TP05DB Series

DESCRIPTION: **5W 1.5KVDC Isolated Wide Voltage Input DC/DC Converters**

The rated output power of TP05DB converters is 5W, 2:1 and 4:1 wide input voltage range, the voltage range is 4.5V-9V，9V-18V,18V-36V,36V-72V,9V-36V and 18V-72VDC.The accuracy of the converter can reach ±1%,it can be widely used in telecommunications, railway transportation, instrument and etc.

FEATURES

5W output power	2:1 and 4:1 wide input Voltage range	Over load protection
Operating temperature: -40℃to 85℃	Fixed switching frequency	RoHS compliant
Metal shell package	1.5KVDC isolation	/

SELECTION GUIDE

Part Number	Input Vlotage voltage（VDC）		Output		Efficiency(Typ) %	Maxium Capacitive Load (u F)
	Rated	Range values	Voltage（VDC）	Current（A）		
TP05DB05S05	5(2:1)	4.5-9	5	1	≥74	1500
TP05DB05D12	5(2:1)	4.5-9	±12	±0.21	≥78	±140
TP05DB12S03	12(2:1)	9-18	3.3	1	≥73	2200
TP05DB12S05	12(2:1)	9-18	5	1	≥74	1500
TP05DB12S12	12(2:1)	9-18	12	0.42	≥75	660
TP05DB12S15	12(2:1)	9-18	15	0.33	≥75	470
TP05DB12D05	12(2:1)	9-18	±5	±0.5	≥76	±850
TP05DB12D12	12(2:1)	9-18	±12	±0.21	≥78	±140
TP05DB12D15	12(2:1)	9-18	±15	±0.17	≥79	±47
TP05DB24S03	24(2:1)	18-36	3.3	1	≥74	2200
TP05DB24S05	24(2:1)	18-36	5	1	≥76	1500
TP05DB24S12	24(2:1)	18-36	12	0.42	≥76	660
TP05DB24S15	24(2:1)	18-36	15	0.33	≥76	470
TP05DB24S24	24(2:1)	18-36	24	0.21	≥79	470
TP05DB24D05	24(2:1)	18-36	±5	±0.5	≥78	±850
TP05DB24D12	24(2:1)	18-36	±12	±0.21	≥79	±140
TP05DB24D15	24(2:1)	18-36	±15	±0.17	≥79	±47
TP05DB48S03	48(2:1)	36-72	3.3	1	≥74	2200
TP05DB48S05	48(2:1)	36-72	5	1	≥76	1500
TP05DB48S12	48(2:1)	36-72	12	0.42	≥78	660
TP05DB48S15	48(2:1)	36-72	15	0.33	≥78	470
TP05DB48D05	48(2:1)	36-72	±5	±0.5	≥79	±850
TP05DB48D12	48(2:1)	36-72	±12	±0.21	≥79	±140
TP05DB48D15	48(2:1)	36-72	±15	±0.17	≥80	±47
TP05DB24S05W	24(4:1)	9-36	5	1	≥75	1500
TP05DB24S12W	24(4:1)	9-36	12	0.42	≥75	660
TP05DB24S15W	24(4:1)	9-36	15	0.33	≥75	470
TP05DB24D05W	24(4:1)	9-36	±5	±0.5	≥77	±850
TP05DB24D12W	24(4:1)	9-36	±12	±0.21	≥78	±140
TP05DB24D15W	24(4:1)	9-36	±15	±0.17	≥78	±47
TP05DB48S05W	48(4:1)	18-72	5	1	≥75	1500
TP05DB48S12W	48(4:1)	18-72	12	0.42	≥77	660
TP05DB48S15W	48(4:1)	18-72	15	0.33	≥77	470
TP05DB48D05W	48(4:1)	18-72	±5	±0.5	≥78	±850
TP05DB48D12W	48(4:1)	18-72	±12	±0.21	≥78	±140
TP05DB48D15W	48(4:1)	18-72	±15	±0.17	≥79	±47
TP05DB110S05W	110(4:1)	40-160	5	1	80	2200
TP05DB110S12W	110(4:1)	40-160	12	0.42	78	470
TP05DB110S15W	110(4:1)	40-160	15	0.33	82	470
TP05DB110S24W	110(4:1)	40-160	24	0.21	83	220

Input voltage 9-18VDC，start-up voltage 9.5-18VDC , input voltage 9-36VDC ,start-up voltage 9.5-36VDC.

