

**Wide Input Voltage Range 30 Watt Dc-Dc Converter**



**FEATURES:**

- 30W DIL PACKAGE
- 100% BURNED IN
- 4:1 WIDE INPUT RANGE
- HIGH EFFICIENCY UP TO 88%
- UL 94V-0 PACKAGE MATERIAL
- CUSTOMIZED SOLUTIONS AVAILABLE
- Remote On/Off ● RoHS COMPLIANT



**APPLICATIONS:**

- Industry Control System ● Semiconductor Equipment
- Wireless Network ● Telecom/Datacom ● Measurement

**Specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified**

Part Number	Input Voltage Vdc	Input Current		Output Voltage Vdc	Output Current Full Load (mA)	Output Ripple & Noise mVp-p	Capacitor Load MAX uF	Efficiency %TYP
		No-Load (mA TYP)	Full Load (mA TYP)					
96DW-24S03R5NL	9-36	100	1265	3.3	7500	100	20000	86
96DW-24S05R5NL	9-36	100	1488	5.0	6000	100	14400	87
96DW-24S12R5NL	9-36	100	1471	12	2500	100	3000	88
96DW-24S15R5NL	9-36	100	1471	15	2000	100	2000	88
96DW-24D12R5NL	9-36	100	1471	±12	1250	100	±2000	88
96DW-24D15R5NL	9-36	100	1471	±15	1000	100	±1300	88
96DW-48S03R5NL	18-75	70	629	3.3	7500	100	20000	86
96DW-48S05R5NL	18-75	70	744	5.0	6000	100	14400	87
96DW-48S12R5NL	18-75	70	727	12	2500	100	3000	88
96DW-48S15R5NL	18-75	70	727	15	2000	100	2000	88
96DW-48D12R5NL	18-75	70	727	±12	1250	100	±2000	88
96DW-48D15R5NL	18-75	70	727	±15	1000	100	±1300	88

Note: 1. BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C. (Ground fixed and controlled environment)  
MIL-STD-217F Notice2 @Ta=25 °C, Full load (Ground, Benign, controlled environment)  
2. The ON/OFF control pin voltage is referred to -Input. (Leave open if not used.)

Input Specifications						
Parameters	Conditions		Min	Typ	Max	Units
<b>Voltage Types</b>					4:1	
<b>Filter</b>	Pi Type					
<b>Input surge voltage 100mS max</b>	24V input			50		Vdc
	48V input			100		Vdc
<b>Input reflected ripple current</b>	Nominal Vin and full load			20		mAp-p
<b>Start up time</b>	Nominal Vin and constant resistive load	Power up		30		mS
		Remote ON/OFF		30		mS
<b>Start-up voltage</b>	24V input			9		Vdc
<b>Start-up voltage</b>	48V input			18		Vdc
<b>Shutdown voltage</b>	24V input			8		Vdc
<b>Shutdown voltage</b>	48V input			16		Vdc
<b>Protection</b>	Fuse Recommended					
<b>Remote ON/OFF (Note 2)</b>	DC-DC ON			OPEN		
<b>(Negative logic)(Option)</b>	DC-DC OFF			Short to ground		
<b>Input current of Remote control pin</b>	Nominal Vin			-0.5mA ~ +0.5mA		
<b>Remote off state input current</b>	Nominal Vin			3mA		

# Yuan Dean Scientific CO.,LTD    96DW-R5    SERIES

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Output Specifications					
Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance	Full Load @ Vin(nom.)			±2	%
Short Circuit/ Restart Protection	Hiccup, automatics recovery				
Over Load Protection	nominal input		150		%
Over Voltage Protection (Zener Diode Clamp)	3.3V Output		3.9		
	5.0V Output		6.2		V
	12V Output		15 & ±15		
	15V Output		18 & ±18		
Line Regulation	LL to HL at Full Load			±0.5	%
Load Regulation	Single			±0.5	%
Load Regulation	Dual, Balance Load,25% to 100% load			±1.0	%
Cross Regulation	Dual, 25% to 100% load			±5.0	%
Ripple & Noise	20MHz bandwidth			100	mVp-p
Transient response recovery time	25% load step change		250	350	us
External Trim Adj. Range			±10% of Output		
Temperature coefficient				±0.05	% / °C

General Specifications					
Parameters	Conditions	Min	Typ	Max	Units
Isolation Resistance	500Vdc	1000			MΩ
Switching Frequency			300		KHz
Isolation Capacitance			2200		pF
Case material		Nickel coated copper with no-conductive base			
Potting material		Epoxy (UL94-V0)			
Isolation Voltage	For 10 seconds			1600	VDC
Design meets safety		IEC60950-1, UL60950-1, EN60950-1			
Dimensions	-R5NL	50.8X 25.4 X 10.6			mm
	-R5HSNL	50.8X 25.4 X 15.3			mm
Weight			36.5		g
MTBF (Note 1)	BELLCORE-TR-NWT-000332	3.163 x 10 <sup>6</sup>			hrs
	MIL-HDBK-217F	4.347 x 10 <sup>5</sup>			hrs

