

No-load input current as low as 8mA

Non-isolated DC-DC converter

Fixed input voltage and regulated adjustable single high-voltage output



FEATURES

HO1-P(N)xxxxH-xxB/C/D/F series offer 0.625W-1.25W of output, with operating ambient temperature range -40°C to +105°C, input reverse polarity protection, control voltage over-voltage protection, output short circuit protection, over-current protection, six-sided metal shielding package, low ripple, low time coefficient and temperature coefficient, which are specifically designed for applications in board power systems where high voltages are required and output ripple requirements are high and output voltage stability is critical. They are widely used in fields such as photomultiplier tubes, mass spectrum, light spectrum, electron beam, ion beam, avalanche diodes.

Selection Guide								
Certification	Part No.	Input Voltage (VDC)	Input Current [©] (mA) Full load/No-load		Output Voltage (VDC)			Current (mA)
		Nominal (Range)	Тур.	Max.	Nominal [®]	Range	Guaranteed range	Max./Min.
	HO1-P1251H-1B	5	405/18	420/30	1250	0~+1250	+200~+1250	1/0
	HO1-N1251H-1B	(4.75-5.25)	405/18	420/30	-1250	0~-1250	-200~-1250	1/0
	HO1-P1251H-0.5C		85/8	90/12	1250	0~+1250	+200~+1250	0.570
	HO1-N1251H-0.5C	12 (10.8-13.2)	85/8	90/12	-1250	0~-1250	-200~-1250	
	HO1-P1501H-0.5C		100/10	105/15	1500	0~+1500	+200~+1500	
	HO1-N1501H-0.5C		100/10	105/15	-1500	0~-1500	-200~-1500	
EIN/BS EIN	HO1-P1251H-0.5D		70/8	75/12	1250	0~+1250	+200~+1250	
	HO1-N1251H-0.5D	15	70/8	75/12	-1250	0~-1250	-200~-1250	0.5/0
	HO1-P1501H-0.5D	(13.5-16.5)	85/10	90/15	1500	0~+1500	+200~+1500	
	HO1-N1501H-0.5D		85/10	90/15	-1500	0~-1500	-200~-1500	
	HO1-P1251H-0.5F	24	48/8	52/12	1250	0~+1250	+200~+1250	
	HO1-N1251H-0.5F	(21.6-26.4)	48/8	52/12	-1250	0~-1250	-200~-1250	

Note:

 $\ensuremath{\textcircled{}}$ 1) At the nominal input voltage and nominal output voltage.

② For HO1-P(N)xxxH-1B series when the Vadj control voltage is equal to 2.5VDC (Typ.), the output voltage can be nominal output voltage, and for HO1-P(N)xxxH-0.5C/D/F series the Vadj control voltage is equal to 5VDC (Typ.). The relationship curve between output voltage and control voltage is shown in Fig.3.

Input Specifications					
ltem	Operating Conditions	Min.	Тур.	Max.	Unit
Reflected Ripple $Current^{\circ}$			30		mA
	HO1-P(N)xxxxH-1B series			10	VDC
Surge Voltage (1sec. max.)	HO1-P(N)xxxxH-0.5C/D series			18	
	HO1-P(N)xxxxH-0.5F series			30	
Input Filter Type			Pl fi	lter	

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DC/DC Converter HO1-P(N)xxxxH-xxB/C/D/F Series

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Hot Plug	Unavailable			
Vadj Control Terminal Input	1			Mo
Impedance	1			101 52
Note:				

① Refer to DC-DC Converter Application Notes for detailed description of reflected ripple current test method

Output Specification	าร						
ltem	Operating Conditions		Min.	Тур.	Max.	Unit	
Adjust-point Tolerance	Output voltage guaranteed range, see fig.3			±1	± 2		
Reference Voltage Accuracy	0%-100% load, reference 2.56VDC output (for HO1-P(N)xxxxH-1B series)			±l	±2		
	0%-100% load, reference 5.15	VDC output (other series)		±l	±2	%	
Linear Regulation	Input voltage range, nomina	output voltage, full load		±0.01	±0.03	3	
Load Regulation	Nominal input voltage, nominal output voltage, 10%-100% load			±0.01	±0.03		
Time Coefficient	Nominal input voltage, nomir warming up for 30 minutes	nal output voltage, full load, after		±0.001	±0.003	%/Hr	
Temperature Coefficient	Nominal input voltage, nomir -40~+95°C	nal output voltage, full load,		±100	±300	PPM/ ℃	
Ripple & Noise®	20MHz bandwidth, nominal input voltage, 0%-100% load, output voltage 0~+1000/-1000VDC	HO1-P(N)xxxxH-xxB/C/D/F series		8		mVp-p	
	20MHz bandwidth, nominal input voltage, 0%-100% load	HO1-P(N)1251H-0.5C/D/F series		10			
		HO1-P(N)xxxxH-1B series & HO1-P(N)1501H-0.5C/D series		15			
	urrent Protection / ircuit Protection / Input voltage range HO1-P(N)xxxH-1B series 105 110 140 Other series 110 140 Constant curr set	HO1-P(N)xxxxH-1B series	105	110	140	%lo	
Over-current Protection /		Other series	110	140	180		
Short-circuit Protection		Constant current mode, continuous, self-recovery		nuous,			
Over-voltage Protection of	oltage Protection of Input voltage range HO1-P(N)xxxH-1B series 2.5 Other series 5.1	2.5	2.6	2.7			
Vadj [©]		Other series	5.1	5.2	5.3	VDC	
Maximum allowable voltage of Vadj [®]	Input voltage range				10		

