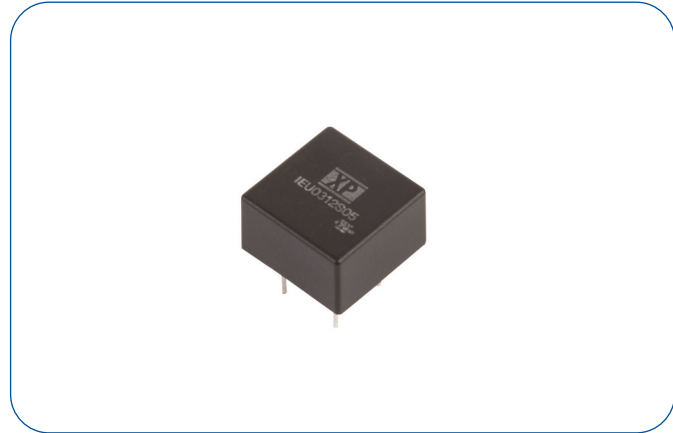


### 3 Watt

- Regulated Single & Dual Output
- 2:1 Input Range
- Compact DIP8 Package
- 1500 VDC Isolation
- Operating Temperature -40 °C to +95 °C
- ITE Safety Approvals
- Full Load at 70 °C
- Class A Conducted & Radiated Emissions
- 3 Year Warranty



#### Dimensions:

IEU03:

0.55 x 0.55 x 0.31" (14.0 x 14.0 x 8.0 mm)

### Models & Ratings

| Input voltage | Output voltage | Output current | Input current <sup>(1)</sup> |           | Maximum capacitive load <sup>(2)</sup> | Efficiency | Model number |
|---------------|----------------|----------------|------------------------------|-----------|--|------------|--------------|
|               |                |                | No load                      | Full load |  |            |              |
| 4.5-10V       | 3V3            | 600 mA         | 45 mA                        | 500 mA    | 100 µF                                 | 79%        | IEU0305S3V3  |
|               | 5 V            | 600 mA         |                              | 740 mA    | 100 µF                                 | 81%        | IEU0305S05   |
|               | 12V            | 250 mA         |                              | 705 mA    | 100 µF                                 | 85%        | IEU0305S12   |
|               | 15V            | 200 mA         |                              | 705 mA    | 100 µF                                 | 85%        | IEU0305S15   |
|               | ±5V            | ±300 mA        |                              | 770 mA    | ±100 µF                                | 82%        | IEU0305D05   |
|               | ±12V           | ±125 mA        |                              | 715 mA    | ±100 µF                                | 84%        | IEU0305D12   |
|               | ±15V           | ±100 mA        |                              | 705 mA    | ±100 µF                                | 85%        | IEU0305D15   |
|               | 9-18V          | 3V3            |                              | 600 mA    | 27 mA                                  | 205 mA     | 100 µF       |
| 5 V           |                | 600 mA         | 300 mA                       | 100 µF    |  | 83%        | IEU0312S05   |
| 12V           |                | 250 mA         | 285 mA                       | 100 µF    |  | 87%        | IEU0312S12   |
| 15V           |                | 200 mA         | 285 mA                       | 100 µF    |  | 87%        | IEU0312S15   |
| ±5V           |                | ±300 mA        | 300 mA                       | ±100 µF   |  | 84%        | IEU0312D05   |
| ±12V          |                | ±125 mA        | 290 mA                       | ±100 µF   |  | 86%        | IEU0312D12   |
| ±15V          |                | ±100 mA        | 285 mA                       | ±100 µF   |  | 87%        | IEU0312D15   |
| 18-36V        |                | 3V3            | 600 mA                       | 16 mA     |  | 105 mA     | 100 µF       |
|               | 5 V            | 600 mA         | 150 mA                       |           | 100 µF                                 | 83%        | IEU0324S05   |
|               | 12V            | 250 mA         | 145 mA                       |           | 100 µF                                 | 87%        | IEU0324S12   |
|               | 15V            | 200 mA         | 145 mA                       |           | 100 µF                                 | 87%        | IEU0324S15   |
|               | ±5V            | ±300 mA        | 150 mA                       |           | ±100 µF                                | 84%        | IEU0324D05   |
|               | ±12V           | ±125 mA        | 145 mA                       |           | ±100 µF                                | 86%        | IEU0324D12   |
|               | ±15V           | ±100 mA        | 145 mA                       |           | ±100 µF                                | 87%        | IEU0324D15   |
|               | 36-75V         | 3V3            | 600 mA                       |           | 10 mA                                  | 52 mA      | 100 µF       |
| 5 V           |                | 600 mA         | 76 mA                        | 100 µF    |  | 82%        | IEU0348S05   |
| 12V           |                | 250 mA         | 73 mA                        | 100 µF    |  | 86%        | IEU0348S12   |
| 15V           |                | 200 mA         | 73 mA                        | 100 µF    |  | 86%        | IEU0348S15   |
| ±5V           |                | ±300 mA        | 76 mA                        | ±100 µF   |  | 82%        | IEU0348D05   |
| ±12V          |                | ±125 mA        | 74 mA                        | ±100 µF   |  | 85%        | IEU0348D12   |
| ±15V          |                | ±100 mA        | 74 mA                        | ±100 µF   |  | 85%        | IEU0348D15   |

