

# TDD15 SERIES

DC - DC CONVERTER  
12 ~ 15W SINGLE & DUAL OUTPUT



## FEATURES

- EFFICIENCY UP TO 87%
- 2:1 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.)
<b>Single Output Models</b>								
TDD15 - 03S2	18~36 VDC	0.63 A	12 WATTS	+3.3 VDC	3600 mA	77%	79%	3500 $\mu$ F
TDD15 - 05S2	18~36 VDC	0.77 A	15 WATTS	+ 5 VDC	3000 mA	79%	81%	3500 $\mu$ F
TDD15 - 12S2	18~36 VDC	0.76 A	15 WATTS	+ 12 VDC	1250 mA	80%	82%	2200 $\mu$ F
TDD15 - 15S2	18~36 VDC	0.69 A	15 WATTS	+ 15 VDC	1000 mA	83%	85%	2200 $\mu$ F
TDD15 - 03S3	35~75 VDC	0.31 A	12 WATTS	+3.3 VDC	3600 mA	78%	80%	3500 $\mu$ F
TDD15 - 05S3	35~75 VDC	0.37 A	15 WATTS	+ 5 VDC	3000 mA	80%	82%	3500 $\mu$ F
TDD15 - 12S3	35~75 VDC	0.36 A	15 WATTS	+ 12 VDC	1250 mA	84%	86%	2200 $\mu$ F
TDD15 - 15S3	35~75 VDC	0.35 A	15 WATTS	+ 15 VDC	1000 mA	85%	87%	2200 $\mu$ F
<b>Dual Output Models</b>								
TDD15 - 12D2	18~36 VDC	0.70 A	15 WATTS	$\pm$ 12 VDC	$\pm$ 630 mA	81%	83%	$\pm$ 1500 $\mu$ F
TDD15 - 15D2	18~36 VDC	0.71 A	15 WATTS	$\pm$ 15 VDC	$\pm$ 500 mA	82%	84%	$\pm$ 1500 $\mu$ F
TDD15 - 12D3	35~75 VDC	0.36 A	15 WATTS	$\pm$ 12 VDC	$\pm$ 630 mA	82%	84%	$\pm$ 330 $\mu$ F
TDD15 - 15D3	35~75 VDC	0.36 A	15 WATTS	$\pm$ 15 VDC	$\pm$ 500 mA	83%	85%	$\pm$ 330 $\mu$ 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		200		KHz
Isolation voltage	Input - Output	1,500			VDC
Isolation resistance	Input - Output, @ 500VDC	100			MΩ
Isolation capacitance	100KHz / 1V			1,000	PF
Ambient temperature	Operating at Vi nom, Io nom	-25		+ 61	°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 W25.4 x H11.5			mm
MTBF	Bellcore issue 6@40°C, GB		840,700		Hours
Cooling	Free air convection				

#### INPUT SPECIFICATIONS

Characteristics	Conditions	min.	typ.	max.	unit
Input voltage range	Ta min ... Ta max, Io nom	18	24	36	VDC
		35	48	75	VDC
No load input current	Vi nom, Io = 0	24V		25	mA
		48V		15	mA
Input voltage w/o damage	Io nom	24V		40	VDC
		48V		80	VDC
Startup voltage	Io nom	24V	16		VDC
		48V	30		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)	16			%
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 16% - 100% FL			± 5	%
Startup time	Vi nom, Io nom			30	ms
Transient recovery time	Vi nom, I ~ 0.5 Io nom			500	μs
Ripple & noise	Vi nom, Io nom, BW = 20MHz			150	mV
Efficiency	Vi nom, Io nom, Po / Pi	Up to 87%, See model list and efficiency curve			

#### CONTROL AND PROTECTION

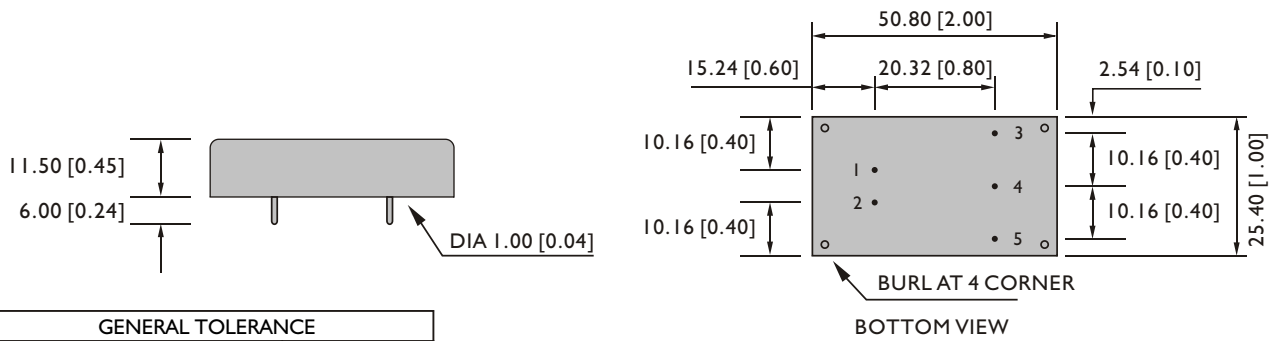
Input reversed	Shunt diode built in, external fuse recommended 1.5 A
Output short circuit	Current limited (Auto-recovery)
Rated over load protection	110%min....160%max

### PHYSICAL CHARACTERISTICS

Case size	50.8 x 25.4 x 11.5 mm (2 x 1 x 0.45 inches)
Case material	Plastic base / Metal case
Weight	35 g
Potting material	Epoxy

### MECHANISM & PIN CONFIGURATION

mm [inch]



