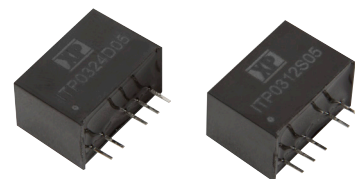


3W

DC-DC
converters 

The ITP03 series is housed in a SIP6 plastic case. Featuring a 4:1 input voltage range of 4.5 to 18VDC, 9 to 36VDC or 18 to 75VDC with both single and dual outputs, singles have 3.3, 5, 12 or 15VDC with duals having ± 5 , ± 12 & ± 15 VDC.

The 3W ITP03 provides 1.5kVDC isolation between input and output, the output has short circuit protection, remote On/Off is standard on the single output model only. The operating temperature range is from -40°C to +75°C, with derating above +70°C.



Features

- ▶ Regulated single & dual outputs
- ▶ 4:1 input range
- ▶ Input ranges 4.5 to 18, 9 to 36, 18 to 75VDC
- ▶ Single outputs 3.3 to 15VDC
- ▶ Dual outputs ± 3.3 to ± 15 VDC
- ▶ SIP6 package
- ▶ 1.6kVDC isolation
- ▶ Complies with EN55032 (with minimal external components)
- ▶ Short-circuit protection
- ▶ Remote On/Off (single output versions only)
- ▶ -40°C to +75°C operating temperature
- ▶ Full power to +70°C
- ▶ 3 year warranty

Applications



Dimensions

17.0 x 10.1 x 11.7mm (0.67" x 0.40" x 0.46")

Documentation

For further information click the link or scan the code

→ xppower.com



Models & ratings

Model number	Input voltage	Output voltage	Output current (full load)	Efficiency	Input current ⁽¹⁾		Maximum capacitive load ⁽²⁾
					No load	Full load	
ITP0312S3V3	4.5-18VDC	3.3VDC	700mA	75%	45mA	257mA	3300 μ F
ITP0312S05		5.0VDC	600mA	81%	45mA	309mA	1680 μ F
ITP0312S12		12.0VDC	250mA	83%	50mA	301mA	820 μ F
ITP0312S15		15.0VDC	200mA	83%	55mA	301mA	680 μ F
ITP0312D05		± 5.0 VDC	± 300 mA	80%	40mA	313mA	± 1000 μ F
ITP0312D12		± 12.0 VDC	± 125 mA	82%	50mA	305mA	± 470 μ F
ITP0312D15		± 15.0 VDC	± 100 mA	83%	60mA	301mA	± 330 μ F

Continued on page 2

Notes:

1. Input currents measured at nominal input voltage.

2. Maximum capacitive load is per output.

Models & ratings

Model number	Input voltage	Output voltage	Output current (full load)	Efficiency	Input current ⁽¹⁾		Maximum capacitive load ⁽²⁾
					No load	Full load	
ITP0324S3V3	9-36VDC	3.3VDC	700mA	76%	25mA	127mA	3300μF
ITP0324S05		5.0VDC	600mA	82%	25mA	152mA	1680μF
ITP0324S12		12.0VDC	250mA	84%	35mA	149mA	820μF
ITP0324S15		15.0VDC	200mA	84%	35mA	149mA	680μF
ITP0324D05		±5.0VDC	±300mA	81%	30mA	154mA	±1000μF
ITP0324D12		±12.0VDC	±125mA	83%	35mA	151mA	±470μF
ITP0324D15		±15.0VDC	±100mA	84%	40mA	149mA	±330μF
ITP0348S3V3	18-75VDC	3.3VDC	700mA	74%	15mA	65mA	3300μF
ITP0348S05		5.0VDC	600mA	81%	15mA	77mA	1680μF
ITP0348S12		12.0VDC	250mA	81%	15mA	77mA	820μF
ITP0348S15		15.0VDC	200mA	82%	20mA	76mA	680μF
ITP0348D05		±5.0VDC	±300mA	79%	15mA	79mA	±1000μF
ITP0348D12		±12.0VDC	±125mA	80%	20mA	78mA	±470μF
ITP0348D15		±15.0VDC	±100mA	80%	30mA	78mA	±330μF

Notes:

1. Input currents measured at nominal input voltage.

2. Maximum capacitive load is per output.

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Input voltage range	4.5	12	18	VDC	ITP0312 series
	9	24	36		ITP0324 series
	18	48	75		ITP0348 series
Input filter	Capacitor				
Input reflected ripple			20	mA pk-pk	Through 27μH inductor and 47μF capacitor
Input surge			25	VDC for 100ms	12V models, ITP0312 series
			50		24V models, ITP0324 series
			100		48V models, ITP0348 series
Inhibit mode Input Current		2.5		mA	Vin nominal when inhibited

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Output voltage	3.3		30	VDC	See models and ratings table
Initial set accuracy			±1	%	
Minimum load	0			A	No minimum load required
Line regulation			±0.2	%	
Load regulation			±1	%	From 0 to 100% load
Cross regulation			±5	%	On dual output models when one load is varied between 25% and 100% and other is fixed at 100%
Transient response deviation			±5	% deviation	Recovery time 500μs, 25% load step change
Ripple & noise			150	mV pk-pk	Single Output. 20MHz bandwidth. Measured using 0.1μF ceramic capacitor and 10μF electrolytic capacitor
			100		Dual Output. 20MHz bandwidth. Measured using 0.1μF ceramic capacitor and 10μF electrolytic capacitor
Over current protection		150		%	Overcurrent threshold
Short circuit protection	Continuous, with auto recovery				
Maximum capacitive load	See models and ratings table				
Temperature coefficient			0.02	%/°C	
Remote on/off	Output is on if Remote On/Off (pin 3) is open Output turns off if 2-4mA is applied to Remote On/Off (pin 3). Via 1kΩ resistor. Applies to single output models.				

