

# TDD05 SERIES

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



## FEATURES

- EFFICIENCY UP TO 78%
- 4:1 WIDE INPUT RANGE
- I/O ISOLATION
- INPUT Pi FILTER
- SHORT CIRCUIT PROTECTION
- HIGH PERFORMANCE
- 2 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>								
TDD05 - 03S4	10~36 VDC	0.30 A	5 WATTS	+3.3 VDC	1500 mA	63%	65%	3500 $\mu$ F
TDD05 - 05S4	10~36 VDC	0.29 A	5 WATTS	+ 5 VDC	1000 mA	68%	70%	3500 $\mu$ F
TDD05 - 12S4	10~36 VDC	0.32 A	6 WATTS	+ 12 VDC	500 mA	73%	75%	330 $\mu$ F
TDD05 - 15S4	10~36 VDC	0.31 A	6 WATTS	+ 15 VDC	400 mA	73%	75%	330 $\mu$ F
TDD05 - 03S5	18~72 VDC	0.15 A	5 WATTS	+3.3 VDC	1500 mA	63%	65%	3500 $\mu$ F
TDD05 - 05S5	18~72 VDC	0.14 A	5 WATTS	+ 5 VDC	1000 mA	70%	72%	3500 $\mu$ F
TDD05 - 12S5	18~72 VDC	0.16 A	6 WATTS	+ 12 VDC	500 mA	75%	77%	330 $\mu$ F
TDD05 - 15S5	18~72 VDC	0.16 A	6 WATTS	+ 15 VDC	400 mA	76%	78%	330 $\mu$ F
<b>Dual Output Models</b>								
TDD05 - 05D4	10~36 VDC	0.29 A	5 WATTS	$\pm$ 5 VDC	$\pm$ 500 mA	68%	70%	$\pm$ 680 $\mu$ F
TDD05 - 12D4	10~36 VDC	0.34 A	6 WATTS	$\pm$ 12 VDC	$\pm$ 250 mA	72%	74%	$\pm$ 150 $\mu$ F
TDD05 - 15D4	10~36 VDC	0.32 A	6 WATTS	$\pm$ 15 VDC	$\pm$ 200 mA	73%	75%	$\pm$ 47 $\mu$ F
TDD05 - 05D5	18~72 VDC	0.14 A	5 WATTS	$\pm$ 5 VDC	$\pm$ 500 mA	70%	72%	$\pm$ 680 $\mu$ F
TDD05 - 12D5	18~72 VDC	0.16 A	6 WATTS	$\pm$ 12 VDC	$\pm$ 250 mA	75%	77%	$\pm$ 150 $\mu$ F
TDD05 - 15D5	18~72 VDC	0.16 A	6 WATTS	$\pm$ 15 VDC	$\pm$ 200 mA	76%	78%	$\pm$ 47 $\mu$ 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	1500			VDC
Isolation resistance	Input - Output, @ 500VDC	100			MΩ
Isolation capacitance	100KHz / 1V			330	PF
Ambient temperature	Operating at Vi nom, Io nom	-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 W25.4 x H11.5			mm
MTBF	Bellcore issue 6@40°C, GB		943200		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 models		25	mA
		48V models		15	mA
Input voltage w/o damage	Io nom	24V models		40	VDC
		48V models		75	VDC
Startup voltage	Io nom	24V models	9.8		VDC
		48V models	17		VDC
Input filter	Pi type				

#### OUTPUT SPECIFICATIONS

Characteristics	Conditions	min.	typ.	max.	unit
Output voltage accuracy	Vi nom, Io nom	single output models		± 2	%
		dual output models		± 2	%
		- 5V model		± 3	%
Minimum load	Vi nom	single output models	0		%
		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			± 5	%
Cross regulation (Dual model)	Aymmetrical load 20% - 100% FL			± 8	%
Startup time	Vi nom, Io nom			1000	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 78%, See model list and efficiency curve			

#### CONTROL AND PROTECTION

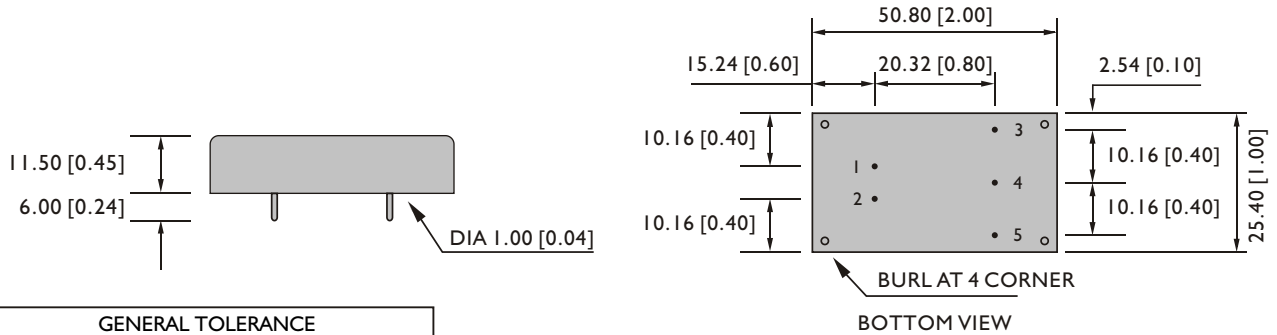
Input reversed	Shunt diode built in, external fuse recommended 1A
Output short circuit	Current limited (Auto-recovery)
Rated over load protection	110%min....160%max

### 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
Patting material	Epoxy

### MECHANISM & PIN CONFIGURATION

mm [inch]



