



**DESCRIPTION: 15W 1.5KVDC Isolated Wide Voltage Input DC/DC Converters**

The rated output power of TP15DD converters is 15W, the outline dimensions is 50.8\*40.6\*11.2, 2:1 and 4:1 wide input voltage range, the voltage range is 9V-18V, 18V-36V, 36V-72V, 9V-36V and 18V-72VDC. The accuracy of the converter can reach  $\pm 1\%$ , it can be widely used in telecommunications, railway transportation, instrument and etc.

**FEATURES**

15W output power	2:1&4:1 wide input voltage range	Under input voltage protection
50.8mm*40.6mm*11.2mm standard package	Fixed switching frequency	RoHS compliant
Operating temperature: -40°C to 85°C	Long-term short circuit protection	Good capability of capacity load
Metal shielding package	1.5KVDC isolation	/

**SELECTION GUIDE**

Part Number	Input Voltage		Output		Efficiency(Typ) %
	voltage (VDC)		Voltage (VDC)	Current (A)	
	Rated	Range values			
TP15DD12S03	12(2:1)	9-18	3.3	4	80
TP15DD12S05	12(2:1)	9-18	5	3	82
TP15DD12S12	12(2:1)	9-18	12	1.25	82
TP15DD12S15	12(2:1)	9-18	15	1	84
TP15DD12S24	12(2:1)	9-18	24	0.63	84
TP15DD12D05	12(2:1)	9-18	$\pm 5$	$\pm 1.5$	80
TP15DD12D12	12(2:1)	9-18	$\pm 12$	$\pm 0.63$	83
TP15DD12D15	12(2:1)	9-18	$\pm 15$	$\pm 0.5$	85
TP15DD24S03	24(2:1)	18-36	3.3	4	80
TP15DD24S05	24(2:1)	18-36	5	3	83
TP15DD24S12	24(2:1)	18-36	12	1.25	85
TP15DD24S15	24(2:1)	18-36	15	1	85
TP15DD24S24	24(2:1)	18-36	24	0.63	85
TP15DD24D05	24(2:1)	18-36	$\pm 5$	$\pm 1.5$	83
TP15DD24D12	24(2:1)	18-36	$\pm 12$	$\pm 0.63$	85
TP15DD24D15	24(2:1)	18-36	$\pm 15$	$\pm 0.5$	85
TP15DD48S03	48(2:1)	36-72	3.3	4	80
TP15DD48S05	48(2:1)	36-72	5	3	83
TP15DD48S12	48(2:1)	36-72	12	1.25	85
TP15DD48S15	48(2:1)	36-72	15	1	85
TP15DD48S24	48(2:1)	36-72	24	0.63	85
TP15DD48D05	48(2:1)	36-72	$\pm 5$	$\pm 1.5$	83
TP15DD48D12	48(2:1)	36-72	$\pm 12$	$\pm 0.63$	85
TP15DD48D15	48(2:1)	36-72	$\pm 15$	$\pm 0.5$	85
TP15DD24S05W	24(4:1)	9-36	5	3	80
TP15DD24S12W	24(4:1)	9-36	12	1.25	82
TP15DD24S15W	24(4:1)	9-36	15	1	83
TP15DD24S24W	24(4:1)	9-36	24	0.63	84
TP15DD24D05W	24(4:1)	9-36	$\pm 5$	$\pm 1.5$	81
TP15DD24D12W	24(4:1)	9-36	$\pm 12$	$\pm 0.63$	83
TP15DD24D15W	24(4:1)	9-36	$\pm 15$	$\pm 0.5$	84
TP15DD48S05W	48(4:1)	18-72	5	3	80
TP15DD48S12W	48(4:1)	18-72	12	1.25	82
TP15DD48S15W	48(4:1)	18-72	15	1	83
TP15DD48S24W	48(4:1)	18-72	24	0.63	85
TP15DD48D05W	48(4:1)	18-72	$\pm 5$	$\pm 1.5$	81
TP15DD48D12W	48(4:1)	18-72	$\pm 12$	$\pm 0.63$	83
TP15DD48D15W	48(4:1)	18-72	$\pm 15$	$\pm 0.5$	84

All specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified.

