MJWI20 Series

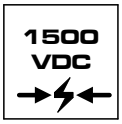
20W, Ultra-Wide Input Range, Single & Dual Output DC/DC Converters

RoHS Compliant

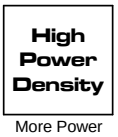
Key Features

- 20 Watts Maximum Output Power
- Single Output Up To 4.5A
- Over Voltage Protection
- 1" x 1" x 0.4" Shielded Metal Package
- Efficiency up to 90%
- 1500VDC Isolation
- 4:1 Ultra Wide Input Range
- Complies with EN55022 Class A
- Remote On/Off Control
- Soft Start

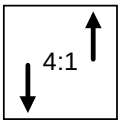
EN55022



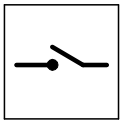
I/O Isolation



More Power



Wide Range


Remote on/off

Protection

Minmax's MJWI20 series, comprising 12 different models, specially addressing data communication equipments, mobile battery driven equipments, distributed power systems, telecommunication equipments, mixed analog/digital subsystems, process/machine control equipments, computer peripheral systems and industrial robot systems.

Packing up to 20W of power into a 1x1x0.4 inch package, with efficiency as high as 90%, the MJWI20 has wide input ranges of 9−36VDC and 18−75VDC and is available in output voltages of 3.3V, 5V, 12V, 15V, ±12V and ±15VDC.

Other features include continuous short circuit protection, overvoltage protection, remote on/off, six−sided shielded case, and EN55022 Class A conducted noise compliance minimize design−in time, cost and eliminate the need for external filtering.

Absolute Maximum Ratings

Parameter		Min.	Max.	Unit
Input Surge Voltage (1000 mS)	24VDC Input Models	−0.7	50	VDC
	48VDC Input Models	−0.7	100	VDC
Lead Temperature (1.5mm from case for 10 Sec.)		−−−	260	℃

Exceeding the absolute maximum ratings of the unit could cause damage. These are not continuous operating ratings.

Environmental Specifications

Parameter	Conditions	Min.	Max.	Unit
Operating Temperature	Ambient	−40	+55	℃
Operating Temperature	Case	−40	+105	℃
Storage Temperature		−50	125	℃
Humidity		−−−	95	%
Cooling	Free−Air Convection			
RFI	Six−Sided Shielded, Metal Case			
Conducted EMI	EN55022 Class A			

Model Selection Guide

Model Number	Input Voltage	Output Voltage	Output Current		Input Current		Reflected Ripple Current	Over Voltage Protection	Efficiency	
			Max.	Min.	@Max. Load	@No Load			@Max. Load	
	VDC	VDC	mA	mA	mA (Typ.)	mA (Typ.)	mA (Typ.)	VDC (Typ.)	% (Typ.)	
MJWI20−24S033	24 (9 ~ 36)	3.3	4500	0	1390	80	50	3.9	89	@12Vin
MJWI20−24S05		5	4000	0	1852	90		6.2	90	
MJWI20−24S12		12	1670	0	1877	40		15	89	
MJWI20−24S15		15	1340	0	1882	40		18	89	
MJWI20−24D12		±12	±835	±60	1877	40		±15	89	
MJWI20−24D15		±15	±670	±50	1882	40		±18	89	
MJWI20−48S033	48 (18 ~ 75)	3.3	4500	0	695	40	30	3.9	89	@24Vin
MJWI20−48S05		5	4000	0	926	45		6.2	90	
MJWI20−48S12		12	1670	0	938	25		15	89	
MJWI20−48S15		15	1340	0	930	25		18	90	
MJWI20−48D12		±12	±835	±60	938	25		±15	89	
MJWI20−48D15		±15	±670	±50	941	25		±18	89	

Capacitive Load

Models by Vout	3.3V	5V	12V	15V	±12V #	±15V #	Unit
Maximum Capacitive Load	10300	6800	1200	750	680	380	uF

 # For each output

Input Fuse Selection Guide

24V Input Models	48V Input Models
5000mA Slow − Blow Type	2500mA Slow − Blow Type

Input Specifications

Parameter	Model	Min.	Typ.	Max.	Unit
Start Voltage	24V Input Models	−−−	−−−	9	VDC
	48V Input Models	−−−	−−−	18	
Input Filter	All Models	LC Filter			

