

LES SERIES - 15 WATT

DESCRIPTION

LES DC/DC converters provide up to 15 Watts of output power in an industry standard package and footprint. With a maximum case temperature of 100°C, the LES is well suited for the most demanding telecom, networking, and industrial applications. The LES features 1500 VDC isolation, short circuit, and overtemperature protection, as well as six-sided shielding. The LES is available with optional enable and voltage trim pins. Please see the IAD series for dual output applications.



FEATURES

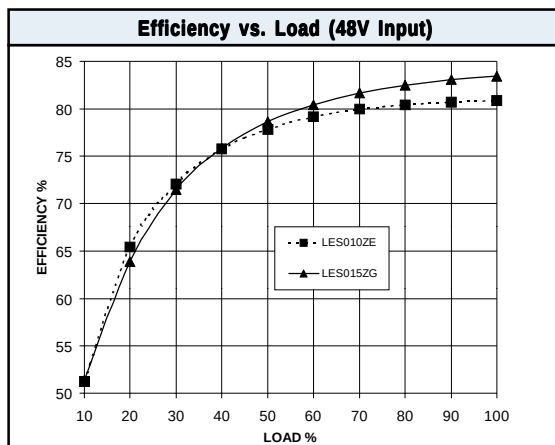
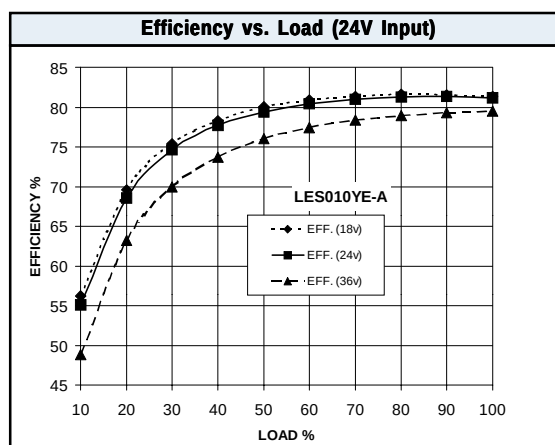
- Industry Standard Package
- Industry Standard Pinout
- 85°C Case Operation
- Short Circuit Protection
- 24V and 48V Inputs
- Input Pi Filter and 6-Sided Shielding
- Regulated Outputs
- 1500V Isolation

TECHNICAL SPECIFICATIONS

Input	
Voltage Range	
24 VDC Nominal	18 - 36 VDC
48 VDC Nominal	36 - 75 VDC
Reflected Ripple	50 mA

Output	
Setpoint Accuracy	±1%
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	10% I_{out} Rated
Dynamic Regulation, Loadstep	25% I_{out}
Pk Deviation	2% V_{out}
Settling Time	500 μ s
Voltage Trim Range	±10%
Short Circuit / Overcurrent Protection	Shutdown / Hiccup
Current Limit Threshold Range, % of I_{out} Rated	110 - 150%
Short Circuit Current Max.	200% I_{out}
OVP Trip Range	115 - 140% V_{out} Nom.
OVP Type	Second Control Loop

General	
Turn-On Time	10 ms
Remote Shutdown	Positive/Negative Logic
Switching Frequency	400 kHz
Isolation	
Input - Output	1500 VDC
Output - Case	500 VDC
Temperature Coefficient	0.02 ppm/°C
Case Temperature	
Operating Range	-40 To +100°C
Storage Range	-40 To +125°C
Humidity Max., Non-Condensing	95%
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



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 for options.)

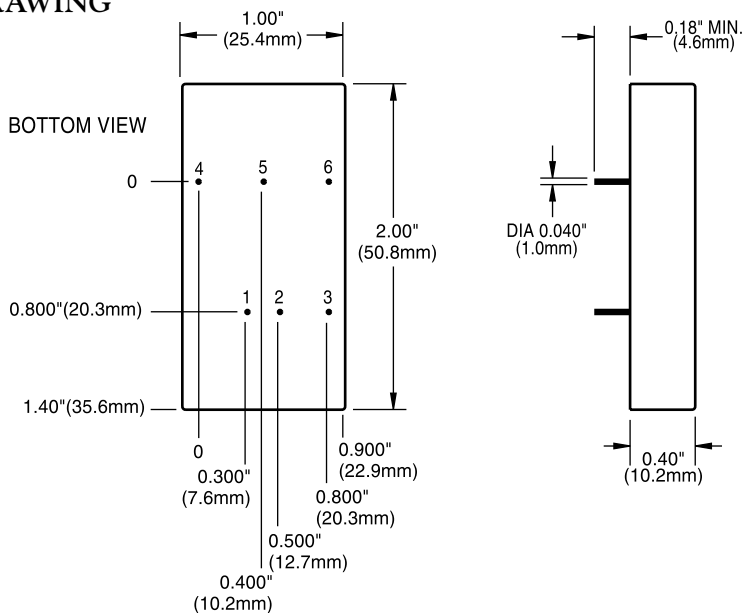
V _{in} (Volts)	V _{in} Range (Volts)	I _{in} Max.* (Amps)	V _{out} (Volts)	I _{out} Rated (Amps)	Ripple & Noise Pk-Pk (mV)	Efficiency Typ. **	Model
24	18 - 36	1.00	15	1.00	150	86%	LES015YJ
24	18 - 36	1.00	12	1.25	120	83%	LES015YH †
24	18 - 36	1.10	5	3.00	100	82%	LES015YG
24	18 - 36	0.80	3.3	3.00	100	79%	LES010YE
24	18 - 36	0.60	2.5	3.00	75	77%	LES008YD †
48	36 - 75	0.50	15	1.00	150	87%	LES015ZJ †
48	36 - 75	0.50	12	1.25	120	85%	LES015ZH †
48	36 - 75	0.60	5	3.00	100	82%	LES015ZG
48	36 - 75	0.40	3.3	3.00	100	79%	LES010ZE
48	36 - 75	0.35	2.5	3.00	75	77%	LES008ZD †

† Denotes advanced product release. Consult factory for product availability.

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

** At nominal V_{in}, rated output.

MECHANICAL DRAWING



Thermal Impedance	
Natural Convection	15.4 °C/W
100 LFM	12.2 °C/W
200 LFM	9.3 °C/W
300 LFM	7.4 °C/W
400 LFM	6.4 °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 (Shutdown)
4	+V _{out}
5	No Pin (Trim)
6	-V _{out}

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, 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	
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" (24.1mm) 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.