GAPTEC

THIS SERIES IS NOT recommended for new design-ins and this series is discontinued

Recommended alternative: 5DCPE_4 series

Please click here for the datasheet.

5DCP series

5W - Single Output DC-DC Converter - Ultra Wide Input Range - High Isolated & Regulated

DC-DC Converter 5 Watt

- 6:1 ultra-wide input voltage range: 200 ~ 1200VDC
- Operating temperature: -40°C ~ 70°C
- 4000VDC High isolation voltage
- High efficiency, Low ripple& noise
- Under input voltage protection (automatic recovery)
- Over output voltage protection (automatic recovery)
- Short circuit protection (SCP)
- Input against reverse protection
- High reliability, long life, three years warranty
- Offer custom products

The 5DCP_4 Series is a regulated DC-DC converter with features of 200-1200VDC ultra-high voltage input, high efficiency and high reliability. It can be widely used in photovoltaic power generation, high-voltage inverter and so on, which provide stable operating voltage to the equipment and improve the power and the load's safety performance with multiple protection when working under abnormal conditions.

The product apply to:
1) Where isolation is necessary between input and output (isolation voltage ≤4000VDC)

Common specifications

Short circuit protection:	Continuous, automatic recovery
Temperature rise at full load:	25°C MAX (Ta= 25°C, 100% load)
Cooling:	Free air convection
Operation temperature range:	-40°C~+70°C
Storage temperature range:	-40°C ~+105°C
Case temperature:	90°C MAX
Welding temperature:	Wave-soldering: 260± 5°C; time:5~10s Manual-welding: 360± 10°C; time:3~5s
Hot swap:	Forbid
Case Material Grade:	Aluminium
Install:	PCB
Storage humidity range:	< 95%
Temperature coefficient:	±0.02%/°C MAX
Delay time:	500ms MAX
MTBF (MIL-HDBK-217F@25°C):	>300,000 hours
Weight:	195g

Input specifications

Item	Test condition	Min	Typ	Max	Units
Input voltage range		200		1200	VDC
Input current 5DCP	• 200VDC input • 600VDC input • 1200VDC input			36 13 8	mA mA mA
External input fuse		1A Slow blow			

Isolation specifications

Item	Test condition	Min	Typ	Max	Units
Isolation voltage	Tested for 1 minute	4000			VDC
Isolation resistance	Test at 500VDC	100			MΩ

Output specifications

Item	Test condition	Min	Typ	Max	Units
Line regulation	5DCP models		±0.5	±1	%
Load regulation	5DCP models		±0.5	±1	%
Output voltage accuracy	5DCP models		±1	±2	%
Ripple & Noise*	20MHz Bandwidth 5DCP models		80	150	mVp-p
Under input voltage protection		Under voltage protection range: 175~185V Under voltage release range: 185~195V			
Over input voltage protection	• 5DCP_	• (Feedback-clamp) Voltage limited < 7.5V			

*Test ripple and noise by "parallel cable" method. Test efficiency at normal temperature and input voltage is 200VDC.

Example:
5DCP_05S4
5= 5Watt; DC= DIP Case; P= Photovoltaik; 05= 5Vout; S=Single output; 4= 4kVDC;

Note:
1. Unless otherwise specified, all specifications above are measured at rated input voltage and rated output load, TA=25°C, humidity < 75%;
2. All specifications stated in this datasheet are subject to the above listed models only. For specifications of non-standard models, please contact our technical support team.

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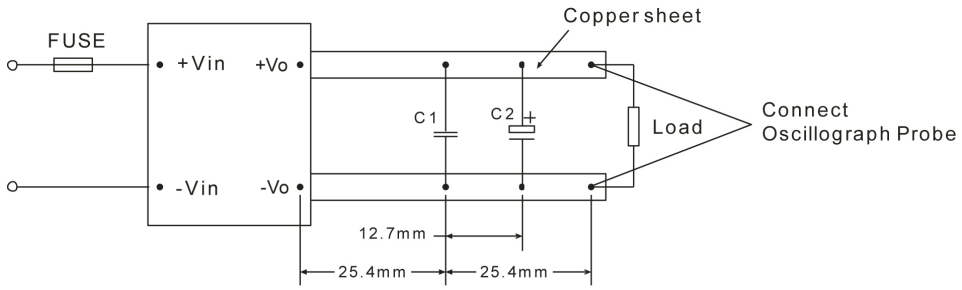
EMC specifications				
EMI	CE	CISPR22/EN55022	CLASS A (Recommended Circuit Refer to EMC recommended circuit, 2)	
EMI	RE	CISPR22/EN55022	CLASS A (Recommended Circuit Refer to EMC recommended circuit, 2)	
EMS	ESD	IEC/EN61000-4-2	Contact 6KV/Air 8KV perf. Criteria B	
EMS	RS	IEC/EN61000-4-3	10V/m	perf. Criteria A
EMS	EFT	IEC/EN61000-4-4	±4KV	perf. Criteria B (External Circuit Refer to recommended circuit, 1)
EMS	Surge	IEC/EN61000-4-5	±2KV	perf. Criteria B (External Circuit Refer to recommended circuit, 1)
EMS	CS	IEC/EN61000-4-6	10 Vr.m.s	perf. Criteria A
EMS	PFM	IEC/EN61000-4-8	10A/m	perf. Criteria A
EMS	Voltage dips, short and interruptions immunity	IEC/EN61000-4-11	0%-70%	perf. Criteria B

