

# RDD05 SERIES

DC - DC CONVERTER  
5 ~ 6W SINGLE & DUAL OUTPUT



## FEATURES

- EFFICIENCY UP TO 88%
- 2:1 WIDE INPUT RANGE
- I/O ISOLATION
- INPUT Pi FILTER
- SHORT CIRCUIT PROTECTION
- 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.)
<b>Single Output Models</b>								
RDD05 - 03S1	9~18 VDC	0.55A	5 WATTS	+3.3 VDC	1500 mA	74%	76%	2200 $\mu$ F
RDD05 - 05S1	9~18 VDC	0.53A	5 WATTS	+ 5 VDC	1000 mA	77%	79%	1500 $\mu$ F
RDD05 - 12S1	9~18 VDC	0.61A	6 WATTS	+ 12 VDC	500 mA	81%	83%	270 $\mu$ F
RDD05 - 15S1	9~18 VDC	0.60A	6 WATTS	+ 15 VDC	400 mA	82%	84%	180 $\mu$ F
RDD05 - 03S2	18~36 VDC	0.27A	5 WATTS	+3.3 VDC	1500 mA	77%	79%	2200 $\mu$ F
RDD05 - 05S2	18~36 VDC	0.26A	5 WATTS	+ 5 VDC	1000 mA	80%	82%	1500 $\mu$ F
RDD05 - 12S2	18~36 VDC	0.29A	6 WATTS	+ 12 VDC	500 mA	84%	86%	270 $\mu$ F
RDD05 - 15S2	18~36 VDC	0.28A	6 WATTS	+ 15 VDC	400 mA	85%	87%	180 $\mu$ F
RDD05 - 03S3	35~75 VDC	0.13A	5 WATTS	+3.3 VDC	1500 mA	78%	80%	2200 $\mu$ F
RDD05 - 05S3	35~75 VDC	0.13A	5 WATTS	+ 5 VDC	1000 mA	81%	83%	1500 $\mu$ F
RDD05 - 12S3	35~75 VDC	0.14A	6 WATTS	+ 12 VDC	500 mA	85%	87%	270 $\mu$ F
RDD05 - 15S3	35~75 VDC	0.14A	6 WATTS	+ 15 VDC	400 mA	86%	88%	180 $\mu$ F
<b>Dual Output Models</b>								
RDD05 - 05D1	9~18 VDC	0.54A	5 WATTS	$\pm$ 5 VDC	$\pm$ 500 mA	76%	78%	$\pm$ 680 $\mu$ F
RDD05 - 12D1	9~18 VDC	0.61A	6 WATTS	$\pm$ 12 VDC	$\pm$ 250 mA	80%	82%	$\pm$ 150 $\mu$ F
RDD05 - 15D1	9~18 VDC	0.60A	6 WATTS	$\pm$ 15 VDC	$\pm$ 200 mA	81%	83%	$\pm$ 68 $\mu$ F
RDD05 - 05D2	18~36 VDC	0.26A	5 WATTS	$\pm$ 5 VDC	$\pm$ 500 mA	78%	80%	$\pm$ 680 $\mu$ F
RDD05 - 12D2	18~36 VDC	0.30A	6 WATTS	$\pm$ 12 VDC	$\pm$ 250 mA	83%	85%	$\pm$ 150 $\mu$ F
RDD05 - 15D2	18~36 VDC	0.29A	6 WATTS	$\pm$ 15 VDC	$\pm$ 200 mA	84%	86%	$\pm$ 68 $\mu$ F
RDD05 - 05D3	35~75 VDC	0.13A	5 WATTS	$\pm$ 5 VDC	$\pm$ 500 mA	79%	81%	$\pm$ 680 $\mu$ F
RDD05 - 12D3	35~75 VDC	0.15A	6 WATTS	$\pm$ 12 VDC	$\pm$ 250 mA	84%	86%	$\pm$ 150 $\mu$ F
RDD05 - 15D3	35~75 VDC	0.15A	6 WATTS	$\pm$ 15 VDC	$\pm$ 200 mA	85%	87%	$\pm$ 68 $\mu$ F

