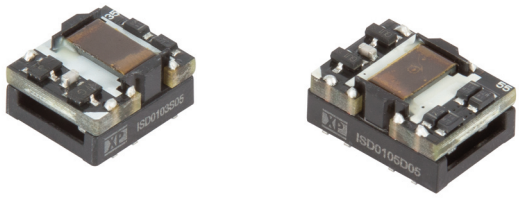
ISD01 Series

DC-DC Converter

XP Power

1 Watt

- Single & dual output
- ±10% input range
- Ultra compact SMD package
- 4.2 kVDC isolation
- 250 VAC/400 VDC working voltage
- Class B conducted emissions (with minimal additional components)
- Operating temperature -40 °C to +105 °C
- Full Load at +100 °C
- MTBF >7.2 MHrs at 25 °C (MIL-HDBK-21F, +25 °C GB)
- Tape & reel package vailable
- 3 year warranty



Dimensions:

ISD01xxS: 0.5 x 0.44 x 0.27" (12.7 x 11.2 x 6.85 mm)
ISD01xxD: 0.6 x 0.44 x 0.27" (15.24 x 11.2 x 6.85 mm)

The ISD01 series is a compact SMD, open frame construction providing a cost effective DC-DC converter with high performance features such as 4.2kV isolation, full load operating temperature to +100 °C, high reliabity and short circuit protection. Available in single or dual output variants this product family is ideal for signal conditioning and voltage matching.

Models & Ratings

Input voltage	Output voltage	Output current	Input current[1,2]		Maximum capacitive load[3]	Efficiency	Model number[3]
			No load	Full load			
3V3 (2.97-3.63 V)	3.3 V	303 mA	50 mA	415 mA	220 µF	73%	ISD0103S3V3
	5.0 V	200 mA		405 mA	220 µF	75%	ISD0103S05
	±3.3 V	±151 mA		405 mA	±100 µF	75%	ISD0103D3V3
	±5.0 V	±100 mA		390 mA	±100 µF	78%	ISD0103D05
5V (4.5-5.5 V)	3.3 V	303 mA	40 mA	275 mA	220 µF	73%	ISD0105S3V3
	5.0 V	200 mA		265 mA	220 µF	76%	ISD0105S05
	±3.3 V	±151 mA		270 mA	±100 µF	75%	ISD0105D3V3
	±5.0 V	±100 mA		260 mA	±100 µF	78%	ISD0105D05

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. ISD0105S05-TR. (reel size 500 pcs)

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage Range	2.97		3.63	VDC	3V3 nominal
	4.50		5.50		5 V nominal
Input Filter	Internal Capacitor				
Input Surge			5	VDC for 1 s	3V3 nominal
			9		5 V nominal
Input Reflected Ripple Current			20	mA pk-pk	

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage	3.3		5	VDC	See Models and Ratings table
Initial Set Accuracy		±3.0		%	At 70% load
Output Voltage Balance			±1.0	%	For dual output with balanced laods
Minimum Load	10			%	Minimum load required
Line Regulation			±1.2	%/1%	Output changes by max of 1.2% for each 1% change in input voltage
Load Regulation		10	15/12	%	3.3 V output/5 V output
Ripple & Noise			150/±120	mV pk-pk	Single/Dual Output. 20 MHz bandwidth. Measured using 10 µF electrolytic capacitor in parallel with 0.1 µF ceramic capacitor
Short Circuit Protection					0.5 s max with auto recovery
Maximum Capacitive Load					See Models and Ratings table
Temperature Coefficient			0.03	%/°C	

General

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency		76		%	See Models and Ratings table
Isolation: Input to Output	4200			VDC	60s qualification test, 3s production test. Working voltage 250 VACrms/400 VDC insulation designation for safety approvals: functional
Isolation Resistance	10^9			Ω	At 1000 VDC
Isolation Capacitance		25		pF	
Switching Frequency	50		80	kHz	
Power Density			16.8	W/in³	
Mean Time Between Failure	7.2			MHrs	MIL-HDBK-217F, +25 °C GB
Weight		0.003 (1.52) 0.004 (1.80)		lb (g)	For single output For dual output
Moisture Sensitivity Level	Level 1				IPC/JEDEC J-STD-020D.1
PCB Pad Material	Copper				
PCB Pad Solder Coating	Lead free HASL				
Solder Process	IPC/JEDEC J-STD-020D.1				
Vibration	Tested to MIL-STD 810F Cat 24, 514. 5C-17 random vibration				
Case Flammability	UL 94V-0 Rated				Non conductive black plastic