Output Specifications

Parameter	Conditions			Min.	Typ.	Max.	Unit
Output Voltage Accuracy				---	---	±1.0	%
Output Voltage Balance	Dual Output, Balanced Loads			---	---	±2.0	%
Line Regulation	Vin=Min. to Max.	Single Output		---	---	±0.2	%
		Dual Output		---	---	±0.5	%
Load Regulation	Min. Load to Full Load	Single Output	3.3V & 5V	---	---	±0.5	%
			12V & 15V	---	---	±0.2	%
		Dual Output		---	---	±1.0	%
Ripple & Noise (20MHz)	3.3V & 5V Models			---	75	---	mV P-P
Ripple & Noise (20MHz)	12V & 15V Models			---	100	---	mV P-P
Ripple & Noise (20MHz)	Dual Output Models			---	100	---	mV P-P
Over Power Protection				---	150	---	%
Transient Recovery Time	25% Load Step Change			---	300	---	uS
Temperature Coefficient				---	---	±0.02	%/°C
Output Short Circuit	Hiccup Automatic Recovery						

General Specifications

Parameter	Conditions	Min.	Typ.	Max.	Unit
Isolation Voltage Rated	60 Seconds	1500	---	---	VDC
Isolation Voltage Test	Flash Tested for 1 Second	1650	---	---	VDC
Isolation Resistance	500VDC	1000	---	---	MΩ
Isolation Capacitance	100KHz,1V	---	---	1500	pF
Switching Frequency		---	330	---	KHz
MTBF	MIL-HDBK-217F @ 25°C, Ground Benign	346	---	---	K Hours

Remote On/Off Control

Parameter	Conditions	Min.	Typ.	Max.	Unit
DC/DC On	3.5V~12V or Open Circuit				
DC/DC Off	0V~1.2V or Short Circuit				
Control Input Current (on)	Vctrl = 5.0V	---	---	0.5	mA
Control Input Current (off)	Vctrl = 0V	---	---	-0.5	mA
Control Common	Referenced to Negative Input				
Standby Input Current	Supply Off & Nominal Vin	---	10	---	mA

Output Voltage Trim

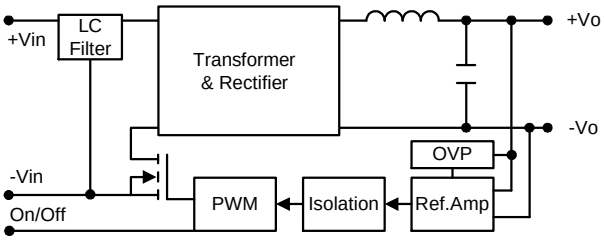
Parameter	Conditions	Min.	Typ.	Max.	Unit
Trim Up / Down Range	% of nominal output voltage	±10	---	---	%

Notes :

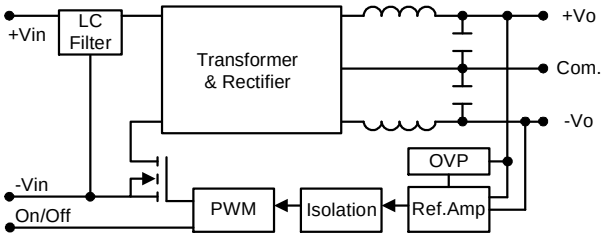
1. Specifications typical at Ta=+25°C, resistive load, nominal input voltage, rated output current unless otherwise noted.
2. Transient recovery time is measured to within 1% error band for a step change in output load of 75% to 100%.
3. Ripple & Noise measurement bandwidth is 20 MHz, measured with a 1uF M/C and a 10uF T/C.
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. Specifications subject to change without notice.

