Patron
Passive Elektronic

PP20DD Series

DESCRIPTION: **20W 1.5KVDC Isolated Wide Input Voltage DC/DC Converters**

The rated output power of PP20DD converters is 20W,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 ±1%,it can be widely used in telecommunications, railway transportation, instrument and etc.

FEATURES

20W output power	2:1 and 4:1 input voltage range	Input under voltage protection
50.8mm *40.6mm *11.2mm standard package	Metal shielding package	Operating temperature:-40℃to85℃
Fixed switching frequency	Long term short-circuit protection	Super capability with capacitive load
RoHs compliance	1.5KVDC isolation	/

SELECTION GUIDE

Part Number	Input Voltage voltage (VDC)		Output		Efficiency(Typ) %
	Rated	Range values	Voltage (VDC)	Current (A)	
PP20DD12S03	12(2:1)	9-18	3.3	5.4	80
PP20DD12S05	12(2:1)	9-18	5	4	82
PP20DD12S12	12(2:1)	9-18	12	1.67	83
PP20DD12S15	12(2:1)	9-18	15	1.33	84
PP20DD12S24	12(2:1)	9-18	24	0.83	84
PP20DD12D05	12(2:1)	9-18	±5	±2	80
PP20DD12D12	12(2:1)	9-18	±12	±0.83	83
PP20DD12D15	12(2:1)	9-18	±15	±0.67	84
PP20DD24S03	24(2:1)	18-36	3.3	5.4	80
PP20DD24S05	24(2:1)	18-36	5	4	83
PP20DD24S12	24(2:1)	18-36	12	1.67	85
PP20DD24S15	24(2:1)	18-36	15	1.33	85
PP20DD24S24	24(2:1)	18-36	24	0.83	86
PP20DD24D05	24(2:1)	18-36	±5	±2	83
PP20DD24D12	24(2:1)	18-36	±12	±0.83	85
PP20DD24D15	24(2:1)	18-36	±15	±0.67	86
PP20DD48S03	48(2:1)	36-72	3.3	5.4	82
PP20DD48S05	48(2:1)	36-72	5	4	84
PP20DD48S12	48(2:1)	36-72	12	1.67	86
PP20DD48S15	48(2:1)	36-72	15	1.33	87
PP20DD48S24	48(2:1)	36-72	24	0.83	87
PP20DD48D05	48(2:1)	36-72	±5	±2	84
PP20DD48D12	48(2:1)	36-72	±12	±0.83	86
PP20DD48D15	48(2:1)	36-72	±15	±0.67	86
PP20DD24S05W	24(4:1)	9-36	5	4	82
PP20DD24S12W	24(4:1)	9-36	12	1.67	86
PP20DD24S15W	24(4:1)	9-36	15	1.33	86
PP20DD24S24W	24(4:1)	9-36	24	0.83	86
PP20DD24D05W	24(4:1)	9-36	±5	±2	82
PP20DD24D12W	24(4:1)	9-36	±12	±0.83	85
PP20DD24D15W	24(4:1)	9-36	±15	±0.67	85
PP20DD48S05W	48(4:1)	18-72	5	4	82
PP20DD48S12W	48(4:1)	18-72	12	1.67	86
PP20DD48S15W	48(4:1)	18-72	15	1.33	86
PP20DD48S24W	48(4:1)	18-72	24	0.83	86
PP20DD48D05W	48(4:1)	18-72	±5	±2	82
PP20DD48D12W	48(4:1)	18-72	±12	±0.83	85
PP20DD48D15W	48(4:1)	18-72	±15	±0.67	85

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
Insulation resistance	Input to output	100M			Ohm
Seismic	10~55Hz		5		G
MTBF	MIL-HDBK-217F2		$5*10^5$		hrs
Over-current protection mode	All input range		Burp, Automatic recovery		
Cooling	Free air convection				
Case material	Metal case				

INPUT CHARACTERISTICS

parameter	Test conditions	Min	Typ	Max	Units
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
Startup time	Output rise time from 5% to 100%	20			ms
Remote control CTL	Remote CTL-Vin		Turn off		
Remote control CTL	Remote CTL NC(The control level 12V-40V)		Turn on		

OUTPUT CHARACTERISTICS

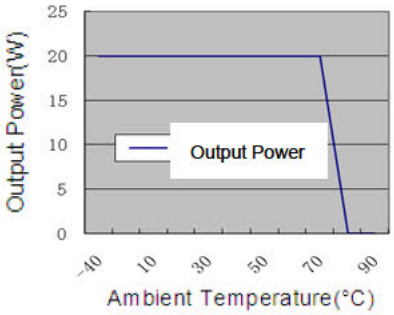
parameter	Test conditions	Min	Typ	Max	Units
Voltage accuracy	Io=0.1…1.0 x Ionom vi=vi rated			±1	%
Line regulation	Vimin≤Vi≤Vimax			±0.2	%
Load regulation	Io=0.1…1.0 x Ionom Vimin≤Vi≤Vimax			±0.5	%
Auxiliary voltage accuracy	Main Load and auxiliary load differ 25%,the auxiliary circuit of the load with at least 25%, the main circuit with full load			±3	%
Ripple and noise	20MHz bandwidth			±1	%
Over current protection	Vimin≤Vi≤Vimax	120			%
output voltage change range	Vimin≤Vi≤Vimax			10	%
Transient recovery time	25% load changes			±5	%
Transient overshoot time	25% load changes			400	us
Switch frequency	Vimin≤Vi≤Vimax		300		KHz

