



20 WATT SINGLE OUTPUT

1" x 2" x 0.40" Package

Isolated, Wide Input (4:1)

DC/DC Converters

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

LWB20 Series

Specifications

All specifications are typical at nominal input, full load and 25°C, unless otherwise noted.

INPUT SPECIFICATIONS

Input voltage range	.....24V nominal input	.....9-36VDC
	.....48V nominal input	.....18- 75VDC
Input filter	.....Pi type	
Input surge voltage	.....24V input	.....50VDC
100mS max	.....48V input	.....100VDC
Input reflected ripple current	.....Nominal Vin and full load	.....20mA-p-p
Start up time	.....Nominal Vin and Power up	.....20ms typ.
	.....constant resistive load	.....Remote ON/OFF 20ms, typ.
Start-up voltage	.....24V input	.....9VDC
	.....48V input	.....18VDC
Shutdown Voltage	.....24V input	.....7.5VDC
	.....48V input	.....15VDC
Remote ON/OFF (Note 6)		
(Positive logic) (Standard)	.....DC-DC ON	.....Open or 3V<Vr<12V
	.....DC-DC OFF	.....Short or OV<Vr<1.2V
(Negative logic) (Option)	.....DC-DC ON	.....Short or OV<Vr<1.2V
	.....DC-DC OFF	.....Open or 3V<Vr<12V
Input current of remote control pin	.....Nominal Vin	.....-0.5mA - +0.5mA
Remote off state input current	.....Nominal Vin	.....2.5mA

OUTPUT SPECIFICATIONS

Output power	.....20 Watts, max.
Voltage accuracy	.....Full load and nominal Vin
Minimum load	.....0%
Voltage adjustability	.....Single output
Line regulation	.....LL to HL at Full Load Single
	.....Dual
Load regulation	.....No Load to Full Load Single
	.....Dual
Cross regulation (Dual)	.....Asymmetrical load 25%/100% FL
Ripple and noise	.....20MHz bandwidth
	.....(Measured with a 0.1µF/50V MLCC)
Temperature coefficient	.....±0.02%/°C, max
Transient response recovery time	.....25% load step change
	.....3.3V output
Over voltage protection	.....5V output
Zener diode clamp	.....12V output
	.....15V output
Over load protection	.....% of FL at nominal input
Short circuit protection	.....Hiccup, automatic recovery

GENERAL SPECIFICATIONS

Efficiency	.....See table
Isolation voltage	.....Input to Output
	.....Input (Output) to Case
Case grounding	.....Connect case to -Vin
Isolation resistance	.....10 to the nine ohms, min
Isolation capacitance	.....1500pF, max.
Switching frequency	.....400KHz, typ.
Approvals and standard	.....IEC60950-1, UL60950-1 EN60950-1
Case material	.....Nickel-coated copper
Base material	.....FR4 PCB
Potting material	.....Epoxy (UL94-VO)
Dimensions	.....2.00x1.00x0.40Inch
Weight	.....27g (0.95oz)
MTBF (Note 1)	.....BELLCORE-TR-NWT-000332
	.....MIL-HDBK-217F

ENVIRONMENTAL SPECIFICATIONS

Operating ambient temperature	.....-40°C to +66°C (without derating)
	.....+66°C TO +105°C (with derating)
Maximum case temperature	.....+105°C
Storage temperature range	.....-55°C to +125°C
Thermal impedance (Note 7)	.....Nature convection
	.....Nature convection with heat -sink
Thermal shock	.....MIL-STD-810F
Vibration	.....MIL-STD-810F
Relative humidity	.....5% to 95% RH

EMC CHARACTERISTICS

EMI (Note 8)	.....EN55022	.....Class A
ESD	.....EN61000-4-2	.....Air ±8KV
		.....Contact ±6KV
Radiated immunity	.....EN61000-4-3	.....10V/m
Fast transient (Note 9)	.....EN61000-4-4	.....±2KV
Surge (Note 9)	.....EN61000-4-5	.....±1KV
Conducted immunity	.....EN61000-4-6	.....10 V.r.m.s

Selection Guide

(Continued)

Model Number	Input Range (VDC)	Output Voltage (VDC)	Output Current		Output Ripple & Noise (mVp-p)	Input Current		Efficiency(4) %	Capacitor(5) Load Max
			Min. Load (mA)	Full Load (mA)		No Load (3) (mA)	Full Load (2) (mA)		
LWB20-24S33	9 – 36	3.3	0	5500	60	50	934	85	18000µF
LWB20-24S5	9 – 36	5	0	4000	75	65	992	88	9600µF
LWB20-24S12	9 – 36	12	0	1670	75	22	1018	86	1650µF
LWB20-24S15	9 – 36	15	0	1330	75	22	1014	86	1050µF
LWB20-48S33	18 – 75	3.3	0	5500	60	35	467	85	18000µF
LWB20-48S5	18 – 75	5	0	4000	75	35	496	88	9600µF
LWB20-48S12	18 – 75	12	0	1670	75	15	503	87	1650µF
LWB20-48S15	18 – 75	15	0	1330	75	15	501	87	1050µF
LWB20-24-5	9 – 36	±5	0	±2000	100	55	992	88	±4800µF
LWB20-24-12	9 – 36	±12	0	±833	100	30	1004	87	±825µF
LWB20-24-15	9 – 36	±15	0	±667	100	30	1005	87	±525µF
LWB20-48-5	18 – 75	±5	0	±2000	100	35	490	89	±4800µF
LWB20-48-12	18 – 75	±12	0	±833	100	17	496	88	±825µF
LWB20-48-15	18 – 75	±15	0	±667	100	17	496	88	±525µF

NOTES:

- Bellcore TR-NWT-00032, Case: 50% Stress, Temperature at 40°C. MIL-HDBK-217F Notice 2 @ Ta = 25°C, Full load (Ground, Benign, controlled environment).
- Maximum value at normal input voltage and full load.
- Typical value at nominal input voltage and no load.
- Typical value at nominal input voltage and full load.
- Test by minimum Vin and constant resistive load.
- The ON/OFF control pin voltage is referenced to-Vin.
- Heat sink is optional and P/N: 7G-0020C-F
- The LWB20 series can meet EN55022 Class A with external L-C filter before the input pins to the converter. Recommend: 24 Vin : NA. 48 Vin : 1µF/100V 1210 MLCC.
- An external input filter capacitor is required if the module has to meet EN61000-4-4. EN61000-4-5. The filter capacitor suggest: Nippon chemi-con KY series, 220µ F/100V, ESR48mΩ

Mechanical Specifications

PIN CONNECTION	
PIN	SINGLE
1	+Vin
2	-Vin
3	+Vout
4	TRIM
5	-Vout
6	CTRL + LOGIC

