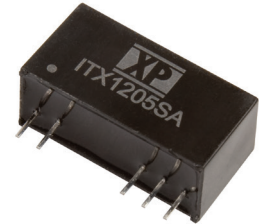


The ITX series is housed in a SIP8 PCB mount plastic case. Featuring a 2:1 input voltage range of 4.5 to 9VDC, 9 to 18VDC, 18 to 36VDC or 36 to 75VDC with regulated single outputs of 3.3, 5, 12, 15 & 24VDC and dual outputs ± 5 , ± 12 & ± 15 VDC.

The 6W ITX series has 1.5kVDC isolation (3kVDC optional) between input and output, short circuit protection is standard, remote On/Off is optional. The operating temperature range is from -40°C to +90°C, with derating above +65°C.



Features

- ▶ Regulated single & dual outputs
- ▶ 2:1 input range
- ▶ Single outputs 3.3 to 24VDC
- ▶ Dual outputs ± 5.0 to ± 15 VDC
- ▶ SIP8 package
- ▶ 1.5kVDC isolation, 3.0kVDC option
- ▶ Remote On/Off option
- ▶ -40°C to +90°C operating temperature
- ▶ Full power to +65°C
- ▶ 3 year warranty

Applications



Dimensions

21.85 x 11.1 x 9.2mm (0.86" x 0.44" x 0.36")

Models & ratings

| Model number ^(1,2) | Input voltage | Output voltage | Output current | Efficiency | Input current ⁽³⁾ | | Maximum capacitive load |
|-------------------------------|---------------|----------------|----------------|------------|------------------------------|-----------|-------------------------|
| | | | | | No load | Full load | |
| ITX0503SA | 4.5-9VDC | 3.3VDC | 1300mA | 77% | 105mA | 1114mA | 6600 μ F |
| ITX0505SA | | 5.0VDC | 1200mA | 81% | | 1481mA | 3300 μ F |
| ITX0509SA | | 9.0VDC | 666mA | 83% | | 1445mA | 2000 μ F |
| ITX0512SA | | 12.0VDC | 500mA | 84% | | 1428mA | 1600 μ F |
| ITX0515SA | | 15.0VDC | 400mA | 84% | | 1428mA | 1400 μ F |
| ITX0524SA | | 24.0VDC | 250mA | 84% | | 1428mA | 680 μ F |
| ITX0505S | | ± 5.0 VDC | ± 600 mA | 81% | | 1481mA | ± 2000 μ F |
| ITX0512S | | ± 12.0 VDC | ± 250 mA | 84% | | 1428mA | ± 900 μ F |
| ITX0515S | | ± 15.0 VDC | ± 200 mA | 84% | | 1428mA | ± 660 μ F |

Continued on page 2

Notes:

