Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

ISH Series

DC-DC Converter

XP Power

2 Watts

- Single Output
- SMD Package
- Industry Standard Pinout
- Operating Temperature -40 °C to +105 °C
- 1500 VDC Isolation, 3000 VDC Option
- 3 Year Warranty

Dimensions:

ISH:
0.500 x 0.44 x 0.285" (12.7 x 11.2 x 7.25 mm)

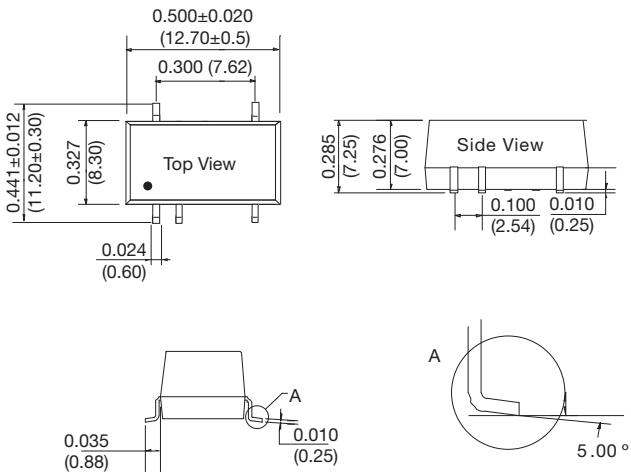
Models & Ratings

Input Voltage	Output Voltage	Output Current	Input Current[2]		Maximum Capacitive Load	Efficiency[3]	Model Number[1]
			No Load	Full Load			
4.5-5.5	3.3V	400 mA	30 mA	506 mA	220 µF	72%	ISH0503A[1]
	5V	400 mA	30 mA	506 mA	220 µF	79%	ISH0505A[1]
	9V	222 mA	30 mA	506 mA	220 µF	82%	ISH0509A[1]
	12V	167 mA	30 mA	506 mA	220 µF	82%	ISH0512A[1]
	15V	133 mA	30 mA	506 mA	220 µF	83%	ISH0515A[1]
10.8-13.2	5V	400 mA	25 mA	212 mA	220 µF	79%	ISH1205A[1]
	9V	222 mA	25 mA	212 mA	220 µF	82%	ISH1209A
	12V	167 mA	25 mA	212 mA	220 µF	82%	ISH1212A[1]
	15V	133 mA	25 mA	212 mA	220 µF	83%	ISH1215A[1]
	24V	83 mA	25 mA	212 mA	220 µF	84%	ISH1224A[1]
13.5-16.5	15V	133 mA	18 mA	169 mA	220 µF	83%	ISH1515A[1]
21.6-26.4	5V	400 mA	15 mA	105 mA	220 µF	79%	ISH2405A[1]
	12V	167 mA	15 mA	105 mA	220 µF	82%	ISH2412A[1]
	15V	133 mA	15 mA	105 mA	220 µF	83%	ISH2415A[1]
	24V	83 mA	15 mA	105 mA	220 µF	86%	ISH2424A[1]

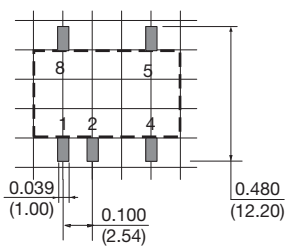
Notes

1. For optional 3000 VDC isolation add suffix '-H' to end of part number e.g. ISH1224A-H.
2. Input currents measured at nominal input voltage.
3. Typical value at full load.

Mechanical Details



Recommended Footprint
Top View grid: 0.1 x 0.1 in (2.54 x 2.54 mm)



PIN CONNECTIONS	
Pin	Function
1	GND
2	+Vin
4	0 V
5	+Vout
8	No Connection

Notes

1. All dimensions are in inches (mm)
2. Weight: 0.003 lbs (1.5 g) typical.
3. Pin diameter: 0.02 ±0.002 (0.5 ±0.005)
4. Pin pitch and length tolerance: ±0.014 (±0.35)
5. Case tolerance: ±0.02 (±0.5)

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage Range	4.50		5.50	VDC	5 V nominal
	10.80		13.20	VDC	12 V nominal
	13.50		16.50	VDC	15 V nominal
	21.60		26.40	VDC	24 V nominal
Input Current					See Models and Ratings table
Input Reflected Ripple		15		mA pk-pk	Through 12 µH inductor and 47 µF capacitor
Input Surge			9	VDC for 1 s	5 V models
			18	VDC for 1 s	12 V models
			21	VDC for 1 s	15 V models
			30	VDC for 1 s	24 V models
Input Filter	Capacitor				

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage	3.3		24	VDC	See Models and Ratings table
Initial Set Accuracy			-7.5, +2.5	%	At 70% load
Minimum Load	10			%	
Line Regulation			±1.2	%	Per 1% change of input voltage (±1.5% for 3V3 output)
Load Regulation				%	See graph
Start Up Delay		2		ms	
Ripple and Noise		100		mV pk-pk	20 MHz bandwidth, measured using 0.1 µF capacitor
Transient Response			3	% deviation	Recovery to within 1% in 500 µs for a 25% load change (5% max. deviation for 3.3 & 5 V models)
Short Circuit Protection					Continuous, with auto recovery, except 1 s max for 24 input V models
Maximum Capacitive Load			220	µF	
Temperature Coefficient			0.03	%/°C	

