

FEATURES :

- 30W DIL Package
- 4:1 Wide Input Range
- 100% Burned In
- High Efficiency Up To 88%
- Customized Solutions Available
- Remote Control:On/Off
- UL 94V-0 Package Material
- Operating Temperature From -40°C TO +85°C
- 3 Years Warranty

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

Part Number	Input Voltage	Input Current		Output Voltage	Output Current	Output Ripple & Noise	Efficiency	Capacitor Load
	Vdc	No Load (mA TYP)	Full Load (mA TYP)	Vdc	Full Load (mA)	mVp-p	%TYP	uF MAX
96DW-24S03R5NL	9-36	120	1265	3.3	7500	100	82	20000
96DW-24S05R5NL	9-36	130	1488	5.0	6000	100	84	14400
96DW-24S12R5NL	9-36	50	1471	12	2500	100	85	3000
96DW-24S15R5NL	9-36	50	1471	15	2000	100	85	2000
96DW-24D12R5NL	9-36	60	1471	±12	1250	100	85	±2000
96DW-24D15R5NL	9-36	60	1471	±15	1000	100	85	±1300
96DW-48S03R5NL	18-75	70	629	3.3	7500	100	82	20000
96DW-48S05R5NL	18-75	80	744	5.0	6000	100	84	14400
96DW-48S12R5NL	18-75	30	727	12	2500	100	86	3000
96DW-48S15R5NL	18-75	30	727	15	2000	100	86	2000
96DW-48D12R5NL	18-75	30	727	±12	1250	100	86	±2000
96DW-48D15R5NL	18-75	30	727	±15	1000	100	86	±1300

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.)

YUAN DEAN SCIENTIFIC



DC-DC Converter

96DW-R5 SERIES

30Watt 1.6KV Isolated

4 : 1 Input Voltage Range

Single & Dual Output

2" x 1"



Applications

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

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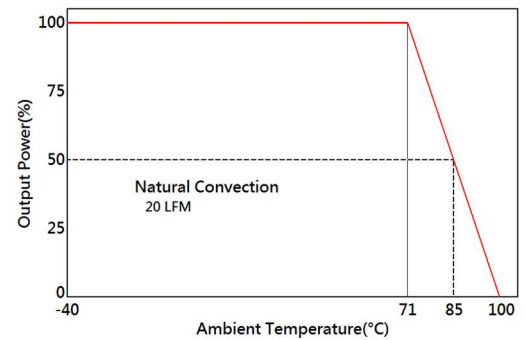
Rev:1.0 2019/06/18

Input Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Types				4:1	
Filter	Pi Type				
Input surge voltage 100mS max	24V input		50		Vdc
	48V input		100		Vdc
Input reflected ripple current	Nominal Vin and full load		20		mAp-p
Start up time	Nominal Vin and constant resistive load	Power up	40		mS
		Remote ON/OFF	30		mS
Start-up voltage	24V input		9		Vdc
	48V input		18		Vdc
Shutdown voltage	24V input		8		Vdc
	48V input		16		Vdc
Protection	Fuse Recommended				
Remote ON/OFF (Note 2)	DC-DC ON			OPEN	
	DC-DC OFF			Short to ground	
Input current of Remote control pin	Nominal Vin		-0.5mA ~ +0.5mA		
Remote off state input current	Nominal Vin		3mA		

Output Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance	Full load@Vin(nom.)			±2	%
Short Circuit /Restart Protection	Hiccup, automatic recovery				
Over Load Protection	nominal input		150		%
Over Voltage Protection (Zener Diode Clamp)	3.3V Output		3.9		V
	5.0V Output		6.2		V
	12V Output		15 & ±15		V
	15V Output		18 & ±18		V
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		

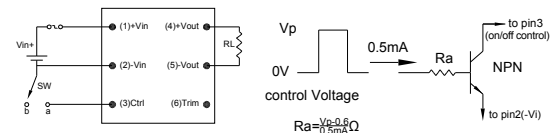
Derating Curve
(without Heat-Sink)

Part Number

96DW - 24 S 05 R 5 NL
A B C D E F G

A: Series
B: Input Voltage
C: Single Output (S),Dual (D)
D: Output Voltage
E: Regulated(R)
F: Package
G: RoHs Version

Remote On/Off Note



When pin3 short to pin2,D/D => OFF
When pin3 leave open,D/D => ON

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	4.7μF/50V 1812 MLCC	1000pF/2KV 1808 MLCC
-48S	2.2μF/100V 1812 MLCC	1000pF/2KV 1808 MLCC
Dual Output	C1	C2/C4
-24D	4.7μF/50V 1812 MLCC	1000pF/2KV 1808 MLCC
-48D	2.2μF/100V 1812 MLCC	1000pF/2KV 1808 MLCC

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				
Epoxy (UL94-V0)	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		3.163×10^6		hrs
	MIL-HDBK-217F		4.347×10^5		hrs

