the input supply line.
4. Natural Convection is about 20LFM but is not equal to still air (0LFM).
5. This series can meet EN61000-4-4 by adding a capacitor across the input pins. Suggested capacitor: CHEMI-CON KY 330µF/100V.

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

**DERATING CURVES**



MECHANICAL DRAWINGS

**Pin Connections**

Pin	Function
1	+Vin
2	GND
3	+Vout

**Notes:**  
All dimensions in mm (inches)  
Tolerance: X.X±0.5 (X.XX±0.02)  
          X.XX±0.25 (X.XXX±0.01)  
Pins ±0.05 (±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 0-20MHz. Position the load between 50mm and 75mm from the DC/DC converter.

TECHNICAL NOTES

**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 3.3µF capacitors at the output.

**Maximum Capacitive Load**

The DCMAR05 series has limitation of maximum connected capacitance on the output. The power module may operate in current limiting mode during start-up, affecting the ramp-up and the startup time. Maximum capacitance can be found in the data sheet.

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## COMPANY INFORMATION

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