

# 3 Watts

## 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 /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>\mu</math>C to +70 <math>\mu</math>C</li> </ul>
Case Temperature	<ul style="list-style-type: none"> <li>• +95 <math>\mu</math>C max</li> </ul>
Storage Temperature	<ul style="list-style-type: none"> <li>• -40 <math>\mu</math>C to +100 <math>\mu</math>C</li> </ul>

#### EMC & 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

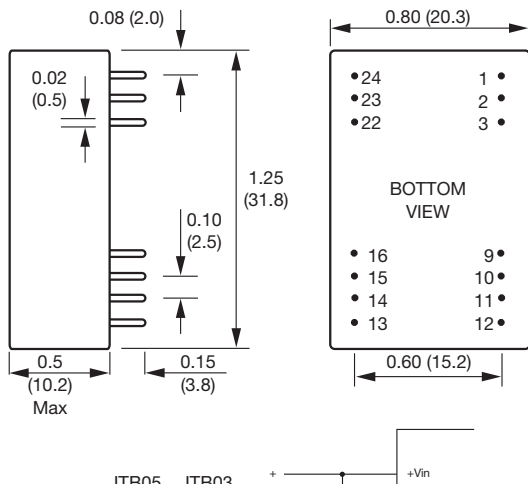
**Notes**

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