1. For optional 3000VDC isolation add suffix '-H' to end of part number e.g. ITX1205SA-H.

2. For optional remote control add suffix '-R' to end of part number e.g. ITX2412S-HR.

3. Input currents measured at nominal input voltage.

Models & ratings

| Model number | Input voltage | Output voltage | Output current | Efficiency | Input current ⁽¹⁾ | | Maximum capacitive load ⁽²⁾ |
|--------------|---------------|----------------|----------------|------------|------------------------------|-----------|--|
| | | | | | No load | Full load | |
| ITX1203SA | 9-18VDC | 3.3VDC | 1300mA | 78% | 55mA | 458mA | 6600µF |
| ITX1205SA | | 5.0VDC | 1200mA | 83% | | 602mA | 3300µF |
| ITX1209SA | | 9.0VDC | 666mA | 84% | | 595mA | 2000µF |
| ITX1212SA | | 12.0VDC | 500mA | 85% | | 588mA | 1600µF |
| ITX1215SA | | 15.0VDC | 400mA | 85% | | 588mA | 1400µF |
| ITX1224SA | | 24.0VDC | 250mA | 84% | | 595mA | 680µF |
| ITX1205S | | ±5.0VDC | ±600mA | 82% | | 609mA | ±2000µF |
| ITX1212S | | ±12.0VDC | ±250mA | 84% | | 595mA | ±900µF |
| ITX1215S | | ±15.0VDC | ±200mA | 84% | | 595mA | ±660µF |
| ITX2403SA | 18-36VDC | 3.3VDC | 1300mA | 78% | 30mA | 229mA | 6600µF |
| ITX2405SA | | 5.0VDC | 1200mA | 83% | | 301mA | 3300µF |
| ITX2409SA | | 9.0VDC | 666mA | 85% | | 294mA | 2000µF |
| ITX2412SA | | 12.0VDC | 500mA | 85% | | 294mA | 1600µF |
| ITX2415SA | | 15.0VDC | 400mA | 86% | | 290mA | 1400µF |
| ITX2424SA | | 24.0VDC | 250mA | 85% | | 294mA | 680µF |
| ITX2405S | | ±5.0VDC | ±600mA | 82% | | 304mA | ±2000µF |
| ITX2412S | | ±12.0VDC | ±250mA | 84% | | 297mA | ±900µF |
| ITX2415S | | ±15.0VDC | ±200mA | 84% | | 297mA | ±660µF |
| ITX4803SA | 36-75VDC | 3.3VDC | 1300mA | 78% | 15mA | 114mA | 6600µF |
| ITX4805SA | | 5.0VDC | 1200mA | 82% | | 152mA | 3300µF |
| ITX4809SA | | 9.0VDC | 666mA | 84% | | 148mA | 2000µF |
| ITX4812SA | | 12.0VDC | 500mA | 85% | | 147mA | 1600µF |
| ITX4815SA | | 15.0VDC | 400mA | 86% | | 145mA | 1400µF |
| ITX4824SA | | 24.0VDC | 250mA | 84% | | 148mA | 680µF |
| ITX4805S | | ±5.0VDC | ±600mA | 82% | | 152mA | ±2000µF |
| ITX4812S | | ±12.0VDC | ±250mA | 85% | | 147mA | ±900µF |
| ITX4815S | | ±15.0VDC | ±200mA | 85% | | 147mA | ±660µF |

Notes:

1. For optional 3000VDC isolation add suffix '-H' to end of part number e.g. ITX1205SA-H.

2. For optional remote control add suffix '-R' to end of part number e.g. ITX2412S-HR.
3. Input currents measured at nominal input voltage.

Input

| Characteristic | Minimum | Typical | Maximum | Units | Notes & conditions |
|------------------------|------------------------------|---------|---------|---------------|--|
| Input voltage range | 4.5 | | 9 | VDC | 5VDC nominal |
| | 9 | | 18 | | 12VDC nominal |
| | 18 | | 36 | | 24VDC nominal |
| | 36 | | 75 | | 48VDC nominal |
| Input current | See models and ratings table | | | | |
| Input filter | Capacitor | | | | |
| Input reflected ripple | | | 30 | mA pk-pk | Through 12µH inductor and 47µF capacitor |
| Input surge | | | 15 | VDC for 100ms | 5VDC nominal |
| | | | 25 | | 12VDC nominal |
| | | | 50 | | 24VDC nominal |
| | | | 100 | | 48VDC nominal |

Output

| Characteristic | Minimum | Typical | Maximum | Units | Notes & conditions |
|--------------------------|---|---------|---------|-------------|---|
| Output voltage | See models and ratings table | | | | |
| Output voltage balance | | | ±2 | % | Dual output models |
| Minimum load | 0 | | | % | No minimum load required |
| Initial set accuracy | | | ±1 | % | |
| Line regulation | | | ±0.2 | % | |
| Load regulation | | | ±1 | % | From 0-100% |
| Cross regulation | | | ±5 | % | Dual output models when one load is varied between 25% and 100% and the other is fixed at 100% load |
| Transient response | | | 3 | % deviation | Recovery to within 1% in 500 μs for a 25% load change (5% max. deviation for 3.3 & 5V models) |
| Ripple & noise | | | 75 | mV pk-pk | 20MHz bandwidth, measured using 0.1μF ceramic capacitor |
| Short circuit protection | Continuous with auto recovery | | | | |
| Temperature coefficient | | | 0.02 | %/°C | |
| Maximum capacitive load | See models and ratings table | | | | |
| Remote on/off | Optional by adding suffix -R to model number. Output off: 2-4 mA via 1KΩ resistor into pin 3 with respect to -Vin. Output on: Open or high impedance. | | | | |

