

**FEATURES**

- ▶ Very high Power Density
- ▶ Small SIP-8 Package: 21.8 x 9.3 x 11.2 mm
- ▶ Ultra-wide 4:1 Input Voltage Range
- ▶ Fully regulated Single- and Dual-Output Models
- ▶ No Min. Load Requirement
- ▶ Low Stand-by Power Consumption
- ▶ Operating Temp.Range -40°C to +75°C
- ▶ I/O- Isolation 1500VDC
- ▶ Remote ON/OFF Control
- ▶ Safety Approval to UL/cUL/IEC/EN 60950-1
- ▶ 3 Years Product Warranty



**PRODUCT OVERVIEW**

The MINMAX MCWI05 series is a new range of isolated 5W DC/DC converter modules featuring fully regulated output voltages and ultra-wide 4:1 input voltage ranges. The converters come in a very small SIP-8 package which occupies only 2.0 cm<sup>2</sup> of PCB space. An excellent efficiency allows operating temperatures up to +65°C without power derating. Further features include remote ON/OFF.

The very low stand-by power consumption makes these converter modules an ideal solution for applications in battery powered equipment and instrumentation.

**Model Selection Guide**

Model Number	Input Voltage (Range) VDC	Output Voltage VDC	Output Current		Input Current		Max. capacitive Load μF	Efficiency (typ.) @Max. Load %
			Max. mA	@Max. Load mA(typ.)	@No Load mA(typ.)			
MCWI05-12S033	12 (4.5 ~ 18)	3.3	1075	389	60	1000	76	
MCWI05-12S05		5	1000	514		1000	81	
MCWI05-12S12		12	417	502		220	83	
MCWI05-12S15		15	334	503		100	83	
MCWI05-12S24		24	209	510		100	82	
MCWI05-12D12		±12	±209	516		100#	81	
MCWI05-12D15		±15	±167	509		47#	82	
MCWI05-24S033	24 (9 ~ 36)	3.3	1075	194	30	1000	76	
MCWI05-24S05		5	1000	257		1000	81	
MCWI05-24S12		12	417	251		220	83	
MCWI05-24S15		15	334	249		100	84	
MCWI05-24S24		24	209	252		100	83	
MCWI05-24D12		±12	±209	255		100#	82	
MCWI05-24D15		±15	±167	255		47#	82	
MCWI05-48S033	48 (18 ~ 75)	3.3	1075	97	20	1000	76	
MCWI05-48S05		5	1000	130		1000	80	
MCWI05-48S12		12	417	126		220	83	
MCWI05-48S15		15	334	124		100	84	
MCWI05-48S24		24	209	127		100	82	
MCWI05-48D12		±12	±209	127		100#	82	
MCWI05-48D15		±15	±167	126		47#	83	

# For each output

**Input Specifications**

Parameter	Model	Min.	Typ.	Max.	Unit
Input Surge Voltage (1 sec. max.)	12V Input Models	-0.7	---	36	VDC
	24V Input Models	-0.7	---	50	
	48V Input Models	-0.7	---	100	
Start-Up Threshold Voltage	12V Input Models	---	---	4.5	
	24V Input Models	---	---	9	
	48V Input Models	---	---	18	
Under Voltage Shutdown	12V Input Models	---	---	4	
	24V Input Models	---	---	8	
	48V Input Models	---	---	16	
Short Circuit Input Power	All Models	---	---	2500	mW
Internal Filter Type		Capacitor type			

**Output Specifications**

Parameter	Conditions	Min.	Typ.	Max.	Unit
Output Voltage Setting Accuracy		---	---	±2.0	%Vnom.
Output Voltage Balance	Dual Output, Balanced Loads	---	±1.0	±2.0	%
Line Regulation	Vin=Min. to Max. @Full Load	---	±0.3	±0.5	%
Load Regulation	Io=0% to 100%	---	±0.5	±1.0	%
Minimum Load	No minimum Load Requirement				
Ripple & Noise	0-20 MHz Bandwidth	---	---	100	mV <sub>P-P</sub>
Transient Recovery Time	25% Load Step Change	---	500	---	µsec
Transient Response Deviation		---	±3	±5	%
Temperature Coefficient		---	±0.01	±0.02	%/°C
Output Short Circuit	Continuous				

**General Specifications**

Parameter	Conditions	Min.	Typ.	Max.	Unit
I/O Isolation Voltage	60 Seconds	1500	---	---	VDC
I/O Isolation Resistance	500 VDC	1000	---	---	MΩ
I/O Isolation Capacitance	100KHz, 1V	---	250	---	pF
Switching Frequency		100	---	---	KHz
MTBF (calculated)	MIL-HDBK-217F@25°C, Ground Benign	2,400,000			Hours
Safety Approvals(pending)	UL/cUL 60950-1 recognition (CSA certificate), IEC/EN 60950-1(CB-report)				

