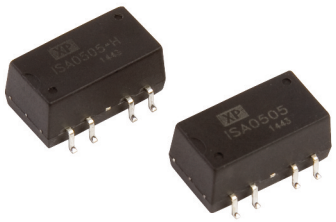
ISA Series

DC-DC Converter

XP Power

1 Watt

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



Dimensions:

ISA:
0.600 x 0.440 x 0.285" (15.24 x 11.20 x 7.25 mm)

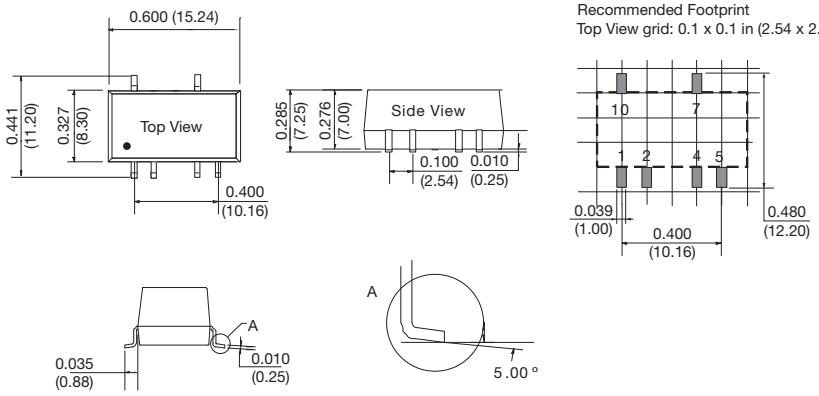
Models & Ratings

Input Voltage	Output Voltage	Output Current	Input Current[2]		Maximum Capacitive Load	Efficiency[3]	Model Number
			No Load	Full Load			
2.97-3.63 V	±5 V	±100 mA	25 mA	389 mA	100 µF	78%	ISA0305[1]
	±12 V	±42 mA	25 mA	389 mA	100 µF	78%	ISA0312[1]
	±15 V	±33 mA	25 mA	389 mA	100 µF	78%	ISA0315
4.5-5.5 V	±5 V	±100 mA	20 mA	250 mA	100 µF	80%	ISA0505[1]
	±9 V	±56 mA	20 mA	250 mA	100 µF	80%	ISA0509[1]
	±12 V	±42 mA	20 mA	247 mA	100 µF	81%	ISA0512[1]
	±15 V	±33 mA	20 mA	247 mA	100 µF	81%	ISA0515[1]
	±24 V	±21 mA	20 mA	247 mA	100 µF	81%	ISA0524[1]
10.8-13.2 V	±5 V	±100 mA	15 mA	104 mA	100 µF	80%	ISA1205[1]
	±9 V	±56 mA	15 mA	104 mA	100 µF	80%	ISA1209[1]
	±12 V	±42 mA	15 mA	103 mA	100 µF	81%	ISA1212[1]
	±15 V	±33 mA	15 mA	103 mA	100 µF	81%	ISA1215[1]
	±24 V	±21 mA	15 mA	103 mA	100 µF	81%	ISA1224[1]
13.5-16.5 V	±15 V	±33 mA	12 mA	83 mA	100 µF	81%	ISA1515[1]
21.6-26.4 V	±5 V	±100 mA	10 mA	52 mA	100 µF	80%	ISA2405[1]
	±9 V	±56 mA	10 mA	52 mA	100 µF	80%	ISA2409[1]
	±12 V	±42 mA	10 mA	51 mA	100 µF	81%	ISA2412[1]
	±15 V	±33 mA	10 mA	51 mA	100 µF	82%	ISA2415[1]
	±24 V	±21 mA	10 mA	51 mA	100 µF	82%	ISA2424[1]

Notes

1. *For optional 3000 VDC isolation add suffix '-H' to end of part number e.g. ISA1224-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
7	+Vout
10	No Connection

Notes

1. All dimensions are in inches (mm)
2. Weight: 0.004 lbs (1.8 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	2.97		3.63	VDC	3.3 V nominal
	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			5	VDC for 15 ms	3.3 V models
			9	VDC for 15 ms	5 V models
			18	VDC for 15 ms	12 V models
			21	VDC for 15 ms	15 V models
			30	VDC for 15 ms	24 V models
Input Filter	Capacitor				

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage	±5		±24	VDC	See Models and Ratings table
Output Voltage Balance			±2	%	Dual output models
Initial Set Accuracy			±3.0	%	At 100% load
Minimum Load	10			%	
Line Regulation			±1.2	%	
Load Regulation				%	See graph
Cross Regulation			±5.0	%	Dual output models when one load is varied between 25% and 100% and the other is fixed at 100% load
Start Up Delay		2		ms	
Ripple and Noise			60	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					
Temperature Coefficient			0.02	%/°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			13	Win^3	
Mean Time Between Failure	3500			kHrs	MIL-HDBK-217F, +25 °C GB
Weight		0.004 (1.8)		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			+105	°C	
Operating Humidity			95	% RH	Non-condensing
Cooling					Natural convection

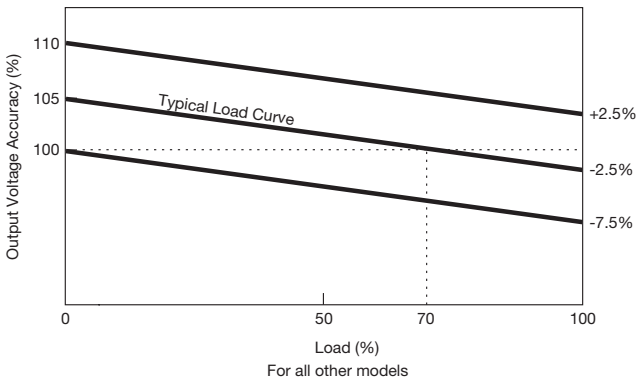
EMC: Emissions

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

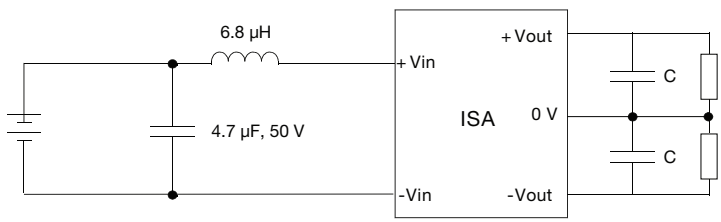
Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
ESD Immunity	EN61000-4-2	3	B	
Radiated Immunity	EN61000-4-3	3 V/m	A	
EFT/Burst	EN61000-4-4	2	B	External input capacitor required, 330 µF/100 V
Surge	EN61000-4-5	2	B	External input capacitor required, 330 µF/100 V
Conducted Immunity	EN61000-4-6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

Load Regulation



Application Note

EMI Filter for Class B Emissions



Output Voltage	C1
±5	4.70 µF
±9	2.20 µF
±12	1.00 µF
±15	1.00 µF
±24	0.47 µF