



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

The rated output power of TP15DC converters is 15W, the outline dimensions is "50.8*25.4*11.2", 2:1 input voltage range, the voltage range is 9V-18V, 18V-36V, 36V-72V. The accuracy of the converter can reach ±1%, it can be widely used in telecommunications, railway transportation, instrument and etc.

FEATURES

15W output power	2:1 input voltage range	Over load protection
50.8mm*25.4mm*11.2mm standard package	Fixed switching frequency	Operating temperature: -40℃ to 85℃
Metal shielding package	RoHS compliant	1.5KVDC isolation

SELECTION GUIDE

Part Number	Input Voltage		Output		Efficiency(Typ) %	Maximum capacitive load (u F)
	voltage (VDC)		Voltage (VDC)	Current (A)		
	Rated	Range values				
TP15DC12S03	12(2:1)	9-18	3.3	3	81	6800
TP15DC12S05	12(2:1)	9-18	5	3	82	4700
TP15DC12S12	12(2:1)	9-18	12	1.25	83	690
TP15DC12S15	12(2:1)	9-18	15	1	84	470
TP15DC12S24	12(2:1)	9-18	24	0.63	84	470
TP15DC12D05	12(2:1)	9-18	±5	±1.5	82	±680
TP15DC12D12	12(2:1)	9-18	±12	±0.63	84	±330
TP15DC12D15	12(2:1)	9-18	±15	±0.5	84	±110
TP15DC24S03	24(2:1)	18-36	3.3	3	81	6800
TP15DC24S05	24(2:1)	18-36	5	3	84	4700
TP15DC24S12	24(2:1)	18-36	12	1.25	84	690
TP15DC24S15	24(2:1)	18-36	15	1	84	470
TP15DC24S24	24(2:1)	18-36	24	0.63	84	470
TP15DC24D05	24(2:1)	18-36	±5	±1.5	83	±680
TP15DC24D12	24(2:1)	18-36	±12	±0.63	84	±330
TP15DC24D15	24(2:1)	18-36	±15	±0.5	84	±110
TP15DC48S03	48(2:1)	36-72	3.3	3	81	6800
TP15DC48S05	48(2:1)	36-72	5	3	84	4700
TP15DC48S12	48(2:1)	36-72	12	1.25	85	690
TP15DC48S15	48(2:1)	36-72	15	1	85	470
TP15DC48D05	48(2:1)	36-72	±5	±1.5	83	±680
TP15DC48D12	48(2:1)	36-72	±12	±0.63	84	±330
TP15DC48D15	48(2:1)	36-72	±15	±0.5	84	±110
TP15DC24S05W	24(4:1)	9-36	5	3	84	4700
TP15DC24S12W	24(4:1)	9-36	12	1.25	84	690
TP15DC24S15W	24(4:1)	9-36	15	1	84	470

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		5x10 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
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

OUTPUT CHARACTERISTICS

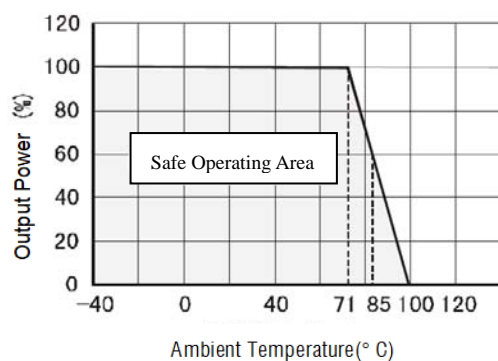
parameter	Test conditions	Min	Typ	Max	Units
Voltage accuracy	$I_o=0.1...1.0 \times I_{onom} V_i=V_i \text{ rated}$			± 1	%
Line regulation	$V_{imin} \leq V_i \leq V_{imax}$			± 0.2	%
Load regulation	$I_o=0.1...1.0 \times I_{onom} V_{imin} \leq V_i \leq V_{imax}$			± 0.5	%
Auxiliary voltage accuracy	Main 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 changes			± 5	%
Transient overshoot time	25% load changes			400	US
Switch frequency	$V_{imin} \leq V_i \leq V_{imax}$		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.

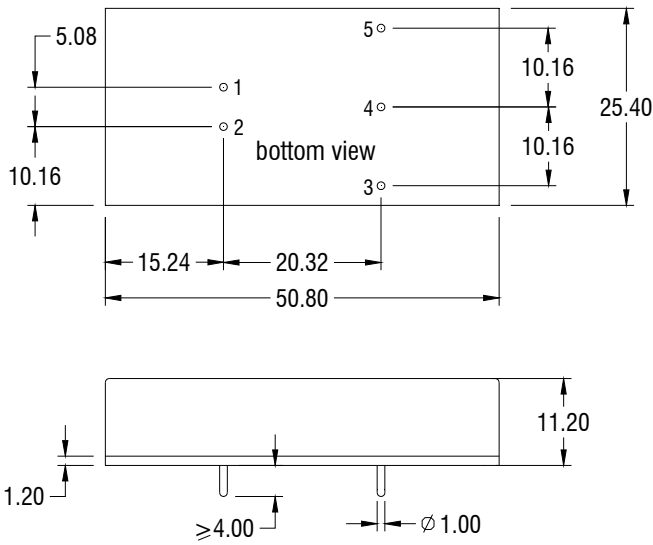
TEMPERATURE DERATING GRAPHS



MECHANICAL DIMENSIONS

PIN CONNECTIONS

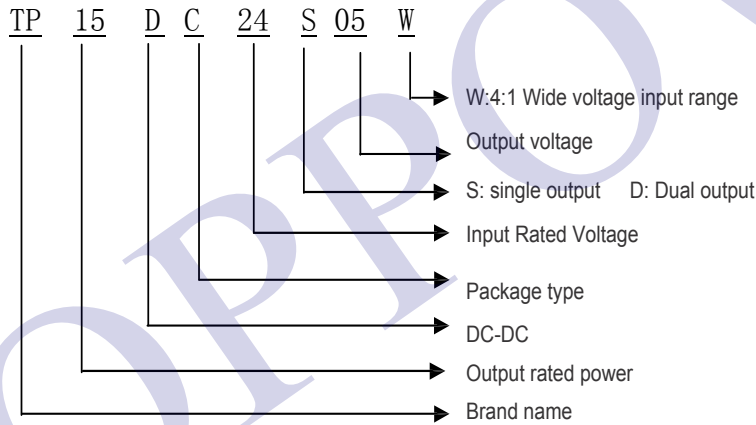
DIP Package



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

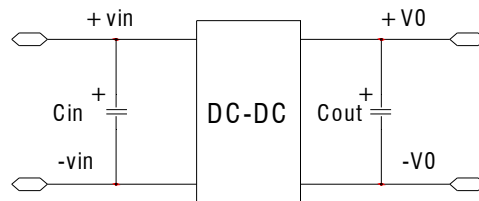
Units: mm
Tolerance: ±0.2mm

MODEL SELECTION



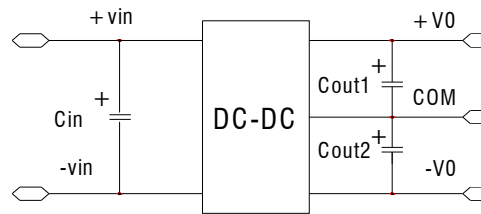
RECOMMEND CIRCUIT

Single Output:



RECOMMEND CIRCUIT

Dual Output:



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