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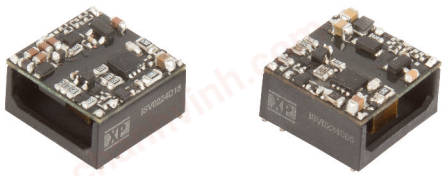
ISV02 Series

DC-DC Converter

XP Power

2 Watt

- Single & dual regulated outputs
- Wide 4:1 input range
- Ultra-compact SMD package
- 3.0kV isolation qualification tested
- Class A conducted emissions
- Tape & reel package available
- -40°C to +75°C operating temperature
- Full power to +75°C
- 3 year warranty



Dimensions:

ISV02: 0.58 x 0.56 x 0.35" (14.65 x 14.40 x 8.95 mm)

The ISV02 series is a compact SMD, open frame construction providing a cost effective DC-DC converter with high performance features such as 3.0kV isolation, 4:1 input range, full load operating temperature to 75°C, remote on/off, high reliabity and short circuit protection. Available in single or dual output versions this product family is ideal for signal conditioning and voltage matching.

Models & Ratings

Input Voltage	Output Voltage	Output Current	Input		Maximum Capacitive Load	Efficiency Vin (Min) with full load	Model Number[3]
			No Load	Full Load			
12V (4.5 - 18V)	5V	400mA	50mA	214mA	1000µF	78%	ISV0212S05
	12V	167mA		211mA	220µF	80%	ISV0212S12
	15V	133mA		206mA	100µF	81%	ISV0212S15
	±12V	±83mA		211mA	±100µF	79%	ISV0212D12
	±15V	±67mA		206mA	±47µF	81%	ISV0212D15
24V (9 - 36V)	5V	400mA	30mA	108mA	1000µF	78%	ISV0224S05
	12V	167mA		105mA	220µF	79%	ISV0224S12
	15V	133mA		103mA	100µF	81%	ISV0224S15
	±12V	±83mA		107mA	±100µF	78%	ISV0224D12
	±15V	±67mA		103mA	±47µF	81%	ISV0224D15

Notes

1. Input currents measured at nominal input voltage.
2. Maximum capacitive load is per output.
3. For optional tape & reel package version, add suffix '-TR' e.g. ISV0212S05-TR. Reel size 200 pcs.
4. Standard tube size is 30pcs.

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage Range	4.5		18.0	VDC	12V nominal
	9.0		36.0		24V nominal
Input Filter	Internal Capacitor				
Input Surge			25	VDC for 100ms	12V nominal
			50		24V nominal
Input Reflected Ripple Current		20		mA pk-pk	Measured with 12 µH inductance with 47 µF input capacitor
Recommended Input Fuse			1	A	12V nominal. Recommended slow blow type
			0.5	A	24V nominal. Recommended slow blow type
Undervoltage Lockout	On: 4.1VDC, Off: 3.5VDC				12V nominal input: Auto recovery
	On: 8.5VDC, Off: 7.0VDC				24V nominal input: Auto recovery
Remote On/Off	Module On if pin 3 is open circuit. Module Off if 2-4mA is applied				See application note.
Standby Mode Input Current		3		mA	When module inhibited

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ISV02 Series

DC-DC Converter

XP Power

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage	5		30	VDC	See Models and Ratings table
Initial Set Accuracy		±1		%	
Output Voltage Balance			±5	%	For dual output with 100% load and 25-100% load
Minimum Load	0			%	Minimum load required for voltage regulation
Line Regulation			±0.2	%	
Load Regulation			±0.5	%	Measured from no load to 100% load
Transient Response			±3	%	Maximum deviation when Vin is nominal and load change from 100% to 25% in 25% step changes. Recovery time 500µS typically
Cross Regulation			5	%	For dual output models with one output at 25% to 100% with the second output at 100% load
Ripple & Noise			100	mV pk-pk	Single/Dual Output. 20 MHz bandwidth. Measured using 10 µF electrolytic capacitor in parallel with 0.1 µF ceramic capacitor. Module On if pin 3 is open circuit. Module Off if 2-4mA is applied
Short Circuit Protection	Auto recovery, continuous				
Maximum Capacitive Load				µF	See Models and Ratings table
Temperature Coefficient			±0.02	%/°C	

General

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency		80		%	See Models and Ratings table
Isolation: Input to Output	3000			VDC	60s qualification test, 3s production test. Working voltage 100 Vrms/150VDC insulation designation for safety approvals: functional
Isolation Resistance	10^9			Ω	At 3000 VDC
Isolation Capacitance		25		pF	
Switching Frequency				kHz	See application notes
Power Density		22		W/in³	
Mean Time Between Failure	890			KHrs	MIL-HDBK-217F, +25 °C GB, TBC
Weight		0.004 (2.0)		lb (g)	
Moisture Sensitivity Level	Level 1				IPC/JEDEC J-STD-020D.1
PCB Pad Material	Solder coated phosphor bronze C5191R-H				
Vibration	Tested to MIL-STD 810F Cat 24, 514. 5C-17 Random Vibration				
Case Material	Non conductive black plastic, UL94V-0 Rated				
Lead-Free Reflow Solder Process	IPC/JEDEC J-STD-020D.1 (water wash permitted with deionised water, dry thoroughly)				