ENVIRONMENTAL SPECIFICATIONS					
Parameters	Conditions	Min	Typ	Max	Units
Operating Temperature		-40		85	°C
Maximum case temperature				115	°C
Storage Temperature		-55		125	°C
Over temperature			115		°C
Thermal impedance	Convection		12		°C/Watt
	Convection with heat-sink		10		°C/Watt
Thermal shock		MIL-STD-810F			
Vibration		MIL-STD-810F			
Relative humidity		5% to 95% RH			

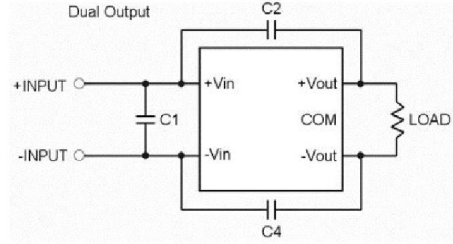
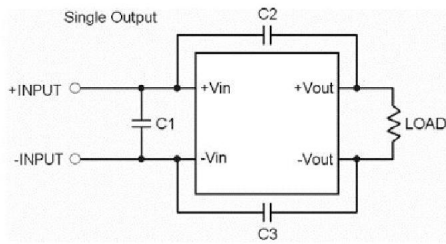
EMC CHARACTERISTICS					
Parameters	Conditions	Min	Typ	Max	Units
EMI	EN55022		Class A		
ESD	EN61000-4-2	Air ±8KV Perf. Criteria A			
		Contact ±6KV Perf. Criteria A			
Radiated immunity	EN61000-4-3		10 V/m Perf. Criteria A		
Fast transient	EN61000-4-4		± 2KV Perf. Criteria A		
Surge	EN61000-4-5		± 1KV Perf. Criteria A		
Conducted immunity	EN61000-4-6		10 Vrms Perf. Criteria A		

Derating Curve(without Heat-Sink)	Remote On/Off Note	Part Number
	<p>When pin3 short to pin2,D/D ON=&gt;OFF When pin3 leave open,D/D=&gt;ON</p>	<p><b>96DW - 24 S 05 R 5 NL</b>  <b>A B C D E F G</b></p> <p>A : Series            B : Input Voltage            C : Single Output(S),DUAL(D)            D : Output Voltage            E : Regulated(R)            F : Package            G : RoHs Version</p>

# Yuan Dean Scientific CO.,LTD 96DW-R5 SERIES

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### Recommended Filter for EN55022 Class A Compliance

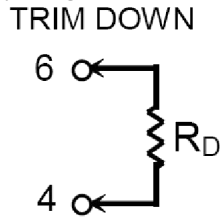
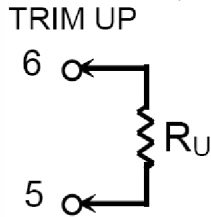


The components used in the above figure, together with the manufacturers' part numbers for these components, are as follows:

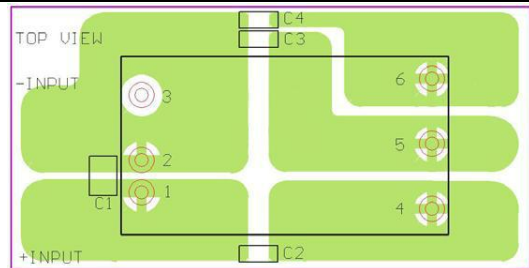
Single Output	C1	C2/C3
-24S	4.7 $\mu$ F/50V 1812 MLCC	1000pF/2KV 1808 MLCC
-48S	2.2 $\mu$ F/100V 1812 MLCC	1000pF/2KV 1808 MLCC
Dual Output	C1	C2/C4
-24D	4.7 $\mu$ F/50V 1812 MLCC	1000pF/2KV 1808 MLCC
-48D	2.2 $\mu$ F/100V 1812 MLCC	1000pF/2KV 1808 MLCC

### EXTERNAL OUTPUT TRIMMING

Output can be externally trimmed by using the method shown below.

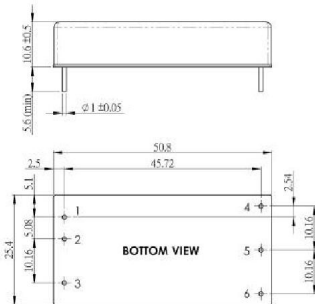


### Recommended EN55022 Class A Filter Circuit Layout



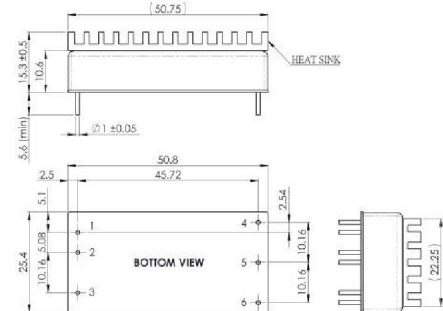
### Markings and dimensions

#### -R5NL



Unit : mm  
Tolerance : XX.X±0.5 · XX.XX±0.25

#### -R5HSNL



Unit : mm  
Tolerance : XX.X±0.5 · XX.XX±0.25

### PIN Connection

PIN	1	2	3	4	5	6
SINGLE	+Vin	-Vin	Ctrl	+Vout	-Vout	Trim
DUAL	+Vin	-Vin	Ctrl	+Vout	COM	-Vout