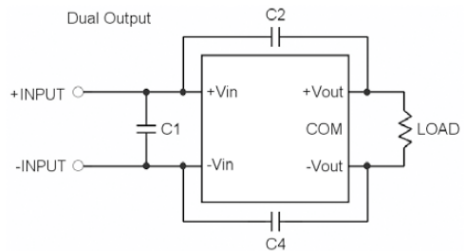
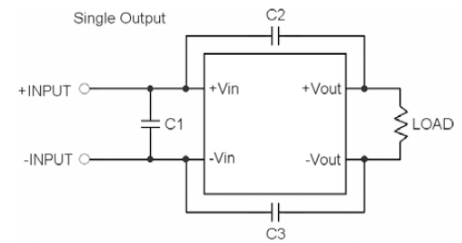
Environmental Specifications

Parameters	Conditions	Min	Typ	Max	Units
Operating Temperature		-40		85	°C
Maximum case temperature				105	°C
Storage Temperature		-55		125	°C
Thermal impedance @20LFM	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

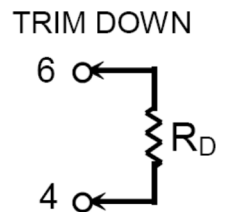
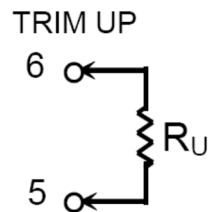
Parameters	Conditions	Min	Typ	Max	Units
EMI	EN55022		Class A		
ESD	EN61000-4-2		Air ±8KV Perf. Criteria A Contact ±6KV Perf. Criteria A		
Radiated immunity	EN61000-4-3		10 V/m Perf. Criteria A		
Fast transient	EN61000-4-4		± 2KV Perf. Criteria A		
Surge	EN61000-4-5		± 1KV Perf. Criteria A		
Conducted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

Recommended Filter for EN55022 Class A Compliance

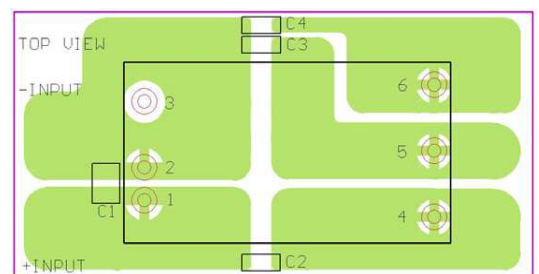


External Output Trimming

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

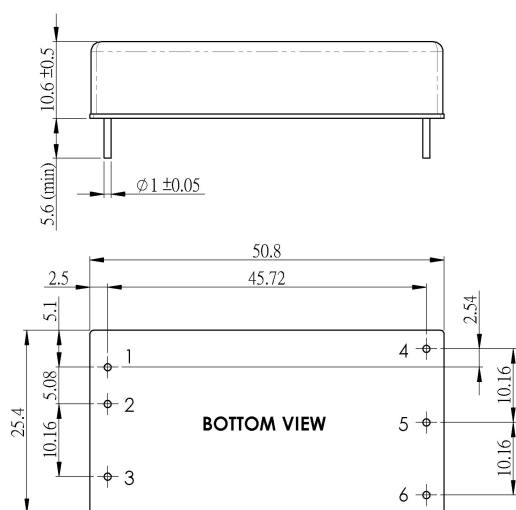


Recommended EN55022 Class A Filter Circuit Layout



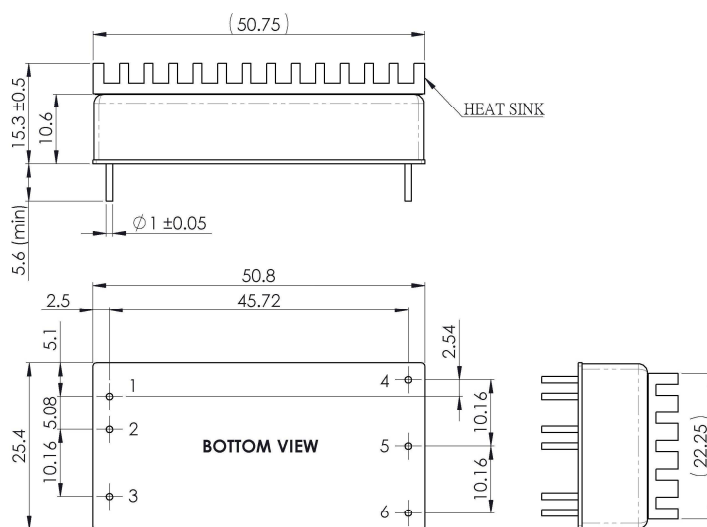
Dimensions

-R5NL



Unit : mm
Tolerance : XX.X $\pm$ 0.5 , XX.XX $\pm$ 0.25

-R5HSNL



Unit : mm
Tolerance : XX.X $\pm$ 0.5 , XX.XX $\pm$ 0.25

PIN Connection

Pin	1	2	3	4	5	6
Single	+Vin	-Vin	Remote ON/OFF	+Vout	-Vout	Trim
Dual	+Vin	-Vin	Remote ON/OFF	+Vout	COM	-Vout