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating Temperature	-40		+75	°C	
Storage Temperature	-55		+125	°C	
Humidity			95	%RH	Non-condensing
Cooling					Natural convection

EMC: Emissions

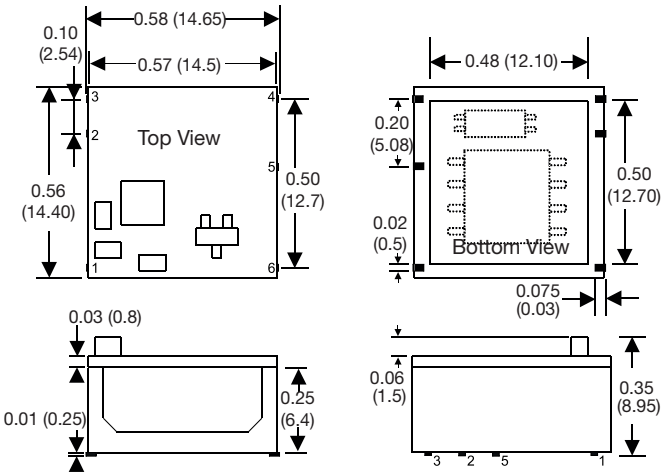
Phenomenon	Standard	Test Level	Notes & Conditions
Conducted	EN55032	Class A	See application notes
Radiated	EN55032	Class A	

EMC: Immunity

Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
ESD Immunity	EN61000-4-2	±8 kV/±4kV	A	Air Discharge/Contact Discharge
Radiated Immunity	EN61000-4-3	10V/m	A	
EFT/Burst	EN61000-4-4	2 kV	A	External components required, see application notes.
Surge	EN61000-4-5	2 kV	A	External components required, see application notes
Conducted Immunity	EN61000-4-6	10 V rms	A	
Magnetic Fields	EN61000-4-8	100 A/m	A	

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Mechanical Details



Pin Connections		
Pin	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	Remote On/Off	Remote On/Off
4	+Vout	+Vout
5	N/C	Common
6	-Vout	-Vout

Notes

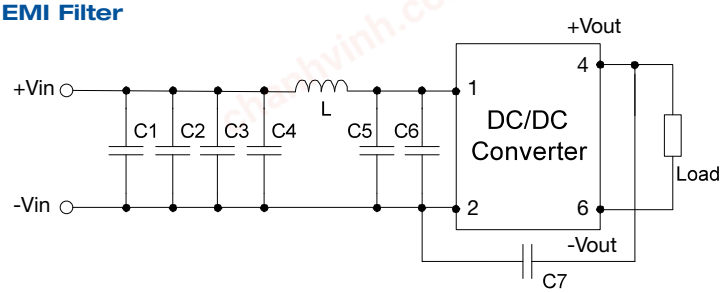
1. All dimensions are in inches (mm)
2. Tolerance: X.XX±0.01 (X.X±0.25)

Application Notes

Switching Frequency

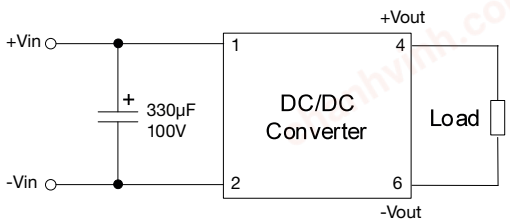
Vin	100% load	90%	80%	70%	60%	50%	40%	30%	20%	10%	No load	Units
4.5V - 9V	100-180	160-200	180-220	210-250	230-290	270-330	320-400	400-480	520-640	740-900	1010-1230	kHz
12V - 24V	340-410	370-450	400-480	450-550	500-620	580-700	660-800	790-970	950-1160	1200-1466	1550-1890	
18V - 36V	410-500	460-560	500-620	550-670	610-750	700-850	770-950	920-1120	1080-1320	1300-1590	1550-1890	

EMI Filter



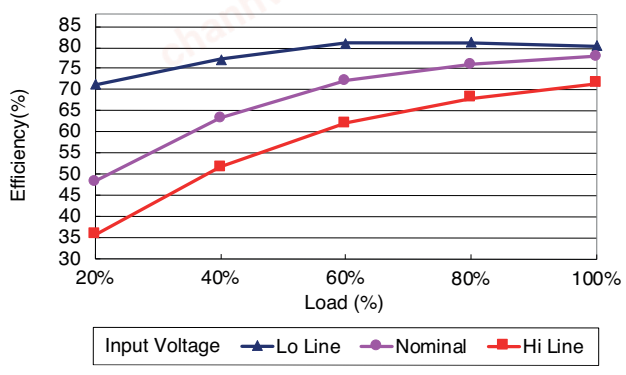
	C1	C2-C6	L	C7
ISV0212xxx	1206, 10µF/50V		2.2µH	1808, 100pF/3KV
ISV0224xxx	1206, 10µF/50V	1206, 10µF/50V	47µH	1808, 100pF/3KV

EFT & Surge Filter



Efficiency Curve – Load vs Input Voltage

Example ISV0212S05



Remote On/Off – Example Circuit

