SCHMID-M

SD_S-2W Series
2W, FIXED INPUT ISOLATED & UNREGULATED TWIN OUTPUT DC-DC CONVERTER

1 Year Warranty SCHMID-M

RoHS COMPLIANT SCHMID-M

FEATURES

High Efficiency up to 85%
SIP Package
1KVDC Isolation
Temperature Range: -40°C to +85°C
No Heat sink Required
No External Component Required
Internal SMD Construction
Industry Standard Pinout
RoHS Compliance
Meet UL60950

APPLICATIONS

The SD_S-2W Series are specially designed for applications where a group of polar power supplies are isolated from the input power supply in a distributed power supply system on a circuit board.
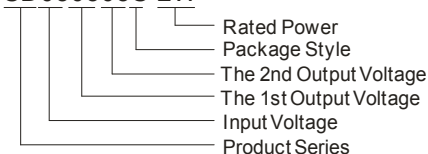
These products apply to:

1) Where the voltage of the input power supply is fixed (voltage variation ≤ ±10%);
2) Where isolation is necessary between input and output (isolation voltage ≤1000VDC);
3) Where the regulation of the output voltage and the output ripple noise are not demanding.

Such as: purely digital circuits, ordinary low frequency analog circuits, and IGBT power device driving circuits.

PRODUCT PROGRAM

| Part Number | Input | | Output | | | Efficiency (%, Typ) | Certificate |
| | Voltage (VDC) | | Voltage (VDC) | Current (mA) | | | |
	Nominal	Range		Max	Min		
SD050505S-2W	5	4.5-5.5	5	200	20	80	UL
SD050909S-2W			9	111	12	82	UL
SD051212S-2W			12	83	9	82	UL
SD051515S-2W			15	67	7	83	UL
SD120505S-2W	12	10.8-13.2	5	200	20	80	UL
SD120909S-2W			9	111	12	83	UL
SD121212S-2W			12	83	9	85	UL
SD121515S-2W			15	67	7	83	UL
SD240505S-2W	24	21.6-26.4	5	200	20	81	UL
SD240909S-2W			9	111	12	82	UL
SD241212S-2W			12	83	9	84	UL
SD241515S-2W			15	67	7	84	UL

Note:Models listed with strike-through text have been officially discontinued.

COMMON SPECIFICATIONS

Item	Test conditions	Min	Typ	Max	Units
Storage humidity		--	--	95	%
Operating temperature		-40	--	85	°C
Storage temperature		-55	--	125	°C
Temp. rise at full load		--	15	25	°C
Lead temperature	1.5mm from case for 10 seconds	--	--	300	°C
Short circuit protection*		--	--	1	s
Cooling	Free air convection				
Case material	Plastic (UL94-V0)				
MTBF		3500	--	--	K hours
Weight		--	2.8	--	g

*Supply voltage must be discontinued at the end of short circuit duration.

MODEL SELECTION

SD050505S-2W

- Rated Power
- Package Style
- The 2nd Output Voltage
- The 1st Output Voltage
- Input Voltage
- Product Series

ISOLATION SPECIFICATIONS

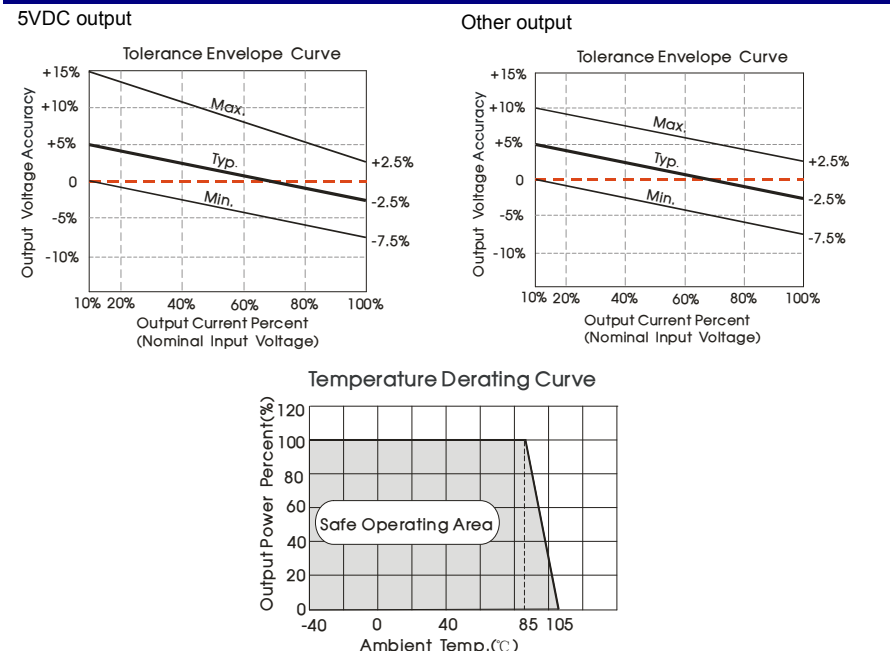| Item	Test conditions	Min	Typ	Max	Units
Isolation voltage	Tested for 1 minute and 1mA max(Vin/Vout)	1000	--	--	VDC
	Tested for 1 minute and 1mA max(Vo1/Vo2)	1000	--	--	
Isolation resistance	Test at 500VDC (Vin/Vout)	1000	--	--	MΩ
	Test at 500VDC (Vo1/Vo2)	1000	--	--	
Isolation capacitance	(Vin/Vout)	--	90	--	pF
	(Vo1/Vo2)	--	90	--	

