

### FEATURES

- Single and Dual Outputs
- High Efficiency up to 84%
- Standard 1.25 x 0.8 x 0.4 Inches
- Fixed Switching Frequency (300KHz)
- 2:1 and 4:1 Ultra Wide Input Voltage Ranges
- Compliant to RoHS EU Directive 2002/95/EC
- UL60950-1, EN60950-1, and IEC60950-1 Licensed
- Standard 24 Pin DIP Package and SMT Type Package
- CE Mark meets 2006/95/EC, 93/68/EEC, and 2004/108/EC

### APPLICATIONS

- Wireless Network
- Telecom/Datacom
- Industry Control Systems
- Measurement Equipment
- Semiconductor Equipment



### DESCRIPTION

The LANCW5 series of DC/DC converters offers up to 6 watts of output power in an IC compatible 24 pin DIP configuration. The LANCW5 series has a 2:1 (W) wide input voltage of 9-18, 18-36, and 36-75VDC. The LANCW5 series also has a 4:1 (UW) ultra wide input range of 9-36 and 18-75VDC. This series is intended to provide power and isolation for applications requiring high power density. Some features include 1600VDC isolation, short circuit protection, and five-sided shielding. Also available are SMT type (suffix "S") and I type (operating temperature: -40°C~+85°C without derating- add suffix "I").

### SPECIFICATIONS: LANCW5 Series

*All specifications apply @ 25°C ambient unless otherwise noted*

#### INPUT SPECIFICATIONS

Input Voltage Range		
LANCW5	12V nominal input	9-18VDC
	24V nominal input	18-36VDC
	48V nominal input	36-75VDC
LANCUW5	24V nominal input	9-36VDC
	48V nominal input	18-75VDC
Input Filter		Pi Type
Input Surge Voltage (100ms max)	12V input	36VDC
	24V input	50VDC
	48V input	100VDC
Input Reflected Ripple Current (nominal Vin and full load)		20mA <sub>p-p</sub>
Start Up Time (nominal Vin and constant resistive load)		450ms typ.

#### OUTPUT SPECIFICATIONS

Output Voltage		see table
Voltage Accuracy (nominal Vin and full load)		±1%
Output Current		see table
Output Power		5 watts max.
Line Regulation (LL to HL at FL)		±0.2%
Load Regulation (no load to full load)	Single Output	±0.5%
	Dual Output	±1%
Cross Regulation (Dual) (Asymmetrical load 25% / 100% FL)		±5%
Minimum Load		0%
Ripple/Noise (20 MHz BW)		50mV <sub>p-p</sub>
Temperature Coefficient		±0.02% / °C max.
Transient Response Recovery Time (25% load step)		200µs

#### GENERAL SPECIFICATIONS

Efficiency		see table
Switching Frequency		300KHz typ.
Isolation Voltage		
Input to Output		1600VDC min.
Input (Output) to Case (DIP)		1600VDC min.
Input (Output) to Case (SMT)		1000VDC min.
Isolation Resistance		10 <sup>9</sup> ohms min.
Isolation Capacitance		300pF max.

#### PROTECTION SPECIFICATIONS

Over Load Protection (% of full load at nominal input)	170% typ.
Short Circuit Protection	Continuous, automatic recovery

#### ENVIRONMENTAL SPECIFICATIONS

Operating Temperature		
Standard		-25°C to +85°C (w/ derating)
"I" (See Notes 6 & 9)		-40°C to +85°C (w/o derating)
"I" (UW Series)		-40°C to +85°C (w/ derating)
Storage Temperature		-55°C ~ +105°C
Maximum Case Temperature	Standard	+100°C
	"I" suffix	+105°C
Relative Humidity (non-condensing)		5% to 95% RH
Thermal Impedance (Natural Convection)		20°C / Watt
Thermal Shock		MIL-STD-810F
Vibration		10~55Hz, 10G, 30 minutes along X, Y, and Z
MTBF (See Note 1)	BELLCORE TR-NWT-000332	3.165 x 10 <sup>6</sup> hrs
	MIL-HDBK-217F	1.631 x 10 <sup>6</sup> hrs