Block Diagram

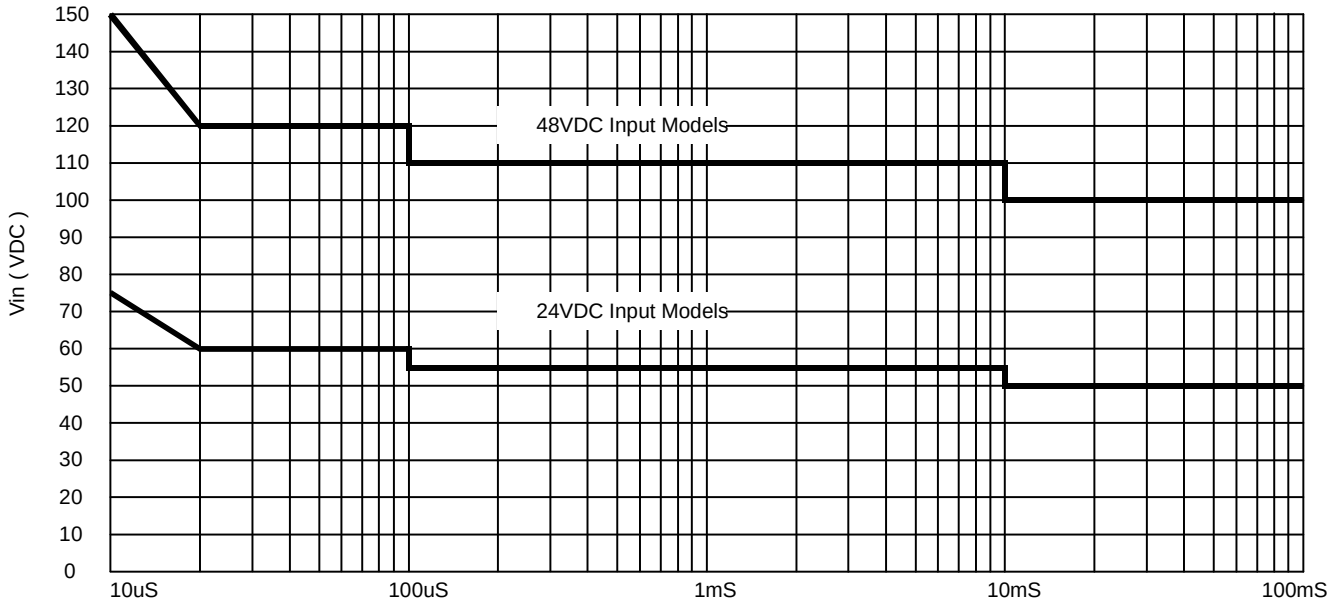
Single Output

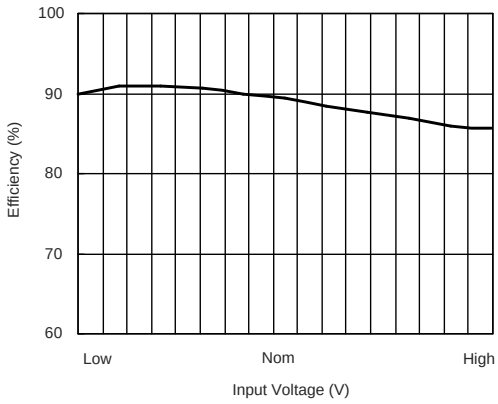


Dual Output

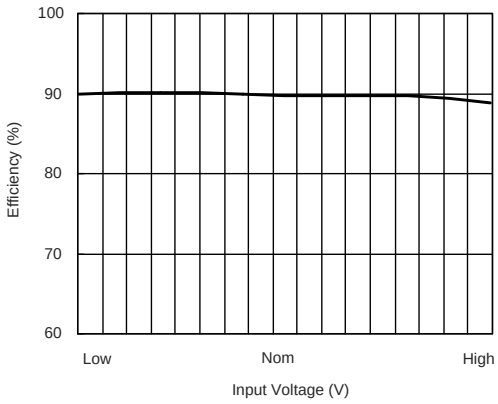


Input Voltage Transient Rating

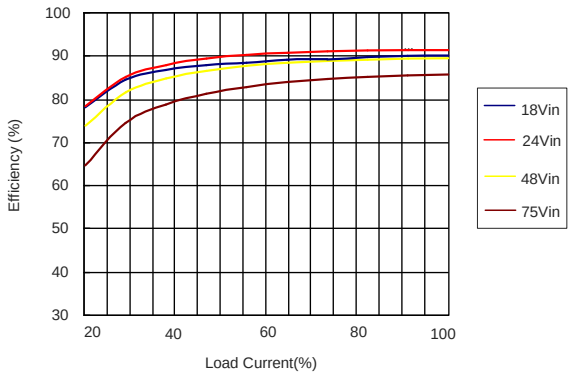




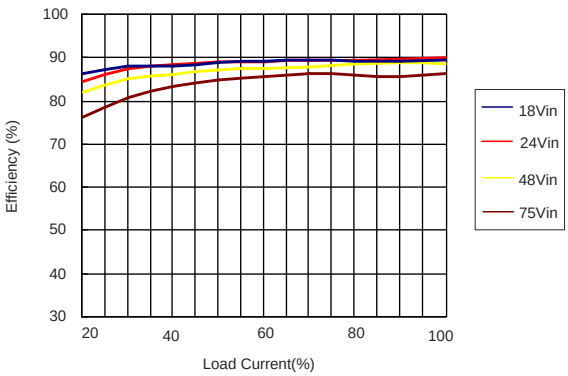
Efficiency vs Input Voltage (Single Output)



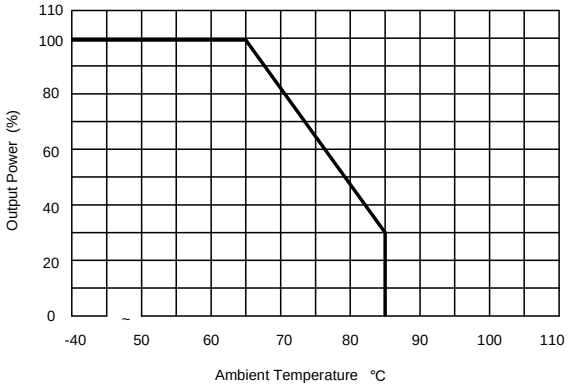
Efficiency vs Input Voltage (Dual Output)



Efficiency vs Output Load (Single Output)

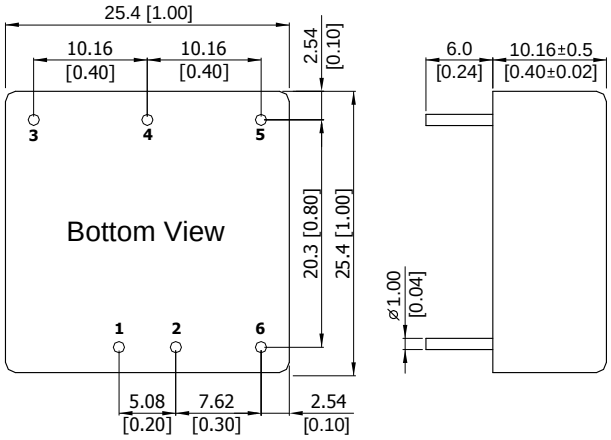


Efficiency vs Output Load (Dual Output)



Derating Curve without Heatsink (MJWI20-48S05)

