ITW01 series

1W

DC-DC converters

The ITW series is housed in a SIP6 PCB mount plastic case. Featuring a 2:1 input voltage range of 4.5 to 9VDC, 9 to 18VDC, 18 to 36VDC or 36 to 75VDC with regulated single outputs of 5, 12, 15 & 24VDC and dual outputs ±12 or ±15VDC.

The 1W ITW series has 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 above +85°C.

Features

- Regulated single & dual outputs
- 2:1 input range
- Single outputs 5.0 to 24VDC
- Dual outputs ±12 & ±15VDC
- SIP6 package
- 1.5kVDC isolation
- No minimum load
- -40°C to +105°C operating temperature
- Full power to +85°C
- 3 year warranty

Applications

Autonomous equipment

Industrial

Technology

Dimensions

7.0 x 11.0 x 7.6mm (0.67" x 0.43" x 0.30")

Models & ratings

Model number	Input voltage	Output voltage	Output current	Efficiency	Input current(1)		Maximum capacitive load
					No load	Full load	
ITW0505SA	4.5-9VDC	5.0VDC	200mA	76%	35mA	263mA	1680µF
ITW0512SA		12.0VDC	83mA	79%	35mA	259mA	820µF
ITW0515SA		15.0VDC	67mA	80%	35mA	254mA	680µF
ITW0524SA		24.0VDC	42mA	80%	35mA	265mA	470µF
ITW0512S		±12.0VDC	±42mA	77%	35mA	259mA	±470µF
ITW0515S		±15.0VDC	±33mA	79%	35mA	254mA	±330µF
ITW1205SA	9-18VDC	5.0VDC	200mA	78%	20mA	108mA	1680µF
ITW1212SA		12.0VDC	83mA	80%	20mA	108mA	820µF
ITW1215SA		15.0VDC	67mA	81%	20mA	105mA	680µF
ITW1224SA		24.0VDC	42mA	80%	20mA	109mA	470µF
ITW1212S		±12.0VDC	±42mA	79%	20mA	108mA	±470µF
ITW1215S		±15.0VDC	±33mA	80%	20mA	105mA	±330µF

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Notes:

1. Input currents measured at nominal input voltage.

ITW01 series

Models & ratings

Model number	Input voltage	Output voltage	Output current	Efficiency	Input current(1)		Maximum capacitive load
					No load	Full load	
ITW2405SA	18-36VDC	5.0VDC	200mA	78%	10mA	54mA	1680μF
ITW2412SA		12.0VDC	83mA	80%	10mA	52mA	820μF
ITW2415SA		15.0VDC	67mA	80%	10mA	52mA	680μF
ITW2424SA		24.0VDC	42mA	81%	10mA	55mA	470μF
ITW2412S		±12.0VDC	±42mA	80%	10mA	52mA	±470μF
ITW2415S		±15.0VDC	±33mA	79%	10mA	52mA	±330μF
ITW4805SA	36-75VDC	5.0VDC	200mA	76%	7mA	27mA	1680μF
ITW4812SA		12.0VDC	83mA	78%	7mA	27mA	820μF
ITW4815SA		15.0VDC	67mA	78%	7mA	27mA	680μF
ITW4824SA		24.0VDC	42mA	77%	7mA	28mA	470μF
ITW4812S		±12.0VDC	±42mA	77%	7mA	27mA	±470μF
ITW4815S		±15.0VDC	±33mA	77%	7mA	27mA	±330μF

Notes:

1. Input currents measured at nominal input voltage.

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Input voltage range	4.5		5.5	VDC	5VDC nominal
	9		9.9		12VDC nominal
	18		13.2		24VDC nominal
	36		16.5		48VDC nominal
Input filter	Capacitor				
Input reflected ripple		20	35	mA pk-pk	Through 12μH inductor and 47μF capacitor
Input surge			15	VDC for 100ms	5VDC models
			25		12VDC models
			50		24VDC models
			100		48VDC models

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Output voltage	See models and ratings table				
Initial set accuracy			±2	%	At full load
Minimum load	No minimum load required				
Line regulation			±0.2	% / 1%	
Load regulation			±1	%	Single output
			±1 (±2)		Dual output 5%-100% (0%-100%)
Cross regulation			±5	% deviation	On dual output models when one load is varied between 25% and 100% and other is fixed at 100%
Transient response			3		Recovery within 2% in less than 2ms for a 25% load change
Ripple & noise			50	mV pk-pk	20MHz bandwidth. Measured using 1μF ceramic capacitor
Short circuit protection	Continuous, auto recovery				
Maximum capacitive load	See models and ratings table				
Temperature coefficient			0.02	%/℃	

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General

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Efficiency				%	See models and ratings table
Isolation: Input to Output			1500	VDC	
Switching Frequency	150		550	kHz	Variable
Isolation Resistance	10^9			Ω	
Isolation Capacitance		70		pF	
Power Density			11.5	W/cm³ (W/in³)	
Mean Time Between Failure	2.8			Mhrs	MIL-HDBK-217F, +25°C GB
Weight		3.0 (0.0067)		g (lb)	