#### PHYSICAL SPECIFICATIONS

Weight	DIP type	0.55oz (16g)
	SMT type	0.63oz (18g)
Dimensions		1.25 x 0.80 x 0.40 inches (31.8 x 20.3 x 10.2 mm)
Case Material		Nickel-coated copper
Base Material		Non-conductive black plastic
Potting material		Epoxy (UL94-V0)
Shielding		five – sided

#### SAFETY & EMC

Approvals and Standards		IEC60950-1, UL60950-1, EN60950-1
EMI (See Note 8)	EN55022	Class A
ESD	EN61000-4-2	Air ± 8KV
		Contact ± 6KV
Radiated Immunity	EN61000-4-3	10V/m Perf. Criteria A
Fast Transient	EN61000-4-4	±2KV Perf. Criteria B
Surge (See Note 7)	EN61000-4-5	±1KV Perf. Criteria B
Conducted Immunity	EN61000-4-6	10 Vrms Perf. Criteria A

*Due to advances in technology, specifications subject to change without notice*

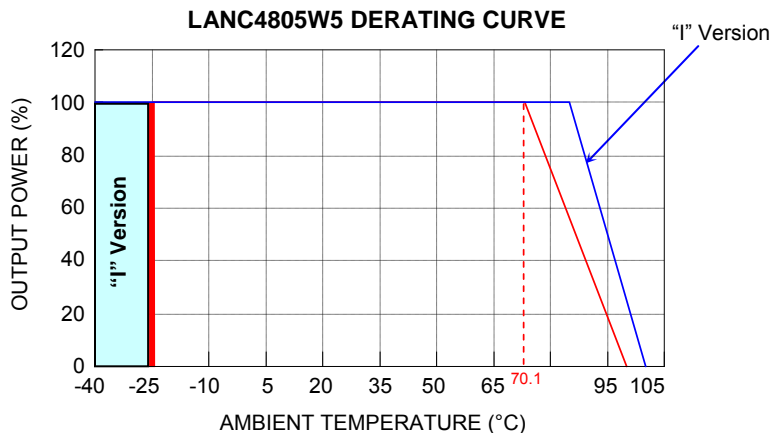
## MODEL SELECTION TABLE

Model Number	Input Range	Output Voltage	Output Current	Ripple & Noise <sup>(4)</sup>	Input Current		Efficiency <sup>(4)</sup>	Output Power	Capacitor <sup>(5)</sup> Load max
					No Load <sup>(3)</sup>	Full Load <sup>(2)</sup>			
LANC1233W5	9–18 VDC	3.3 VDC	1000mA	50mVp-p	10mA	382mA	76%	3.3W	2200µF
LANC1205W5	9–18 VDC	5 VDC	1000mA	50mVp-p	10mA	563mA	78%	5W	1000µF
LANC1212W5	9–18 VDC	12 VDC	470mA	50mVp-p	10mA	603mA	82%	5.64W	220µF
LANC1215W5	9–18 VDC	15 VDC	400mA	50mVp-p	10mA	649mA	81%	6W	150µF
LANC1205DW5	9–18 VDC	±5 VDC	±500mA	50mVp-p	15mA	563mA	78%	5W	± 68µF
LANC1212DW5	9–18 VDC	±12 VDC	±230mA	50mVp-p	20mA	597mA	81%	5.5W	± 100µF
LANC1215DW5	9–18 VDC	±15 VDC	±190mA	50mVp-p	15mA	594mA	84%	5.7W	± 68µF
LANC2433W5 (UW)	18–36 (9–36) VDC	3.3 VDC	1000mA	50mVp-p	10mA (5mA)	194mA (191mA)	75% (76%)	3.3W	2200µF
LANC2405W5 (UW)	18–36 (9–36) VDC	5 VDC	1000mA	50mVp-p	15mA (10mA)	285mA (278mA)	77% (79%)	5W	1000µF
LANC2406UW5	9–36 VDC	6 VDC	833mA	50mVp-p	-	278mA	79%	5W	690µF
LANC2412W5 (UW)	18–36 (9–36) VDC	12 VDC	470mA	50mVp-p	15mA (5mA)	305mA (305mA)	81% (81%)	5.64W	220µF
LANC2415W5 (UW)	18–36 (9–36) VDC	15 VDC	400mA	50mVp-p	15mA (10mA)	325mA (312mA)	81% (84%)	6W	150µF
LANC2405DW5 (UW)	18–36 (9–36) VDC	±5 VDC	±500mA	50mVp-p	15mA (10mA)	274mA (282mA)	80% (78%)	5W	± 680µF
