WDD15 SERIES



DC - DC CONVERTER

12 ~ 15W SINGLE & DUAL OUTPUT

FEATURES

- EFFICIENCY UP TO 84%
- 4:1 WIDE INPUT RANGE
- I/O ISOLATION
- INPUT Pi FILTER
- SHORT CIRCUIT PROTECTION
- HIGH PERFORMANCE
- 3 YEARS WARRANTY

MODEL LIST

MODEL NO.	INPUT VOLTAGE	INPUT CURRENT (typ.)	OUTPUT WATTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	EFF. (min.)	EFF. (typ.)	CAPACITOR LOAD (max.)
Single Output Models								
WDD15 - 03S4	10~36 VDC	0.63 A	12 WATTS	+3.3 VDC	3600 mA	77%	80%	7000 μF
WDD15 - 05S4	10~36 VDC	0.78 A	15 WATTS	+ 5 VDC	3000 mA	79%	81%	7000 μF
WDD15 - 12S4	10~36 VDC	0.75 A	15 WATTS	+ 12 VDC	1250 mA	81%	83%	470 μF
WDD15 - 15S4	10~36 VDC	0.75 A	15 WATTS	+ 15 VDC	1000 mA	81%	83%	220 μF
WDD15 - 03S5	18~72 VDC	0.32 A	12 WATTS	+3.3 VDC	3600 mA	77%	80%	7000 μF
WDD15 - 05S5	18~72 VDC	0.39 A	15 WATTS	+ 5 VDC	3000 mA	79%	81%	7000 μF
WDD15 - 12S5	18~72 VDC	0.37 A	15 WATTS	+ 12 VDC	1250 mA	82%	84%	470 μF
WDD15 - 15S5	18~72 VDC	0.38 A	15 WATTS	+ 15 VDC	1000 mA	80%	82%	220 μF
Dual Output Models								
WDD15 - 12D4	10~36 VDC	0.78 A	15 WATTS	± 12 VDC	± 630 mA	80%	82%	± 1000 μF
WDD15 - 15D4	10~36 VDC	0.78 A	15 WATTS	± 15 VDC	± 500 mA	79%	81%	± 1000 μF
WDD15 - 12D5	18~72 VDC	0.39 A	15 WATTS	± 12 VDC	± 630 mA	80%	82%	± 1000 μF
WDD15 - 15D5	18~72 VDC	0.38 A	15 WATTS	± 15 VDC	± 500 mA	79%	81%	± 1000 μF

SPECIFICATION

All Specifications Typical At Nominal Line, Full Load, 25°C Unless Otherwise Noticed

GENERAL

Characteristics	Conditions		min.	typ.	max.	unit
Switching frequency	Vi nom, Io nom			230		KHz
Isolation voltage	Input - Output		1,500			VDC
Isolation resistance	Input - Output, @ 500VDC		100			MΩ
Isolation capacitance	100KHz / 1V				1,000	PF
Ambient temperature	Vi nom, Io nom	3.3V & 5V output models	-25		+61	°C
		12V, 15V & dual output models	-25		+71	°C
Case temperature	Operating at Vi nom, Io nom				+100	°C
Derating	Vi nom			See derating curve		
Storage temperature	Non operational		-40		+100	°C
Relative humidity	Vi nom, Io nom		20		95	% RH
Temperature coefficient	Vi nom, Io min				±0.02	% / °C
Dimension				L50.8 x W40.64 x H10.16		mm
MTBF	Bellcore issue 6@40°C, GB			1,270,000		Hours
Cooling	Free air convection					

INPUT SPECIFICATIONS

Characteristics	Conditions		min.	typ.	max.	unit
Input voltage range	Ta min ...Ta max, Io nom		10	24	36	VDC
			18	48	72	VDC
No load input current	Vi nom, Io=0	24V			15	mA
		48V			10	mA
Input voltage w/o damage	Io nom	24V			40	VDC
		48V			75	VDC
Startup voltage	Io nom	24V		9.5		VDC
		48V		16		VDC
Input filter	Pi type					

OUTPUT SPECIFICATIONS

Characteristics	Conditions		min.	typ.	max.	unit
Output voltage accuracy	Vi nom, Io nom				±2	%
Minimum load	Vi nom	single output models	0			%
		dual output models (each output)	10			%
Line regulation	Io nom, Vi min ...Vi max				±1	%
Load regulation	Vi nom, Io 0 ... Io nom, single output models				±2	%
	Vi nom, Io min ... Io nom, dual output models				±5	%
Cross regulation (Dual model)	Aymmetrical load 10% - 100% FL				±5	%
Startup time	Vi nom, Io nom				30	ms
Transient recovery time	Vi nom, 1~0.5 Io nom				500	μs
Ripple & noise	Vi nom, Io nom, BW = 20MHz	3.3V & 5V			100	mV
		12V, 15V & dual			150	mV
Voltage trim range 1)	Vi nom	3.3V		± 5		%
		5V, 12V, 15V & dual		±10		%
Efficiency	Vi nom, Io nom, Po / Pi			Up to 84%, See model list and efficiency curve		

NOTE 1 : Pls refer to Fig 1 & Table 1 for connection and resistance recommended.

