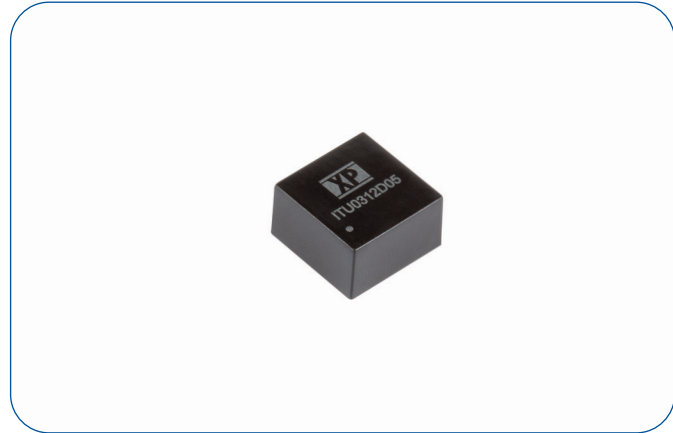


3 Watts

- Regulated Single & Dual Outputs from 3.3 to 30VDC
- Wide 4:1 Input Range
- Input Range 4.5 to 18, 9 to 36, 18 to 75VDC
- Compact DIP8 Package
- 1.6kVDC Input/Output Isolation
- Efficiency to 84%
- Complies with EN55032
- Short-Circuit Protection
- Remote On/Off
- -40°C to +80°C Operating Temperature
- Full Power up to +70°C
- MTBF >820 Khrs (MIL-HDBK-217F, +25°C GB)
- 3 Year Warranty



Dimensions:

ITU03: 0.55 x 0.55 x 0.32" (14.0 x 14.0 x 8.1mm)

The ITU series offers a compact 3W, cost effective DC-DC module with a wide range of input voltages and output voltages. Regulation to 1%, industrial temperature range with a robust encapsulated DIP8 construction, remote on/off and short circuit protection.

Models & Ratings

| Input Voltage | Output Voltage | Output Current (Full Load) | Input Current ⁽¹⁾ | | Maximum Capacitive Load ⁽²⁾ | Efficiency | Model Number |
|------------------|----------------|----------------------------|------------------------------|-----------|--|------------|--------------|
| | | | No Load | Full Load | | | |
| 12V (4.5-18V) | 3.3V | 700mA | 30mA | 257mA | 3300µF | 75% | ITU0312S3V3 |
| | 5.0V | 600mA | 45mA | 309mA | 1680µF | 81% | ITU0312S05 |
| | 12.0V | 250mA | 55mA | 301mA | 470µF | 83% | ITU0312S12 |
| | 15.0V | 200mA | 60mA | 301mA | 330µF | 83% | ITU0312S15 |
| | ±5.0V | ±300mA | 30mA | 313mA | ±1000µF | 80% | ITU0312D05 |
| | ±12.0V | ±125mA | 55mA | 305mA | ±220µF | 82% | ITU0312D12 |
| | ±15.0V | ±100mA | 60mA | 301mA | ±220µF | 83% | ITU0312D15 |
| 24V (9-36V) | 3.3V | 700mA | 25mA | 127mA | 3300µF | 76% | ITU0324S3V3 |
| | 5.0V | 600mA | 20mA | 152mA | 1680µF | 82% | ITU0324S05 |
| | 12.0V | 250mA | 30mA | 149mA | 470µF | 84% | ITU0324S12 |
| | 15.0V | 200mA | 35mA | 149mA | 330µF | 84% | ITU0324S15 |
| | ±5.0V | ±300mA | 25mA | 154mA | ±1000µF | 81% | ITU0324D05 |
| | ±12.0V | ±125mA | 30mA | 151mA | ±220µF | 83% | ITU0324D12 |
| | ±15.0V | ±100mA | 35mA | 149mA | ±220µF | 84% | ITU0324D15 |
| 48V (18-75V) | 3.3V | 700mA | 10mA | 65mA | 3300µF | 74% | ITU0348S3V3 |
| | 5.0V | 600mA | 10mA | 77mA | 1680µF | 81% | ITU0348S05 |
| | 12.0V | 250mA | 15mA | 77mA | 470µF | 81% | ITU0348S12 |
| | 15.0V | 200mA | 15mA | 76mA | 330µF | 82% | ITU0348S15 |
| | ±5.0V | ±300 mA | 20mA | 79mA | ±1000µF | 79% | ITU0348D05 |
| | ±12.0V | ±125 mA | 20mA | 78mA | ±220µF | 80% | ITU0348D12 |
| | ±15.0V | ±100 mA | 25mA | 78mA | ±220µF | 80% | ITU0348D15 |

