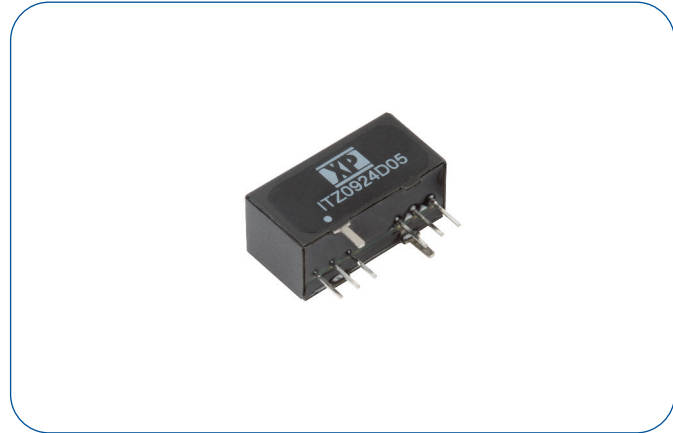


9 Watts

- Ultra Compact SIP-8 Package
- Smallest Footprint 9 W Converter
- Single & Dual Outputs
- 4:1 Input Range
- Operating Temperature -40 °C to +85 °C
- 1600 VDC Isolation
- Fully Regulated Output
- No Minimum Load Required
- Remote On/Off
- 3 Year Warranty



Dimensions:

ITZ:
0.86 x 0.38 x 0.44" (21.9 x 9.6 x 11.2 mm)

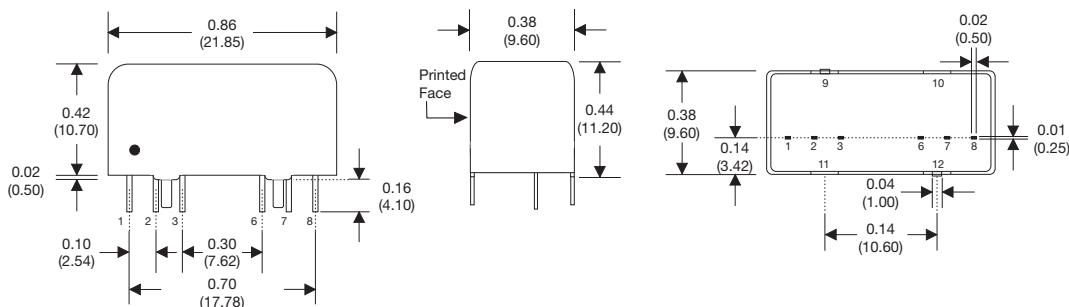
Models & Ratings

Input Voltage	Output Voltage	Output Current	Input Current ⁽¹⁾		Maximum Capacitive Load ⁽²⁾	Efficiency	Model Number
			No Load	Full Load			
9-36 V	3.3 V	2000 mA	9 mA	335 mA	2600 µF	82%	ITZ0924S3V3
	5 V	1600 mA	9 mA	390 mA	1300 µF	85%	ITZ0924S05
	9 V	1000 mA	9 mA	435 mA	800 µF	86%	ITZ0924S09
	12 V	750 mA	9 mA	425 mA	560 µF	88%	ITZ0924S12
	15 V	600 mA	9 mA	420 mA	560 µF	89%	ITZ0924S15
	24 V	375 mA	9 mA	420 mA	200 µF	89%	ITZ0924S24
	±5 V	±600 mA	9 mA	390 mA	±800 µF	85%	ITZ0924D05
	±12 V	±250 mA	9 mA	425 mA	±390 µF	88%	ITZ0924D12
18-75 V	±15 V	±200 mA	9 mA	425 mA	±200 µF	88%	ITZ0924D15
	3.3 V	2000 mA	5 mA	170 mA	2600 µF	82%	ITZ0948S3V3
	5 V	1600 mA	5 mA	170 mA	1300 µF	85%	ITZ0948S05
	9 V	1000 mA	5 mA	220 mA	800 µF	86%	ITZ0948S09
	12 V	750 mA	5 mA	210 mA	560 µF	89%	ITZ0948S12
	15 V	600 mA	5 mA	215 mA	560 µF	88%	ITZ0948S15
	24 V	375 mA	5 mA	215 mA	200 µF	88%	ITZ0948S24
	±5 V	±600 mA	5 mA	195 mA	±800 µF	85%	ITZ0948D05
	±12 V	±250 mA	5 mA	215 mA	±390 µF	87%	ITZ0948D12
	±15 V	±200 mA	5 mA	215 mA	±200 µF	87%	ITZ0948D15

Notes

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

Mechanical Details



Pin Connections		
Pin	Single	Dual
1	-Vin	-Vin
2	+Vin	+Vin
3	Remote On/Off	Remote On/Off
6	+Vout	+Vout
7	-Vout	Common
8	No Connection	-Vout
9	Case	Case
10	Stand Off	Stand Off
11	Stand Off	Stand Off
12	Case	Case