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating Temperature	-40		+105	°C	See Derating Curve.
Storage Temperature	-55		+125	°C	
Humidity			95	%RH	Non-condensing
Cooling					Natural convection

EMC: Emissions

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

EMC: Immunity

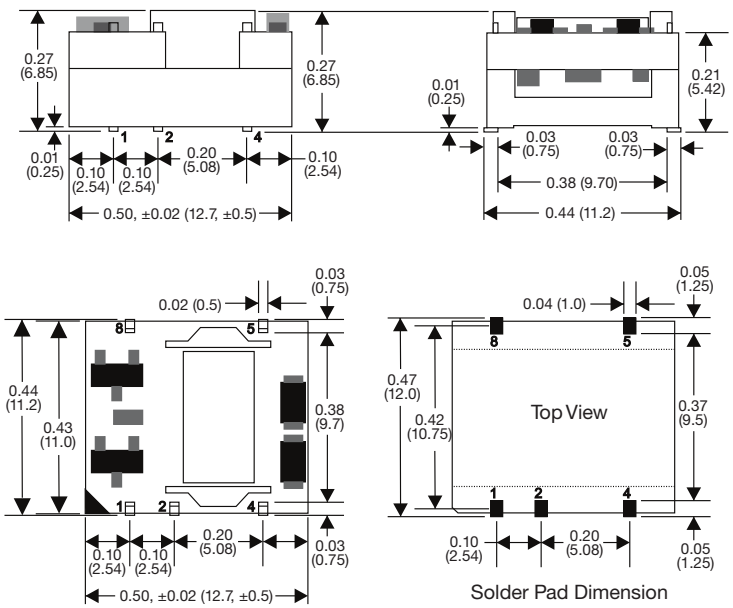
Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
ESD Immunity	EN61000-4-2	±8 kV	A	Air Discharge
Radiated Immunity	EN61000-4-3	3 Vrms	A	
EFT/Burst	EN61000-4-4	2 kV	A	External components required, see application notes
Surge	EN61000-4-5	2 kV	A	External components required, see application notes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

Safety Approvals

Safety Agency	Safety Standard	Notes & Conditions
UL	UL60601-1, UL62368-1	Designed to meet
TUV	EN60601-1, EN62368-1	
CB	IEC60601-1, IEC62368-1	
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

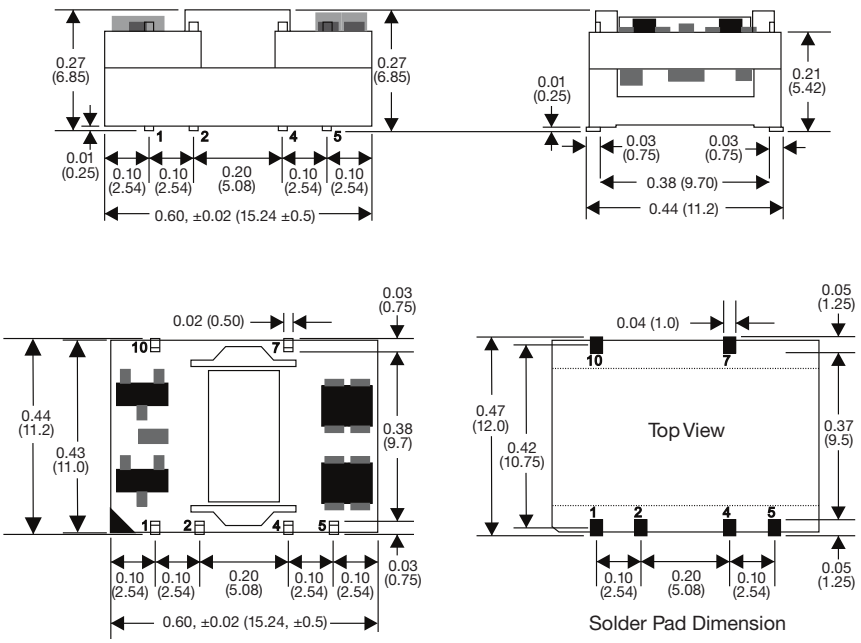
Mechanical Details

Single Output



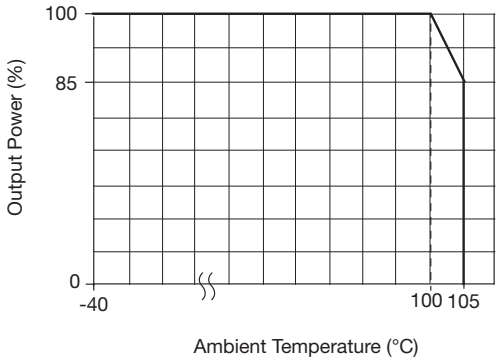
Pin Connections	
Pin	Single
1	-Vin
2	+Vin
4	-Vout
5	+Vout
8	N/C

