

FEATURES

- ◆ RoHS compliant
- ◆ Efficiency up to 80%
- ◆ SIP Package
- ◆ Wide temperature performance at full 2 Watt load, -40°C to 85 °C
- ◆ UL 94V-0 package material
- ◆ No heatsink required
- ◆ LOW Isolation Capacitance
- ◆ Industry standard pinout
- ◆ Power sharing on output
- ◆ 6KVDC isolation
- ◆ Continuous Short Circuit Protection
- ◆ Internal SMD construction
- ◆ No external components required
- ◆ Good dynamic feature

MODEL SELECTION

H^①05^②05^③X^④S^⑤-2W^⑥

- ① Product Series
- ② Input Voltage
- ③ Output Voltage
- ④ Fixed Input
- ⑤ SIP Package
- ⑥ Rated Power

APPLICATIONS

The H_XS-2W&G_XS-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 $\leq \pm 10\%$);
- 2) where isolation is necessary between input and output (isolation voltage $\leq 6000\text{VDC}$);
- 3) where the regulation of the output voltage and the output ripple noise are not demanded.

Such as: purely digital circuits, ordinary low frequency analog circuits, and 1GBT power device driving circuits.



SELECTION GUIDE

Order code	Input Voltage(VDC)		Output Voltage (VDC)	Output Current		Efficiency (% Typ)	Switching Frequency (KHz Typ)
	Nominal	Range		Max	Min		
	G0505XS-2W	5	4.5-5.5	±5	±200	±20	74
G0509XS-2W	5	4.5-5.5	±9	±111	±12	77	81
G0512XS-2W	5	4.5-5.5	±12	±83	±9	77	82
G0515XS-2W	5	4.5-5.5	±15	±67	±7	77	83
H0505XS-2W	5	4.5-5.5	5	400	40	74	180
H0509XS-2W	5	4.5-5.5	9	222	23	77	150
H0512XS-2W	5	4.5-5.5	12	167	17	77	84
H0515XS-2W	5	4.5-5.5	15	133	14	77	83
G1205XS-2W	12	10.8-13.	±5	±200	±20	75	82
G1209XS-2W	12	10.8-13.	±9	±111	±12	78	83
G1212XS-2W	12	10.8-13.	±12	±83	±9	80	180
G1215XS-2W	12	10.8-13.	±15	±67	±7	78	150
H1205XS-2W	12	10.8-13.	5	400	40	75	80
H1209XS-2W	12	10.8-13.	9	222	23	78	85
H1212XS-2W	12	10.8-13.	12	167	17	80	87
H1215XS-2W	12	10.8-13.	15	133	14	78	84
G2405XS-2W	24	21.6-26.	±5	±200	±20	75	180
G2409XS-2W	24	21.6-26.	±9	±111	±12	77	150
G2412XS-2W	24	21.6-26.	±12	±83	±9	80	82
G2415XS-2W	24	21.6-26.	±15	±67	±7	79	80
H2405XS-2W	24	21.6-26.	5	400	40	75	78
H2409XS-2W	24	21.6-26.	9	222	23	77	80
H2412XS-2W	24	21.6-26.	12	167	17	80	180
H2415XS-2W	24	21.6-26.	15	133	14	74	150

ISOLATION SPECIFICATIONS

Parameter	Test conditions	Min.	Typ.	Max	Unit
Isolation test voltage	Flash tested for 1 minute and 1mA	6000			VDC
Isolation resistance	Test at $V_{iso}=500\text{VDC}(V_{in}/V_{out})$	1000			MΩ
Isolation capacitance			10		PF

OUTPUT SPECIFICATIONS

Parameter	Test conditions	Min	Typ.	Max	Unit
Output power		0.2		2	W
Line regulation	For V_{in} change of $\pm 1\%$			±1.2	%
Load regulation	10% to 100% full load(5V output)		10	15	
	10% to 100% full load(9V output)		8.3	15	
	10% to 100% full load(12V output)		6.8	15	
	10% to 100% full load(15V output)		6.3	15	
Output voltage accuracy		See tolerance envelope graph			
Temperature drift	100% full load		±0.03		%/°C
Output Ripple&Noise	20MHz Bandwidth		150	250	MV p-p
Switching frequency	Full load, nominal input	(5V input)	45		KHz
		(12V/24v input)	50		

* 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: $\pm 5\%$.

