

FEATURES :

- 30 Watt DIL Package
- 2:1Wide Input Voltage
- 100% Burned In
- High Efficiency to 89%
- Customized Solutions Available
- Remote Control: On/Off
- UL94V-0 Package Material
- Operating Temperature:-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 (mA TYP)		Output Voltage	Output Current	Output Ripple & Noise	Efficiency	Capacitor Load
	Vdc	No Load	Full Load	Vdc	Full Load (mA)	mVp-p	TYP%	uF MAX
96D-12S03R5NL	9-18	120	2398	3.3	7500	100	86	20000
96D-12S05R5NL	9-18	130	2841	5.0	6000	100	88	14400
96D-12S12R5NL	9-18	50	2809	12	2500	100	89	3000
96D-12S15R5NL	9-18	50	2809	15	2000	100	89	2000
96D-24S03R5NL	18-36	70	1200	3.3	7500	100	86	20000
96D-24S05R5NL	18-36	80	1420	5.0	6000	100	88	14400
96D-24S12R5NL	18-36	30	1404	12	2500	100	89	3000
96D-24S15R5NL	18-36	30	1404	15	2000	100	89	2000
96D-48S03R5NL	36-72	40	600	3.3	7500	100	86	20000
96D-48S05R5NL	36-72	50	710	5.0	6000	100	88	14400
96D-48S12R5NL	36-72	30	702	12	2500	100	89	3000
96D-48S15R5NL	36-72	30	702	15	2000	100	89	2000
96D-12D12R5NL	9-18	60	2873	±12	±1250	100	89	±2000
96D-12D15R5NL	9-18	60	2873	±15	±1000	100	89	±1300
96D-24D12R5NL	18-36	30	1437	±12	±1250	100	89	±2000
96D-24D15R5NL	18-36	30	1437	±15	±1000	100	89	±1300
96D-48D12R5NL	36-72	30	718	±12	±1250	100	89	±2000
96D-48D15R5NL	36-72	30	718	±15	±1000	100	89	±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

96D-R5 SERIES

30Watt 1.6KV Isolated

2 : 1 Input Voltage Range

Single & Dual Output

2" x 1"



Applications

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



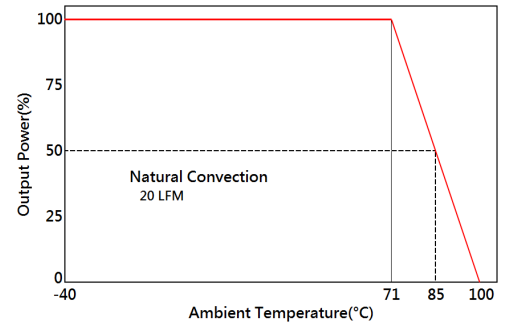
Input Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Types					2:1
Filter	PI Type				
Input surge voltage 100mS max	12V, 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	12V input		9		Vdc
	24V input		18		Vdc
	48V input		36		Vdc
Shutdown voltage	12V input		8		Vdc
	24V input		17		Vdc
	48V input		35		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		%
	3.3V Output		3.9		V
Over Voltage Protection (Zener Diode Clamp)	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)**

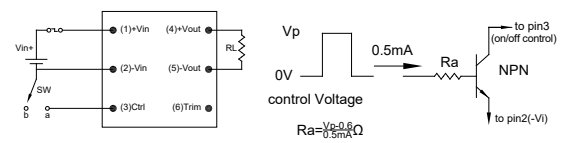


Part Number

96D - 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 ON=>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				
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 ⁶		hrs
	MIL-HDBK-217F		4.347 x 10 ⁵		hrs

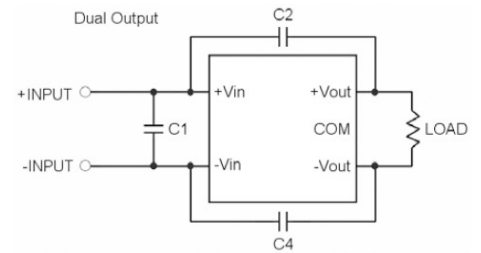
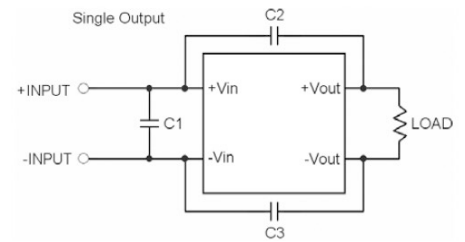
Environmental Specifications