Dual Output

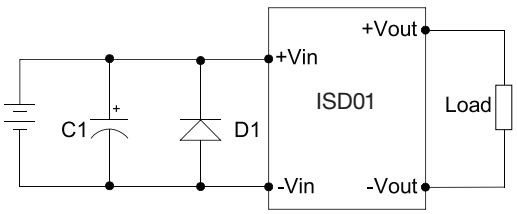


Pin Connections	
Pin	Dual
1	-Vin
2	+Vin
4	Common
5	-Vout
7	+Vout
10	N/C

Application Notes



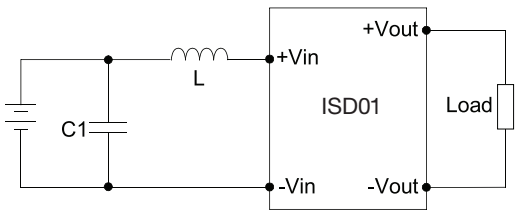
EFT & Surge Filter



C1	D1
330 µF/50 V	SMDJ9.0A

D1: Transient Voltage Suppression Diode

EMI Filter



C1	L
1206,22 µF	6.8 µH

Notes

1. All dimensions are in inches (mm)
2. Weight: 0.003 lbs (1.52 g) approx
   0.004 lbs (1.80 g) approx
3. Tolerance: X.XX±0.01 (X.X±0.25)
4. Pin Tolerance: ±0.002 (±0.05)

Protection

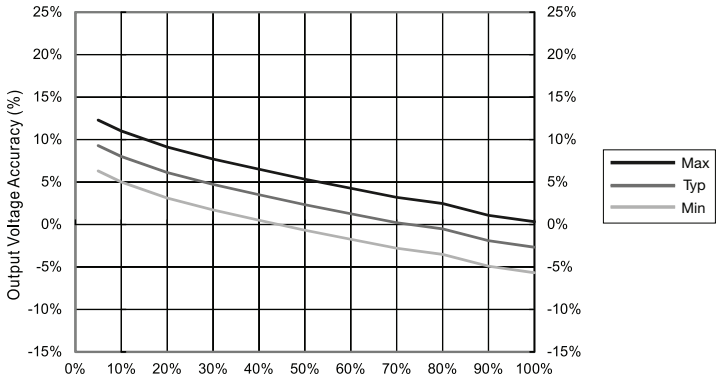
For UL compliance an input anti-surge line fuse must be fitted: Input 3V3, 1A slow burn fuse
Input 5V, 0.5A slow burn fuse

UL regonised fuses are recommended and should be rated to the maximum input voltage as a minimum

Application Notes

Output Voltage Tolerance

ISD0103S3V3



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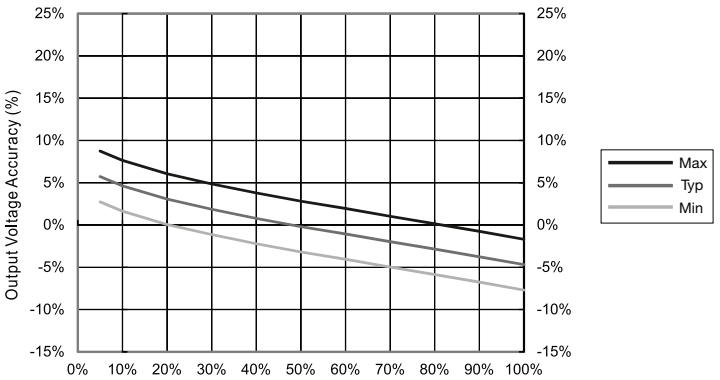

