

FEATURES

- ▶ High Power Density in SIP-8 Package
- ▶ Small Footprint: 21.8 x 9.3 mm (0.86" x 0.37")
- ▶ Ultra-wide 4:1 Input Ranges
- ▶ Fully regulated Output
- ▶ Operating Temp. Range -40° to +90°C
- ▶ Overload Protection
- ▶ I/O-isolation 1500 VDC
- ▶ Remote On/Off Control
- ▶ 3 Years Product Warranty



PRODUCT OVERVIEW

The MINMAX MCWI02 series is a range of isolated 2W DC/DC converter modules featuring fully regulated output and ultra-wide 4:1 input voltage ranges. The product comes in a SIP-8 package with a very small footprint occupying only 2.0 cm² (0.32 square in.) on the PCB.

An excellent efficiency allows an operating temperature range up to 75°C at full load. Further features include remote On/Off control and over load protection.

The very compact dimensions of these DC/DC converters make them an ideal solution for many space critical 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.)			
MCWI02-12S033	12 (4.5 ~ 18)	3.3	500	183	60	1000	75	
MCWI02-12S05		5	400	208		1000	80	
MCWI02-12S12		12	167	204		170	82	
MCWI02-12S15		15	134	204		110	82	
MCWI02-12D05		±5	±200	208		470#	80	
MCWI02-12D12		±12	±83	202		100#	82	
MCWI02-12D15		±15	±67	204		47#	82	
MCWI02-24S033	24 (9 ~ 36)	3.3	500	92	30	1000	75	
MCWI02-24S05		5	400	104		1000	80	
MCWI02-24S12		12	167	102		170	82	
MCWI02-24S15		15	134	102		110	82	
MCWI02-24D05		±5	±200	104		470#	80	
MCWI02-24D12		±12	±83	101		100#	82	
MCWI02-24D15		±15	±67	102		47#	82	
MCWI02-48S033	48 (18 ~ 75)	3.3	500	46	20	1000	74	
MCWI02-48S05		5	400	52		1000	80	
MCWI02-48S12		12	167	51		170	82	
MCWI02-48S15		15	134	51		110	82	
MCWI02-48D05		±5	±200	52		470#	80	
MCWI02-48D12		±12	±83	51		100#	82	
MCWI02-48D15		±15	±67	51		47#	82	

For each output

Input Specifications

Parameter	Model	Min.	Typ.	Max.	Unit
Input Surge Voltage (1 sec. max.)	12V Input Models	-0.7	---	25	VDC
	24V Input Models	-0.7	---	50	
	48V Input Models	-0.7	---	100	
Start-Up Threshold Voltage	12V Input Models	3	4	4.5	
	24V Input Models	4.5	6	8.5	
	48V Input Models	8.5	12	17	
Under Voltage Shutdown	12V Input Models	---	---	4	
	24V Input Models	---	---	8	
	48V Input Models	---	---	16	
Reverse Polarity Input Current	All Models	---	---	0.5	A
Short Circuit Input Power		---	---	1500	mW
Internal Filter Type		Capacitor type			
Internal Power Dissipation		---	---	2500	mW

Output Specifications

Parameter	Conditions	Min.	Typ.	Max.	Unit
Output Voltage Setting Accuracy	At 50% Load and Nominal Vin	---	---	±2.0	%Vnom.
Output Voltage Balance	Dual Output, Balanced Loads	---	±1.0	±2.0	%
Line Regulation	Vin=Min. to Max.	---	±0.3	±0.5	%
Load Regulation	Io=0% to 100%	---	±0.5	±1	%
Min.Load	No minimum Load Requirement				
Ripple & Noise (20MHz)		---	50	100	mV _{P-P}
Transient Recovery Time	25% Load Step Change	---	300	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 (rated)	60 Seconds	1500	---	---	VDC
I/O Isolation Resistance	500 VDC	1000	---	---	MΩ
I/O Isolation Capacitance	100KHz, 1V	---	250	500	pF
Switching Frequency		---	300	---	KHz
MTBF (Calculated)	MIL-HDBK-217F@25°C, Ground Benign	1,000,000	---	---	Hours

Input Fuse

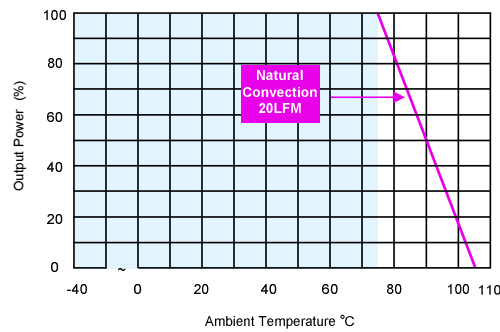
12V Input Models	24V Input Models	48V Input Models
750mA Slow-Blow Type	350mA Slow-Blow Type	135mA Slow-Blow Type

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

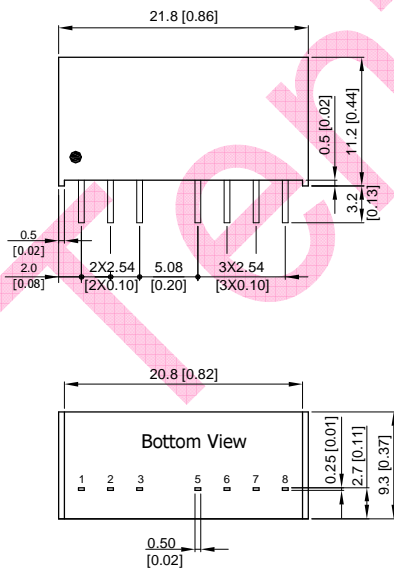
Parameter	Conditions	Min.	Max.	Unit
Operating Ambient Temperature Range (See Power Derating Curve)	Natural Convection	-40	+90	°C
Case Temperature		---	+105	°C
Storage Temperature Range		-55	+125	°C
Humidity (non condensing)		---	95	% rel. H
Cooling	Free-Air convection			
Lead Temperature (1.5mm from case for 10Sec.)		---	260	°C

Power Derating Curve

Notes

- 1 Specifications typical at $T_a=+25^{\circ}\text{C}$, resistive load, nominal input voltage and rated output current unless otherwise noted.
- 2 Transient recovery time is measured to within 1% error band for a step change in output load of 75% to 100%.
- 3 Ripple & Noise measurement bandwidth is 0-20 MHz.
- 4 All DC/DC converters should be externally fused at the front end for protection.
- 5 Other input and output voltage may be available, please contact factory.
- 6 That "natural convection" is about 20LFM but is not equal to still air (0 LFM).
- 7 Specifications are subject to change without notice.

Package Specifications

Mechanical Dimensions



Pin Connections

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: $X.X\pm 0.5$ ($X.XX\pm 0.02$)
 $X.XX\pm 0.25$ ($X.XXX\pm 0.01$)
- ▶ 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	: 4.66g