

## WA Series



- 2:1 Input Range
- Optional 4:1 Input Range
- Efficiency to 74%
- Input Pi Filter
- Fully Regulated Outputs
- Optional 3 kVDC Isolation
- UL Approved Versions

## Specification

## Input

Input Voltage Range	<ul style="list-style-type: none"> <li>• 5 V (4.5-6.0 VDC)</li> <li>• 12 V (9-18 or 9-36 VDC - A version)</li> <li>• 24 V (18-36 or 18-72 VDC - A version)</li> <li>• 48 V (36-72 VDC)</li> </ul>
Input Current	<ul style="list-style-type: none"> <li>• See table</li> </ul>
Input Filter	<ul style="list-style-type: none"> <li>• Pi network</li> </ul>
Undervoltage Lockout	<ul style="list-style-type: none"> <li>• Turn On &gt; 65% nominal input</li> <li>• Turn Off &lt; 62% nominal input</li> </ul>

## Output

Output Voltage	<ul style="list-style-type: none"> <li>• See table</li> </ul>
Output Voltage Balance	<ul style="list-style-type: none"> <li>• <math>\pm 1\%</math> max, dual output models</li> </ul>
Initial Set Accuracy	<ul style="list-style-type: none"> <li>• <math>\pm 2\%</math> max</li> </ul>
Start Up Delay	<ul style="list-style-type: none"> <li>• 30 ms max</li> </ul>
Start Up Rise Time	<ul style="list-style-type: none"> <li>• 35 ms typical</li> </ul>
Line Regulation	<ul style="list-style-type: none"> <li>• <math>\pm 0.5\%</math> max (high line to low line)</li> </ul>
Load Regulation	<ul style="list-style-type: none"> <li>• <math>\pm 0.5\%</math> max for 10-100% load change single output models, <math>\pm 1.0\%</math> max for 25-100% load change dual output models</li> </ul>
Cross Regulation	<ul style="list-style-type: none"> <li>• 2.2% on dual output models</li> </ul>
Transient Response	<ul style="list-style-type: none"> <li>• &lt;1.5% max deviation, recovering within 200 <math>\mu</math>s for a 50% load change</li> </ul>
Ripple & Noise	<ul style="list-style-type: none"> <li>• 100 mV or 1% pk-pk, whichever is greater, 20MHz BW</li> </ul>
Overcurrent Protection	<ul style="list-style-type: none"> <li>• 110-130% trip and restart (Hiccup mode)</li> </ul>
Short Circuit Protection	<ul style="list-style-type: none"> <li>• Continuous with auto recovery</li> </ul>
Maximum Capacitive Load	<ul style="list-style-type: none"> <li>• 30,000 <math>\mu</math>F</li> </ul>
Temperature Coefficient	<ul style="list-style-type: none"> <li>• <math>\pm 0.05</math> /<math>^{\circ}</math>C max</li> </ul>

## General

Efficiency	<ul style="list-style-type: none"> <li>• See table</li> </ul>
Isolation	<ul style="list-style-type: none"> <li>• 500 VDC Input to Output (1000 M<math>\Omega</math>/80 pF)</li> <li>• Optional high isolation version, 3000 VDC Input to Output, add suffix 'X' to model number</li> </ul>
Switching Frequency	<ul style="list-style-type: none"> <li>• 100 kHz typical</li> </ul>
MTBF	<ul style="list-style-type: none"> <li>• 1,000 kHrs to MIL-HDBK-217F</li> </ul>

## Environmental

Operating Temperature	<ul style="list-style-type: none"> <li>• -25 <math>^{\circ}</math>C to +70 <math>^{\circ}</math>C</li> </ul>
Case Temperature	<ul style="list-style-type: none"> <li>• +95 <math>^{\circ}</math>C max</li> </ul>
Storage Temperature	<ul style="list-style-type: none"> <li>• -40 <math>^{\circ}</math>C to +100 <math>^{\circ}</math>C</li> </ul>

## EMC &amp; Safety

Emissions	<ul style="list-style-type: none"> <li>• EN55022, level A conducted</li> <li>• EN55022, level A radiated</li> </ul>
ESD Immunity	<ul style="list-style-type: none"> <li>• EN61000-4-2, level 2 Performance Criteria A</li> </ul>
Radiated Immunity	<ul style="list-style-type: none"> <li>• EN61000-4-3 3 V/m Performance Criteria A</li> </ul>
Conducted Immunity	<ul style="list-style-type: none"> <li>• EN61000-4-6 3 V rms Performance Criteria A</li> </ul>
Safety Approvals	<ul style="list-style-type: none"> <li>• UL1950 for XU versions only</li> </ul>

