TDD25 SERIES

DC - DC CONVERTER

23 ~ 25W SINGLE & DUAL OUTPUT

FEATURES

- EFFICIENCY UP TO 86%
- 2:1 & 3:1 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.)
Single Output Models								
TDD25 - 03S2	18~60 VDC	1.17 A	23 WATTS	+3.3 VDC	7000 mA	78%	80%	3500μF
TDD25 - 05S2	18~60 VDC	1.20 A	25 WATTS	+ 5 VDC	5000 mA	84%	86%	3500μF
TDD25 - 12S2	18~60 VDC	1.13 A	24 WATTS	+ 12 VDC	2000 mA	84%	86%	470μF
TDD25 - 15S2	18~60 VDC	1.18 A	25 WATTS	+ 15 VDC	1700 mA	84%	86%	300μF
TDD25 - 03S3	35~75 VDC	0.58 A	23 WATTS	+3.3 VDC	7000 mA	78%	80%	3500μF
TDD25 - 05S3	35~75 VDC	0.60 A	25 WATTS	+ 5 VDC	5000 mA	84%	86%	3500μF
TDD25 - 12S3	35~75 VDC	0.56 A	24 WATTS	+ 12 VDC	2000 mA	84%	86%	470μF
TDD25 - 15S3	35~75 VDC	0.59 A	25 WATTS	+ 15 VDC	1700 mA	84%	86%	300μF
Dual Output Models								
TDD25 - 12D2	18~60 VDC	1.11 A	25 WATTS	± 12 VDC	± 1000 mA	84%	86%	± 220μF
TDD25 - 15D2	18~60 VDC	1.21 A	25 WATTS	± 15 VDC	± 850 mA	84%	86%	± 100μF
TDD25 - 12D3	35~75 VDC	0.59 A	25 WATTS	± 12 VDC	± 1000 mA	84%	86%	± 220μF
TDD25 - 15D3	35~75 VDC	0.61 A	25 WATTS	± 15 VDC	± 850 mA	84%	86%	± 100μF

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			300		KHz
Isolation voltage	Input - Output		1500			VDC
Isolation resistance	Input - Output, @ 500VDC		100			MΩ
Isolation capacitance	100KHz / 1V				1000	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				L76.2 x W50.8 x H12		mm
MTBF	Bellcore issue 6@40°C, GB			701800		Hours
Cooling	Free air convection					

INPUT SPECIFICATIONS

Characteristics	Conditions		min.	typ.	max.	unit
Input voltage range	Ta min ...Ta max, Io nom		18	24	60	VDC
			35	48	75	VDC
No load input current	Vi nom, Io=0	24V models			20	mA
		48V models			15	mA
Input voltage w/o damage	Io nom	24V models			65	VDC
		48V models			80	VDC
Startup voltage	Io nom	24V models		16		VDC
		48V models		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			%
		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				± 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 models			150	mV
		12V, 15V & dual			Vout x±1%	mV
Voltage trim range *	Vi nom	3.3V model		± 5		%
		5V, 12V, 15V & dual		±10		%
Efficiency	Vi nom, Io nom, Po / Pi			Up to 86%, See model list and efficiency curve		

** NOTE : Pls refer to Fig1 & Table 1 for connection resistance recommended.*

CONTROL AND PROTECTION

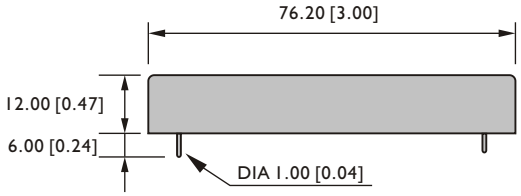
Remote ON / OFF	ON: opened or 8 ~ 10VDC applied, reference to input GND
	OFF: -0.3 ~ 2VDC applied, reference to input GND
Input reversed	Shunt diode built in, external fuse recommended (24Vin : 2A, 48Vin : 1.5A)
Output short circuit	Current limited (Auto-recovery)
Rated over load protection	110%min....140%max

