



Wide Input Voltage Range 20 Watt DC-DC Converter



FEATURES:

- 20W DIL PACKAGE
- 4:1 WIDE INPUT RANGE
- 100% BURNED IN
- HIGH EFFICIENCY
- UL94V-0 PACKAGE MATERIAL
- CUSTOM SOLUTIONS AVAILABLE
- RoHS COMPLIANT
- Remote Control:On/Off



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)	Efficiency %TYP	Capacitor Load uF MAX
		No-Load (mA TYP)	Full Load (mA TYP)				
95DW-24S03R3NL	9-36	60	900	3.3	5500	84	3300
95DW-24S05R3NL	9-36	60	968	5	4000	86	3300
95DW-24S12R3NL	9-36	40	970	12	1670	86	330
95DW-24S15R3NL	9-36	20	966	15	1330	86	330
95DW-24D05R3NL	9-36	70	900	±5	±2000	84	±2200
95DW-24D12R3NL	9-36	40	959	±12	±835	87	±330
95DW-24D15R3NL	9-36	40	944	±15	±665	88	±330
95DW-48S03R3NL	18-75	25	450	3.3	5500	84	5600
95DW-48S05R3NL	18-75	25	484	5	4000	86	5600
95DW-48S12R3NL	18-75	25	485	12	1670	86	680
95DW-48S15R3NL	18-75	15	483	15	1330	86	680
95DW-48D05R3NL	18-75	25	496	±5	±2000	84	±3300
95DW-48D12R3NL	18-75	25	497	±12	±835	84	±220
95DW-48D15R3NL	18-75	25	483	±15	±665	86	±220

Input Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Types				4:1	
Start-up voltage / under voltage shut down	24 Vin		8.7 / 8.3	9	VDC
	48 Vin		16.9 / 16.2	18	VDC
Surge voltage (100 msec. max.)	24 Vin			50	V
	48 Vin			100	V
Reflected input ripple current			30		mA
Conducted noise (input)		EN 55022 level A, FCC part 15, level A with external capacitor			
Filter	Pi Network				
Protection	Fuse Recommended				

Output Specifications (Temperature Coefficient : ±0.05%/°C)

