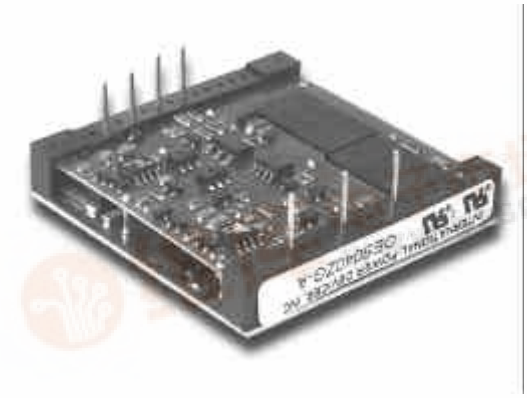
Powering Communications and Technology

OES SERIES
40 WATT



DESCRIPTION

OES DC/DC converters are ultra-dense, 40 Watt, single output converters produced for the telecom and networking markets. Making use of open-frame packaging, planar magnetics, high efficiency topologies, and surface-mount design, the OES has superior thermal performance. The OES features 1500 VDC isolation and overvoltage protection, as well as input undervoltage lockout.

FEATURES

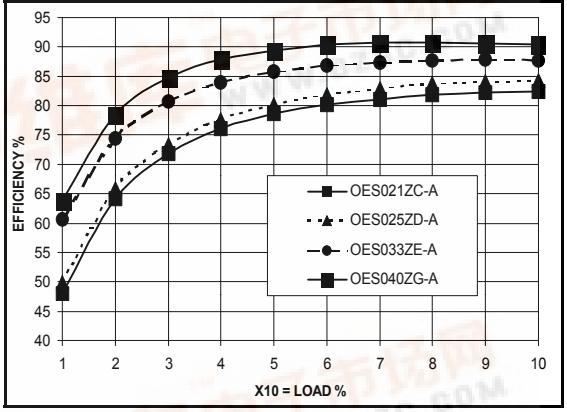
- Ultra-Dense 40W converter
- Industry standard package
- 100 °C baseplate operation
- Open-Frame packaging
- 5, 3.3, 2.5, and 2.1V Outputs
- Remote Enable Pin
- 1500V Isolation
- Input Pi Filter

TECHNICAL SPECIFICATIONS

Input	
Voltage Range	
48 VDC Nominal	36 - 72 VDC
Input Under Voltage Lockout	<34V
Input Undervoltage Hysteresis	1V Nominal
Reflected Ripple	50 mA Pk-Pk
Input Reverse Voltage Protection	Shunt Diode

Output	
Setpoint Accuracy	±1%
3.3/5.0 V Line Regulation V_{in} Min. - V_{in} Max., I_{out} Rated	0.2% V_{out}
2.5/2.1 V Line Regulation V_{in} Min. - V_{in} Max., I_{out} Rated	0.4% V_{out}
Load Regulation I_{out} Min. - I_{out} Max., V_{in} Nom.	0.5% V_{out}
Minimum Output Current	10%, I_{out} Rated
Dynamic Regulation, Loadstep	25% I_{out}
Pk Deviation	6% V_{out}
Settling Time	500 µs
Voltage Trim Range	±10%
Short Circuit / Overcurrent Protection	Shutdown / Hiccup
Current Limit Threshold Range, % of I_{out} Rated	110 - 140%
OVP Trip Range	120 - 140% V_{out} Nom.
Remote Shutdown Reference	V_{in} Negative

Efficiency vs. Load (48V Input)



General	
Turn-On Time	10 ms
Remote Shutdown	Positive Logic
Switching Frequency, 3.3V Output	400 kHz
Switching Frequency, 5.0, 2.5, 2.1V Outputs	300 kHz
Isolation	
Input - Output	1500 VDC
Input - Case	1050 VDC
Output - Case	500 VDC
Temperature Coefficient	±0.03%/°C
Case Temperature	
Operating Range	-40 To +100°C
Storage Range	-40 To +125°C
Thermal Shutdown Range	105 To 115°C
Vibration, 3 Axes, 5 Min Each	5 g, 10 - 55 Hz
MTBF† (Bellcore TR-NWT-000332)	2.5 X 10^6 hrs
Safety	UL, cUL, TUV
Weight (Approx.)	1.4 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.

Units are water-washable and fully compatible with commercial spray or immersion post wave-solder washing equipment.

High Density - Board Mounted Power Division

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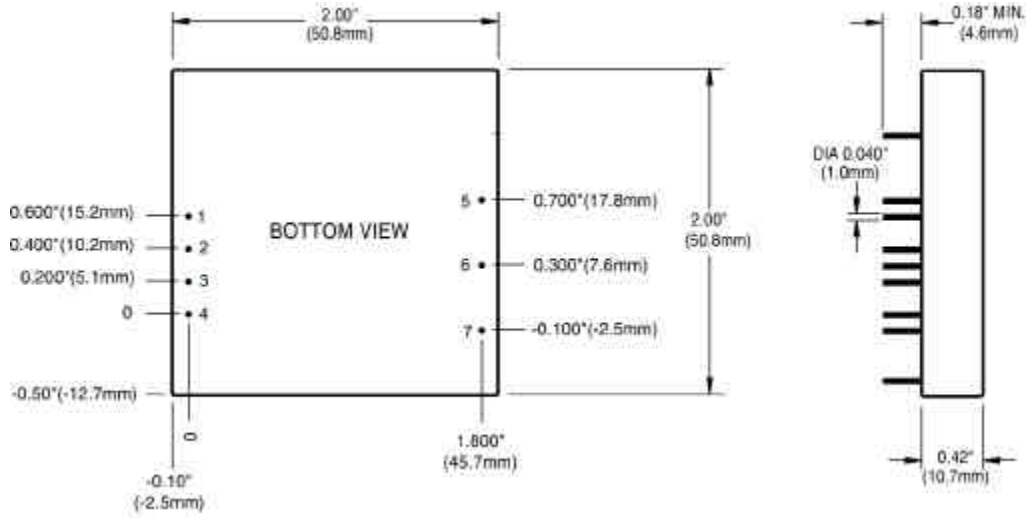
MODELS - (See the last page of Section for options.)

Vin (Volts)	Vin Range (Volts)	Iin Max.* (Amps)	Vout (Volts)	Iout Rated (Amps)	Ripple & Noise Pk-Pk (mV)	Efficiency Typ. **	Model
48	36 - 72	0.77	2.1	10.00	50	84%	OES021ZC-A
48	36 - 72	0.87	2.5	10.00	50	81%	OES025ZD-A
48	36 - 72	1.12	3.3	10.00	75	85%	OES033ZE-A
48	36 - 72	1.31	5	8.00	75	89%	OES040ZG-A

* Maximum input current at minimum input voltage, maximum rated output power.
** At nominal Vin, rated output.

MECHANICAL DRAWING



Thermal Impedance	
Natural Convection	11.3 C/W
100 LFM	8.9 C/W
200 LFM	6.2 C/W
300 LFM	4.4 C/W
400 LFM	3.4 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 Conn.
4	Enable
5	$+V_{out}$
6	$-V_{out}$
7	Trim

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

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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.

OPTIONS	SUFFIX	APPLICATIONS 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	
PIN LENGTH AND HEATSINK OPTIONS			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" (24.1mmVertical 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.