CONTROL AND PROTECTION

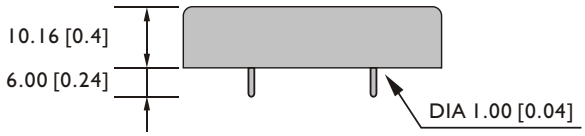
Remote ON / OFF	ON : opened or 8 ~ 10VDC applied, reference to input GND OFF : -0.3 ~ 2VDC applied, reference to input GND
Input reversed	Shunt diode built in, external fuse recommended (24Vin : 2A, 48Vin : 1A)
Output short circuit	Current limited (Auto-recovery)
Rated over load protection	110%min....140%max

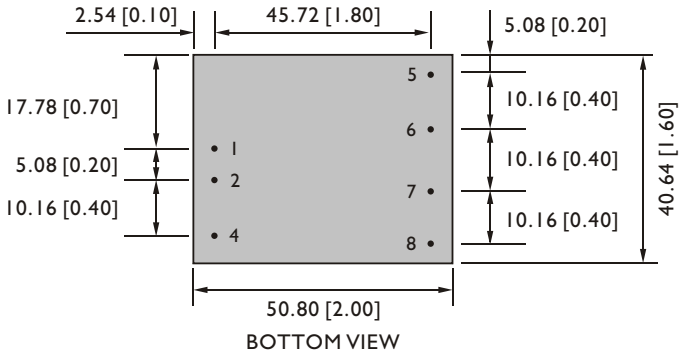
PHYSICAL CHARACTERISTICS

Case size	50.8 x 40.64 x 10.16 mm (2 x 1.6 x 0.4 inches)
Case material	Plastic base / Metal case
Weight	60 g
Potting material	Epoxy

MECHANISM & PIN CONFIGURATION

mm [inch]





GENERAL TOLERANCE	
0.00[0.00] - 30.00[1.18]	±0.30[0.01]
30.00[1.18] - 120.00[4.72]	±0.50[0.02]

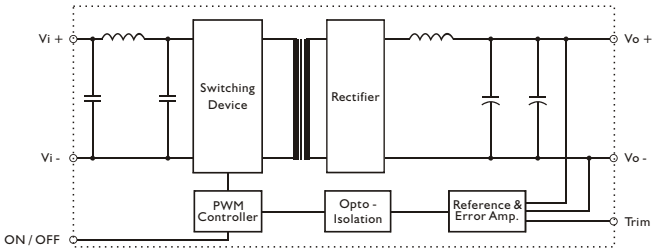
PIN ASSIGNMENT

GENERAL

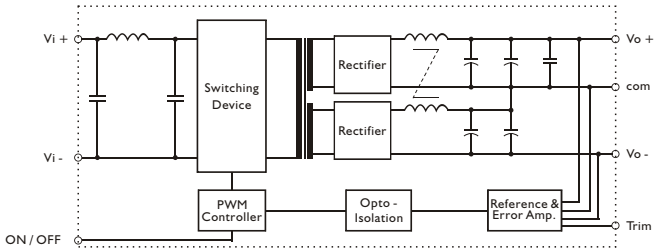
PIN NO.	1	2	4	5	6	7	8
SINGLE	Vi+	Vi -	ON / OFF	NO PIN	Vo +	Vo -	Trim
DUAL	Vi+	Vi -	ON / OFF	Vo +	com	Vo -	Trim

CIRCUIT SCHEMATIC

• Block diagram for WDD15 series with single output

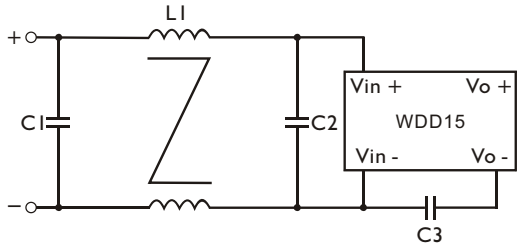


• Block diagram for WDD15 series with dual output

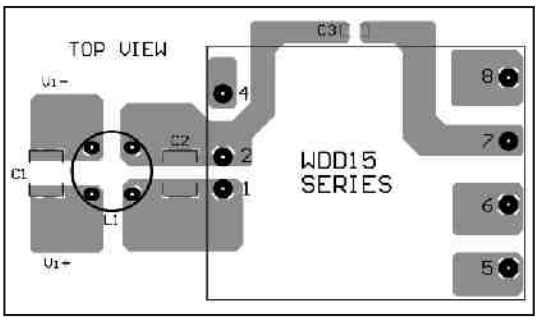


RECOMMENDED CIRCUIT

• Recommended filter for EN55022 Class B compliance



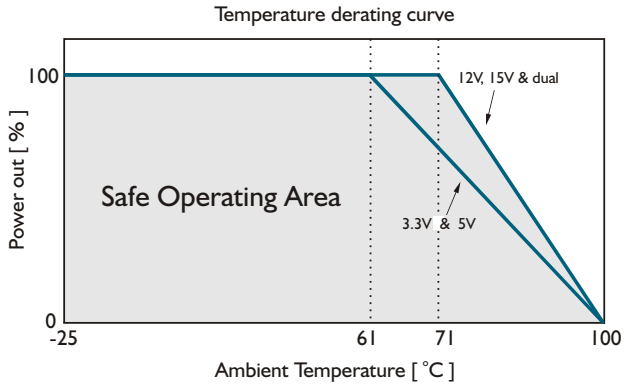
• Recommended EN 55022 Class B filter circuit layout.