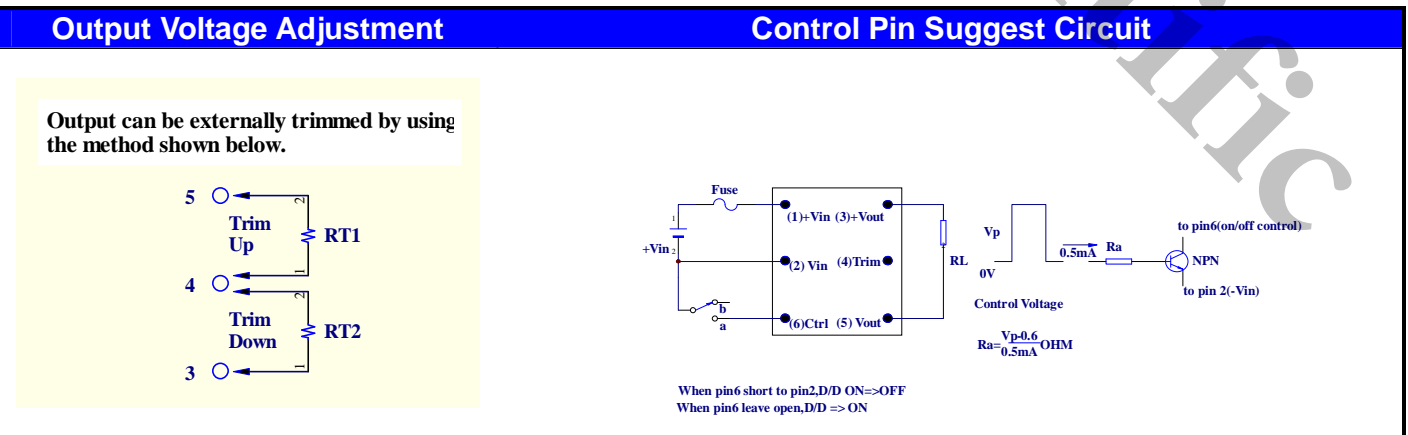
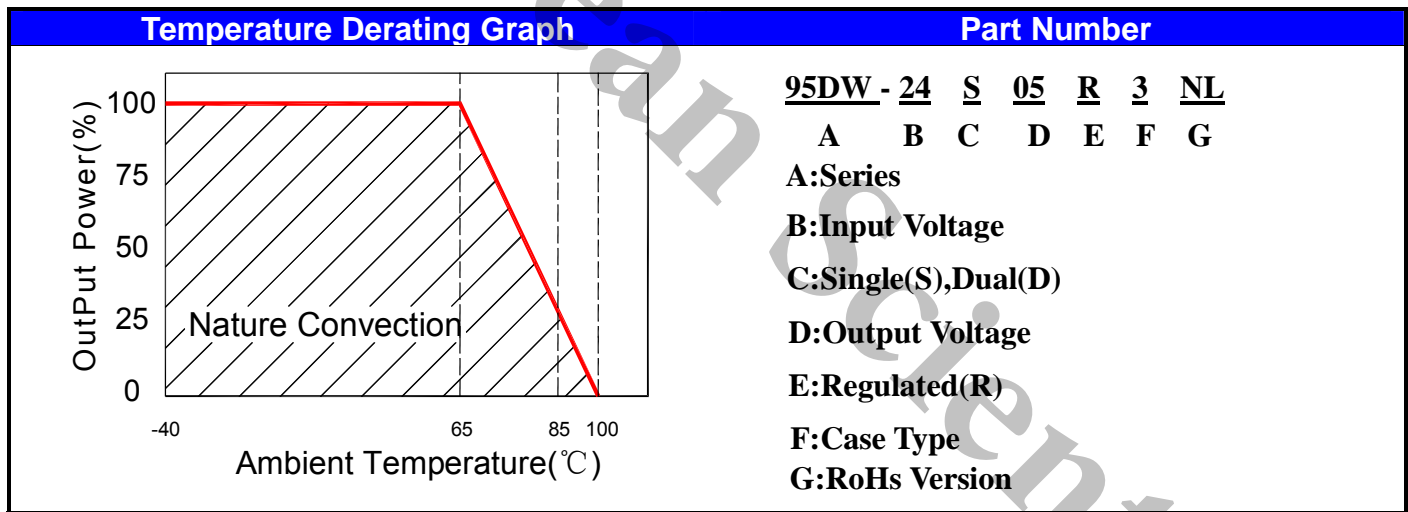
Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance				±2	%
Output voltage adj. range	only for single output models			±10	%
Line Regulation (Vmin - Vmax)	single output			0.5	%
	dual output			0.5	%
Load Regulation (25 - 100 %)	single output			0.5	%
	dual output models balanced load			1.0	%
Load variation(25%/100%)	dual output models unbalanced load			5.0	%
Minimum load	required	0		10	%
Ripple and noise(20 MHz bandwidth)	with external capacitor (See Note 1)			100	mVp-p
Temperature coefficient			±0.05		%/°C
Over Load Protection		120	150	180	%
Short circuit protection		Hiccup (automatic recovery)			
Over voltage protection	3.3VDC	3.7		5.4	Vout
	5VDC	5.6		7.0	Vout
	12VDC	13.5		19.6	Vout
	15VDC	16.8		20.5	Vout
Start up time	nominal Vin and constant resistive load		30		ms
Transient response setting time	25% load step change		300		us