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
Isolation resistance	Input to Output	100M			ohm
Seismic	10~55Hz		5		G
MTBF	MIL-HDBK-217F2		5×10^5		hrs
Over-current protection mode	Full input range		Auto recovery		
Cooling	Free air convection				
Case material	Metal case				

INPUT CHARACTERISTICS

parameter	Test conditions	Min	Typ	Max	Units
Input voltage	5V Input module(4.5V -9V)	4.5	5	9	VDC
Input voltage	12V Input module(9V -18V)	9.5	12	18	VDC
Input voltage	24V Input module(18V-36V)	18	24	36	VDC
Input voltage	48V Input module(36V-72V)	36	48	72	VDC
Input voltage	24V Input module(9V -36V)	9.5	24	36	VDC
Input voltage	48V Input module(18V-72V)	18	48	72	VDC
Start rising time	Input rising time from 5%-100%	20			ms

OUTPUT CHARACTERISTICS

parameter	Test conditions	Min	Typ	Max	Units
Voltage accuracy	Io=0.1•••1.0 x Ionom Vi=Vi rated			±1	%
Line regulation	Vimin≤Vi≤Vimax			±0.2	%
Load regulation	Io=0.1•••1.0 x Ionom Vimin≤ Vi≤Vimax			±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			±3	%
Ripple and noise	20MHz bandwidth			±1	%
Over-current protection	Vimin≤Vi≤Vimax	120			%
Transient recovery time	25% load change			±5	%
Transient overshoot range	25% load change			400	us
Switch frequency	Vimin≤Vi≤Vimax		300		KHz

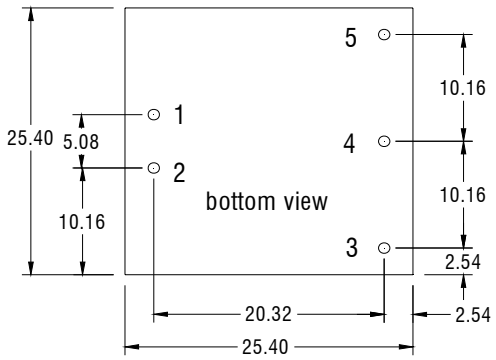
ENVIRONMENT CHARACTERISTICS

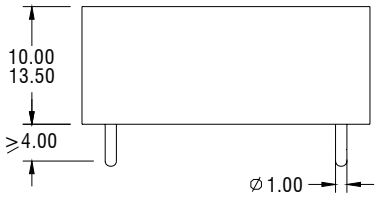
parameter	Test conditions	Min	Typ	Max	Units
Storage Humidity	Non condensing	5		+95	%
Operating Temperature	Power derating (above 71℃	-40		+85	℃
Storage Temperature		-55		+125	℃
Max. Case Temperature	Operating Temperature curve range			105	℃
Lead Temperature	1.5mm from case for 10 seconds			300	℃
Cooling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

- Case temperature under shall not exceed the maximum case temperature level.

MECHANICAL DIMENSIONS

DIP Package





Units: mm

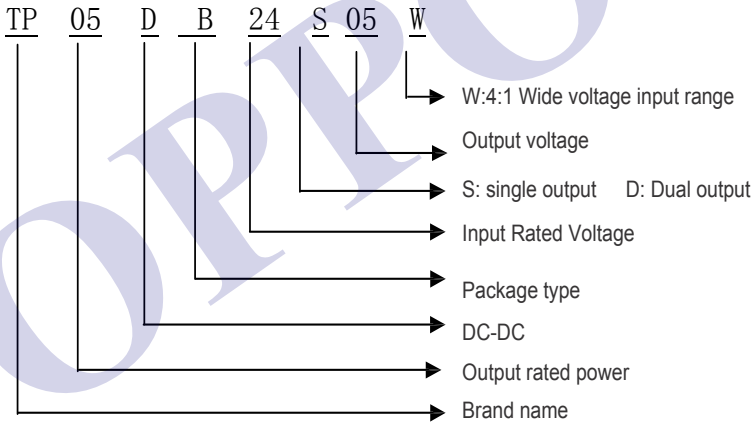
Pin diameter tolerances: ±0.1mm

General Tolerance: ±0.5mm

PIN CONNECTIONS

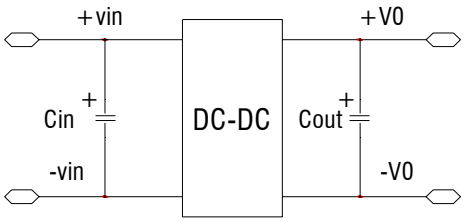
Pin	Single output	Dual output
1	+Vin	+Vin
2	-Vin	-Vin
3	-Vout	-Vout
4	/	Com
5	+Vout	+Vout

MODEL SELECTION



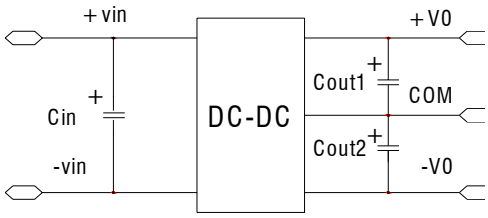
RECOMMEND CIRCUIT:

Single Output:



RECOMMEND CIRCUIT:

Dual Output:



- Add input capacitance Cin is helpful to improve the electromagnetic compatibility, recommend Cin use 47 uF-100uF of the electrolytic capacitors.
- If the module connect to the digital circuits, please add the Cout、Cout1、Cout2.
- If Cout, Cout1, Cout2 value is too high or lower ESR, it will cause the module instable,
- The recommended value of Cout, Cout1, Cout2 should be 100 uF/A, the current here means the output current.

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.