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Operating temperature	-40		+105	°C	Derate from 100% load at +85°C to no load at +105°C
Storage temperature	-55		+125	°C	
Case temperature			+105	°C	
Humidity			95	%RH	Non-condensing
Cooling	Natural convection				

Safety approvals

Safety agency	Standard	Notes & conditions
UL	UL60950-1, UL62368-1	Information technology
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

Emissions - EMC

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

Immunity - EMC

Phenomenon	Standard	Test level	Criteria	Notes & conditions
ESD immunity	EN61000-4-2	3	A	
Radiated immunity	EN61000-4-3	20 Vrms	A	
EFT/burst	EN61000-4-4	3	A	External input capacitor required 330µF/100V
Surge	EN61000-4-5	Installation class 2	A	External input capacitor required 330µF/100V
Conducted immunity	EN61000-4-6	3Vrms	A	
Magnetic fields	EN61000-4-8	1A/m	A	

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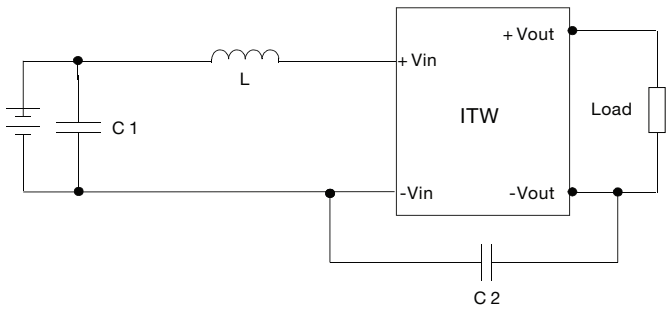
Application notes

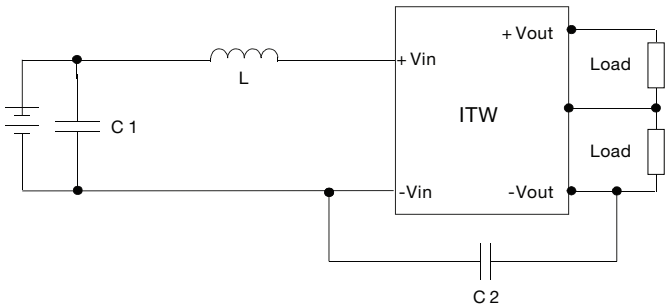
EMI filter

Input filter components (C1, C2, L) are used to help meet conducted emissions requirement for the module. These components should be mounted as close as possible to the module; and all leads should be minimized to decrease radiated noise.



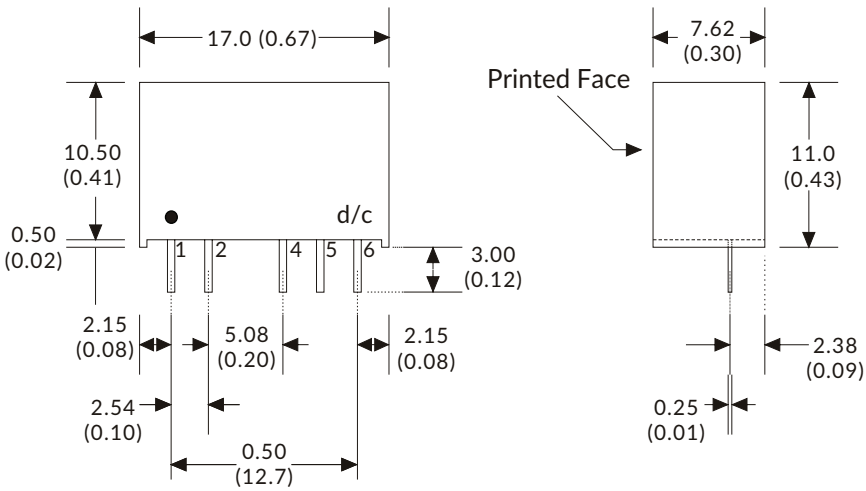
Model	C1*	C2*	L
ITWxx05SA	4.7μF/50V	220pF/3kV	4.7μH
ITWxx12SA			4.7μH
ITWxx15SA			18μH
ITWxx24SA			18μH

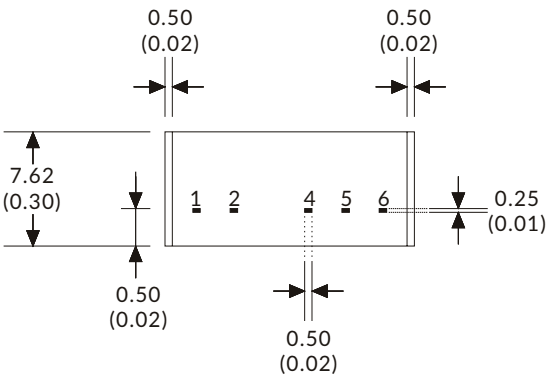
* C1 & C2 are multilayer ceramic capacitors.



Model	C1*	C2*	L
ITWxx12S	4.7μF/50V	220pF/3kV	4.7μH
ITWxx15S			

Mechanical details





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

Notes:

1. All dimensions are in mm (inches)
2. Weight: 3.0 (0.0067) 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)

Specifications subject to change without notice.