LANC2412DW5 (UW)	18–36 (9–36) VDC	±12 VDC	±230mA	50mVp-p	20mA (10mA)	288mA (295mA)	84% (82%)	5.5W	± 100µF
LANC2415DW5 (UW)	18–36 (9–36) VDC	±15 VDC	±190mA	50mVp-p	20mA (10mA)	308mA (297mA)	81% (84%)	5.7W	± 68µF
LANC24833W5 (UW)	36–75 (18–75) VDC	3.3 VDC	1000mA	50mVp-p	10mA (5mA)	98mA (100mA)	74% (73%)	3.3W	2200µF
LANC4805W5 (UW)	36–75 (18–75) VDC	5 VDC	1000mA	50mVp-p	10mA (10mA)	143mA (138mA)	77% (79%)	5W	1000µF
LANC4812W5 (UW)	36–75 (18–75) VDC	12 VDC	470mA	50mVp-p	10mA (10mA)	151mA (155mA)	82% (80%)	5.64W	220µF
LANC4815W5 (UW)	36–75 (18–75) VDC	15 VDC	400mA	50mVp-p	10mA (10mA)	162mA (160mA)	81% (82%)	6W	150µF
LANC4805DW5 (UW)	36–75 (18–75) VDC	±5 VDC	±500mA	50mVp-p	10mA (10mA)	141mA (145mA)	78% (76%)	5W	± 68µF
LANC4812DW5 (UW)	36–75 (18–75) VDC	±12 VDC	±230mA	50mVp-p	5mA (10mA)	147mA (151mA)	82% (80%)	5.5W	± 100µF
LANC4815DW5 (UW)	36–75 (18–75) VDC	±15 VDC	±190mA	50mVp-p	10mA (10mA)	150mA (156mA)	83% (80%)	5.7W	± 68µF

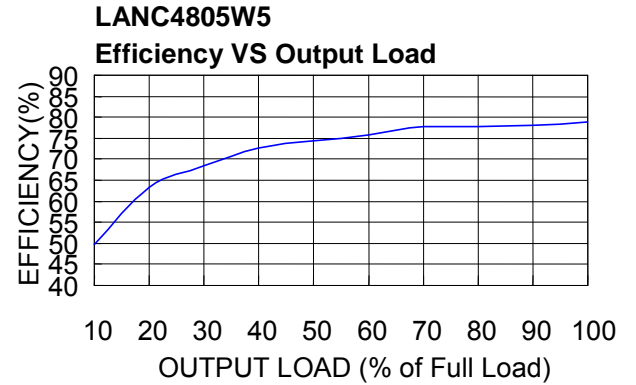
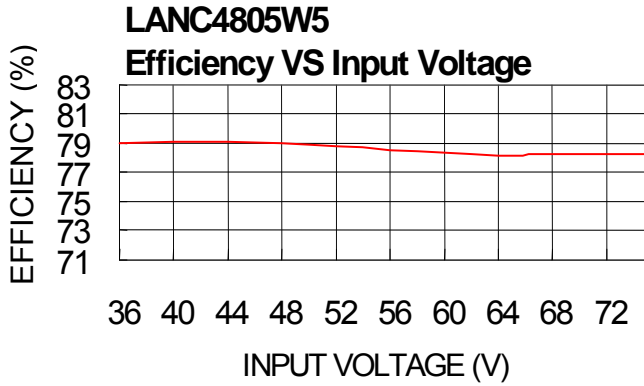
## NOTES

- BELLCORE TR-NWT-000332. Case 1: 50% Stress, Temperature at 40°C.  
MIL-HDBK-217F Notice2 @ Ta=25°C, Full load (Ground, benign, controlled environment).
- Maximum value at nominal input voltage and full load of standard type.
- 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 industrial "I" suffix for 2:1 version is more efficient, therefore, it can be operated in a more extensive temperature range than standard and I suffix 4:1 input versions.
- An external filter capacitor is required if the module has to meet EN61000-4-5. The filter capacitor suggested is Nippon chemi-com KY series, 220µF/100V, ESR 48mΩ.
- The LANCW5 Series can meet EMC EN55022 Class A and Class B with an external filter in parallel with the input pins. See page 3 for filter suggestions.
- There is no pin at PIN10 & PIN15 for LANC5UW series.
- For industrial temperature range add the suffix "I" to the model number.
- For SMT type add the suffix "S" to the model number.