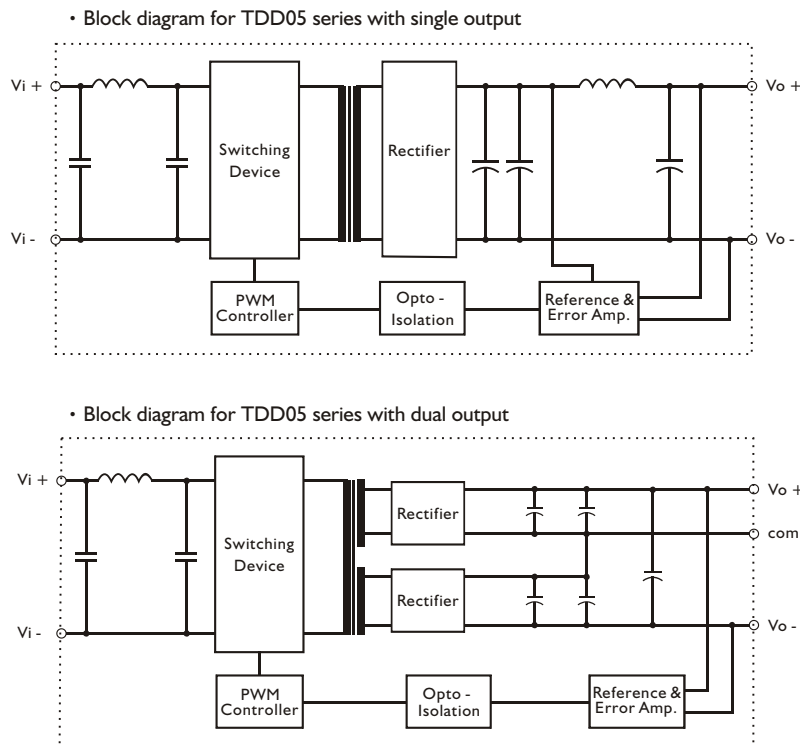
GENERAL TOLERANCE	
0.00[0.00] - 30.00[1.18]	±0.30[0.01]
30.00[1.18] - 120.00[4.72]	±0.50[0.02]

### PIN ASSIGMENT

#### GENERAL

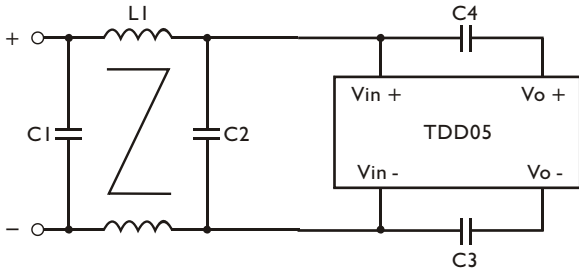
PIN NO.	1	2	3	4	5
SINGLE	Vi +	Vi -	Vo +	NO PIN	Vo -
DUAL	Vi +	Vi -	Vo +	com	Vo -

### CIRCUIT SCHEMATIC

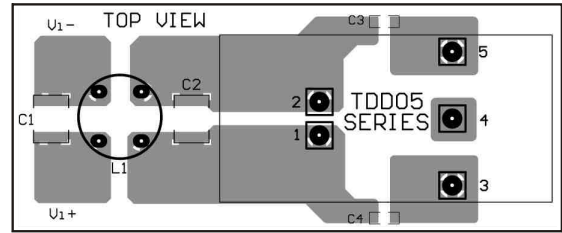


### RECOMMENDED CIRCUIT

- Recommended filter for EN55022 Class B compliance.



- Recommended EN 55022 Class B filter circuit layout.

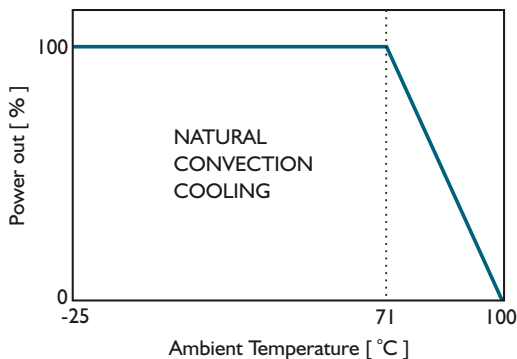


- The components used in the above figure, together with the manufacturer part numbers for these components, are as follows.

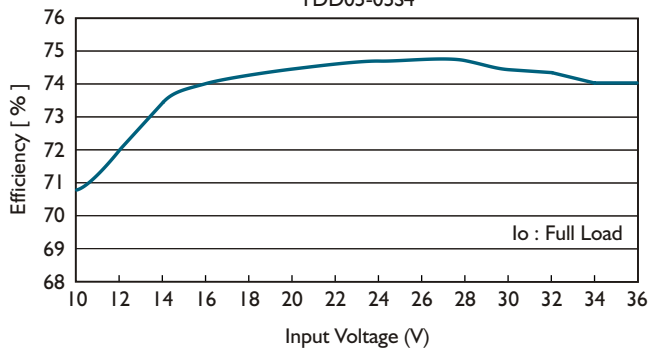
	C1	C2	C3	C4	L1
TDD05-XXX4	2.2 $\mu$ F / 50V MLCC	4.7 $\mu$ F / 50V MLCC	0.22nF / 2KV MLCC	0.22nF / 2KV MLCC	1.5 mH Common choke
TDD05-XXX5	2.2 $\mu$ F / 100V MLCC	4.7 $\mu$ F / 100V MLCC	0.22nF / 2KV MLCC	0.22nF / 2KV MLCC	1.5 mH Common choke

### DERATING AND EFFICIENCY CURVE

Temperature derating curve



Efficiency Vs Input Voltage  
TDD05-05S4



Efficiency Vs Output Load  
TDD05-05S4