Mechanical Dimensions

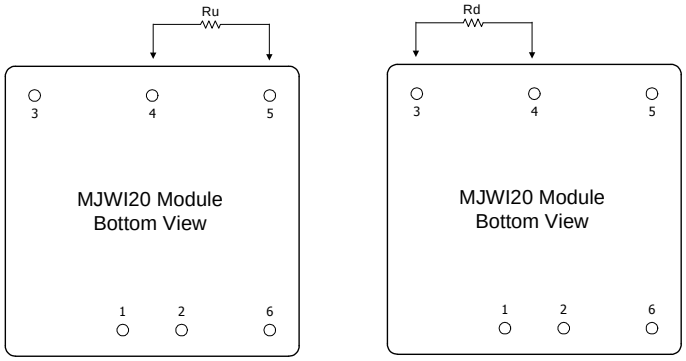


Tolerance	Millimeters	Inches
	X.X±0.25	X.XX±0.01
	X.XX±0.13	X.XXX±0.005
Pin	±0.05	±0.002

Physical Characteristics

Case Size	:	25.4×25.4×10.16 mm 1.0×1.0×0.4 inches
Case Material	:	Metal With Non−Conductive Baseplate
Weight	:	15g
Flammability	:	UL94V−0

EXTERNAL OUTPUT TRIMMING
Output can be externally trimmed by using the method shown below



Trim Up

Trim Down

Pin Connections

Pin	Single Output	Dual Output
1	+Vin	+Vin
2	−Vin	−Vin
3	+Vout	+Vout
4	Trim	Common
5	−Vout	−Vout
6	Remote On/Off	Remote On/Off