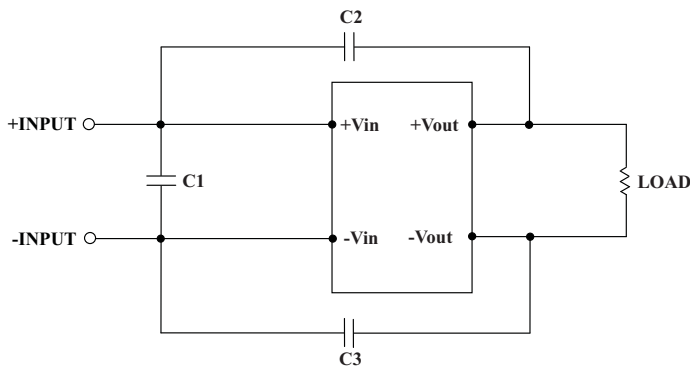
## DERATING CURVE



**EFFICIENCY GRAPHS**



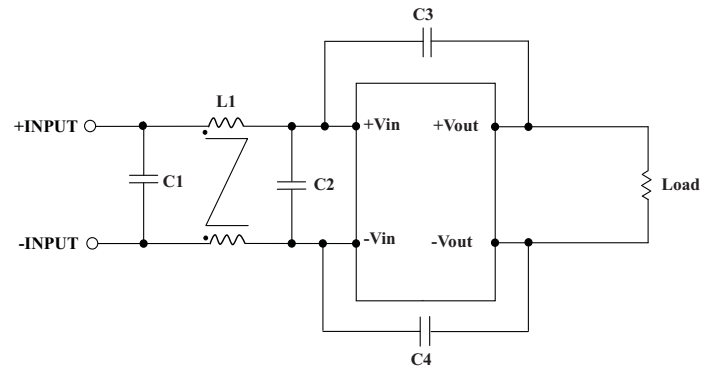
**Specification for EMC EN55022 Class A Compliance**



The components used in the figure above are as follows:

	C1	C2	C3
LANC12xxW5	4.7µF/25V 1210 MLCC	1000pF/2KV 1808 MLCC	1000pF/2KV 1808 MLCC
LANC24xxW5	N/A	1000pF/2KV 1808 MLCC	1000pF/2KV 1808 MLCC
LANC48xxW5	N/A	1000pF/2KV 1808 MLCC	1000pF/2KV 1808 MLCC

**Specification for EMC EN55022 Class B Compliance**



The components used in the figure above are as follows:

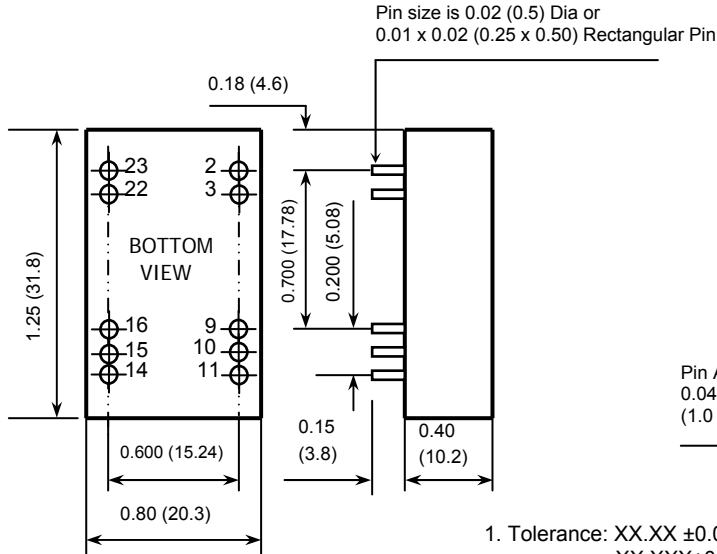
	C1	C2	C3&C4	L1
LANC12xxW5	4.7µF/50V 1812 MLCC	N/A	1000pF/2KV 1808 MLCC	PMT-050 (325µH) Common Choke
LANC24xxW5	6.8µF/50V 1812 MLCC	N/A	1000pF/2KV 1808 MLCC	PMT-050 (325µH) Common Choke
LANC48xxW5	2.2µF/100V 1812 MLCC	2.2µF/100V 1812 MLCC	1000pF/2KV 1808 MLCC	PMT-050 (325µH) Common Choke