General

| Characteristic | Minimum | Typical | Maximum | Units | Notes & conditions |
|----------------------------|------------------------------|-------------|---------|--|--|
| Efficiency | See models and ratings table | | | | |
| Isolation: input to output | | | 1500 | VDC | For optional high isolation versions, 3000 VDC input to output add suffix -H to model number |
| Isolation resistance | 10 ⁹ | | | Ω | |
| Isolation capacitance | | | 50 | pF | |
| Switching frequency | 0.1 | | 1.5 | MHz | Variable |
| Power density | | 2.6 (44.0) | | W/cm ³ (W/in ³) | |
| Mean time between failure | 770 | | | khrs | MIL-HDBK-217F, +25°C GB |
| Weight | | 4.8 (0.011) | | g (lb) | |

Environmental

| Characteristic | Minimum | Typical | Maximum | Units | Notes & conditions |
|-----------------------|--------------------|---------|---------|-------|---|
| Operating temperature | -40 | | +90 | °C | Derate from 100% load at +65°C to 20% load at 90°C, for all models except 5V and ±5V models: derate from 100% load at 55°C to 20% load at 90°C) |
| Storage temperature | -55 | | +125 | °C | |
| Case temperature | | | +105 | °C | |
| Cooling | Natural convection | | | | |
| Operating humidity | | | 95 | % | RH, non condensing |

Safety approvals

| Safety agency | Standard | Notes & conditions |
|---------------|----------------------------------|--------------------|
| UL | UL60950-1, UL62368-1 | |
| Others | CAN/CSA C22.2 No.60950-1 | |
| CE | Meets all applicable directives | |
| UKCA | Meets all applicable legislation | |

Emissions - EMC

| Phenomenon | Standard | Test level | Notes & conditions |
|------------|----------|------------|-----------------------|
| Conducted | EN55032 | Class A | See application notes |
| Radiated | EN55032 | Class A | |

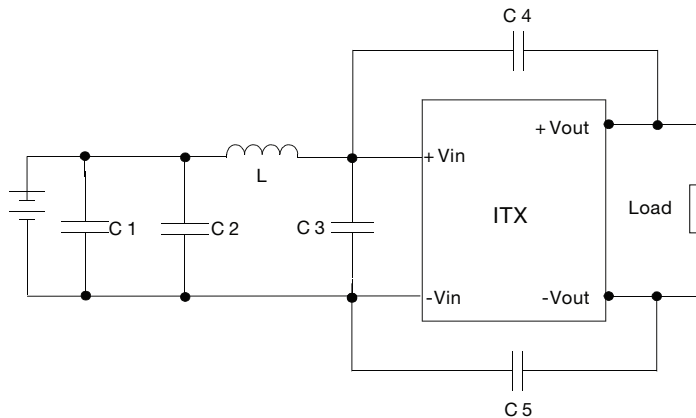
Immunity - EMC

| Phenomenon | Standard | Test level | Criteria | Notes & conditions |
|--------------------|-------------|------------|----------|---|
| ESD Immunity | EN61000-4-2 | 3 | B | |
| Radiated immunity | EN61000-4-3 | 20V/m | A | |
| EFT/Burst | EN61000-4-4 | 3 | B | External input capacitor required, 330 μ F/100V |
| Surge | EN61000-4-5 | 2 | B | External input capacitor required, 330 μ F/100V |
| Conducted immunity | EN61000-4-6 | 3Vrms | A | |
| Magnetic fields | EN61000-4-8 | 1A/m | A | |

