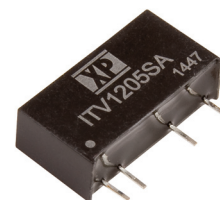


1 Watts

- Single & dual output, unregulated
- -40 °C to +105 °C operation
- SIP7 package
- Full load at 95 °C ambient
- 3000 VDC isolation, functional
- Class B radiated emissions
- MTBF >3.5 MHrs
- 3 year warranty



The ITV series of unregulated DC-DC modules provides an exceptional high operating temperature range while remaining cost effective. Features include short circuit protection and a robust encapsulated package.

Dimensions:

ITV:
0.76 x 0.24 x 0.39" (19.5 x 6.0 x 10.0 mm)

Models & Ratings

Input Voltage	Output Voltage	Output Current	Input Current ⁽¹⁾		Maximum Capacitive Load ⁽²⁾	Efficiency ⁽³⁾	Model Number
			No Load	Full Load			
5 V	5 V	200 mA	30 mA	253 mA	220 µF	80%	ITV0505SA
	12 V	83.3 mA	30 mA	253 mA	100 µF	80%	ITV0512SA
	15 V	66.7 mA	30 mA	253 mA	100 µF	80%	ITV0515SA
	±5 V	±100 mA	30 mA	253 mA	±100 µF	80%	ITV0505S
	±12 V	±41.6 mA	30 mA	250 mA	±47 µF	81%	ITV0512S
	±15 V	±33.3 mA	30 mA	250 mA	±47 µF	81%	ITV0515S
12 V	5 V	200 mA	15 mA	106 mA	220 µF	80%	ITV1205SA
	12 V	83.3 mA	15 mA	106 mA	100 µF	80%	ITV1212SA
	15 V	66.7 mA	15 mA	104 mA	100 µF	81%	ITV1215SA
	±5 V	±100 mA	15 mA	106 mA	±100 µF	80%	ITV1205S
	±12 V	±41.6 mA	15 mA	106 mA	±47 µF	80%	ITV1212S
	±15 V	±33.3 mA	15 mA	104 mA	±47 µF	81%	ITV1215S
24 V	5 V	200 mA	7 mA	53 mA	220 µF	80%	ITV2405SA
	12 V	83.3 mA	7 mA	53 mA	100 µF	80%	ITV2412SA
	15 V	66.7 mA	7 mA	53 mA	100 µF	80%	ITV2415SA
	±5 V	±100 mA	7 mA	53 mA	±100 µF	80%	ITV2405S
	±12 V	±41.6 mA	7 mA	53 mA	±47 µF	80%	ITV2412S
	±15 V	±33.3 mA	7 mA	53 mA	±47 µF	80%	ITV2415S

Notes

1. Input currents measured at nominal input voltage.
2. Maximum capacitive load is per output.
3. Measured at nominal input voltage and full load.

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage Range	4.5		5.5	VDC	5 V nominal
	10.8		13.2	VDC	12 V nominal
	21.6		26.4	VDC	24 V nominal
Input Filter	Capacitor				
Input Reflected Ripple			15	mA pk-pk	Through 12 μ H inductor and 47 μ F capacitor
Input Surge			9	VDC for 1000 ms	5 V models
			18	VDC for 1000 ms	12 V models
			30	VDC for 1000 ms	24 V models