<b>PMT-050</b>	
	<b>SPECIFICATIONS</b>
	<p>Pins 1-2: 325µH±35%    Pins 3-4: 325µH±35%</p> <p>Inductance</p> <p>Test Conditions: 100KHz/100mV</p> <p>Measurement Instrument: HP 4263B LCR Meter</p>
	<p>Impedance</p> <p>DCR (Max): 35mΩ</p> <p>Measurement Instrument: HIOKI 3540mΩ HITESTER</p>
	<p>Rated Current</p> <p>IDC (Max): 3.3A</p> <p>Measurement Instrument: Agilent 34401A Meter</p>
<p>Recommended Through Hole</p> <p>φ0.8mm</p>	

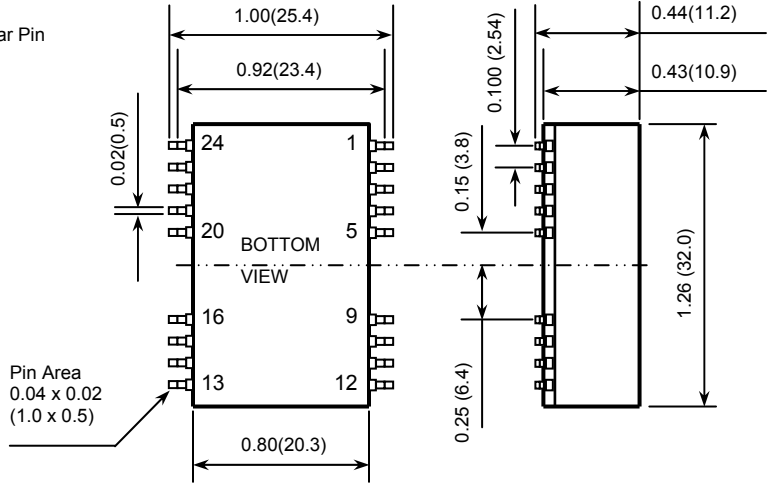
**MECHANICAL DRAWING**

Unit: inches (mm)

**DIP TYPE**



**SMT TYPE**  
 (add suffix "S")



1. Tolerance: XX.XX ±0.02 (X.X±0.5)  
 XX.XXX±0.01 (X.XX±0.25)
2. Pin pitch tolerance: ±0.01 (0.25)
3. Pin dimension tolerance: ±0.004 (0.1)

PIN CONNECTION (DIP)					
PIN	SINGLE	DUAL	PIN	SINGLE	DUAL
2	-INPUT	-INPUT	23	+INPUT	+INPUT
3	-INPUT	-INPUT	22	+INPUT	+INPUT
9	NC	COMMON	16	-OUTPUT	COMMON
10	NC (Note 9)	NC (Note 9)	15	NC (Note 9)	NC (Note 9)
11	NC	-OUTPUT	14	+OUTPUT	+OUTPUT

PIN CONNECTION (SMT)					
PIN	SINGLE	DUAL	PIN	SINGLE	DUAL
2	-INPUT	-INPUT	23	+INPUT	+INPUT
3	-INPUT	-INPUT	22	+INPUT	+INPUT
9	NC	COMMON	16	-OUTPUT	COMMON
10	NC	NC	15	NC	NC
11	NC	-OUTPUT	14	+OUTPUT	+OUTPUT
Others	NC	NC	Others	NC	NC