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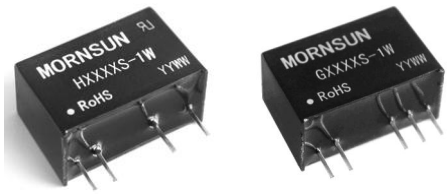

G_S-1W & H_S-1W Series

1W, FIXED INPUT, 6000V ISOLATED & UNREGULATED DUAL/SINGLE OUTPUT DC-DC CONVERTER

RoHS

FEATURES

- Small Footprint
- SIP Package
- 6KVDC Isolation
- Low Isolation Capacitance
- Temperature Range: -40°C ~ +85°C
- No Heatsink Required
- Internal SMD Construction
- Industry Standard Pinout
- RoHS Compliance

APPLICATIONS

The G_S-1W & H_S-1W 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 ≤6000VDC);

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.

MODEL SELECTION

G0505S-1W

- Rated Power
- Package Style
- Output Voltage
- Input Voltage
- Product Series

PRODUCT PROGRAM

Part Number	Input		Output			Efficiency (%, Typ.)	Certificate
	Voltage (VDC)		Voltage (VDC)	Current (mA)			
	Nominal	Range		Max.	Min.		
H0505S-1W	5	4.5-5.5	5	200	20	70	UL
H0509S-1W			9	111	12	72	UL
H0512S-1W			12	84	9	73	UL
H0515S-1W			15	67	7	74	UL
G0505S-1W			±5	±100	±10	70	
G0509S-1W			±9	±56	±6	72	
G0512S-1W			±12	±42	±5	73	
G0515S-1W			±15	±33	±4	75	
H1205S-1W	12	10.8-13.2	5	200	20	70	UL
H1209S-1W			9	111	12	71	UL
H1212S-1W			12	84	9	72	UL
H1215S-1W			15	67	7	74	UL
G1205S-1W			±5	±100	±10	70	
G1209S-1W			±9	±56	±6	71	
G1212S-1W			±12	±42	±5	72	
G1215S-1W			±15	±33	±4	75	
H1505S-1W	15	13.5-16.5	5	200	20	70	
G1505S-1W			±5	±100	±10	70	
G1515S-1W			±15	±33	±4	73	
H2403S-1W	24	21.6-26.4	3.3	303	30	68	
H2405S-1W			5	200	20	71	
H2412S-1W			12	83	8	73	
H2415S-1W			15	67	7	75	
G2405S-1W			±5	±100	±10	71	
G2409S-1W			±9	±56	±6	72	
G2412S-1W			±12	±42	±5	72	

COMMON SPECIFICATIONS

Item	Test Conditions	Min.	Typ.	Max.	Units
Storage humidity range				95	%
Operating temperature		-40		85	°C
Storage temperature		-55		125	
Temp. rise at full load			15	25	
Lead temperature	1.5mm from case for 10 seconds			300	
Short circuit protection*	5V input voltage			1	s
	The other input voltages	Continuous			
Cooling		Free air convection			
Case material		Plastic(UL94-V0)			
MTBF		3500			k hours
Weight			4.2		g

*When input voltage (Nominal) is 5V, Supply voltage must be discontinued at the end of short circuit duration.

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ISOLATION SPECIFICATIONS

Item	Test conditions	Min.	Typ.	Max.	Units
Isolation voltage	Tested for 1 minute and 1mA max	6000			VDC
Isolation resistance	Test at 500VDC	1000			MΩ
Isolation capacitance				10	pF

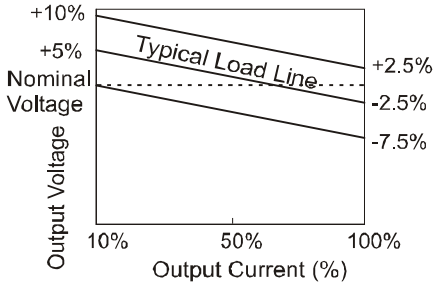
OUTPUT SPECIFICATIONS

Item	Test conditions		Min.	Typ.	Max.	Units
Output power			0.1		1	W
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	15	%
	10% to 100% load (12V output)			6.8	15	%
	10% to 100% load (15V output)			6.3	15	%
Output voltage accuracy			See tolerance envelope graph			
Temperature drift	100% full load				±0.03	%/°C
Ripple & Noise*	20MHz Bandwidth			150	200	mVp-p
Switching frequency	Full load, nominal input	(5V input)		250		kHz
		(The other inputs)		50		kHz

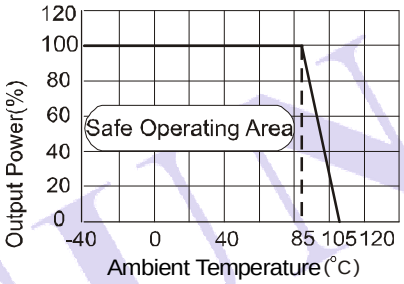
*Test ripple and noise by "parallel cable" method. See detailed operation instructions at Testing of Power Converter section, application notes.
Note: Dual output models unbalanced load: ±5%.

TYPICAL CHARACTERISTICS

Tolerance Envelope Graph



Temperature Derating Graph



APPLICATION NOTE

1) Requirement on output load

To ensure this module can operate efficiently and reliably, During operation, 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.

