

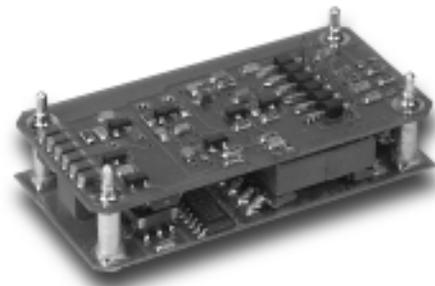
## UPM SERIES - NON-ISOLATED, 40 WATT

### DESCRIPTION

UPM non-isolated DC/DC buck converters deliver high power and excellent transient response in a compact 1.0" x 2.0" x 0.475" package. The UPM can provide up to 40 Watts of output power at 12A output current, and output voltages from 1.2 to 3.3V. Featuring open-frame, 100% surface-mount construction and high efficiency, the UPM excels in difficult thermal environments.

### FEATURES

- High Power Converter
- High Efficiency
- Excellent Transient Response
- Sense Pins
- Surface-Mount Construction
- Voltage Trim
- Low Profile
- Water Washable

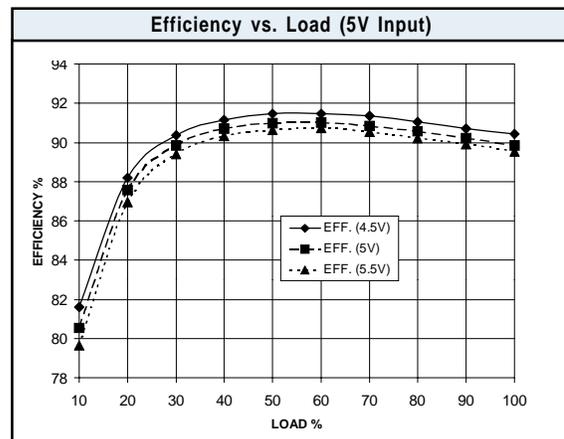


### TECHNICAL SPECIFICATIONS

Input	
Voltage Range	
3.3 VDC Nominal	3.0 - 3.6 VDC
5.0 VDC Nominal	4.5 - 5.5 VDC

Output	
Setpoint Accuracy	±1%
Line Regulation $V_{in}$ Min. - $V_{in}$ Max., $I_{out}$ Rated	1% $V_{out}$
Load Regulation $I_{out}$ Min. - $I_{out}$ Max., $V_{in}$ Nom.	1% $V_{out}$
Ripple and Noise, DC - 200 MHz	50 mV Pk-Pk
Remote Sense Headroom	0.25 V
Current Limit Protection Type	Hiccup
Current Limit Threshold Range, % of $I_{out}$ Rated	130%
Short Circuit Protection Type	Latching
$V_{out}$ Ramp Up Rate, Minimum	0.5V/ms

General	
Switching Frequency	200 kHz
Temperature Coefficient	50 ppm/°C
Baseplate Operating Temperature	0 to +100°C
Storage Range	-40 to +100°C
Internal Input Capacitance	500 $\mu$ F Max.
Recommended External Capacitance	
Input	200 $\mu$ F/A $I_{out}$
Output	200 $\mu$ F/A $I_{out}$
Load Capacitance Compensation	User Selectable
Humidity Max., Non-Condensing	95%
Vibration, 3 Axes, 5 Min Each	5 g, 10 - 55 Hz
MTBF† (Bellcore TR-NWT-000332)	2.9 x 10 <sup>6</sup> hrs
Safety	UL, CSA, EN60950
Weight (approx.)	0.9 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.
Safety: Agency approvals may vary from model to model. Please consult factory for specific model information.
Units are water-washable and fully compatible with commercial spray or immersion post-wave-solder washing equipment.