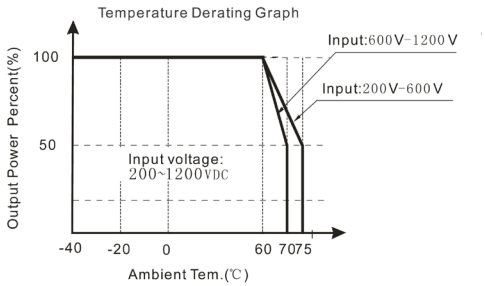
Part Number	Power [W]	Nominal Output [V; Vo]	Current Output [A; Io]	Capacitive load [µF, Max.]	Ripple & Noise [mV, Max.]	Efficiency [%, max]
5DCP_05S4	5	5	1	10000	150	73

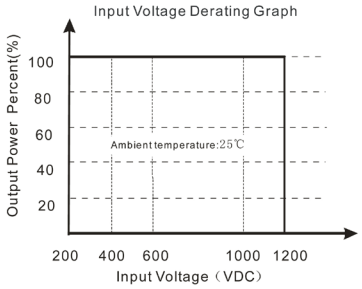
Parallel lines measure



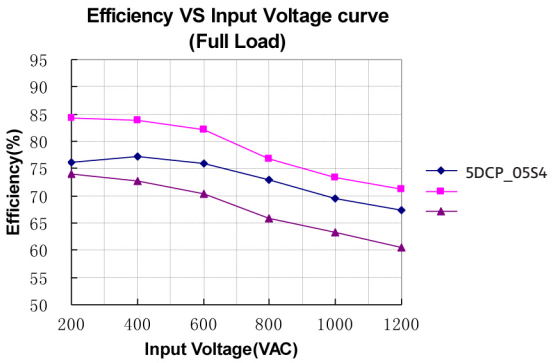
Note: C1: 1µF (Ceramic capacitor) C2: 10µF (Electrolytic capacitor)