**GENERAL CHARACTERISTICS**

parameter	Test conditions	Min	Typ	Max	Units
Isolation voltage	Input to output		500	1500	VDC
Insulation resistance	Input to output	100M			Ohm
Seismic	10~55Hz		5		G
MTBF	MIL-HDBK-217F2		$5 \times 10^5$		hrs
Over-current protection mode	All input range	Automatic recovery			
Cooling	Free air convection				
Case material	Metal case				

**INPUT CHARACTERISTICS**

parameter	Test conditions	Min	Typ	Max	Units
Startup voltage	The12V input module(9V-18V)	9.2	9.5	9.8	VDC
Startup voltage	The24V input module(18V-36V)			18	VDC
Startup voltage	The48Vinput module(36V-72V)			36	VDC
Startup voltage	The24V input module(9V-36V)	8.8	9	9.3	VDC
Startup voltage	The48Vinput module(18V-72V)			18	VDC
Under input voltage protection	The12V input module(9V-18V)			8.5	VDC
Under input voltage protection	The24V input module(18V-36V)			17	VDC
Under input voltage protection	The48Vinput module(36V-72V)			35	VDC
Start time	Input rising time from 5%-100%	20			ms
CTL remote control	CTL remote control add -vin			Turn off	
CTL remote control	CTL remote control pending Level control from 12V-40V			Turn on	

**OUTPUT CHARACTERISTICS**

parameter	Test conditions	Min	Typ	Max	Units
Voltage accuracy	$I_o=0.1 \dots 1.0 \times I_{onom}$ $V_i=V_i$ rated			$\pm 1$	%
Line regulation	$V_{imin} < V_i < V_{imax}$			$\pm 0.2$	%
Load regulation	$I_o=0.1 \dots 1.0 \times I_{onom}$ $V_{imin} < V_i < V_{imax}$			$\pm 0.5$	%
Auxiliary voltage accuracy	Main Load and auxiliary load differ 25%,the auxiliary circuit of the load with at least 25%, the main circuit with full load			$\pm 3$	%
Ripple and noise	20MHz bandwidth			$\pm 1$	%
Over current protection	$V_{imin} < V_i < V_{imax}$	120			%
output voltage change range	$V_{imin} < V_i < V_{imax}$			10	%
Transient recovery time	25% load changes			$\pm 5$	%
Transient overshoot time	25% load changes			400	us
Switch frequency	$V_{imin} < V_i < V_{imax}$		300		KHz

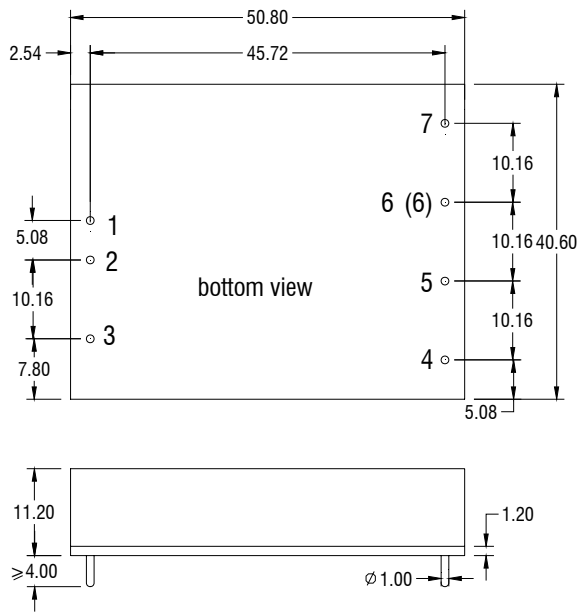
**ENVIRONMENT CHARACTERISTICS**

parameter	Test conditions	Min	Typ	Max	Units
Storage Humidity	Non condensing	5		+95	%
Operating Temperature	Power derating (above 71 °C)	-40		+85	°C
Storage Temperature		-55		+125	°C
Max. Case Temperature	Operating Temperature curve range			105	°C
Lead Temperature	1.5mm from case for 10 seconds			300	°C
Cooling	Free air convection				

- Module in every environment temperature rating, case temperature under shall not exceed the maximum case temperature level.