#### 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                |         | 10      | VDC         | 5 V nominal        |
|                     | 9.0                |         | 18      |             | 12 V nominal       |
|                     | 18.0               |         | 36      |             | 24 V nominal       |
|                     | 36.0               |         | 75      |             | 48 V nominal       |
| Input Filter        | Internal Capacitor |         |         |             |                    |
| Input Surge         |                    |         | 12      | VDC for 1 s | 5 V nominal        |
|                     |                    |         | 25      |             | 12 V nominal       |
|                     |                    |         | 50      |             | 24 V models        |
|                     |                    |         | 100     |             | 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     |         |         | ±1.5    | %           | At full load  |
| Output Voltage Balance   |         |         | ±2.0    | %           | For dual output with balanced loads   |
| Minimum Load             |         |         |         | A           | No minimum load required  |
| Line Regulation          |         |         | ±0.2    | %           | From minimum to maximum input at full load  |
| Load Regulation          |         |         | ±1.0    | %           | From 0 to full load   |
| Cross Regulation         |         |         | ±5.0    | %           | On dual output models when one load is varied between 25% and 100% and other is fixed at 100% |
| Transient Response       |         |         | 5       | % deviation | Recovery within 1% in less than 500 µs for a 25% load change.                                 |
| Ripple & Noise           |         | 70      |         | mV pk-pk    | 20 MHz bandwidth. Measured using 0.47 µF ceramic capacitor.                                   |
| Overload Protection      |         | 170     |         | %           |   |
| 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                 |                 | 84          |         | %                 | See Models and Ratings table |
| Isolation: Input to Output | 1500/1800       |             |         | VDC               | 60 s/1 s                     |
| Isolation Resistance       | 10 <sup>9</sup> |             |         | Ω                 | At 500 VDC                   |
| Isolation Capacitance      |                 | 100         |         | pF                |                              |
| Switching Frequency        |                 | 100         |         | kHz               |                              |
| Power Density              |                 |             | 32.0    | W/in <sup>3</sup> |                              |
| Mean Time Between Failure  |                 | 3.4         |         | MHrs              | MIL-HDBK-217F, +25 °C GB     |
| Weight                     |                 | 0.008 (3.9) |         | lb (g)            |                              |

### Environmental

| Characteristic                  | Minimum        | Typical | Maximum | Units | Notes & Conditions           |
|---------------------------------|----------------|---------|---------|-------|------------------------------|
| Operating Temperature           | -40            |         | +95     | °C    | See Derating Curve.          |
| Storage Temperature             | -50            |         | +125    | °C    |                              |
| Case Temperature                |                |         | +95     | °C    |                              |
| Humidity                        |                |         | 95      | %RH   | Non-condensing               |
| Cooling                         |                |         |         |       | Natural convection           |
| Case Flammability               | UL 94V-0 Rated |         |         |       | Non conductive black plastic |
| Lead-Free Reflow Solder Process |                |         |         |       | IPC/JEDEC J-STD-020D.1       |

### EMC: Emissions

| Phenomenon | Standard | Test Level | Notes & Conditions   |
|------------|----------|------------|----------------------|
| Conducted  | EN55022  | Class A    | See application note |
| Radiated   | EN55022  | Class A    | See application note |