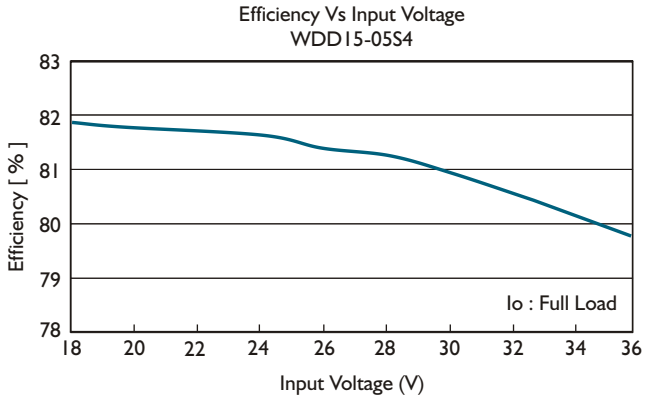


• The components used in the above figure, together with the manufacturer part numbers for these components, are as follows.

	C1	C2	C3	L1
WDD15-XXX4	1 μF / 50V MLCC	1 μF / 50V MLCC	1nF / 2KV MLCC	1.5mH Common Choke
WDD15-XXX5	3.3 μF / 100V MLCC	3.3 μF / 100V MLCC	1nF / 2KV MLCC	3.5mH Common Choke

DERATING AND EFFICIENCY CURVE





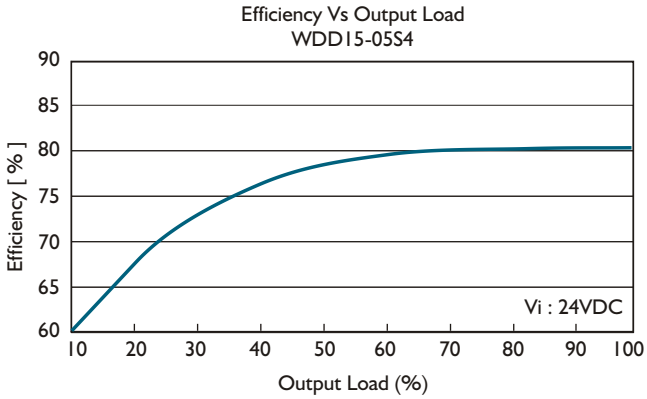
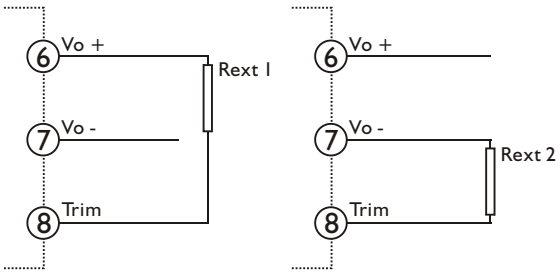


Fig. 1 Trim connection

(For Single output)



(For Dual output)

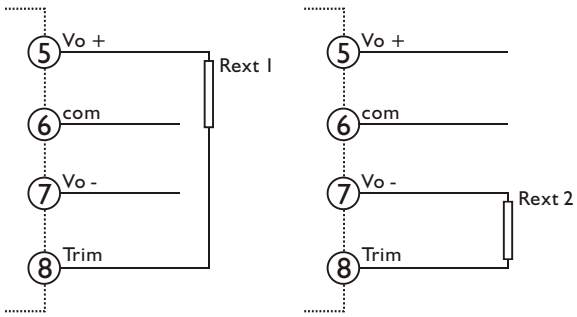


Table 1 Typical resistor values for various output voltage adjustment settings

Type	Rext 1		Rext 2	
	Vo nom -2.5%	Vo nom -5%	Vo nom +2.5%	Vo nom +5%
WDD15-03SX	750Ω	510Ω	8.66KΩ	3.9KΩ
Type	Vo nom -5%	Vo nom -10%	Vo nom +5%	Vo nom +10%
WDD15-05SX	4.7KΩ	0Ω	4.7KΩ	470Ω
WDD15-12SX	47KΩ	15KΩ	5.6KΩ	200Ω
WDD15-15SX	150KΩ	56KΩ	12KΩ	1KΩ
WDD15-12DX	130KΩ	51KΩ	10KΩ	750Ω
WDD15-15DX	330KΩ	150KΩ	20KΩ	3KΩ