### 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		150		KHz
Isolation voltage	Input / Output	1,500			VDC
Isolation resistance	Input / Output, @ 500VDC	100			MΩ
Isolation capacitance	100KHz / IV		1,000		PF
Ambient temperature	Operating at Vi nom, Io nom	-25		+ 71	°C
Case temperature	Operating at Vi nom, Io nom			+ 90	°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		L31.8 x W20.3 x H12.7			mm
MTBF	Bellcore issue 6@40°C, GB		1,120,000		Hours
Cooling	Free air convection				
Vibration	meet IEC 60068-2-6 (Random wave, 10-2KHz, 5G, each along X, Y, Z axes 10 min/cycle, 60min)				

#### INPUT SPECIFICATIONS

Characteristics	Conditions	min.	typ.	max.	unit
Input voltage range	Ta min ... Ta max, Io nom	9	12	18	VDC
		18	24	36	VDC
		36	48	72	VDC
No load input current	Vi nom, Io = 0	12V		30	mA
		24V		25	mA
		48V		15	mA
Input voltage w/o damage	Io nom	12V		20	VDC
		24V		40	VDC
		48V		75	VDC
Startup voltage	Io nom	12V	8.7		VDC
		24V	17.4		VDC
		48V	31.5		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			%
	Vi nom dual output models (each output)	20			%
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			± 3	%
Cross regulation (Dual model)	Aymmetrical load 20% - 100% FL			± 5	%
Startup time	Vi nom, Io nom			500	ms
Transient recovery time	Vi nom, I ~ 0.5 Io nom			500	μs
Ripple & noise	Vi nom, Io nom, BW = 20MHz			100	mV
Efficiency	Vi nom, Io nom, Po / Pi	Up to 88%, See model list and efficiency curve			

### SPECIFICATION

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

### CONTROL AND PROTECTION

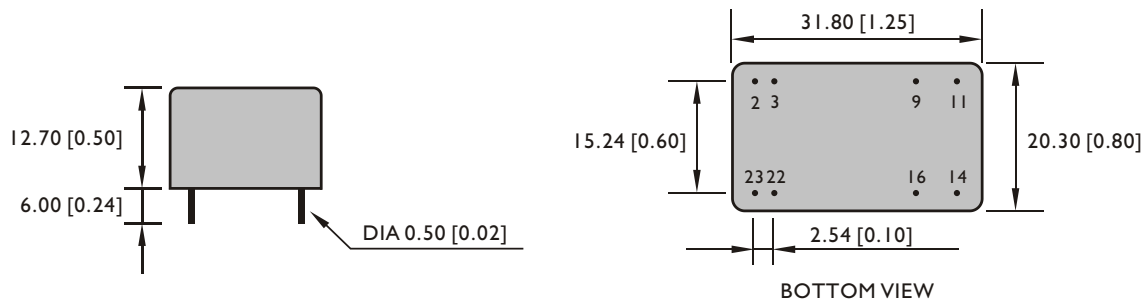
Input reversed	Shunt diode built in, external fuse recommended 1A
Output short circuit	Current limited (Auto-recovery)
Rated over load protection	110%min....140%max

### PHYSICAL CHARACTERISTICS

Case size	31.8 x 20.3 x 12.7 mm (1.25 x 0.8 x 0.5 inches)
Case material	Plastic
Weight	15 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]

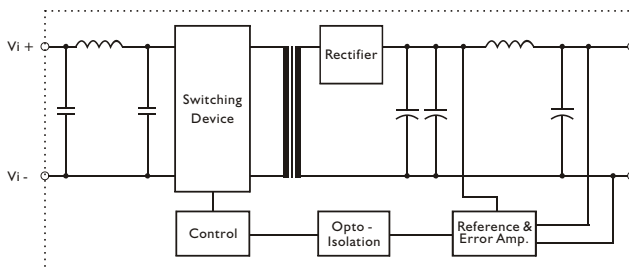
### PIN ASSIGNMENT

#### GENERAL

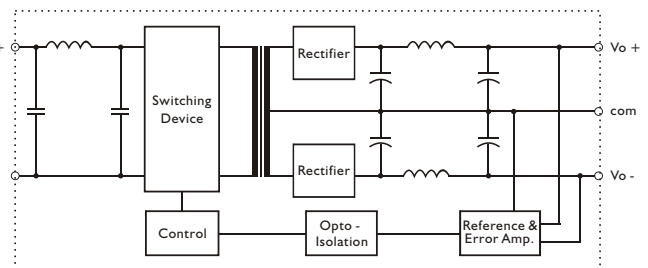
PIN NO.	2 & 3	9	11	14	16	22 & 23
SINGLE	Vi -	NO PIN	N. C.	Vo +	Vo -	Vi +
DUAL	Vi -	com	Vo -	Vo +	com	Vi +