Notes

1. All dimensions are in inches (mm)
2. Weight: 0.013 lbs (5.9 g) approx.
3. Pin diameter: 0.02±0.002 (0.5±0.05)
4. Pin pitch tolerance: ±0.014 (±0.35)
5. Case tolerance: ±0.02 (±0.5)

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage Range	9		36	VDC	24 V nominal
	18		75	VDC	48 V nominal
Input Filter	Capacitor				
Input Reflected Ripple			20/40	mA pk-pk	24/48 V input. Through 12 μ H inductor and 47 μ F capacitor
Input Surge			50	VDC for 100 ms	24 V models
			100	VDC for 100 ms	48 V models

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage	3.3		30	VDC	See Models and Ratings table
Initial Set Accuracy			± 1	%	At full load
Minimum Load	0			A	No minimum load required
Line Regulation			± 0.2	%	
Load Regulation			± 0.5	%	Single output from 0 to full load
			± 1	%	Dual output and single 3V3 output from 0 to full 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			$\pm 5/\pm 3$	% deviation	For 3V3 & 5V output models / all other models. Recovery within 2% in less than 2ms for a 25% load change
Ripple & Noise			75	mV pk-pk	20 MHz bandwidth. Measured using 0.1 μ F ceramic capacitor
Short Circuit Protection					Continuous, with auto recovery
Over Voltage Protection		130		%	
Over Load Protection		180		%	
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 circuit. Output is off if 2.4 mA current is applied to remote on/off (pin 3) via 1 k Ω resistor				

General

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency		88		%	See Models and Ratings table
Isolation: Input to Output	1600			VDC	For 60 seconds
Isolation: Input/Output to Case	1000			VDC	For 60 seconds
Switching Frequency		400/500		kHz	24 V input/48 V input
Isolation Resistance	10 ⁹			Ω	
Isolation Capacitance		50		pF	
Power Density			62.6	Win ³	
Mean Time Between Failure	900			KHrs	MIL-HDBK-217F, +25 °C GB
Weight		0.013 (5.9)		lb (g)	

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating Temperature	-40		+85	°C	Derate from 100% load at +60 °C to no load at +85 °C, and 100% load at 50 °C to no load at 85 °C for 3V3 models
Storage Temperature	-55		+125	°C	
Case Temperature			+100	°C	
Humidity			95	%RH	Non-condensing
Cooling					Natural convection

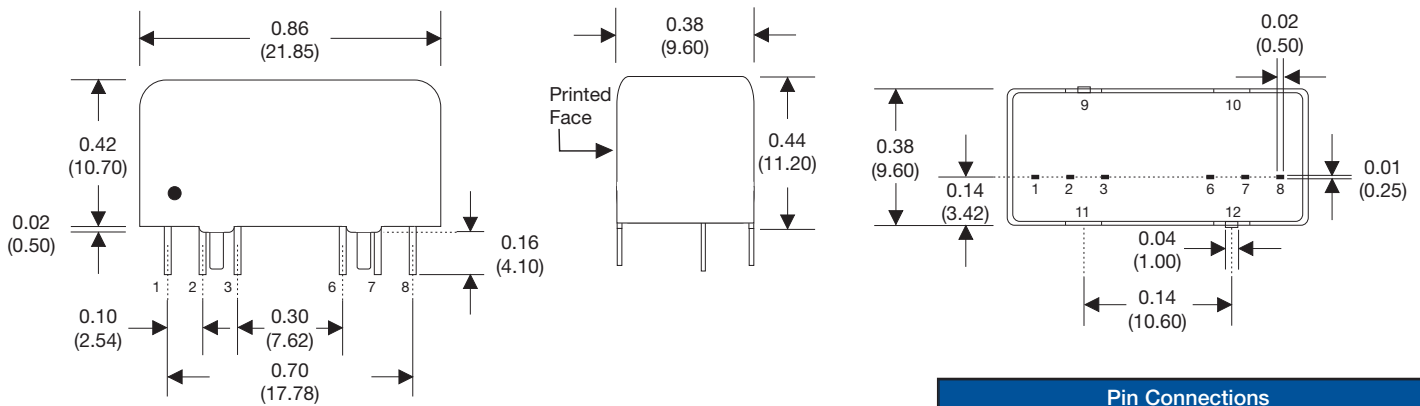
EMC: Emissions

Phenomenon	Standard	Test Level	Notes & Conditions
Conducted	EN55032	Class A	See application note
Radiated	EN55032	Class A	See application note

EMC: Immunity

Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
ESD Immunity	EN61000-4-2	± 6 kV/ ± 8 kV	A	Contact/Air Discharge
Radiated Immunity	EN61000-4-3	20 Vrms	A	
EFT/Burst	EN61000-4-4	± 2 kV	A	See application note
Surges	EN61000-4-5	± 2 kV	A	See application note
Conducted Immunity	EN61000-4-6	10 V rms	A	
Magnetic Fields	EN61000-4-8	100 A/m	A	

