



# 20 WATT SINGLE OUTPUT



1" x 2" x 0.40" Package  
Isolated, Wide Input (2:1)  
DC/DC Converters

## Specifications

Typical at 25°C under full load and nominal input voltage, unless otherwise specified.

### INPUT

1.5V, 1.8V, 2.5V, 3.3V, 5V, 12V, 15Vdc Output 20 Watts Output Power	
Input Voltages	..... Voltage Range
24 Vdc	..... 18-36 Vdc
48 Vdc	..... 36-72 Vdc
Input Filter (Note 1)	..... L-C type
Input reflected ripple (Note 2)	..... Nominal Vin and full load 20mA p-p
Start up time Nominal Vin and constant resistor load	..... 10mS, typ.
Remote on/off (Note 4)	
DC-DC ON	..... Open or 3.5V < V <sub>r</sub> < 12V
DC-DC OFF	..... Short or 0V < V <sub>r</sub> < 1.2V
Remote OFF Input current	..... Nominal Vin 20mA

### ENVIRONMENTAL

Operating Temperature Range	..... -40°C to +85°C (with derating)
Maximum Case Temperature	..... +100°C
Storage Temperature Range	..... -55 to +105°C

### OUTPUT

Voltage Accuracy	..... ±1% max.
Line Regulation LL to HL at FL	..... ±0.2% max.
Load Regulation 10% to 100% FL	..... ±0.5% max.
Ripple and Noise (20 MHz BW)	..... 75mV p-p max.
Temperature Coefficient (at FL)	..... ±0.02%/°C max.
Transient Response, recovery time 25% load step	..... 300µms max.

### GENERAL

Efficiency	..... See Table
Isolation Voltage	..... 1500 Vdc min.
Isolation Resistance	..... 10 <sup>9</sup> Ohms, min. / 1000MOhms
Isolation Capacitance	..... 1000pF, max.
Switching Frequency	..... 500KHz, typ.
Over Voltage Protection	1.5V output ..... 3.9V    1.8V output ..... 3.9V    2.5V output ..... 3.9V
Zener diode clamp	3.3V output ..... 3.9V    5V output ..... 6.2V    12V output ..... 15V
	15V output ..... 18V

Short Circuit Protection	..... Hiccup, automatic recovery
Over Load Protection	..... % of FL at nominal input 150% typ.

### ENVIRONMENTAL

Operating Temperature Range	..... -40°C to +85°C (with derating)
Maximum Case Temperature	..... 100°C
Storage Temperature Range	..... -55 to +105°C
Thermal Impedance (Note 5)	..... Nature convection 12°C/Watt, Nature convection with heat sink 10°C/Watt
Thermal Shock	..... MIL-STD-810D
Vibration	..... 10-55Hz, 2G, 30 minutes along X, Y and Z
Relative humidity	..... 5% to 95% RH
Cooling	..... Free Air Convection

### PHYSICAL

Case Material	..... Nickel Coated Copper with Non-Conductive Base
Weight	..... 1.5 oz. (42.52 grams)
Dimensions	..... 1.00" x 2.00" x 0.40" (25.4 x 50.8 x 10.16 mm)
MTBF (Note 4)	..... 1.791 x 10 <sup>6</sup> Hours

### EMC CHARACTERISTICS

Conducted emissions	EN55022	Level A
Radiated emissions	EN55022	Level A
ESD	EN61000-4-2	Perf. Criteria2
Radiated immunity	EN61000-4-3	Perf. Criteria2
Fast transient	EN61000-4-4	Perf. Criteria2
Surge	EN61000-4-5	Perf. Criteria2
Conducted immunity	EN61000-4-6	Perf. Criteria2

### NOTE:

1. An external filter capacitor is required for normal operation. The capacitor should be capable of handling 1A ripple current for 24V/48V models. Suggest: Nippon chemi-con KMF series, 220µ F/100V, ESR 90mΩ.
2. The negative / positive logic and pin length are optional (see table). The pin voltage is referenced to negative input.
3. Heat sink is optional.
4. The LWA20 meets level A & level B conducted emissions only with external components connected before the input pin to the converter.
5. Typical value at nominal input voltage and full load.
6. The converter is provided with basic insulation.

## FEATURES

- 20 Watts Output Power
- 1.5V, 1.8V, 2.5V, 3.3V, 5V, 12V, 15Vdc Output
- UL & CE Approved
- -40°C to +85°C Operating Temp. Range (with derating)
- Low Profile Package (1.0" x 2.0" x 0.4")
- Input/Output Isolation (1500Vdc min.)
- High Efficiency to 89% @ FL
- Short Circuit & Over-Voltage Protection
- 6-Sided Continuous Metal Shielding
- Epoxy Encapsulated

LWA20 Series

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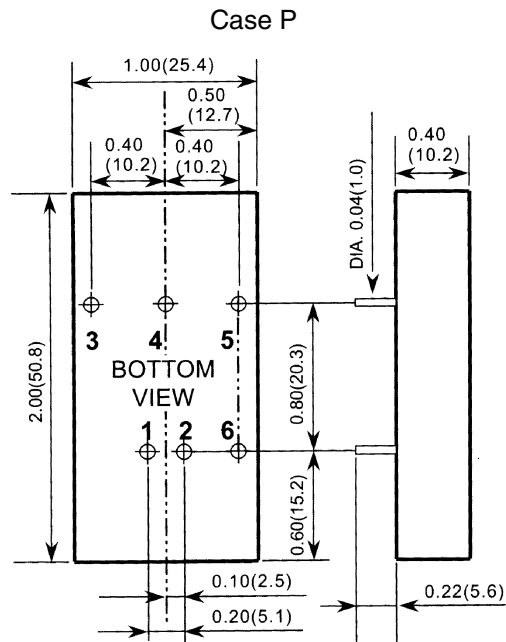
**Selection Guide**

(Continued)

SINGLE OUTPUT VOLTAGE	Input Voltage Nominal (Range) (Vdc)	Output Voltage (Vdc)	Output Current (mA)	Efficiency %	Model Number	Case	Capacitor Load (Max)
	24 (18-36)		1.5	6000	79	LWA20-24S1.5	P
		1.8	6000	82	LWA20-24S1.8	P	65000µF
		2.5	6000	84	LWA20-24S2.5	P	33000µF
		3.3	5000	86	LWA20-24S33	P	13000µF
		5	4000	88	LWA20-24S5	P	6800µF
		12	1670	87	LWA20-24S12	P	2200µF
		15	1330	87	LWA20-24S15	P	755µF
48 (36-72)		1.5	6000	80	LWA20-48S1.5	P	65000µF
		1.8	6000	83	LWA20-48S1.8	P	65000µF
		2.5	6000	85	LWA20-48S2.5	P	33000µF
		3.3	5000	87	LWA20-48S33	P	13000µF
		5	4000	89	LWA20-48S5	P	6800µF
		12	1670	88	LWA20-48S12	P	2200µF
		15	1330	87	LWA20-48S15	P	755µF

**Mechanical Specifications**

I/O CONNECTIONS	
PIN	SINGLE
1	+Vin
2	-Vin
3	+Vout
4	TRIM
5	-Vout
6	CTRL + LOGIC



All Dimensions are in inches (mm)



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