General

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency					See Models and Ratings table
Isolation: Input to Output	1500			VDC	For optional high isolation versions, 3000 VDC input to output add suffix -H to model number
Switching Frequency	50		300	kHz	
Isolation Resistance	10^9			Ω	Input to output, tested at 500 VDC
Isolation Capacitance		20		pF	Input to output
Power Density			31.8	Win^3	
Mean Time Between Failure	3500			kHrs	MIL-HDBK-217F, +25 °C GB
Weight		0.003 (1.5)		lb (g)	

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating Temperature	-40		+105	°C	Derate from 100% load at +100 °C to 80% load at 105 °C
Storage Temperature	-55		+125	°C	
Case Temperature			+115	°C	
Operating Humidity			95	% RH	Non-condensing
Cooling					Natural convection

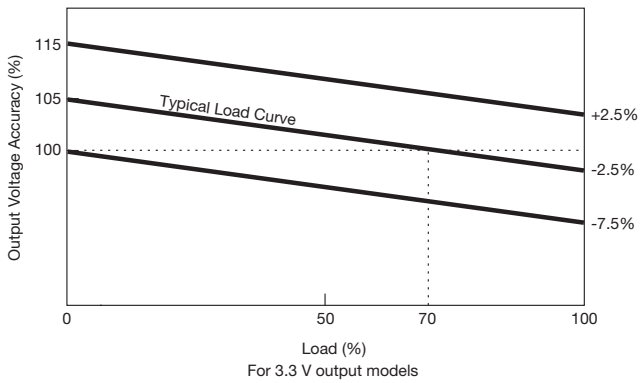
EMC: Emissions

Phenomenon	Standard	Test Level	Notes & Conditions
Conducted	EN55022	Class B	See Application Note for Class B filter
Radiated	EN55022	Class B	See Application Note for Class B filter

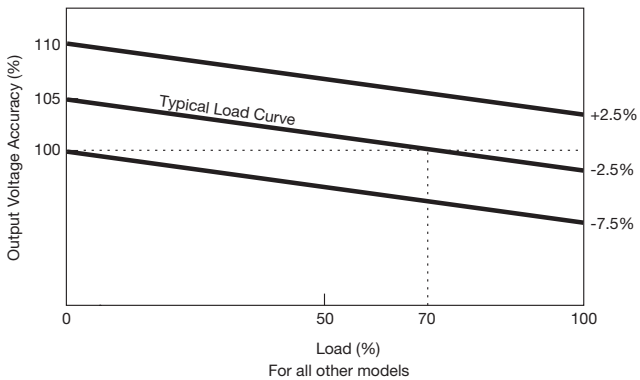
EMC: Immunity

Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
ESD Immunity	EN61000-4-2	3	B	
Radiated Immunity	EN61000-4-3	3 V/m	A	
EFT/Burst	EN61000-4-4	2	B	External input capacitor required, 330 µF/100 V
Surge	EN61000-4-5	2	B	External input capacitor required, 330 µF/100 V
Conducted Immunity	EN61000-4-6	3 V rms	A	
Magnetic Fields	EN61000-4-8	1 A/m	A	

Load Regulation



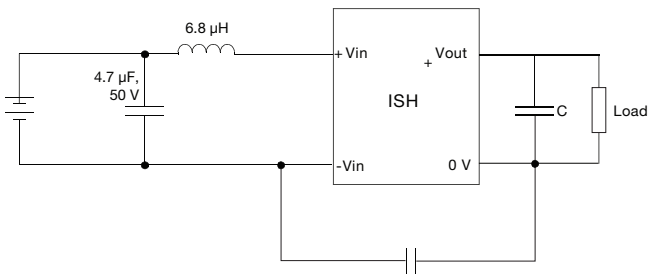
For 3.3 V output models



For all other models

Application Note

EMI Filter for Class B Emissions

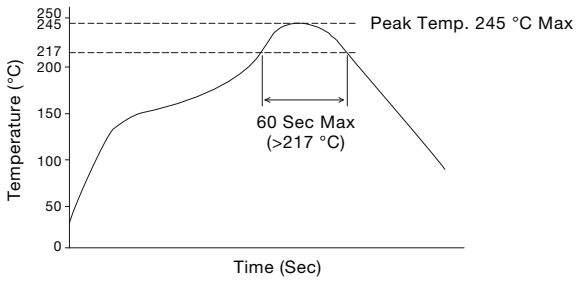


For ISH2424A model only, add Ycap, 470 pF, 3 kv

Output Voltage	C
3.3	10.00 µF
5	10.00 µF
9	4.70 µF
12	2.20 µF
15	1.00 µF
24	0.47 µF

Solder Profile

It is recommended to refer to IPC/JEDEC J-STD-020D standard for reflow soldering curve. The recommended reflow soldering temperature graph for our products is as follows:



Note:
The curve is only suitable for hot air convection reflow soldering.