

## MWS SERIES - 20 WATT

### DESCRIPTION

MWS DC/DC converters provide up to 20 watts of output power in an industry-standard package and footprint. The MWS is available in either 24V or 48V input versions. With a maximum case temperature of 100°C, the MWS is well suited for the most demanding telecom, networking, and industrial applications. The MWS features 1500 VDC isolation, short circuit, and overtemperature protection.



### FEATURES

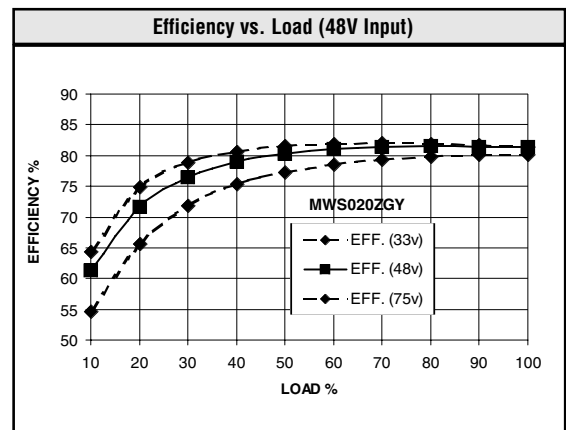
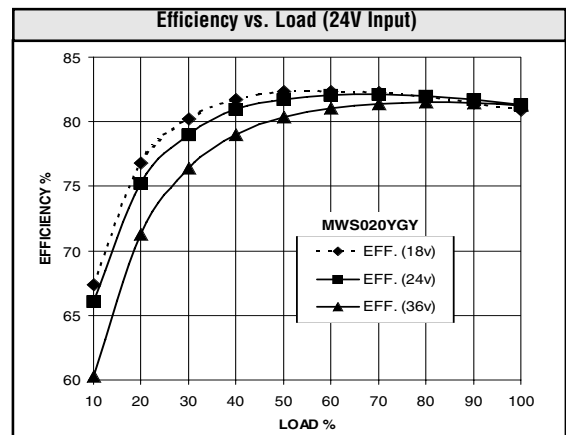
- 20W Standard Package
- 100°C Case Operation
- 3.3V Output Available
- Integrated Heatsink
- Enable and Trim Pins
- Wide Range Input Voltage
- 1500V Isolation
- Short Circuit Protection

### TECHNICAL SPECIFICATIONS

Input	
24 VDC Nominal	18 - 36 VDC
48 VDC Nominal	33 - 75 VDC
Input Undervoltage Lockout	<33V or <18V
UVLO Hysteresis	1V Nominal
Reflected Ripple	50 mA
Input Reverse Voltage Protection	Shunt Diode

Output	
Setpoint Accuracy	±1.0%
Line regulation $V_{in}$ Min. - $V_{in}$ Max., $I_{out}$ Rated	0.2% $V_{out}$
Load Regulation $I_{out}$ Min. - $I_{out}$ Max., $V_{in}$ Nom.	0.5% $V_{out}$
Minimum Output Current	5 %
Dynamic Regulation, Loadstep	25% $I_{out}$
Pk Deviation	4% $V_{out}$
Settling Time	500 $\mu$ s
Voltage Trim Range	±10%
Short Circuit / Overcurrent Protection	Shutdown / Hiccup
Current Limit Threshold Range, % of $I_{out}$ Rated	110 - 140%

General	
Turn-On Time, Max.	175 ms Max.
Remote Shutdown	Positive Logic
Switching Frequency	450 kHz
Isolation	
Input - Output	1500 VDC
Temperature Coefficient	0.015%/°C
Case Temperature	
Operating Range	-40 To +100°C
Storage Range	-40 To +105°C
Humidity Max., Non-Condensing	95%
Vibration, 3 Axes, 5 Min Each	5 g, 10 - 55 Hz
MTBF† (Bellcore TR-NWT-000332)	1.9 x 10 <sup>6</sup> hrs
Safety	UL, cUL, TUV
Weight (approx.)	1.2 oz



Notes
† MTBF predictions may vary slightly from model to model.
Specifications typically at 25°C, normal line, and full load, unless otherwise stated.
Soldering Conditions: I/O pins, 260°C, ten seconds; fully compatible with commercial wave-soldering equipment.

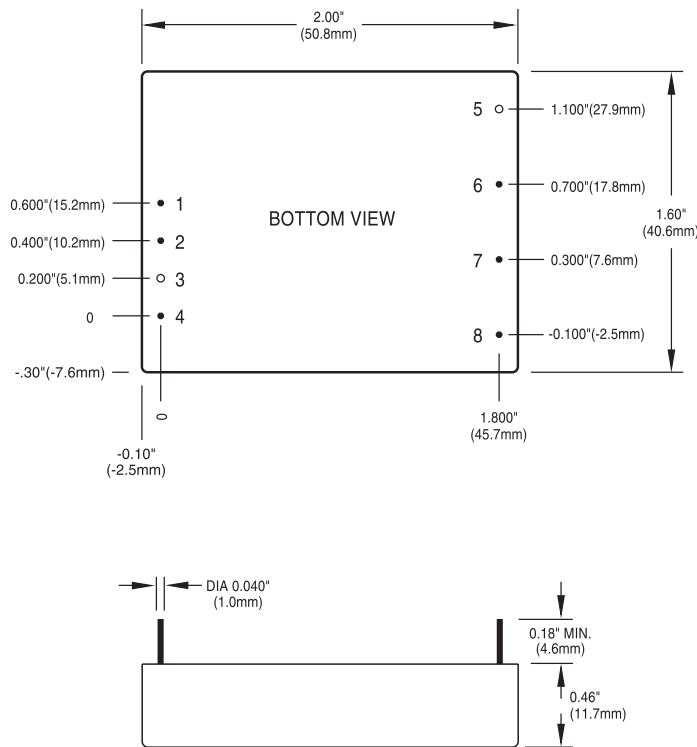
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MODELS - (See the last page of Section for options.)