Notes

1. Measurements taken at full load, minimal input voltage
2. Maximum capacitive load is per output

3. Standard tube quantity 30 pcs

Input

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|----------------------------|--------------------|---------|---------|---------------|--|
| Input Voltage Range | 4.5 | 12 | 18 | VDC | ITU0312 series |
| | 9 | 24 | 36 | | ITU0324 series |
| | 18 | 48 | 75 | | ITU0348 series |
| Input Filter | Integral capacitor | | | | |
| Input Reflected Ripple | | | 20 | mA pk-pk | Through 27µH inductor and 47µF capacitor |
| Input Surge | | | 25 | VDC for 100ms | 12V models, ITU0312 series |
| | | | 50 | | 24V models, ITU0324 series |
| | | | 100 | | 48V models, ITU0348 series |
| Inhibit Mode Input Current | | 2.5 | | mA | V _{in} nominal |

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 |
| 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 2) is open. Output turns off if 2-4mA is applied to Remote On/Off (pin 2). | | | | |

General

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|----------------------------|---|-------------|---------|------------------|------------------------------|
| Efficiency | | 81 | | % | See Models and Ratings table |
| Isolation: Input to Output | 1600 | | | VDC | Functional |
| Switching Frequency | | 100 | | kHz | |
| Isolation Resistance | 10 ⁹ | | | Ω | |
| Isolation Capacitance | | | 2000 | pF | |
| Power Density | | | 31 | Win ³ | |
| Mean Time Between Failure | 820 | | | Khrs | MIL-HDBK-217F, +25°C GB |
| Case Material | Non conductive black plastic | | | | |
| Potting Material | Silicon (UL94V-0 rated) | | | | |
| Pin Material | Brass solder-coated | | | | |
| Solder Process | JEDEC J-STD 020D.1. 260°C max. 1.5mm from case 10s max. | | | | |
| Weight | | 0.008 (3.6) | | lb (g) | |

Environmental

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|-----------------------|--------------------|---------|---------|-------|--------------------|
| Operating Temperature | -40 | | +80 | °C | See derating curve |
| 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 | External components required. See application notes. |
| Radiated | EN55032 | Class A | |

Safety Approvals

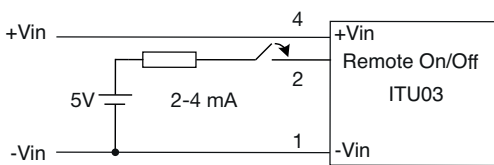
| Safety Agency | Safety Standard | Notes & Conditions |
|---------------|----------------------------------|--------------------|
| CE | Meets all applicable directives | |
| UKCA | Meets all applicable legislation | |

EMC: Immunity

| Phenomenon | Standard | Test Level | Criteria | Notes & Conditions |
|-----------------|-------------|------------|----------|--|
| ESD | EN61000-4-2 | ±8kV | A | Air Discharge |
| Radiated | EN61000-4-3 | 10V/M | A | |
| EFT/Burst | EN61000-4-4 | ±2kV | A | External input capacitor required 220µF/100V |
| Surge | EN61000-4-5 | ±2kV | A | External input capacitor required 220µF/100V |
| Conducted | EN61000-4-6 | 10Vrms | A | |
| Magnetic Fields | EN61000-4-8 | 100A/m | A | |