**MECHANICAL DIMENSIONS** **PIN CONNECTIONS**

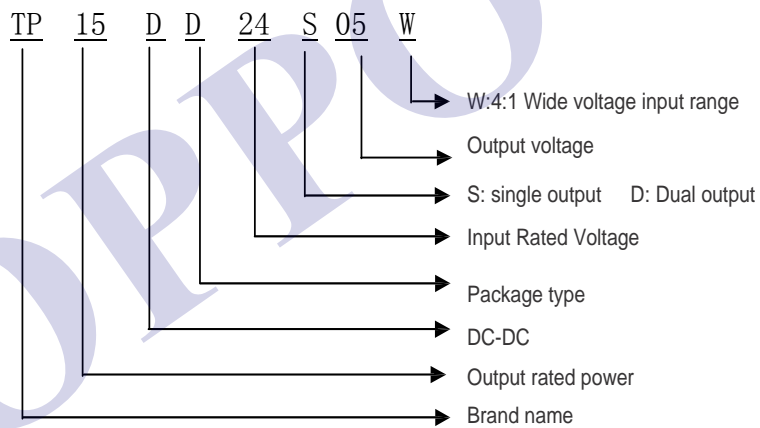
DIP Package



Units: mm  
Tolerance: ±0.2mm

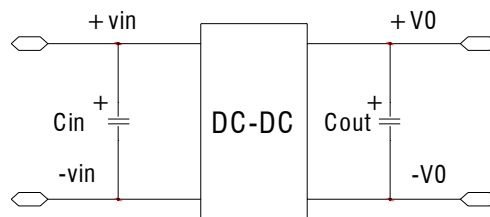
Pin	Single output	Dual output
1	+Vin	+Vin
2	-Vin	-Vin
3	CTL	CTL
4	TRM	TRM
5	-Vout	-Vout
6	+Vout	/
(6)	/	Com
7	/	+Vout

**MODEL SELECTION**



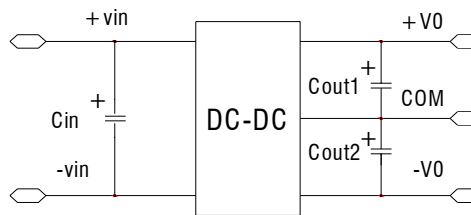
**RECOMMEND CIRCUIT**

Single Output:



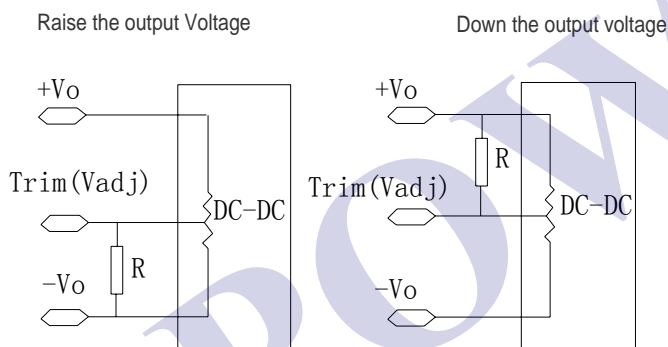
**RECOMMEND CIRCUIT**

Dual Output:



- Add input capacitance  $C_{in}$  is helpful to improve the electromagnetic compatibility, recommend  $C_{in}$  use 47 uF-100uF of the electrolytic capacitors.
- If the module connect to the digital circuits, please add the  $C_{out}$ ,  $C_{out1}$ ,  $C_{out2}$ .
- If  $C_{out}$ ,  $C_{out1}$ ,  $C_{out2}$  value is too high or lower ESR, it will cause the module instable,
- The recommended value of  $C_{out}$ ,  $C_{out1}$ ,  $C_{out2}$  should be 100 uF/A, the current here means the output current.

**Trim application&Trim Resistance**



- In dual and triple output modules, this application can just used in the mian road (auxiliary road chage together with the main road)

**USING ATTENTIONS**

- Module will cause irreversible damage when in the state of the input reverse polarity.
- Module will cause irreversible damage when in the long-term overload conditions.
- Module will cause irreversible damage when out of the maximum input voltage range.

TEMPERATURE DERATING