General

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Efficiency	74		84	%	See models and ratings table
Isolation: input to output		1600		VDC	Functional
Switching frequency		100		kHz	
Isolation resistance	10 ⁹			Ω	
Isolation capacitance			40	pF	
Power density			1.46 (24)	W/cm ³ (W/in ³)	
Mean time between failure	0.95			Mhrs	MIL-HDBK-217F, +25°C GB
Case material	Non conductive black plastic				
Potting material	Epoxy (UL94V-0 rated)				
Pin material	C5191R-H Solder-coated				
Solder process	260°C max. 1.5mm from case 10s max. See application notes.				
Water washing	Wash with de-ionised water and dry thoroughly				
Weight		3.85 (0.008)		g (lb)	

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Operating temperature	-40		75	°C	Derate from 100% load at +70°C to no load at +75°C
Storage temperature	-55		+125	°C	
Case temperature			+100	°C	
Cooling	Natural convection				
Operating humidity			95	%	RH, non condensing

Safety approvals

Certification	Standard	Notes & conditions
UL	UL62368-1	
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

Emissions - EMC

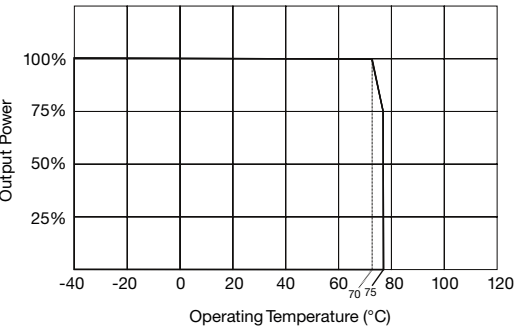
Phenomenon	Standard	Test level	Notes & conditions
Conducted	EN55032	Class A	External components required. See application notes.
Radiated	EN55032	Class A	

Immunity - EMC

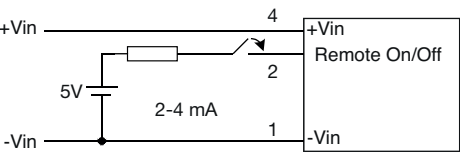
Phenomenon	Standard	Test level	Criteria	Notes & conditions
ESD Immunity	EN61000-4-2	±8kV	A	Air discharge
Radiated Immunity	EN61000-4-3	10Vrms	A	
EFT/Burst	EN61000-4-4	±2kV	A	External input capacitor required 220µF/100V
Surges	EN61000-4-5	±2kV	A	External input capacitor required 220µF/100V
Conducted Immunity	EN61000-4-6	10Vrms	A	
Magnetic Fields	EN61000-4-8	100A/m	A	

Application notes

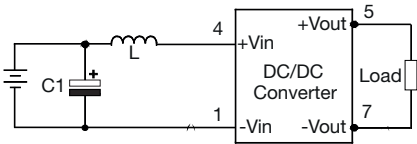
Derating curve



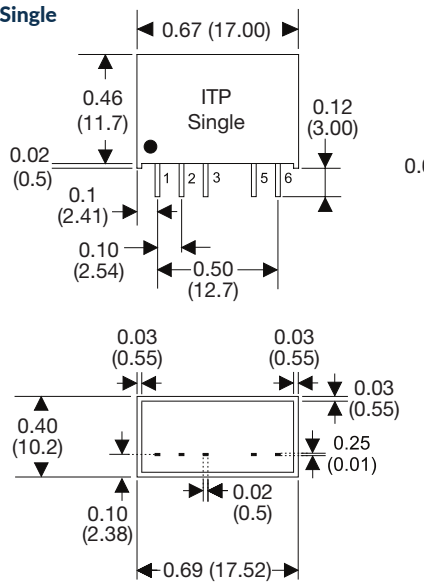
Remote on/off



EMI Filter



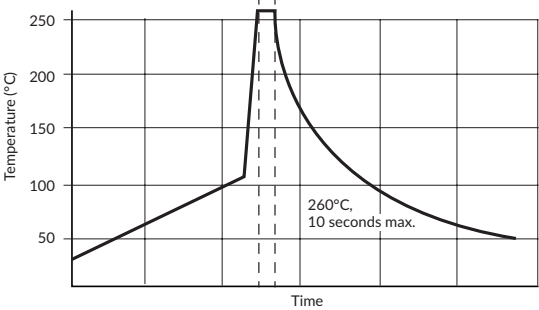
Mechanical details



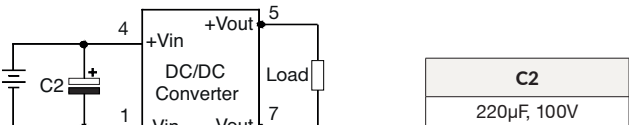
Notes:

- 1. All dimensions are in mm (inches)
- 2. Weight: 3.85 (0.008) g (lb) approx.
- 3. Pin pitch tolerance: ± 0.35 (± 0.014)

Solder profile



EFT & surge



Model	C1	L	C3
ITP0312	1210, 10 μ F, 35 V	2.2 μ H	1206, 100 PF, 1kV
ITP0324	1210, 2.2 μ F, 35 V	10 μ H	1206, 100 PF, 1kV
ITP0348	1210, 4.7 μ F, 35 V	18 μ H	1206, 100 PF, 1kV