PHYSICAL CHARACTERISTICS

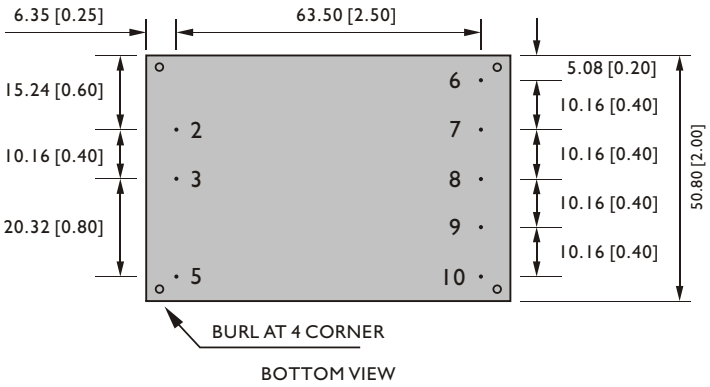
Case size	76.2 x 50.8 x 12 mm (3 x 2 x 0.47 inches)
Case material	Plastic base / Metal case
Weight	105 g
Patting material	Epoxy

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]



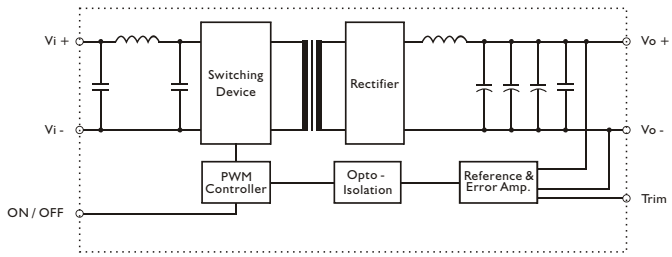
PIN ASSIGNMENT

GENERAL

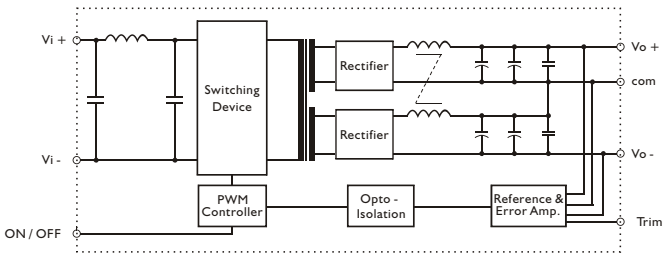
PIN NO.	2	3	5	6	7	8	9	10
SINGLE	Vi -	Vi+	ON / OFF	N. C.	N. C.	Vo -	Vo +	Trim
DUAL	Vi -	Vi+	ON / OFF	Vo -	N. C.	com	Vo +	Trim

CIRCUIT SCHEMATIC

• Block diagram for TDD25 series with single output

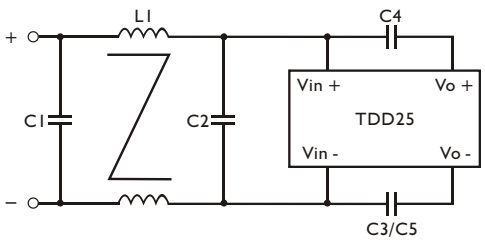


• Block diagram for TDD25 series with dual output



RECOMMENDED CIRCUIT

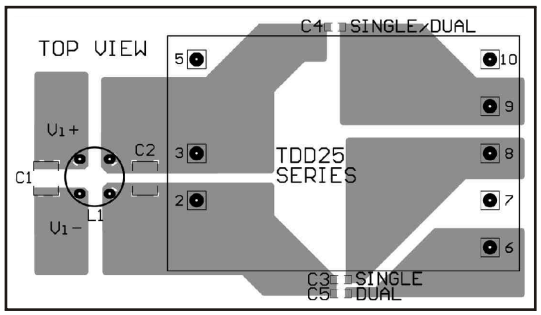
• Recommended filter for EN55022 Class B compliance.



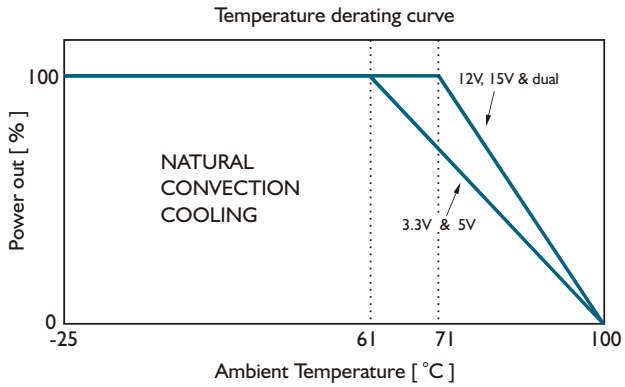
• The commponents used in the above figure, together with the manufacturer part numbers for these components, are as follows.