MODEL	INPUT VOLTAGE (VOLTS)	INPUT VOLTAGE RANGE (VOLTS)	MAXIMUM INPUT CURRENT (AMPS)*	OUTPUT VOLTAGE (VOLTS)	RATED OUTPUT CURRENT (AMPS)	RIPPLE & NOISE $\mu$ k-pk (mV)	TYPICAL EFFICIENCY**
<b>MWS020ZGY</b>	48	33 - 75	0.77	5	4	75	81%
<b>MWS020ZHY</b>	48	33 - 75	0.73	12	1.66	120	85%
<b>MWS020YJY</b>	24	18 - 36	1.34	15	1.33	150	85%

NOTES: \* Maximum input current at minimum input voltage, maximum rated output power.  
 \*\* At nominal  $V_{in}$ , rated output.

### MECHANICAL DRAWING



Thermal Impedance	
Natural Convection	11.5 °C/W
100 LFM	10.2 °C/W
200 LFM	8.5 °C/W
300 LFM	6.5 °C/W
400 LFM	5.4 °C/W

Note:  
 Thermal impedance data is dependent on many environmental factors. The exact thermal performance should be validated for specific application.

Pin	Function
1	+ $V_{in}$
2	- $V_{in}$
3	No Pin
4	Shutdown
5	No Pin
6	+ $V_{out}$
7	- $V_{out}$
8	Trim

Tolerances	
Inches:	(Millimeters)
.XX ± 0.020	.X ± 0.5
.XXX ± 0.010	.XX ± 0.25
Pin:	
± 0.002	± 0.05
Case:	
+ 0.04, - 0.00	+ 1.0, - 0.00

(Dimensions as listed unless otherwise specified.)

## OPTIONS

When ordering equipment options, use the following suffix information. Select the option(s) that you prefer and add them to the model number. Example ordering options are located below the options table.

OPTION	SUFFIX	APPLICABLE SERIES	REMARKS
Negative Logic	N	HAS, HBD, HBS, HES, HLS, LES, QBS, QES, QLS, TES, TQD	TTL "Low" Turns Module ON TTL "High" Turns Module OFF
Lucent-Compatible Trim	T	HAS, HBD, HBS, HES, HLS, QBS, QES, QLS	
Terminal Strip	TS	XWS, XWD, XWT	
Trim	1	IAS, LES	
Enable	2	IAD, IAS, LES, SMS	
Trim and Enable	3	IAS, LES	
Current Share	4	SMS	
Headerless	Y	Encapsulated EWS, IWS, OWS	
<b>PIN LENGTH AND HEATSINK OPTIONS</b>			Standard Pin Length is 0.180" (4.6mm)
0.110" (2.8mm) Pin Length	8	All Units (Except SMS)	
0.150" (3.8mm) Pin Length	9	All Units (Except SMS)	
0.24" (6.1mm) Horizontal Heatsink	1H	All Units (Except DIP, HLS, HLD, QLS, SIP, SM, TLD, and TKD Packages)	Includes Thermal Pad
0.24" (6.1mm) Vertical Heatsink	1V	All Units (Except DIP, HLS, HLD, QLS, SIP, SM, TLD, and TKD Packages)	Includes Thermal Pad
0.45" (11.4mm) Horizontal Heatsink	2H	All Units (Except DIP, HLS, HLD, QLS, SIP, SM, TLD, and TKD Packages)	Includes Thermal Pad
0.45" (11.4mm) Vertical Heatsink	2V	All Units (Except DIP, HLS, HLD, QLS, SIP, SM, TLD, and TKD Packages)	Includes Thermal Pad
0.95" (24.1mm) Horizontal Heatsink	3H	All Units (Except DIP, HLS, HLD, QLS, SIP, SM, TLD, and TKD Packages)	Includes Thermal Pad
0.95" (24.1mm) Vertical Heatsink	3V	All Units (Except DIP, HLS, HLD, QLS, SIP, SM, TLD, and TKD Packages)	Includes Thermal Pad

Example Options:

HBS050ZG-ANT3V = HBS050ZG-A with negative logic, Lucent-compatible trim, and 0.95" vertical heatsink.

LES015YJ-3N = LES015YJ with optional trim and enable, negative logic.

QBS066ZG-AT8 = QBS066ZG-A with Lucent compatible trim and 0.110" pin length.

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**TECHNICAL REVISIONS** The appearance of products, including safety agency certifications pictured on labels, may change depending on the date manufactured. Specifications are subject to change without notice.

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