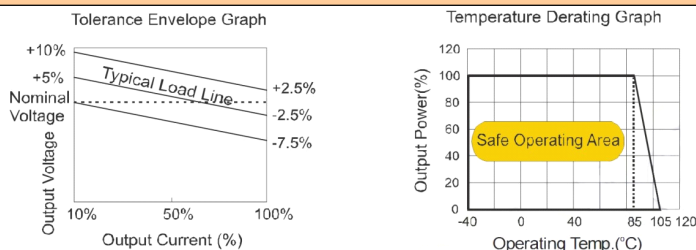
COMMON SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Units
Storage humidity range				95	%
Operating temperature		-40		85	°C
Storage temperature		-55		125	
Lead temperature	1.5mm from case for 10 seconds			300	
Temp.rise at full load			15	30	
Cooling		Free air convection			
Case material		Plastic(UL94-V0)			
Short circuit protection*		Continuous			
				1	s
MTBF		3500			K hours
Weight			4.3		g

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

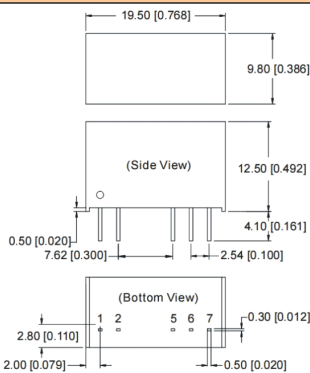
TYPICAL CHARACTERISTICS

Temperature Derating Graph



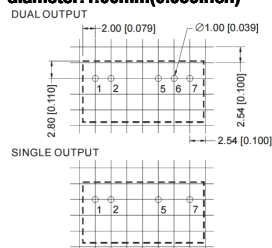
OUTLINE DIMENSIONS & PIN CONNECTIONS

SIZE Graph



RECOMMENDED FOOTPRINT

Top view, grid: 2.54mm(0.1inch)
diameter: 1.00mm(0.039inch)



FOOTPRINT DETAILS

Pin	Single	Dual
1	VIN	VIN
2	GND	GND
5	0V	-V0
6	No Pin	0V
7	+V0	+V0

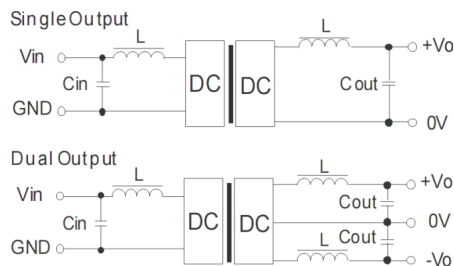
Note:
Unit:mm(inch)
Pin section:0.50*0.3mm(0.020*0.012inch)
Pin section tolerances: 0.10mm(0.004inch)
General tolerances: ±0.25mm(±0.010inch)

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 is not less than 10% of the full load, and that this product should never be operated under no load!

Filtering

To get the input/output ripple,an "LC"filtering network may be connected to the input and output ends of the DC/DC converter.Which may produce a more significant filtering effect.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 see (Figure 1).



(Figure 1)

In some circuits which are sensitive to noise and ripple,a filtering capacitor may be added to the DC/DC output end and input end to reduce the noise and ripple. 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).

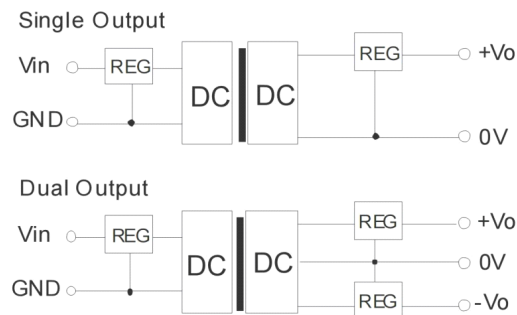
EXTERNAL CAPACITOR TABLE (TABLE 1)

Vin (VDC)	Cin (µF)	Single Vou (VDC)	Cout (µF)	Dual Vou (VDC)	Cout (µF)
5	47	5	10.0	±5	4.7
12	2.2	9	4.7	±9	2.2
24	1.0	12	2.2	±12	1.0
--	--	15	1.0	±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)

When the environment temperature is higher than 71°C, the product output power should be less than 60% of the rated power.

No parallel connection or plug and play.

RoHS COMPLIANT INFORMATION

This series is compatible with RoHS soldering systems with a peak wave solder temperature of 300° C for 10 seconds.
The pin termination finish on the SIP package type is Tin Plate, Hot Dipped over Matte Tin with Nickel Preplate. The DIP types are Matte Tin over Nickel Preplate. Both types in this series are backward compatible with Sn/Pb soldering systems.

REACH COMPLIANT INFORMATION

This series has proven that this product does not contain harmful chemicals, it also has harmful chemical substances through the registration, inspection and approval.