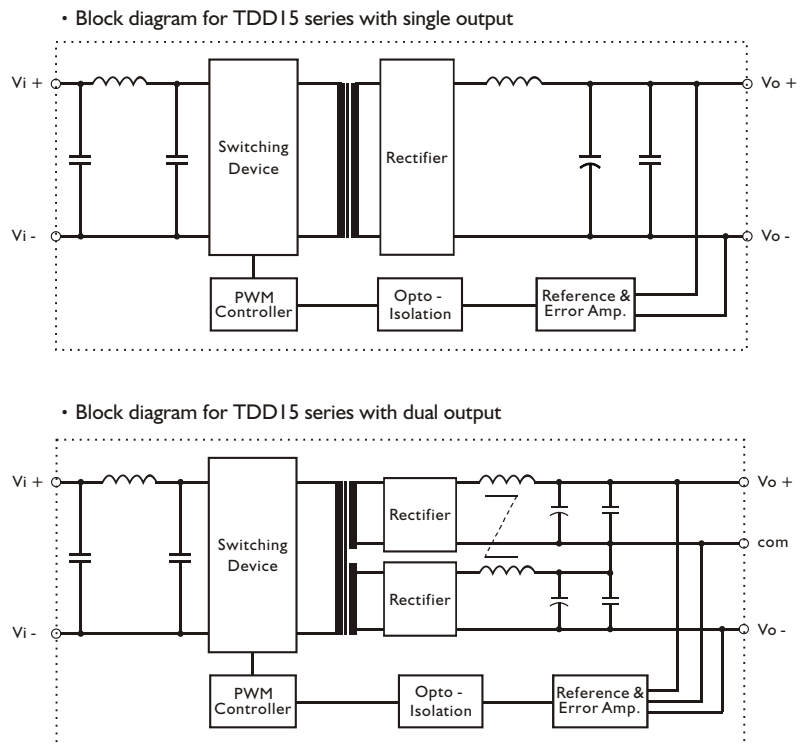
GENERAL TOLERANCE	
0.00[0.00] - 30.00[1.18]	±0.30[0.01]
30.00[1.18] - 120.00[4.72]	±0.50[0.02]

### PIN ASSIGNMENT

#### GENERAL

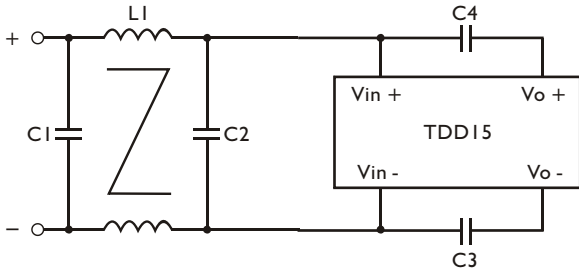
PIN NO.	1	2	3	4	5
SINGLE	Vi +	Vi -	Vo +	NO PIN	Vo -
DUAL	Vi +	Vi -	Vo +	com	Vo -

### CIRCUIT SCHEMATIC

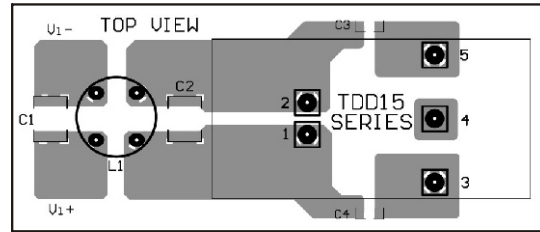


### RECOMMENDED CIRCUIT

- Recommended filter for EN 55032 Class B compliance.



- Recommended EN 55032 Class B filter circuit layout.

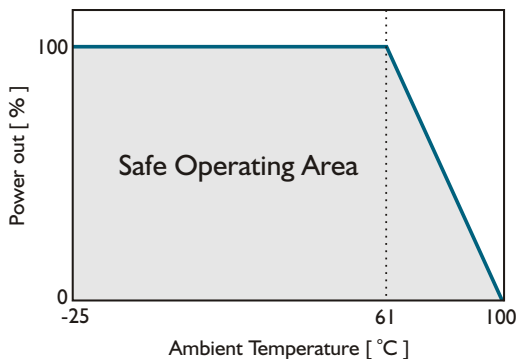


- The components used in the above figure, together with the manufacturer part numbers for these components, are as follows.

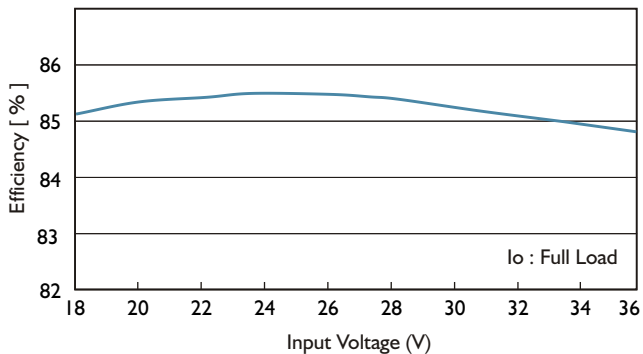
	C1	C2	C3	C4	L1
TDD15-XXX2	2.2 $\mu$ F / 50V MLCC	4.7 $\mu$ F / 50V MLCC	1nF / 2KV MLCC	1nF / 2KV MLCC	1.5 mH Common choke
TDD15-XXX3	2.2 $\mu$ F / 100V MLCC	4.7 $\mu$ F / 100V MLCC	1nF / 2KV MLCC	1nF / 2KV MLCC	1.5 mH Common choke

### DERATING AND EFFICIENCY CURVE

Temperature derating curve



Efficiency Vs Input Voltage  
TDD15-05S2



Efficiency Vs Output Load  
TDD15-05S2