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage	5		15	VDC	See Models and Ratings table
Initial Set Accuracy			± 5	%	At 70% load
Minimum Load	10			%	Minimum load required to meet specification. Operation at no load will not cause damage.
Line Regulation			± 1.2	%/1%Vin	
Load Regulation			+5, -2.5	%	From 10% to full load from 70% load point
Cross Regulation			± 5	%	On dual output models when one load is varied between 25% and 100% and other is fixed at 100%
Ripple & Noise			60	mV pk-pk	20 MHz bandwidth. Measured using 0.1 μ F ceramic capacitor
Short Circuit Protection					Continuous, with auto recovery
Maximum Capacitive Load					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. Functional insulation.
Working Voltage			100	VAC	
Switching Frequency	40/50		50/70	kHz	5 V/12-24 V input
Isolation Resistance	10 ⁹			Ω	
Isolation Capacitance		50		pF	
Power Density			14	Win ³	
Mean Time Between Failure	3.6			MHrs	MIL-HDBK-217F, +25 °C GB
Pin Type	Solder coated phosphor bronze				C5191R-H
Case Material	Non conductive black plastic				UL94V-0 rated
Potting Material	Epoxy				UL94V-0 rated
Solder Profile	260°C maximum				1.5mm from case, up to 10s max
Weight		0.0053 (2.4)		lb (g)	

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating Temperature	-40		+105	°C	Derate from 100% load at +95 °C to 90% at +105 °C
Storage Temperature	-55		+125	°C	
Case Temperature			+115	°C	
Humidity			95	%RH	Non-condensing
Cooling					Natural convection

Safety Approvals

Safety Agency	Safety Standard	Notes & Conditions
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

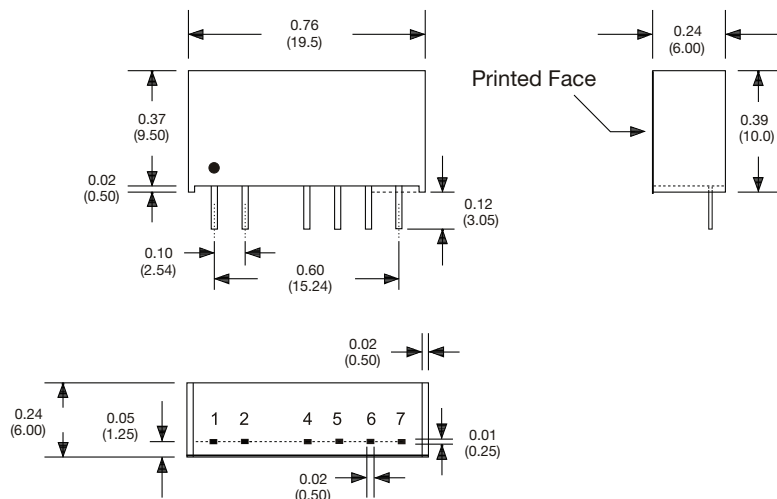
EMC: Emissions

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

EMC: Immunity

Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
ESD Immunity	EN61000-4-2	3	A	
Radiated Immunity	EN61000-4-3	10 Vrms	A	
EFT/Burst	EN61000-4-4	3	A	External input capacitor required 330 μ F/100 V
Surges	EN61000-4-5	1	A	External input capacitor required 330 μ F/100 V
Conducted Immunity	EN61000-4-6	3 V rms	A	
Magnetic Fields	EN61000-4-8	1 A/m	A	

Mechanical Details



Pin Connections

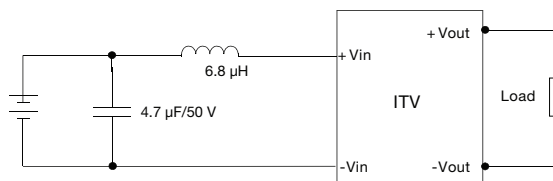
Pin	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
4	No Pin	No Pin
5	-Vout	-Vout
6	No Pin	Common
7	+Vout	+Vout

Notes

1. All dimensions are in inches (mm)
2. Weight: 0.0053lbs (2.4 g) approx.
3. Pin diameter: 0.02 $\pm$ 0.002 (0.5 $\pm$ 0.05)
4. Pin pitch tolerance: $\pm$ 0.014 ($\pm$ 0.35)
5. Case tolerance: $\pm$ 0.02 ($\pm$ 0.5)

Application Note

EMI Filter



1206 Chip Capacitor, placed as close as possible to the input pins