ENVIRONMENT CHARACTERISTICS

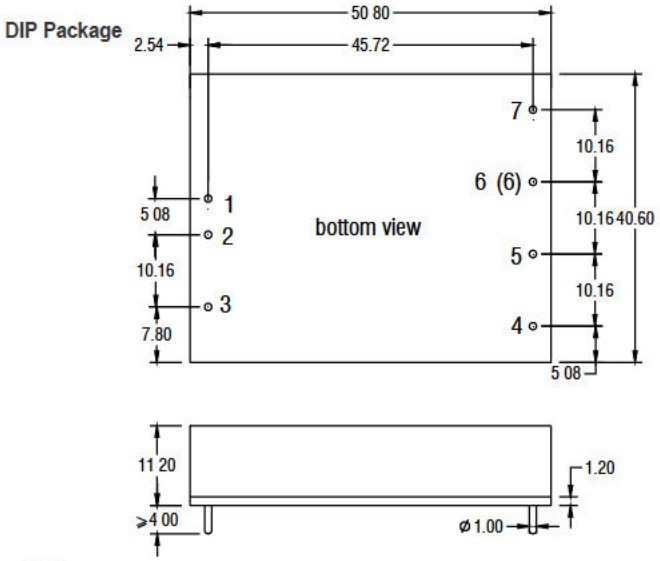
parameter	Test conditions	Min	Typ	Max	Units
Storage Humidity	Non condensing	5		+95	%
Operating Temperature	Power derating (above 71℃	-40		+85	℃
Storage Temperature		-55		+125	℃
Max. Case Temperature	Operating Temperature curve range			105	℃
Lead Temperature	1.5mm from case for 10 seconds			300	℃
Cooling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

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

TEMPERATURE DERATING GRAPHS



MECHANICAL DIMENSIONS

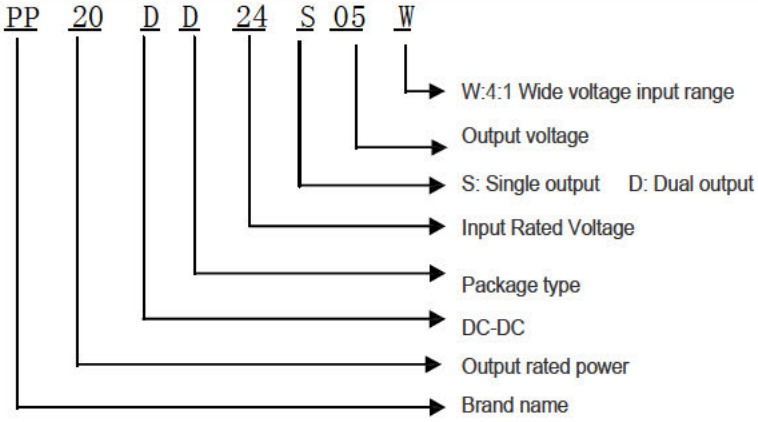


Units: mm
Pin diameter tolerances: ±0.1mm
General Tolerance: ±0.5mm

PIN CONNECTIONS

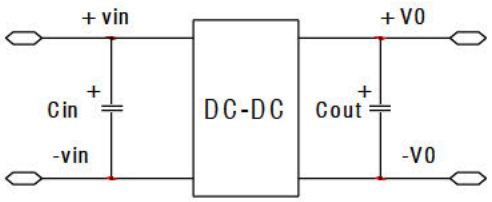
Pin	Single output	Dual output
1	+Vin	+Vin
2	-Vin	-Vin
3	CTL	CTL
4	TRM	TRM
5	-Vout	-Vout
6	+Vout	/
(6)	/	COM
7	/	+Vout

MODEL SELECTION



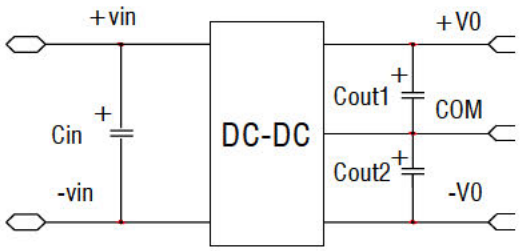
RECOMMEND CIRCUIT

Single Output



RECOMMEND CIRCUIT

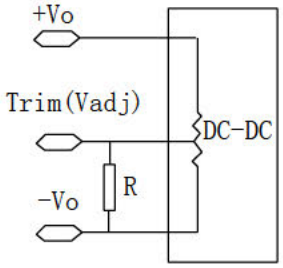
Dual Output:



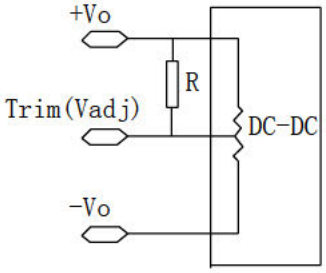
- Add input capacitance Cin is helpful to improve the electromagnetic compatibility, recommend Cin use 47 uF-100uF of the electrolytic capacitors.
- If the module connect to the digital circuits, please add the Cout、Cout1、Cout2.
- If Cout, Cout1, Cout2 value is too high or lower ESR, it will cause the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

Trim application & Trim Resistance

Raise the output Voltage



Down the output voltage



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

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.