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

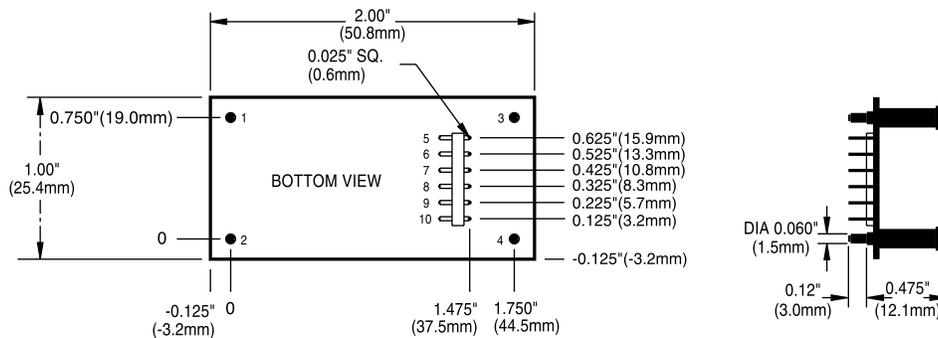
Vin (Volts)	Vin Range (Volts)	Iin Max.* (Amps)	Vout (Volts)	Iout Rated (Amps)	Efficiency Typ. **	Model
3.3	3.0 - 3.6	5.2	1.2	12	78%	UPM301.2
3.3	3.0 - 3.6	6.3	1.5	12	79%	UPM301.5
3.3	3.0 - 3.6	7.5	1.8	12	81%	UPM301.8
3.3	3.0 - 3.6	8.5	2.1	12	82%	UPM302.1
5	4.5 - 5.5	4.1	1.2	12	78%	UPM501.2
5	4.5 - 5.5	5.1	1.5	12	79%	UPM501.5
5	4.5 - 5.5	6.0	1.8	12	81%	UPM501.8
5	4.5 - 5.5	6.8	2.1	12	82%	UPM502.1
5	4.5 - 5.5	7.9	2.5	12	84%	UPM502.5
5	4.5 - 5.5	10.0	3.3	12	88%	UPM503.3

Denotes advanced product release. Consult factory for product availability.

\* Maximum input current at minimum input voltage, maximum rated output power.

\*\* At nominal Vin, rated output.

### MECHANICAL DRAWING



Thermal Impedance	
Natural Convection	9.4 °C/W
100 LFM	6.6 °C/W
200 LFM	4.3 °C/W
300 LFM	3.2 °C/W
400 LFM	2.7 °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 <sub>in</sub>
2	+V <sub>in</sub>
3	-V <sub>out</sub>
4	+V <sub>out</sub>
5	-Vsense
6	Ground
7	Loop Comp.
8	No Conn.
9	Trim
10	+Vsense

Tolerances	
Inches:	(Millimeters)
.XX ± 0.020	.X ± 0.5
.XXX ± 0.010	.XX ± 0.25
Pin:	
± 0.002	± 0.05
(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, LES, QBS, QES, TES, TQD	TTL "Low" Turns Module ON TTL "High" Turns Module OFF
Lucent Compatible Trim	T	HAS, HBD, HBS, HES, QBS, QES	
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, SIP, and SM Packages)	Includes Thermal Pad
0.24" (6.1mm) Vertical Heatsink	1V	All Units (Except DIP, SIP, and SM Packages)	Includes Thermal Pad
0.45" (11.4mm) Horizontal Heatsink	2H	All Units (Except DIP, SIP, and SM Packages)	Includes Thermal Pad
0.45" (11.4mm) Vertical Heatsink	2V	All Units (Except DIP, SIP, and SM Packages)	Includes Thermal Pad
0.95" (24.1mm) Horizontal Heatsink	3H	All Units (Except DIP, SIP, and SM Packages)	Includes Thermal Pad
0.95" (24.1mm) Vertical Heatsink	3V	All Units (Except DIP, SIP, and SM 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.

**NUCLEAR AND MEDICAL APPLICATIONS** Power-One products are not authorized for use as critical components in life support systems, equipment used in hazardous environments, or nuclear control systems without the express written consent of the President of Power-One, Inc.

**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.