Application notes

EMT filter

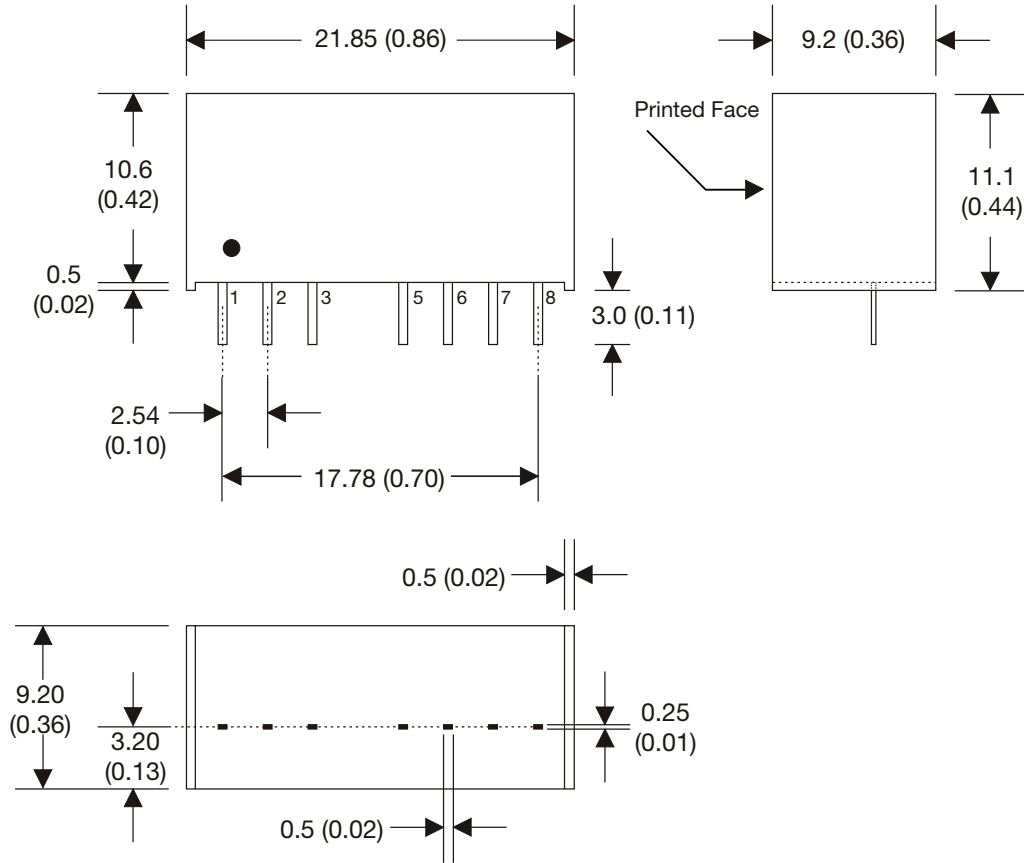
Input filter components (C1,C2,C3,C4,C5, L) are used to help meet conducted emissions requirement for the module. These components should be mounted as close as possible to the module; and all leads should be minimized to decrease radiated noise.



| Model | C1 | C2 & C3* | L | C4 & C5* |
|-------|------------------|------------------|------------|-----------|
| ITX05 | 220 μ F/100V | 22 μ F/25V | 10 μ H | 220pF/3kV |
| ITX12 | | 10 μ F/50V | 10 μ H | 220pF/3kV |
| ITX24 | | 10 μ F/50V | 10 μ H | 220pF/3kV |
| ITX48 | | 2.2 μ F/100V | 15 μ H | 220pF/3kV |

* C2, C3, C4 & C5 are multilayer ceramic capacitors.

Mechanical details



| Pin connections | | |
|-----------------|---------------|---------------|
| Pin | Single | Dual |
| 1 | -Vin | -Vin |
| 2 | +Vin | +Vin |
| 3 | Remote On/Off | Remote On/Off |
| 5 | +Vout | +Vout |
| 6 | -Vout | Common |
| 7 | No Connection | -Vout |
| 8 | Case | Case |

| Pin connections | | |
|-----------------|---------------|---------------|
| Pin | Single -R | Dual -R |
| 1 | -Vin | -Vin |
| 2 | +Vin | +Vin |
| 3 | Remote On/Off | Remote On/Off |
| 5 | N.C. | N.C. |
| 6 | +Vout | +Vout |
| 7 | -Vout | Common |
| 8 | N.C. | -Vout |

Notes:

- All dimensions are in mm (inches)
- Weight: 4.8 (0.011) g (lb) approx.
- Pin pitch tolerance: ± 0.35 (± 0.014)

- Pin diameter: 0.5 ± 0.05 (0.02 ± 0.002)
- Case tolerance: ± 0.5 (± 0.02)

Specifications subject to change without notice.