### CIRCUIT SCHEMATIC

• Block diagram for RDD05 series with single output

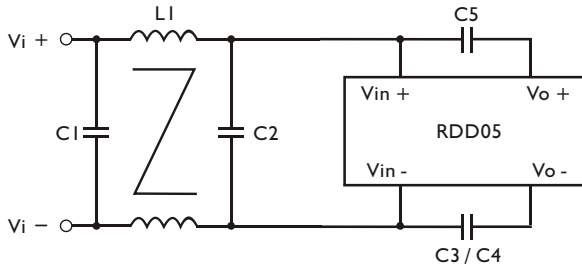


• Block diagram for RDD05 series with dual output



### RECOMMENDED CIRCUIT

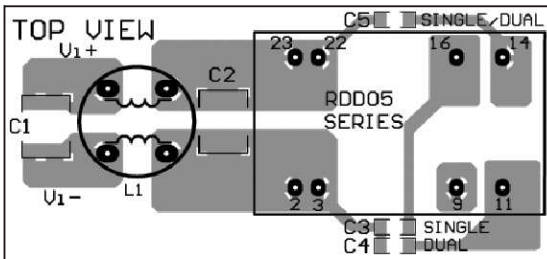
- Recommended filter for EN55022 Class B compliance.



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

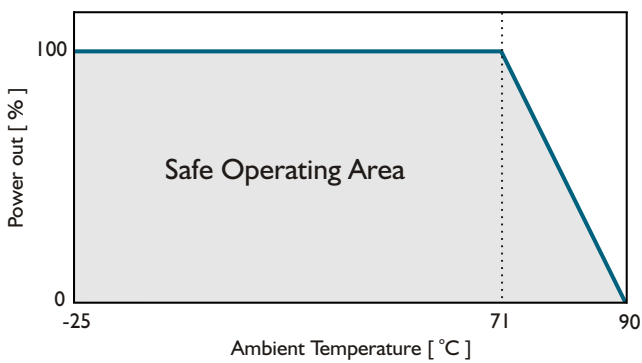
	C1	C2	C3 / C4	C5	L1
RDD05-XXX1	2.2 $\mu$ F / 50V MLCC	4.7 $\mu$ F / 50V MLCC	1nF/2KV MLCC	1nF/2KV MLCC	1.5mH Common Choke
RDD05-XXX2	2.2 $\mu$ F / 50V MLCC	4.7 $\mu$ F / 50V MLCC	1nF/2KV MLCC	1nF/2KV MLCC	1.5mH Common Choke
RDD05-XXX3	2.2 $\mu$ F / 100V MLCC	2.2 $\mu$ F / 100V MLCC	1nF/2KV MLCC	1nF/2KV MLCC	1.5mH Common Choke

- Recommended EN 55022 Class B filter circuit layout.

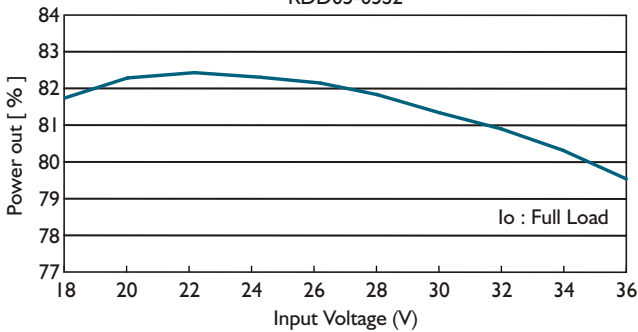


### DERATING AND EFFICIENCY CURVE

Temperature derating curve



Efficiency Vs Input Voltage  
RDD05-05S2



Efficiency Vs Output Load  
RDD05-05S2