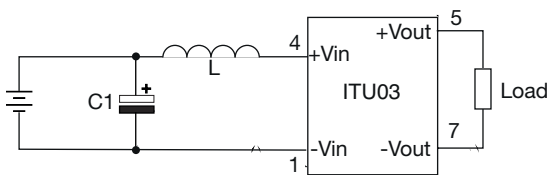
Application Notes

Remote On/Off

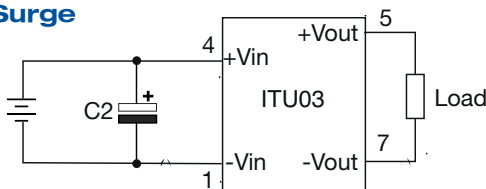


| Model | C1 | L |
|---------|-------------------|-------|
| ITU0312 | 1210, 10µF, 35V | 2.2µH |
| ITU0324 | 1210, 2.2µF, 100V | 2.2µH |
| ITU0348 | 1210, 4.7µF, 35V | 2.2µH |

EMI Filter

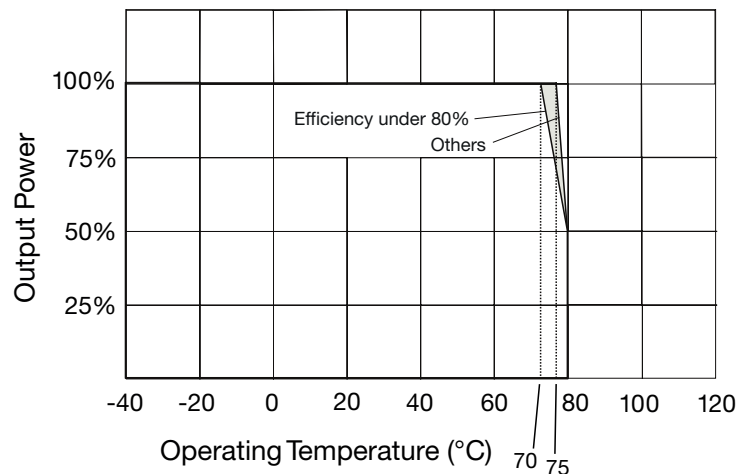


EFT & Surge

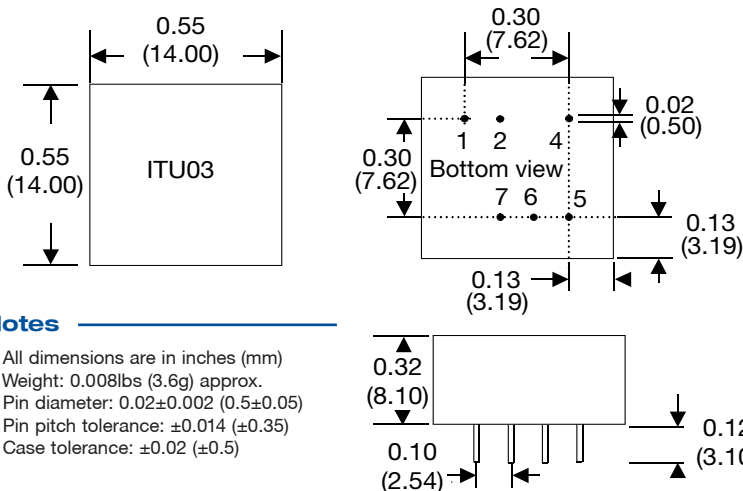


| C2 |
|-------------|
| 220µF, 100V |

Derating Curve



Mechanical Details



Notes

- All dimensions are in inches (mm)
- Weight: 0.008lbs (3.6g) approx.
- Pin diameter: 0.02±0.002 (0.5±0.05)
- Pin pitch tolerance: ±0.014 (±0.35)
- Case tolerance: ±0.02 (±0.5)

| Pin | Pin Connections | |
|-----|-----------------|---------------|
| | Single | Dual |
| 1 | -V Input | -V Input |
| 2 | Remote On/Off | Remote On/Off |
| 3 | Not fitted | Not fitted |
| 4 | +V Input | +V Input |
| 5 | +V Output | +V Output |
| 6 | Not fitted | Common |
| 7 | -V Output | -V Output |
| 8 | Not fitted | Not fitted |