OUTPUT SPECIFICATIONS

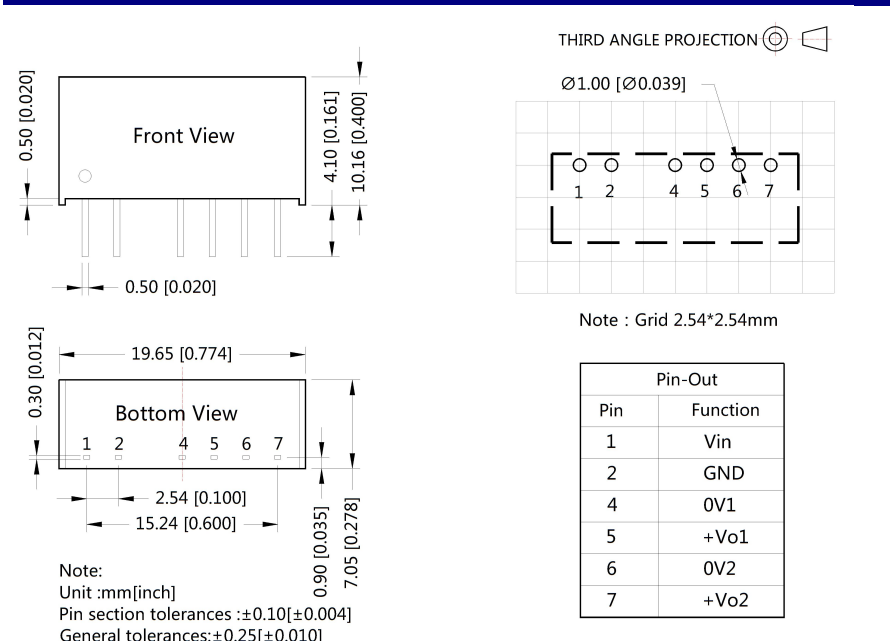| Item	Test conditions	Min	Typ	Max	Units
Line regulation	For Vin change of 1%	--	--	±1.2	--
Load regulation	10% to 100% load(5V Output)	--	12.8	15	%
	10% to 100% load(9V Output)	--	8.3	10	
	10% to 100% load(12V Output)	--	6.8	10	
	10% to 100% load(15V Output)	--	6.3	10	
Output voltage accuracy		See tolerance envelope graph			
Temperature drift	100% full load	--	--	0.03	%/°C
Output ripple& Noise*	20MHz Bandwidth	--	100	--	mVp-p
Switching frequency	Full load, nominal input	--	70	--	KHz

*Test ripple and noise by "parallel cable" method. See detailed operation instructions at Testing of Power Converter section, application notes.

Note:
1. All specifications measured at TA=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
2. See below recommended circuits for more details.
3. Operation under minimum load will not damage the converter; However, they may not meet all specification listed, and that will reduce the life of product

TYPICAL CHARACTERISTICS

5VDC output

Other output

OUTLINE DIMENSIONS & PIN CONNECTIONS

THIRD ANGLE PROJECTION

Note : Grid 2.54*2.54mm

Pin-Out	
Pin	Function
1	Vin
2	GND
4	0V1
5	+Vo1
6	0V2
7	+Vo2

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

APPLICATION NOTE

Requirement on output load
To ensure this module can operate efficiently and reliably, a minimum load is specified for this kind of DC/DC converter in addition to a maximum load (namely full load). During operation, make sure the specified range of input voltage is not exceeded, the minimum output load **could not be less than 10% of the full load**. If the actual output power is very small, please connect a resistor with proper resistance at the output end in parallel to increase the load, or use our company's products with a lower rated output power.

Overload Protection
Under normal operating conditions, the output circuit of these products has no protection against over-current and short-circuits. The simplest method is to connect a self-recovery fuse in series at the input end or add a circuit breaker to the circuit.

Recommended and testing circuit
If you want to further decrease the input/output ripple, an "LC" filtering network may be connected to the input and output ends of the DC/DC converter, see (Figure 1).

(Figure 1)
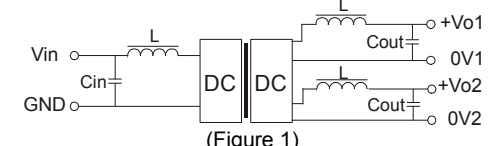
It should also be noted that the inductance and the frequency of the "LC" filtering network should be staggered with the DC/DC frequency to avoid mutual interference. However, the capacitance of the output filter capacitor must be proper. If the capacitance is too big, a startup problem might arise. For every channel of output, provided the safe and reliable operation is ensured, the recommended capacitance of its filter capacitor sees (Table 1).

EXTERNAL CAPACITOR TABLE (Table 1)

Vin (VDC)	Cin (μF)	Vout (VDC)	Cou (μF)
5	4.7	5	4.7
12	2.2	9	2.2
24	1	12	1
--	--	15	0.47

It's not recommend to connect any external capacitor in the application field with less than 0.5 watt output.

Output Voltage Regulation and Over-voltage Protection Circuit
The simplest device for output voltage regulation, over-voltage and over-current protection is a linear voltage regulator with overheat protection that is connected to the input or output end in series (Figure 2).
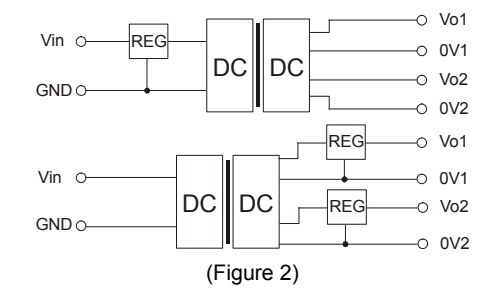
(Figure 2)

No parallel connection or plug and play.