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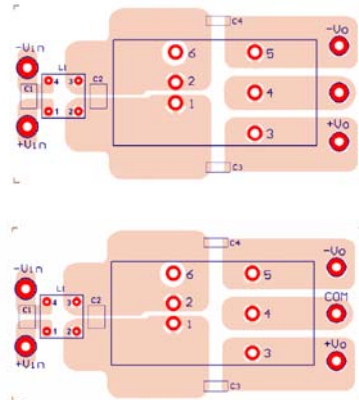
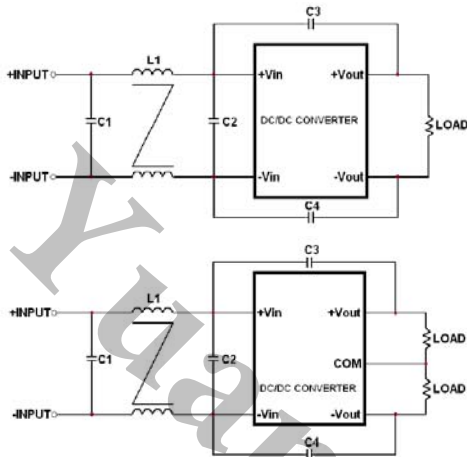
General Specifications					
Parameters	Conditions	Min	Typ	Max	Units
Temperature ranges	Operating(with derating)	-40		+85	°C
	Case temperature			105	°C
	Storage	-55		+125	°C
Humidity	non condensing	5		95	%
Reliability, calculated MTBF	MIL-HDBK-217F, @ +25° C, ground benign	659000			Hours
Isolation voltage	For 60 seconds(Input/Output)			1500	VDC
Isolation capacity	Input/Output		1000		pF
Isolation resistance	Input/Output (500 VDC)	1000			MΩ
Remote On/Off	On	3.0 ~ 15 VDC or open circuit			
	Off	0 ~ 1.2 VDC or short circuit pin 6 and pin 2			
	Off idle current:		2.5		mA
Switching frequency (fixed)	pulse width modulation PWM		300		KHz
Vibration and thermal shock		MIL-STD-810E			
Safety standards		EN 60950-1, IEC 60950-1			
Case material		Black Coated Copper (or Nickel Coated) With Non-Conductive Base			
Base material		Non-conductive FR4			
Potting material		epoxy (UL 94V-0 rated)			
Weight		32.6 g (0.53 oz)			
Soldering temperature		max. 265 °C / 10sec			

Note : 1 Ripple & Noise measurement bandwidth is 20 MHz, measured with a 1uF M/C.



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EMC Considerations



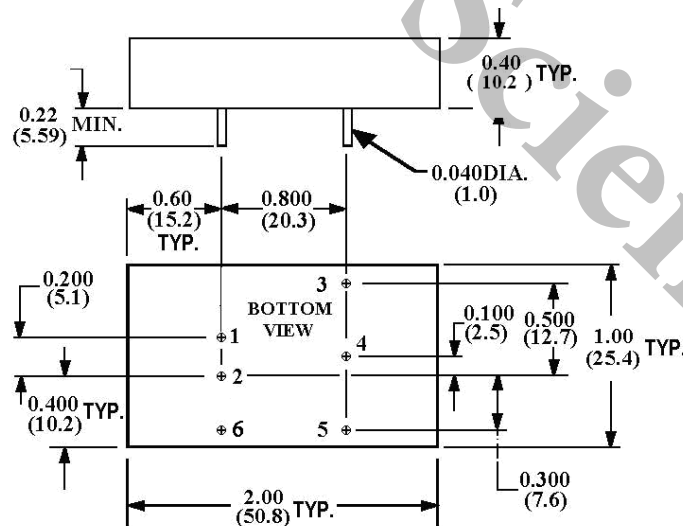
Suggested Schematic to comply with EN55022 Conducted Noise emission Class B

Recommended Layout with input Filter

Following components are needed to comply with EN55022 Class B conducted noise:

95DW-24S(D)xxR3NL				95DW-48S(D)xxR3NL			
Componet	Value	Voltage	Reference	Componet	Value	Voltage	Reference
C1,C2	6.8uF	50V	1812 MLCC	C1,C2	2.2uF	100V	1812 MLCC
C3,C4	1000pF	2KV	1206 MLCC	C3,C4	1000pF	2KV	1206 MLCC
L1	450uH		Common Mode Choke	L1	325uH		Common Mode Choke

Markings and dimensions



PIN Connection

PIN	1	2	3	4	5	6
SINGLE	+Vin	-Vin	+Vout	Trim	-Vout	Ctrl On/Off
DUAL	+Vin	-Vin	+Vout	Com	-Vout	Ctrl On/Off