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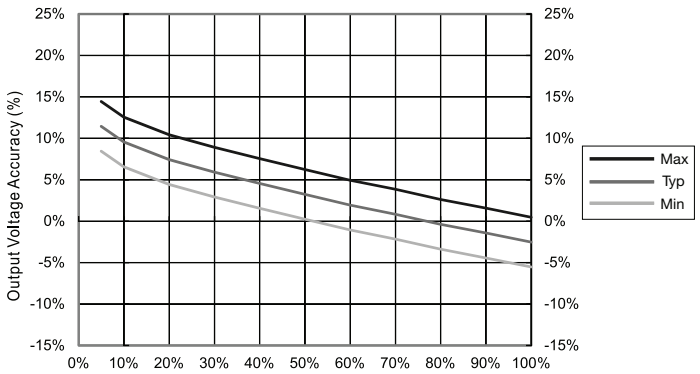

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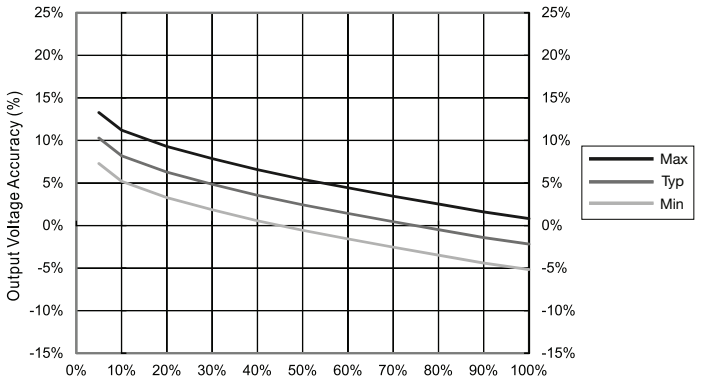
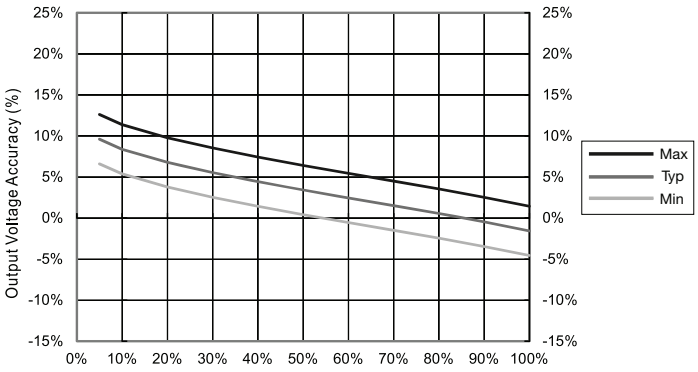


Application Notes

Output Voltage Tolerance

ISD0103D03



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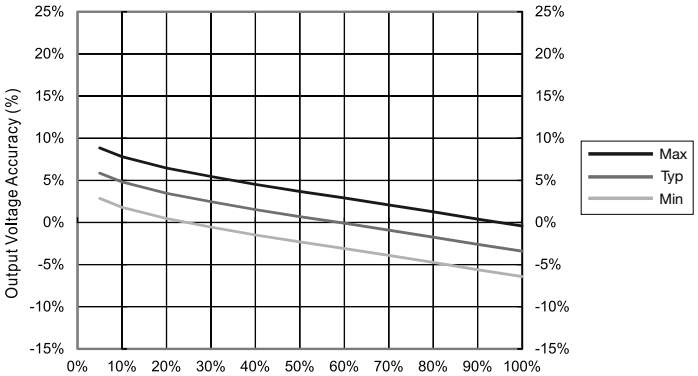

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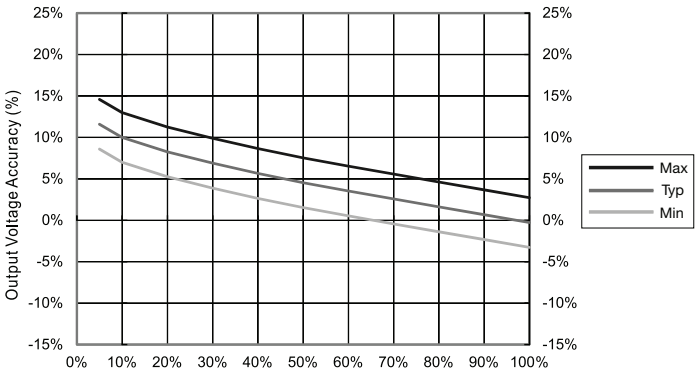

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