**Models and Ratings**

Input Voltage <sup>(1,2,5)</sup>	Output Voltage	Output Current	Input Current <sup>(6)</sup>		Efficiency	Model Number <sup>(3,4)</sup>
			No Load	Full Load		
4.5-6.0 VDC	3.3 VDC	600 mA	15.0 mA	619 mA	64%	WA100
	5.0 VDC	600 mA	15.0 mA	850 mA	70%	WA101
	12.0 VDC	250 mA	15.0 mA	800 mA	75%	WA102
	15.0 VDC	200 mA	15.0 mA	800 mA	75%	WA103
	±5.0 VDC	±250 mA	25.0 mA	850 mA	70%	WA104
	±12.0 VDC	±125 mA	25.0 mA	800 mA	75%	WA105
9-18 VDC	3.3 VDC	600 mA	7.5 mA	236 mA	70%	WA200
	5.0 VDC	600 mA	7.5 mA	340 mA	73%	WA201
	12.0 VDC	250 mA	7.5 mA	320 mA	78%	WA202
	15.0 VDC	200 mA	7.5 mA	320 mA	78%	WA203
	±5.0 VDC	±250 mA	12.0 mA	340 mA	73%	WA204
	±12.0 VDC	±125 mA	12.0 mA	320 mA	78%	WA205
18-36 VDC	3.3 VDC	600 mA	5.0 mA	113 mA	73%	WA300
	5.0 VDC	600 mA	5.0 mA	168 mA	74%	WA301
	12.0 VDC	250 mA	5.0 mA	156 mA	80%	WA302
	15.0 VDC	200 mA	5.0 mA	156 mA	80%	WA303
	±5.0 VDC	±250 mA	7.5 mA	168 mA	74%	WA304
	±12.0 VDC	±125 mA	7.5 mA	156 mA	80%	WA305
36-72 VDC	3.3 VDC	600 mA	3.0 mA	58 mA	71%	WA400
	5.0 VDC	600 mA	2.0 mA	82 mA	76%	WA401
	12.0 VDC	250 mA	2.0 mA	78 mA	80%	WA402
	15.0 VDC	200 mA	2.0 mA	78 mA	80%	WA403
	±5.0 VDC	±250 mA	3.0 mA	82 mA	76%	WA404
	±12.0 VDC	±125 mA	3.0 mA	80 mA	78%	WA405
	±15.0 VDC	±100 mA	3.0 mA	80 mA	78%	WA406

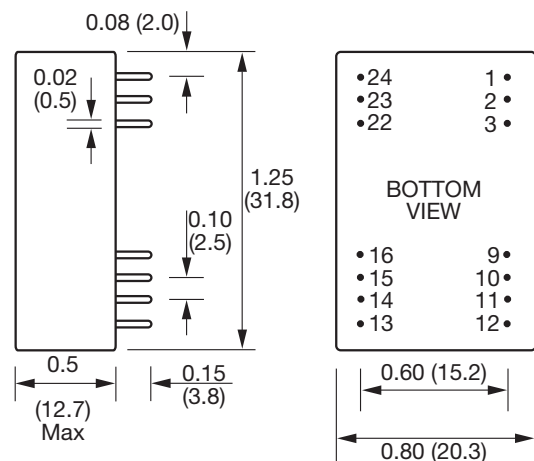
**Notes**

1. Nominal input voltage 5, 12, 24 or 48 VDC.
2. For optional 4:1 input range: 9-36 VDC: Add suffix 'A' to WA2xx model number, 18-72 VDC: Add suffix 'A' to WA3xx model number.
3. For 3000 VDC isolation add suffix 'X' to model number.
4. For UL1950 approval, add suffix 'XU' to model number. UL approved product is only available with 3000 VDC isolation and option 'X' pinout.
5. 'X' or 'XU' versions are not available with optional 4:1 input range.
6. Input current is at nominal input voltage.

**Mechanical Details**

All dimensions are in inches (mm)

Weight: 0.04 lbs (20 g) approx.



PIN CONNECTIONS		
Pin	Single Output	Dual Output
1	+V input	+V input
2	N/C	-V output
3	N/C	Common
9	No pin	No pin
10	-V output	Common
11	+V output	+V output
12	-V input	-V input
13	-V input	-V input
14	+V output	+V output
15	-V output	Common
16	No pin	No pin
22	N/C	Common
23	N/C	-V output
24	+V input	+V input

OPTION 'X' PIN CONNECTIONS		
Pin	Single Output	Dual Output
1	No pin	No pin
2	-V input	-V input
3	-V input	-V input
9	N/C	Common
10	N/C	N/C
11	N/C	-V output
12	No pin	No pin
13	No pin	No pin
14	+V output	+V output
15	N/C	N/C
16	-V output	Common
22	+V input	+V input
23	+V input	+V input
24	No pin	No pin