**Remote On/Off Control**

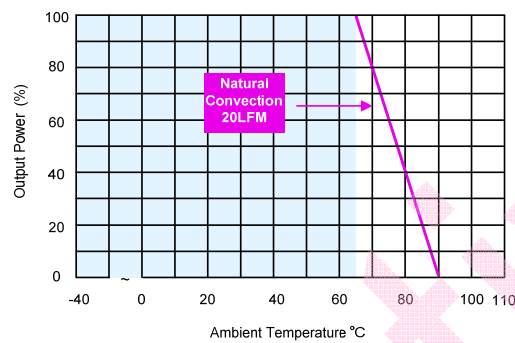
Parameter	Conditions	Min.	Typ.	Max.	Unit
Converter On	Open or high impedance				
Converter Off	2~4mA current applied via 1Kohm resistor				
Standby Input Current	Supply Off & Nominal Vin	---	2.5	---	mA

**Environmental Specifications**

Parameter	Conditions	Min.	Max.	Unit
Operating Ambient Temperature Range (See Power Derating Curve)	Natural Convection	-40	+75	°C
Case Temperature		---	+90	°C
Storage Temperature Range		-55	+125	°C
Humidity (non condensing)		---	95	% rel. H
Cooling	Free-Air convection			
Lead Temperature (1.5mm from case for 10Sec.)		---	260	°C

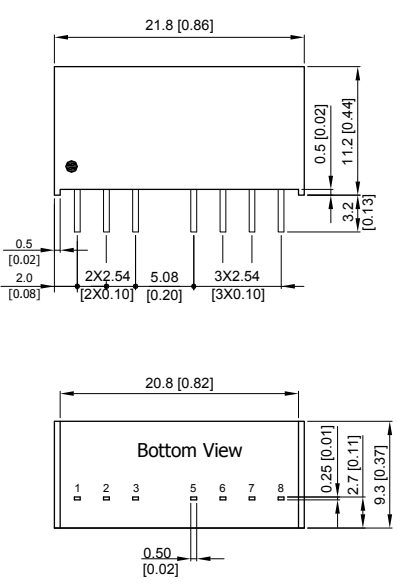
**EMC Specifications**

Parameter	Standards & Level	Performance	
EMI	EN55022, FCC part 15	Class A (See Page 4)	
EMS	EN55024		
	ESD	EN61000-4-2 air $\pm$ 8kV , Contact $\pm$ 6kV	A
	Radiated immunity	EN61000-4-3 10V/m	A
	Fast transient (5)	EN61000-4-4 $\pm$ 2kV	A
	Surge (5)	EN61000-4-5 $\pm$ 1kV	A
	Conducted immunity	EN61000-4-6 10Vrms	A

**Power Derating Curve**

**Notes**

- Specifications typical at Ta=+25°C, resistive load, nominal input voltage and rated output current unless otherwise noted.
- Transient recovery time is measured to within 1% error band for a step change in output load of 75% to 100%.
- We recommend to protect the converter by a slow blow fuse in the input supply line.
- Other input and output voltage may be available, please contact factory.
- To meet EN61000-4-4 & EN61000-4-5 an external capacitor across the input pins is required. Suggested capacitor: TBD
- That "natural convection" is about 20LFM but is not equal to still air (0 LFM).
- Specifications are subject to change without notice.

**Package Specifications**

Mechanical Dimensions		Pin Connections																									
		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Pin</th> <th>Single Output</th> <th>Dual Output</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-Vin</td> <td>-Vin</td> </tr> <tr> <td>2</td> <td>+Vin</td> <td>+Vin</td> </tr> <tr> <td>3</td> <td>Remote On/Off</td> <td>Remote On/Off</td> </tr> <tr> <td>5</td> <td>NC</td> <td>NC</td> </tr> <tr> <td>6</td> <td>+Vout</td> <td>+Vout</td> </tr> <tr> <td>7</td> <td>-Vout</td> <td>Common</td> </tr> <tr> <td>8</td> <td>NC</td> <td>-Vout</td> </tr> </tbody> </table>		Pin	Single Output	Dual Output	1	-Vin	-Vin	2	+Vin	+Vin	3	Remote On/Off	Remote On/Off	5	NC	NC	6	+Vout	+Vout	7	-Vout	Common	8	NC	-Vout
Pin	Single Output	Dual Output																									
1	-Vin	-Vin																									
2	+Vin	+Vin																									
3	Remote On/Off	Remote On/Off																									
5	NC	NC																									
6	+Vout	+Vout																									
7	-Vout	Common																									
8	NC	-Vout																									
		NC: No Connection  ▶ All dimensions in mm (inches) ▶ Tolerance: X.X±0.5 (X.XX±0.02) X.XX±0.25 (X.XXX±0.01) ▶ Pins ±0.1(±0.004)																									

**Physical Characteristics**

Case Size	: 21.8x9.3x11.2 mm (0.86x0.37x0.44 inches)
Case Material	: Non-Conductive Black Plastic (flammability to UL 94V-0 rated)
Pin Material	: Alloy 42
Weight	: 4.8g

**Recommended Filter for EN 55022, class A, FCC part 15 ,level A Compliance**

TBD
-----