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

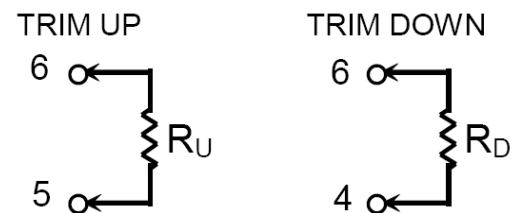
Parameters	Conditions	Min	Typ	Max	Units
EMI	EN55022		Class A		
ESD	EN61000-4-2	Air	±8KV Perf. Criteria A		
		Contact	±6KV Perf. Criteria A		
Radiated immunity	EN61000-4-3	10 V/m Perf. Criteria A			
Fast transient	EN61000-4-4	± 2KV Perf. Criteria A			
Surge	EN61000-4-5	± 1KV Perf. Criteria A			
Conducted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

Recommended Filter for EN55022 Class A Compliance

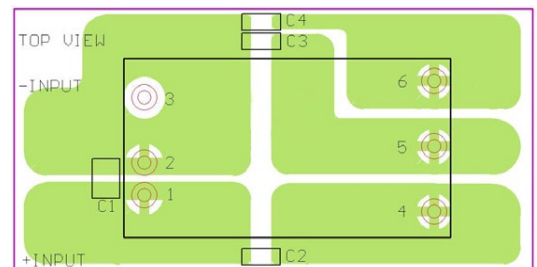


External Output Trimming

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

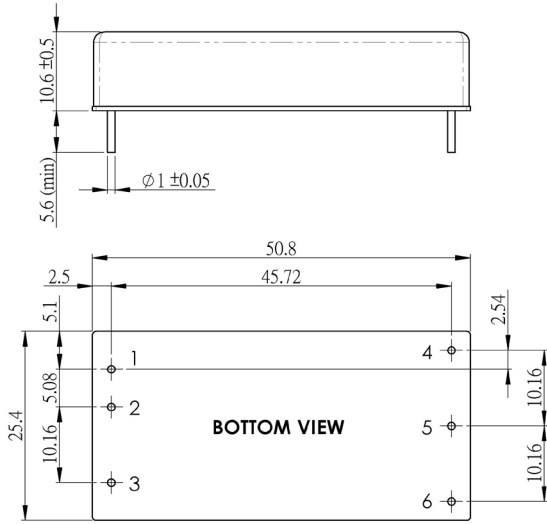


Recommended EN55022 Class A Filter Circuit Layout



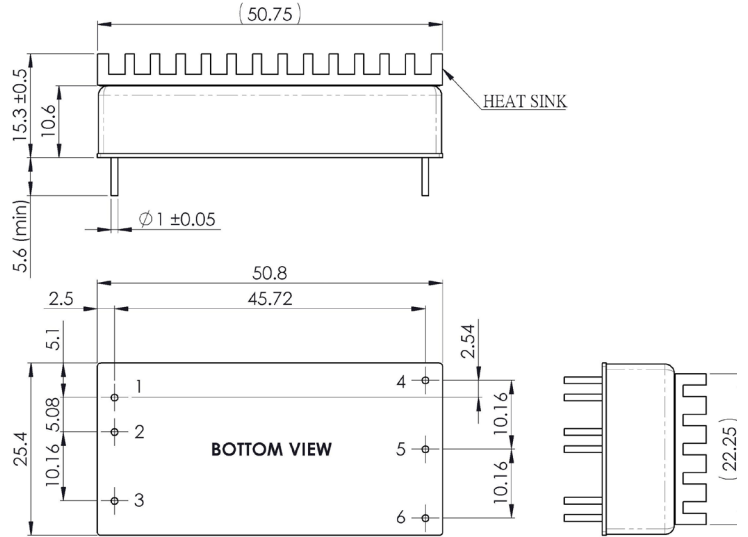
Dimensions

-R5NL



Unit : mm
Tolerance : XX.X ± 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	Remote ON/OFF	+Vout	-Vout	Trim
Dual	+Vin	-Vin	Remote ON/OFF	+Vout	COM	-Vout