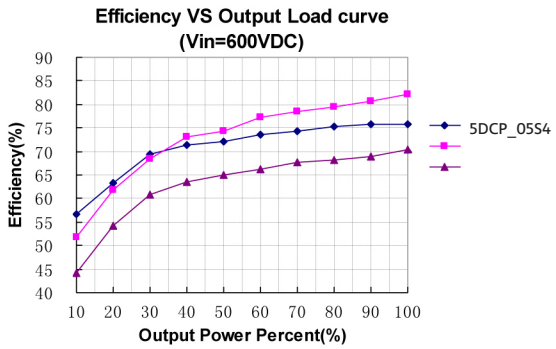
Typical characteristics



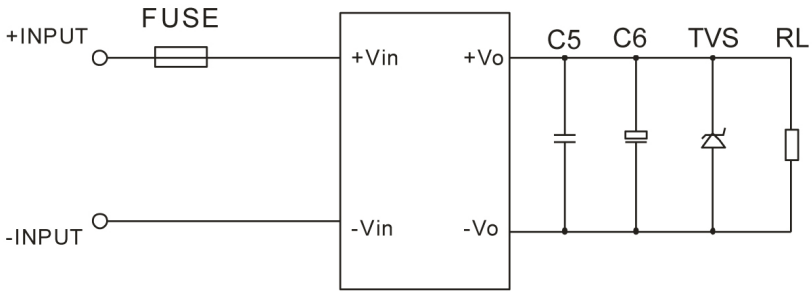


Efficiency

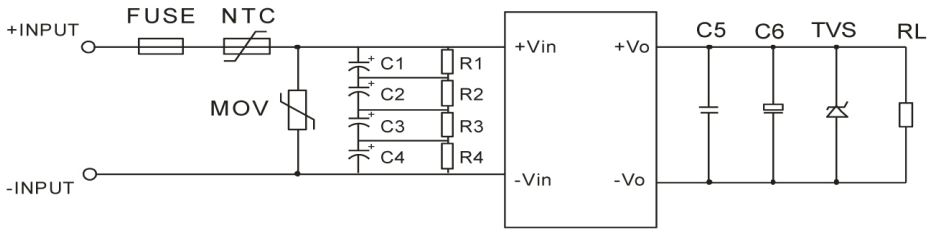




Typical application circuit



EMC recommended circuit



Recommended circuit for applications which require higher EMC standard (external circuit output is the same as typical application circuit)

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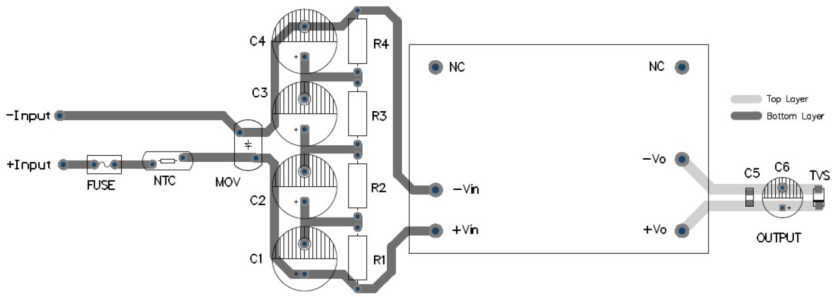
EMC recommended circuit PCB lay-



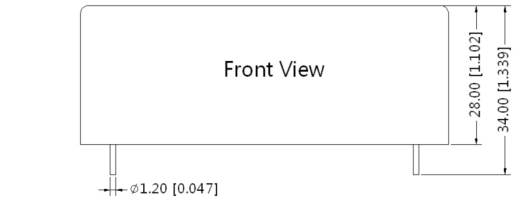
Safety and recommend wiring: line-width ≥3mm, line-line distance≥6mm, line- ground distance≥6mm

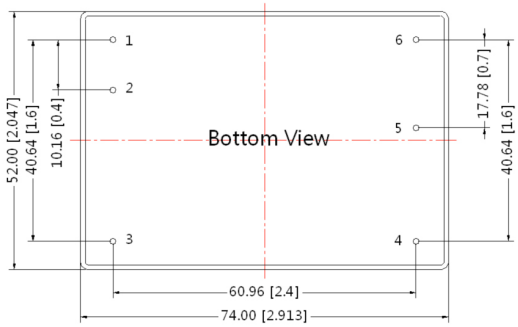
External circuit parameters			
Model	C5 (μF)	C6 (μF)	TVS
5DCP_05S4	1	220	SMBJ7.0A

Recommend Parameter For Higher EMC Standard Circuit	
Components	Recommend Parameter
MOV	S20K1000
C1, C2, C3, C4	47μF/450V
R1, R2, R3, R4	1MΩ/2W
NTC	5D-9
FUSE	1A/250V, slow blow, it must be connected to FUSE

Note:
1. Output filtering capacitor C6 is electrolytic capacitors, It is recommended to use high frequency and low impedance electrolytic capacitors. For capacitance and current of capacitor please refer to manufacture's datasheet. Voltage derating of capacitor should be 80%. TVS is a recommended component to protect post-circuits (if converter fails).
MOV: Varistor, it is used to protect the device under surge. Access as needed.
2. For standard EMC requirement, please refer to figure 1.If higher EMC

Mechanical dimensions





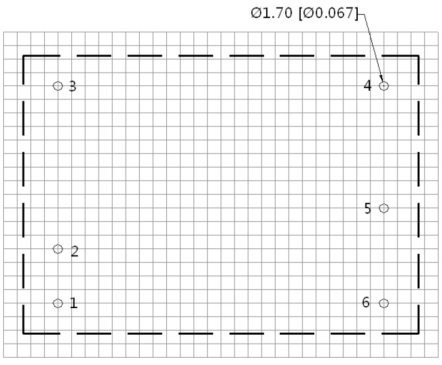
PIN CONNECTION	
Pin	Function
1	+Vin
2	-Vin
3,4	NC
5	-Vo
6	+Vo

NC:No connection

Note:
Unit: mm[inch]
Pin section tolerances: 0.10mm[0.004inch]
General tolerances: 0.25mm[0.010inch]

THIRD ANGLE PROJECTION

Recommended footprint



Note : Grid 2.54*2.54mm