



**DESCRIPTION: 3W 1.5KVDC Isolated Wide Range Input Voltage DC/DC Converters**

The rated output power of TP03DA converters is 3W, the outline dimensions is "31.75\*20.32\*11.2", 2:1 and 4:1 wide input voltage range, the voltage range is 4.9V-9V, 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**

3W output power	2:1 and 4:1 wide input voltage range	Over load protection
31.75mm*20.32mm*11.2mm standard package	Fixed switching frequency	Operating temperature: -40°C to 85°C
Metal shell packaging	RoHS compliant	1.5KVDC isolation

**SELECTION GUIDE**

Part Number	Input Voltage		Output		Efficiency(Typ) %	Maxium capacitive load (u F)
	voltage (VDC)		Voltage (VDC)	Current (A)		
	Rated	Range values				
TP03DA05S05	5(2:1)	4.5-9	5	0.6	≥73	1000
TP03DA05S12	5(2:1)	4.5-9	12	0.25	≥75	660
TP03DA05D05	5(2:1)	4.5-9	±5	±0.3	≥73	±850
TP03DA05D12	5(2:1)	4.5-9	±12	±0.125	≥78	±140
TP03DA05D15	5(2:1)	4.5-9	±15	±0.1	≥79	±47
TP03DA12S03	12(2:1)	9-18	3.3	0.6	≥73	2200
TP03DA12S05	12(2:1)	9-18	5	0.6	≥74	1500
TP03DA12S12	12(2:1)	9-18	12	0.25	≥75	660
TP03DA12S15	12(2:1)	9-18	15	0.2	≥75	470
TP03DA12D05	12(2:1)	9-18	±5	±0.3	≥76	±850
TP03DA12D12	12(2:1)	9-18	±12	±0.125	≥78	±140
TP03DA12D15	12(2:1)	9-18	±15	±0.1	≥79	±47
TP03DA24S03	24(2:1)	18-36	3.3	0.6	≥74	2200
TP03DA24S05	24(2:1)	18-36	5	0.6	≥76	1500
TP03DA24S12	24(2:1)	18-36	12	0.25	≥76	660
TP03DA24S15	24(2:1)	18-36	15	0.2	≥76	470
TP03DA24D05	24(2:1)	18-36	±5	±0.3	≥78	±850
TP03DA24D12	24(2:1)	18-36	±12	±0.125	≥79	±140
TP03DA24D15	24(2:1)	18-36	±15	±0.1	≥79	±47
TP03DA48S03	48(2:1)	36-72	3.3	0.6	≥74	2200
TP03DA48S05	48(2:1)	36-72	5	0.6	≥76	1500
TP03DA48S12	48(2:1)	36-72	12	0.25	≥78	660
TP03DA48S15	48(2:1)	36-72	15	0.2	≥78	470
TP03DA48D05	48(2:1)	36-72	±5	±0.3	≥79	±850
TP03DA48D12	48(2:1)	36-72	±12	±0.125	≥79	±140
TP03DA48D15	48(2:1)	36-72	±15	±0.1	≥80	±47
TP03DA24S03W	24(4:1)	9-36	3.3	0.6	≥73	2200
TP03DA24S05W	24(4:1)	9-36	5	0.6	≥75	1500
TP03DA24S12W	24(4:1)	9-36	12	0.25	≥75	660
TP03DA24S15W	24(4:1)	9-36	15	0.2	≥75	470
TP03DA24D05W	24(4:1)	9-36	±5	±0.3	≥77	±850
TP03DA24D12W	24(4:1)	9-36	±12	±0.125	≥78	±140
TP03DA24D15W	24(4:1)	9-36	±15	±0.1	≥78	±47
TP03DA48S05W	48(4:1)	18-72	5	0.6	≥75	1500
TP03DA48S12W	48(4:1)	18-72	12	0.25	≥77	660
TP03DA48S15W	48(4:1)	18-72	15	0.2	≥77	470
TP03DA48D05W	48(4:1)	18-72	±5	±0.3	≥78	±850
TP03DA48D12W	48(4:1)	18-72	±12	±0.125	≥78	±140
TP03DA48D15W	48(4:1)	18-72	±15	±0.1	≥79	±47

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 x 10 <sup>5</sup>		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
Startup voltage	5V Input module(4.5V -9V)	4.5	5	9	VDC
Startup voltage	12V Input module(9V -18V)	8.8	9	9.3	VDC
Startup voltage	24V Input module(18V-36V)			18	VDC
Startup voltage	48V Input module(36V-72V )			36	VDC
Startup voltage	24V Input module(9V -36V)	8.8	9	9.3	VDC
Startup voltage	48V Input module(18V-72V)			18	VDC
Start rising time	Input rising time from 5%-100%	20			ms

