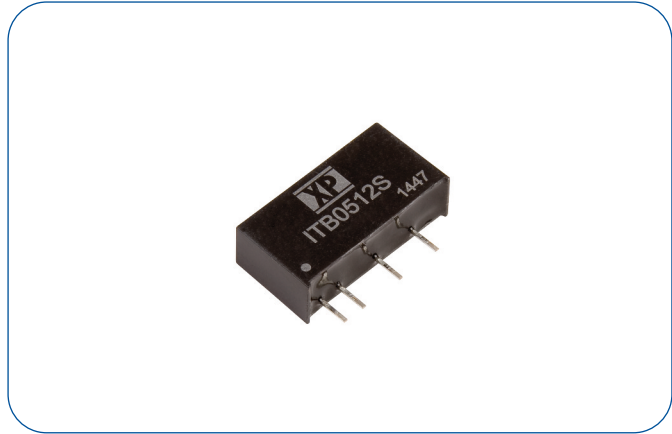


### 1 Watts

- Single Output
- SIP Package
- -40 °C to +105 °C Operation
- Full Load at 95 °C Ambient
- Single Outputs
- 1500 VDC Isolation
- Class B Conducted & Radiated Emissions
- MTBF >3.5 Mhrs
- 3 Year Warranty



#### Dimensions:

**ITB:**  
0.76 x 0.24 x 0.39" (19.5 x 6.0 x 10.0 mm)

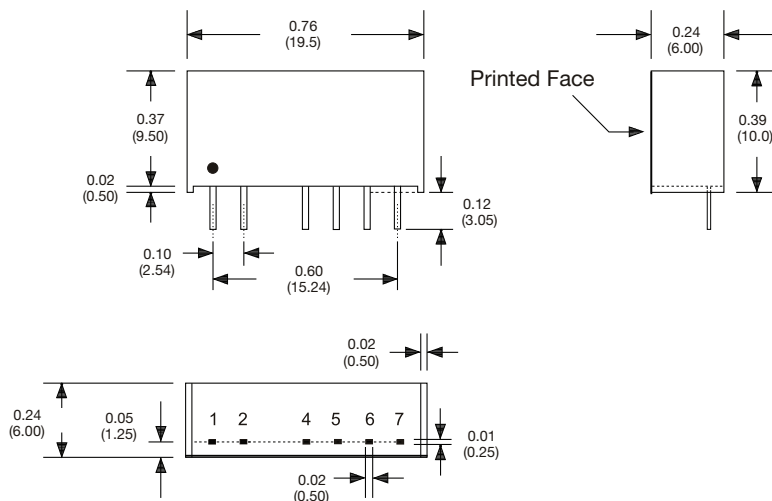
### Models & Ratings

| Input Voltage | Output Voltage | Output Current | Input Current <sup>(1)</sup> |           | Maximum Capacitive Load <sup>(2)</sup> | Efficiency <sup>(3)</sup> | Model Number |
|---------------|----------------|----------------|------------------------------|-----------|--|---------------------------|--------------|
|               |                |                | No Load                      | Full Load |  |                           |              |
| 5V            | 5V             | 200 mA         | 30 mA                        | 253 mA    | 220 µF                                 | 80%                       | ITB0505S     |
|               | 12V            | 83.3 mA        | 30 mA                        | 253 mA    | 100 µF                                 | 81%                       | ITB0512S     |
|               | 15V            | 66.7 mA        | 30 mA                        | 253 mA    | 100 µF                                 | 81%                       | ITB0515S     |
| 12V           | 5V             | 200 mA         | 15 mA                        | 106 mA    | 220 µF                                 | 80%                       | ITB1205S     |
|               | 12V            | 83.3 mA        | 15 mA                        | 106 mA    | 100 µF                                 | 80%                       | ITB1212S     |
|               | 15V            | 66.7 mA        | 15 mA                        | 104 mA    | 100 µF                                 | 81%                       | ITB1215S     |
| 24V           | 5V             | 200 mA         | 7 mA                         | 53 mA     | 220 µF                                 | 81%                       | ITB2405S     |
|               | 12V            | 83.3 mA        | 7 mA                         | 53 mA     | 100 µF                                 | 80%                       | ITB2412S     |
|               | 15V            | 66.7 mA        | 7 mA                         | 53 mA     | 100 µF                                 | 80%                       | ITB2415S     |

### Notes

Input currents measured at nominal input voltage.