Mechanical Details



Pin Connections		
Pin	Single	Dual
1	-Vin	-Vin
2	+Vin	+Vin
3	Remote On/Off	Remote On/Off
6	+Vout	+Vout
7	-Vout	Common
8	No Connection	-Vout
9	Case	Case
10	Stand Off	Stand Off
11	Stand Off	Stand Off
12	Case	Case

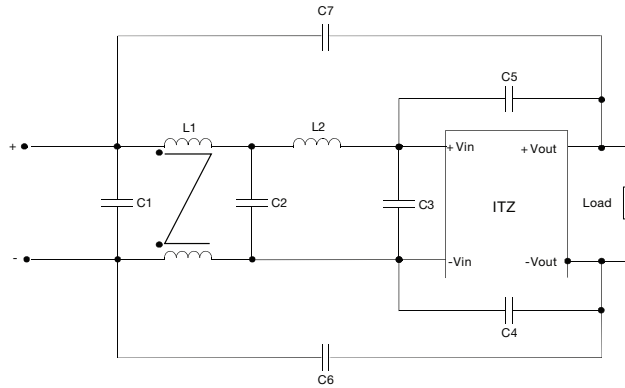
Notes

- All dimensions are in inches (mm)
- Weight: 0.013 lbs (5.9 g) approx.
- Pin diameter: 0.02 ± 0.002 (0.5 \pm 0.05)
- Pin pitch tolerance: ± 0.014 (± 0.35)
- Case tolerance: ± 0.02 (± 0.5)

Application Note

EMI Filter

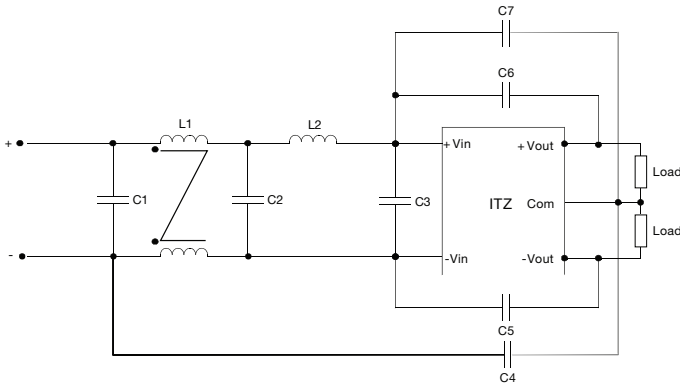
Single Output Models



Models	C1,C2,C3	C4, C5, C6, C7	L1	L2
24 Vin	1210, 106M/35 V	1808, 221K/3 kV	20 μ H	20 μ H
48 Vin	1210, 475M/100 V	1808, 102K/3 kV	132.8 μ H	10 μ H

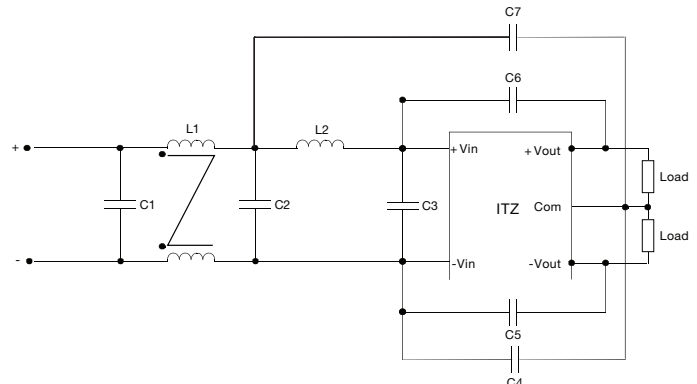
Dual Output Models

24 V Version



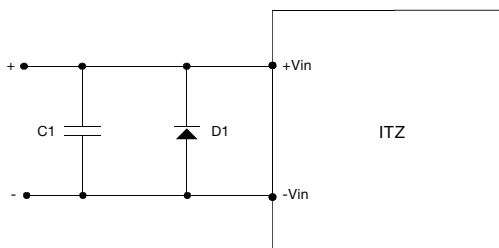
Models	C1,C2,C3	C4, C5, C6	C7	L1	L2
24 Vin	1210, 106M/35 V	1808, 221K/3 kV	1808, 102K/3 kV	20 μ H	20 μ H

48 V Version



Models	C1,C2,C3	C5, C6	C4, C7	L1	L2
48 Vin	1210, 475K/100 V	1808, 102K/3 kV	1808, 221K/3 kV	132.8 μ H	10 μ H

EFT/Surge Filter



Models	C1	D1
24 Vin	330 μ F, 100 V	TVS, 3 kW, 70 V
48 Vin	330 μ F, 100 V	TVS, 3 kW, 120 V

C1 suggested series Nippon Chemicon KY