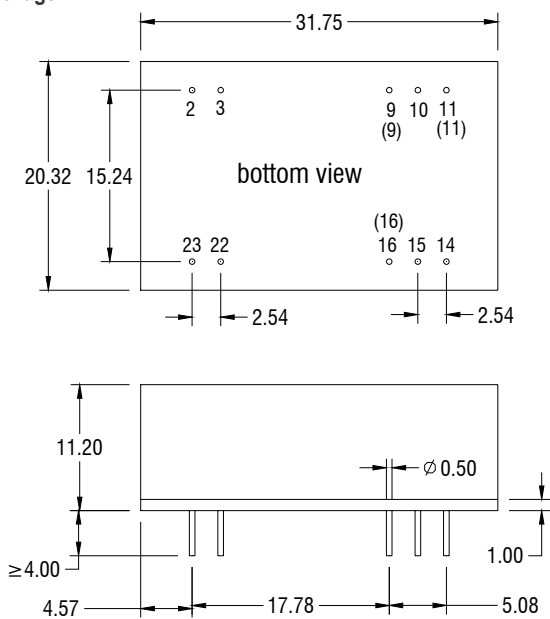
OUTPUT CHARACTERISTICS					
Parameter	Test conditions	Min	Typ	Max	Units
Voltage accuracy	$I_o=0.1\sim 1.0 \times I_{onom}$ $V_i=V_i$ rated			±1	%
Line regulation	$V_{imin} \leq V_i \leq V_{imax}$			±0.2	%
Load regulation	$I_o=0.1\sim 1.0 \times I_{onom}$ $V_{imin} \leq V_i \leq V_{imax}$			±0.5	%
Auxiliary 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	$V_{imin} \leq V_i \leq V_{imax}$	120			%
Transient recovery time	25% load change			±5	%
Transient overshoot range	25% load change			400	us
Switch frequency	$V_{imin} \leq V_i \leq V_{imax}$		30		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				

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

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

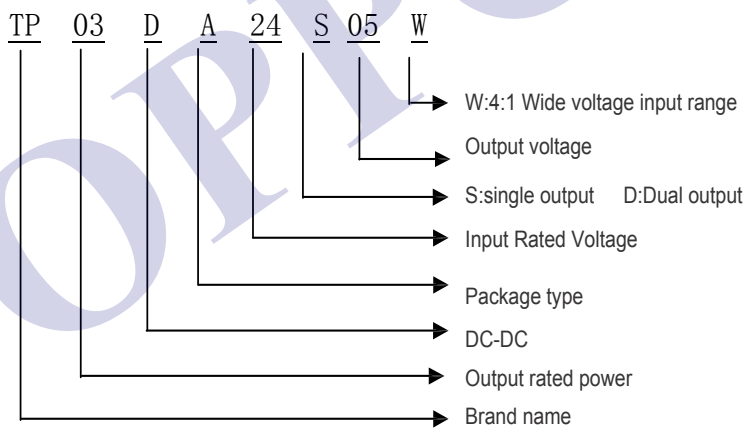
**DIP Package**



Units: mm  
Tolerance: ±0.2mm

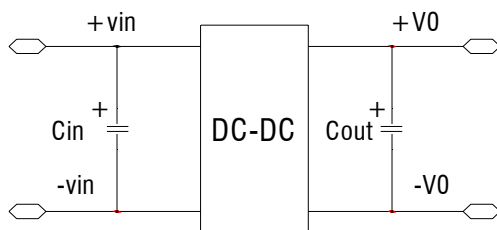
Pin	Single Output	Dual Output
2	-Vin	-Vin
3	-Vin	-Vin
9	NC	/
(9)	/	Com
10	NC	NC
11	NC	/
(11)	/	-Vout
14	+Vout	+Vout
15	NC	NC
16	-Vout	/
(16)	/	Com
22	+Vin	+Vin
23	+Vin	+Vin

**MODEL SELECTION**



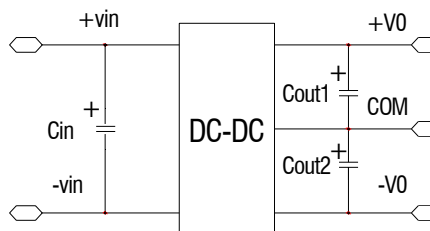
**RECOMMEND CIRCUIT:**

Single Output:



**RECOMMEND CIRCUIT:**

Dual Output:



- Add input capacitance  $C_{in}$  is helpful to improve the electromagnetic compatibility, recommend  $C_{in}$  use 47  $\mu$ F-100 $\mu$ F 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  $\mu$ F/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.

TEMPERATURE RISE DURING USE

TOPPOWER