① Please refer to fig.4 for the test method of ripple and noise, the product is working by the linear power source, oscilloscope probe uses x1 gear to test; 2 When the Vadj voltage is greater than or equal to the over-voltage protection voltage point of Vadj, the product without output;

③ Vadj voltage can not exceed its maximum allowable voltage of 10V, otherwise the product will be permanently damaged.

General Specificatio	ons				
Item	Operating Conditions	Min.	Тур.	Max.	Unit
Operating Temperature	See Fig. 1	-40		+105	ŝ
Storage Temperature		-55		+125	C
Storage Humidity	Non-condensing	5		85	%RH
Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from case for 10 seconds			300	°C
Vibration		10-150H	z, 5G, 0.75m	ım. along X,	Y and Z
Switching Frequency	Nominal input voltage, full load		200		kHz
MTBF	MIL-HDBK-217F@25℃	1000			k hours

Mechanical Specific	echanical Specifications		
Case Material	Aluminum alloy		
Dimensions	45.50 x 23.00 x 12.50 mm		
Weight	20g (Typ.)		
Cooling Method	Free air convection		

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DC/DC Converter HO1-P(N)xxxxH-xxB/C/D/F Series



Electromagnetic Compatibility (EMC)				
Emissions	CE	CISPR32/EN55032 CLASS B (For HO1-P(N)xxxxH-xxB/C/D series, with external 10uF/25V MLCC capacitor at the input) (For HO1-P(N)xxxxH-0.5F series, with external 22uF/50V MLCC capacitor at the input)		
	RE	CISPR32/EN55032 CLASS B (without extra components)		
	ESD	IEC/EN61000-4-2 Contact ±4kV	perf. Criteria B	
	RS	IEC/EN61000-4-3 10V/m	perf. Criteria B	
Immunity	EFT	IEC/EN61000-4-4 100KHz ±2kV (see Fig.5 for recommended circuit)	perf. Criteria B	
	Surge	IEC/EN61000-4-5 line to line ±2kV (see Fig.5 for recommended circuit)	perf. Criteria B	
	CS	IEC/EN61000-4-6 3 Vr.m.s	perf. Criteria B	

Product Characteristic Curve



Fig. 1

Design Reference

1. Typical application

The output voltage of the product can be adjusted by an external circuit. There are two adjustment methods, as shown in Fig.2. The relationship curve between output voltage of the product and control voltage is shown in Fig.3. Output ripple can be further reduced by connect the RC filter on the output end of the product.



Fig. 2 External adjustment method of output voltage

Parameter description:

RO	Adjustable resistance≥10KΩ
RI	2k Ω
C1	4.7nF/2000V
N	HO1-P(N)xxxxH-1B series: 2.56VC
VIÐI	HO1-P(N)xxxxH-0.5C/D/F series: 5.15VDC
Control Voltage	HO1-P(N)xxxxH-1B series: 0-2.5VDC
	HO1-P(N)xxxxH-0.5C/D/F series: 0-5VDC



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Output Voltage-Control Voltage Relationship Curve



(Note: For HO1-P(N)xxxxH-1B series 100% Vadj is equal to 2.5VDC (Typ.); For HO1-P(N)xxxxH-0.5C/D/F series 100% Vadj is equal to 5.0VDC (Typ.))



2. Ripple & Noise testing compliance circuit



Parameter description:

Cin	100µF/50V
RO	Adjustable resistance \geq 10k Ω
R2	1kΩ/2W
C2	4.7nF/2000V

3. EMC compliance circuit



4. For additional information please refer to DC-DC converter application notes on www.mornsun.cn



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Dimensions and Recommended Layout

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THIRD ANGLE PROJECTION



Note: Unit: mm[inch] Pin diameter tolerances: $\pm 0.10[\pm 0.004]$ General tolerances: $\pm 0.50[\pm 0.020]$



Pi	n–Out
Pin	Mark
1,2	NC
3	HV
4	Vref
5	Vadj
6	Case
7	GND
8	Vin

NC: Pin to be isolated from circuit Case: Case is connected to the internal GND GND: Vin's and HV's GND are connected internally

HO1-P(N)H-xxB(C)(D)(F)-V0

Notes:

- 1. For additional information please refer to Product Packaging Information. Packaging bag number: 58210097;
- 2. If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
- 3. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25°C, humidity<75%RH with nominal input voltage and rated output load;
- 4. All index testing methods in this datasheet are based on our company corporate standards;
- 5. We can provide product customization service;
- 6. Products are related to laws and regulations: see "Features" and "EMC";
- 7. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

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