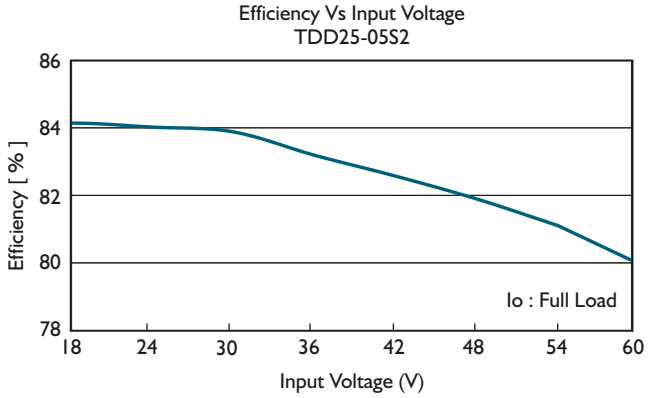
	C1	C2	C3/C4/C5	L1
TDD25-XXSX	6.8μF / 100V MLCC	6.8μF / 100V MLCC	InF / 2KV MLCC	500μH Command Chock
TDD25-XXDX	6.8μF / 100V MLCC	6.8μF / 100V MLCC	2.2nF / 2KV MLCC	500μH Command Chock

• Recommended EN 55022 Class B filter circuit layout.



DERATING AND EFFICIENCY CURVE





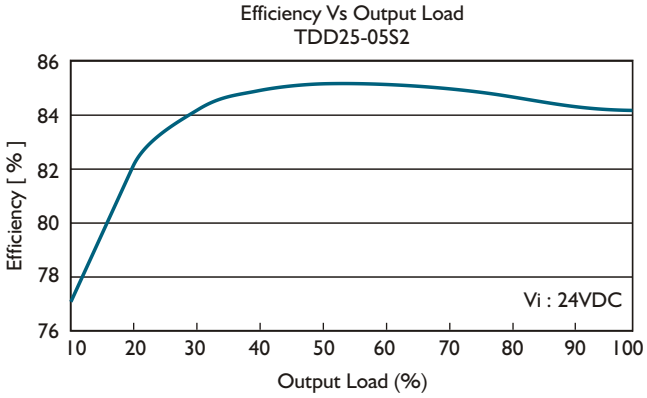


Fig. 1 Trim connection

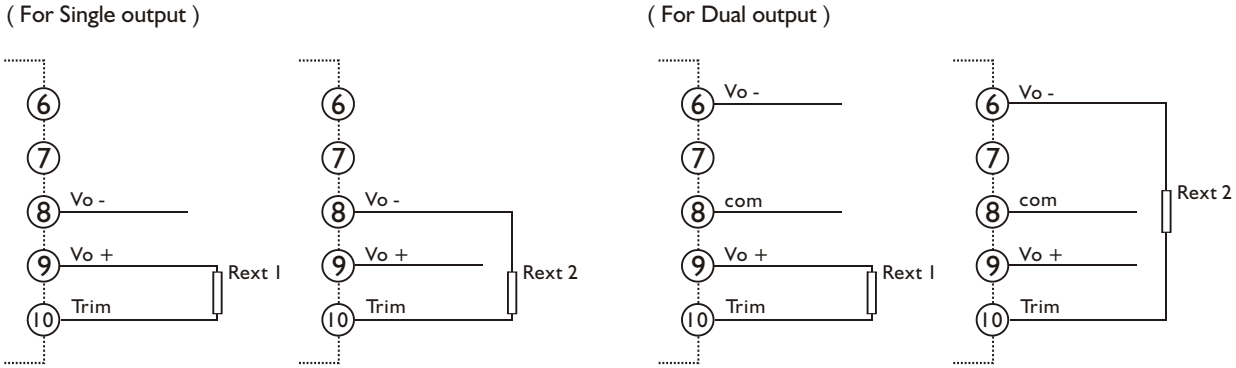


Table 1 Typical resistor values for various output voltage adjustment settings

Type	Rext 1		Rext 2	
	Vo nom -2.5%	Vo nom -5%	Vo nom +2.5%	Vo nom +5%
TDD25-03SX	1KΩ	0Ω	6.8KΩ	3.9KΩ
Type	Vo nom -5%	Vo nom -10%	Vo nom +5%	Vo nom +10%
TDD25-05SX	1KΩ	0Ω	1KΩ	0Ω
TDD25-12SX	62KΩ	20KΩ	8.2KΩ	1KΩ
TDD25-15SX	180KΩ	62KΩ	20KΩ	0Ω
TDD25-12DX	100KΩ	51KΩ	10KΩ	1KΩ
TDD25-15DX	180KΩ	68KΩ	10KΩ	0Ω