### 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 inches (mm)
2. Weight: 0.0053lbs (2.4 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    | 4.5       |         | 5.5     | VDC             | 5 V nominal  |
|                        | 10.8      |         | 13.2    | VDC             | 12 V nominal   |
|                        | 21.6      |         | 26.4    | VDC             | 24 V nominal   |
| Input Filter           | Capacitor |         |         |                 |  |
| Input Reflected Ripple |           |         | 15      | mA pk-pk        | Through 12 $\mu$ H inductor and 47 $\mu$ F capacitor |
| Input Surge            |           |         | 9       | VDC for 1000 ms | 5 V models   |
|                        |           |         | 18      | VDC for 1000 ms | 12 V models  |
|                        |           |         | 30      | VDC for 1000 ms | 24 V models  |

### Output

| Characteristic           | Minimum | Typical | Maximum   | Units    | Notes & Conditions   |
|--------------------------|---------|---------|-----------|----------|--|
| Output Voltage           | 5       |         | 15        | VDC      | See Models and Ratings table   |
| Initial Set Accuracy     |         |         | $\pm 5$   | %        | At 70% load  |
| Minimum Load             | 10      |         |           | %        | Minimum load required to meet specification. Operation at no load will not cause damage. |
| Line Regulation          |         |         | $\pm 1.2$ | %/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 0.1 $\mu$ F ceramic capacitor                           |
| Short Circuit Protection |         |         |           |          | Continuous, with auto recovery   |
| Maximum Capacitive Load  |         |         |           |          | See Models and Ratings table   |
| 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   | kHz              | 5 V/12-24 V input            |
| Isolation Resistance       | $10^9$  |              |         | $\Omega$         |                              |
| Isolation Capacitance      |         | 50           |         | pF               |                              |
| Power Density              |         |              | 14      | Win <sup>3</sup> |                              |
| Mean Time Between Failure  | 3.6     |              |         | MHrs             | MIL-HDBK-217F, +25 °C GB     |
| Weight                     |         | 0.0053 (2.4) |         | lb (g)           |                              |

### 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   | -55     |         | +125    | °C    |   |
| Case Temperature      |         |         | +115    | °C    |   |
| Humidity              |         |         | 95      | %RH   | Non-condensing                                    |
| Cooling               |         |         |         |       | Natural convection                                |

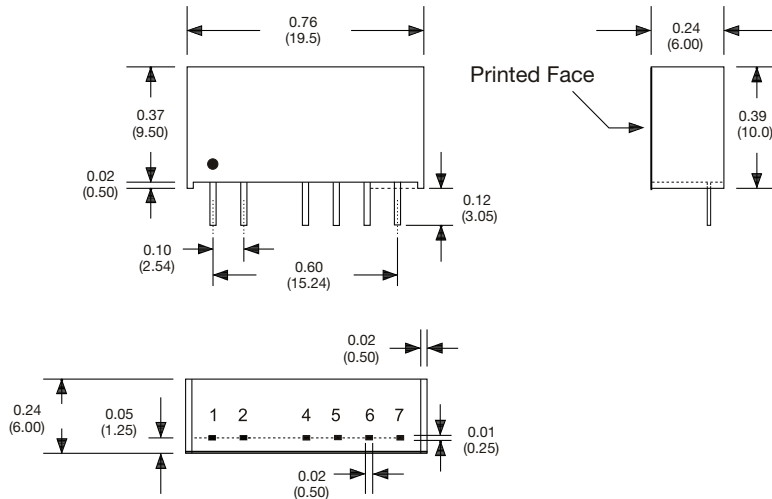
### EMC: Emissions

| Phenomenon | Standard | Test Level | Notes & Conditions   |
|------------|----------|------------|----------------------|
| Conducted  | EN55022  | Class B    | See Application Note |
| Radiated   | EN55022  | Class B    |                      |

### EMC: Immunity

| 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 input capacitor required 330 $\mu$ F/100 V |
| Surges             | EN61000-4-5 | 1          | A        | External input capacitor required 330 $\mu$ F/100 V |
| Conducted Immunity | EN61000-4-6 | 3 V rms    | A        |   |
| Magnetic Fields    | EN61000-4-8 | 1 A/m      | A        |   |

### Mechanical Details



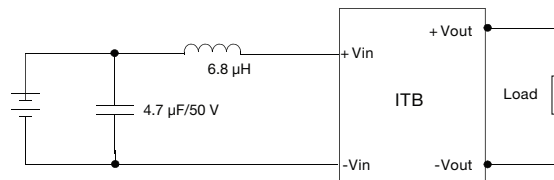
| Pin Connections |        |
|-----------------|--------|
| Pin             | Single |
| 1               | +Vin   |
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#### Notes

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2. Weight: 0.0053lbs (2.4 g) approx.
3. Pin diameter:  $0.02 \pm 0.002$  ( $0.5 \pm 0.05$ )
4. Pin pitch tolerance:  $\pm 0.014$  ( $\pm 0.35$ )
5. Case tolerance:  $\pm 0.02$  ( $\pm 0.5$ )

### Application Note

#### EMI Filter



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