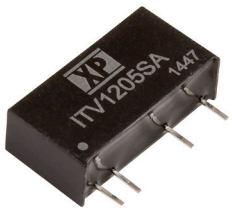
ITB01 series

1W

DC-DC converters

The ITB series is housed in a SIP7 plastic case for PCB mounting. Featuring a ±10% input voltage range for 5, 12 & 24VDC nominal inputs, offering singles outputs of 5, 12 & 15VDC.

The 1W ITB provides 1.5kVDC isolation between input and output, short circuit protection is standard. The operating temperature range is from -40°C to +105°C with derating from +95°C.



Features

- Semi-regulated single output
- ±10% input range
- Single outputs 5.0 to 15VDC
- SIP7 package
- 1.5kVDC isolation
- Class B conducted & radiated emissions
- -40°C to +105°C operation
- Full load to 95°C
- 3 year warranty

Applications

Autonomous equipment

Industrial

Technology

Dimensions

19.5 x 6.0 x 10.0mm (0.76” x 0.24” x 0.39”)

Models & ratings

Model number	Input voltage	Output voltage	Output current	Efficiency	Input current		Maximum capacitive load
					No load	Full load	
ITB0505S	5VDC	5.0VDC	200mA	80%	30mA	253mA	220µF
ITB0512S		12.0VDC	83.3mA	81%	3 mA	253mA	100µF
ITB0515S		15.0VDC	66.7mA	81%	30mA	253mA	100µF
ITB1205S	12VDC	5.0VDC	200mA	80%	15mA	106mA	220µF
ITB1212S		12.0VDC	83.3mA	80%	15mA	106mA	100µF
ITB1215S		15.0VDC	66.7mA	81%	15mA	104mA	100µF
ITB2405S	24VDC	5.0VDC	200mA	81%	7mA	53mA	220µF
ITB2412S		12.0VDC	83.3mA	80%	7mA	53mA	100µF
ITB2415S		15.0VDC	66.7mA	80%	7mA	53mA	100µF

Notes:

Input currents measured at nominal input voltage.

ITB01 series

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Input voltage range	4.5		5.5	VDC	5VDC nominal
	10.8		13.2		12VDC nominal
	21.6		26.4		24VDC nominal
Input filter	Capacitor				
Input reflected ripple			15	mA pk-pk	Through 12µH inductor and 47µF capacitor
Input surge			9	VDC for 100ms	5VDC models
			18		12VDC models
			30		24VDC 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
Ripple & noise			60	mV pk-pk	20 MHz bandwidth. Measured using 0.1µF ceramic capacitor
Short circuit protection	See models and ratings table				
Maximum capacitive load	Continuous, auto recovery				
Temperature coefficient			0.02	%/°C	

General

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Efficiency		80		%	See models and ratings table
Isolation: input to output	1500			VDC	
Switching frequency	40/50		50/70	Ω	5V/12-24V input
Isolation resistance	10^9			pF	
Isolation capacitance		50		kHz	
Power density			0.85 (14)	W/cm^3 (W/in^3)	
Mean time between failure	3.6			Mhrs	MIL-HDBK-217F, +25°C GB
Weight		2.4 (0.0053)		g (lb)	

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	-50		+125	°C	
Case temperature			+115	°C	
Humidity			95	%RH	Non-condensing
Cooling	Natural convection				

Safety approvals

Safety agency	Standard	Notes & conditions
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

Emissions - EMC

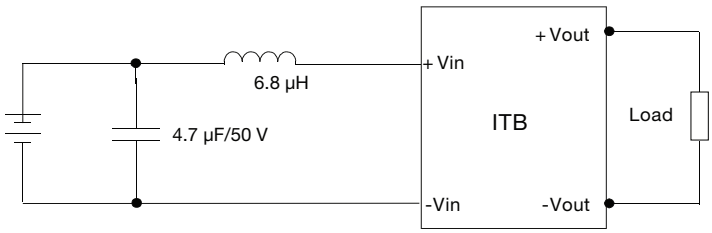
Phenomenon	Standard	Test level	Notes & conditions
Conducted	EN55022	Class B	See application notes.
Radiated	EN55022	Class B	

Immunity - EMC

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 components required, 330µF/100V
Surge	EN61000-4-5	1	A	External components required, 330µF/100V
Conducted immunity	EN61000-4-6	3 V rms	A	
Magnetic fields	EN61000-4-8	1 A/m	A	

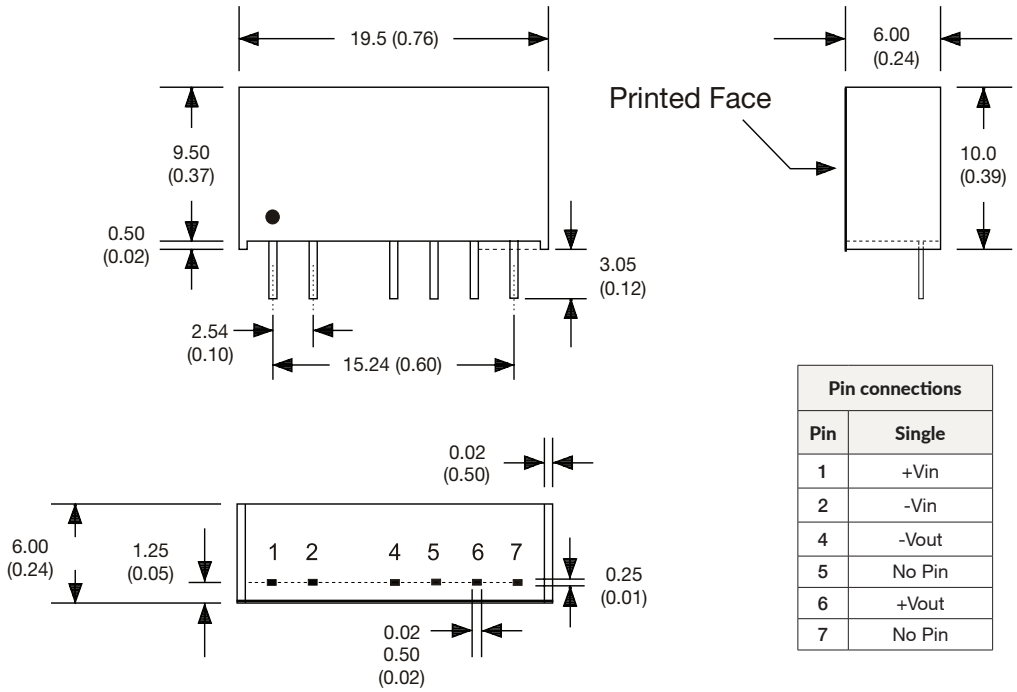
Application notes

EMI filter



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

Mechanical details



Pin connections	
Pin	**Single**
1	+Vin
2	-Vin
4	-Vout
5	No Pin
6	+Vout
7	No Pin

Notes:

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