2) Recommended testing and application 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).

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 greatest capacitance of its filter capacitor sees (Table 1).

3) Output Voltage Regulation and Over-voltage Protection Circuit

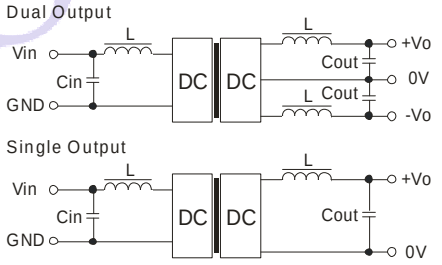
The simplest device for output voltage regulation, over-voltage and over-current protection is a linear voltage regulator with overheat protection that is connected to the input or output end in series (Figure 2).

4) Overload Protection

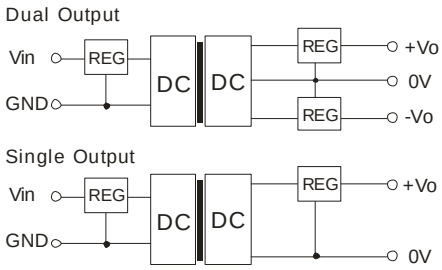
Under normal operating conditions, the output circuit of these products has no protection against overload. The simplest method is to connect a self-recovery fuse in series at the input end or add a circuit breaker to the circuit.

5) No parallel connection or plug and play

RECOMMENDED CIRCUIT



(Figure 1)



(Figure 2)

EXTERNAL CAPACITOR TABLE (TABLE 1)

Vin (VDC)	Cin (μF)	Single Vout (VDC)	Cout (μF)	Dual Vout (VDC)	Cout (μF)
5	4.7	5	10	±5	4.7
12	2.2	9	4.7	±9	2.2
15	2.2	12	2.2	±12	2.2
24	1	15	1	±15	1

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

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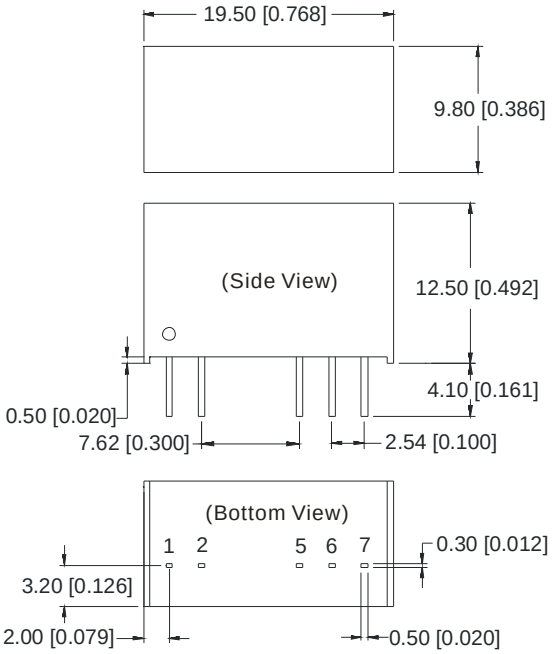
OUTLINE DIMENSIONS & PIN CONNECTIONS

MECHANICAL DIMENSIONS

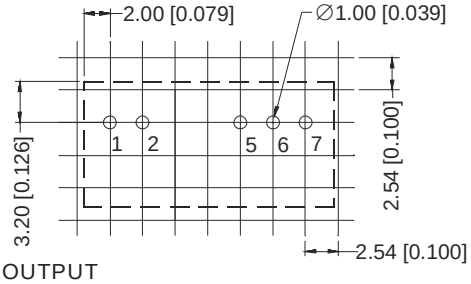


FOOTPRINT DETAILS		
Pin	Single	Dual
1	Vin	Vin
2	GND	GND
5	0V	-Vo
6	No Pin	0V
7	+Vo	+Vo

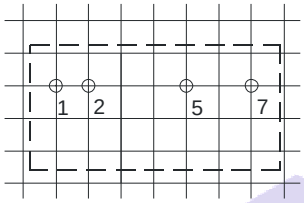
Note:
Unit:mm[inch]
Pin section tolerances: ±0.10mm[±0.004inch]
General tolerances: ±0.25mm[±0.010inch]

RECOMMENDED FOOTPRINT

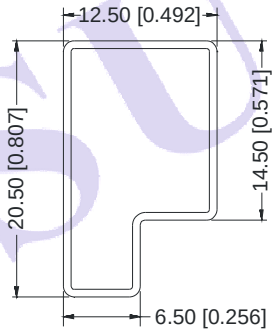
DUAL OUTPUT



SINGLE OUTPUT



TUBE OUTLINE DIMENSIONS



Note:
Unit :mm[inch]
General tolerances: ±0.50mm[±0.020inch]
L=530mm[20.866inch] Devices per tube quantity: 25pcs
L=220mm[8.661inch] Devices per tube quantity: 10pcs

Note:

1. 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.
2. All specifications measured at Ta=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
3. Only typical models listed, other models may be different, please contact our technical person for more details.
4. In this datasheet, all the test methods of indications are based on corporate standards.

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