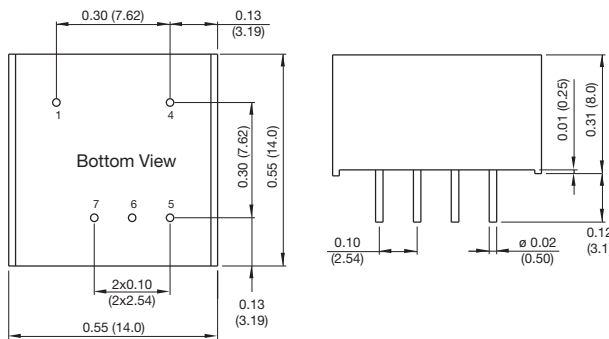
### EMC: Immunity

| Phenomenon      | Standard    | Test Level                         | Criteria | Notes & Conditions   |
|-----------------|-------------|------------------------------------|----------|--|
| ESD             | EN61000-4-2 | ±8 kV air discharge, ±6 kV contact | A        |  |
| Radiated        | EN61000-4-3 | 10 V/m                             | A        |  |
| EFT/Burst       | EN61000-4-4 | ±2 kV                              | A        | With external input capacitor, suggested part is CHEMI-CON KY 220µF/100V |
| Surge           | EN61000-4-5 | ±1 kV                              | A        | With external input capacitor, suggested part is CHEMI-CON KY 220µF/100V |
| Conducted       | EN61000-4-6 | 3 V rms                            | A        |  |
| Magnetic Fields | EN61000-4-8 | 3 A/m                              | A        |  |

### Safety Approvals

| Safety Agency | Safety Standard                  | Notes & Conditions     |
|---------------|----------------------------------|------------------------|
| CB Report     | IEC60950-1                       | Information Technology |
| UL            | UL/cUL60950-1, UL/cUL62368-1     | Information Technology |
| CE            | Meets all applicable directives  |                        |
| UKCA          | Meets all applicable legislation |                        |

### Mechanical Details



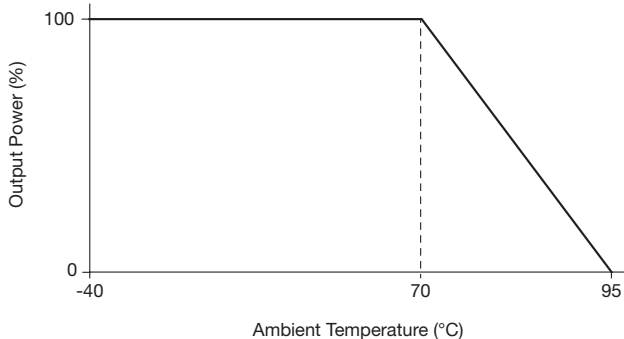
| Pin Connections |        |        |
|-----------------|--------|--------|
| Pin             | Single | Dual   |
| 1               | -Vin   | -Vin   |
| 4               | +Vin   | +Vin   |
| 5               | +Vout  | +Vout  |
| 6               | No Pin | Common |
| 7               | -Vout  | -Vout  |

### Notes

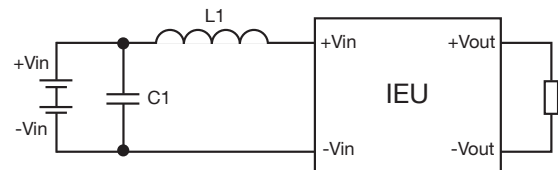
- All dimensions are in inches (mm)
- Weight: 0.008 lbs (3.9 g) approx.
- Tolerance: X.XX±0.01 (X.X±0.25)  
X.XXX±0.005 (X.XX±0.13)
- Pin Tolerance: ±0.002 (±0.05)

### Application Notes

#### Derating Curve



#### EMI Filter



| Model   | C1           | L1      |
|---------|--------------|---------|
| IEU0205 | 22 µF/16 V   | 3.3 µH  |
| IEU0212 | 22 µF/25 V   | 18.0 µH |
| IEU0224 | 10 µF/50 V   | 39.0 µH |
| IEU0248 | 3.3 µF/100 V | 68.0 µH |

C1 = 5, 12 & 24 V: 1206 X5R MLCC, 48 V: 1206 X7S MLCC, L1 = SCD0504T series

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