

## FEATURES:

- 10 Watt DIL Package
- 4:1 Wide Input Voltage Range
- High Efficiency Up To 88%
- Regulated Output Types
- No Minimum Load Required
- Over Power and Short Circuit Protection
- UL94V-0 Package Material
- 100% Burned In
- UL Recognized



## DC-DC Converter UC10 Series

10 Watt  
1600Vdc Isolated  
4:1 Input Voltage Range  
Single & Dual Output  
DIP16 Package

Specifications typical at TA=25°C nominal input voltage and rated output current unless otherwise specified

| Part Number | Input Voltage Range | Input Current (mA TYP) |           | Output Voltage Range | Output Current (mA (typ)) | Efficiency % (typ) | Maximum Capacitor Load $\mu F$ |
|-------------|---------------------|------------------------|-----------|----------------------|---------------------------|--------------------|--------------------------------|
|             |                     | No-Load                | Full-Load |                      |                           |                    |                                |
|             | Vdc                 | mA (typ)               | mA (typ)  | Vdc                  | mA (typ)                  | % (typ)            | $\mu F$                        |
| UC10-24S12  | 9~36                | 9                      | 479       | 12                   | 833                       | 87                 | 660                            |
| UC10-24S24  | 9~36                | 9                      | 483       | 24                   | 416                       | 88                 | 240                            |
| UC10-24D15  | 9~36                | 9                      | 473       | $\pm 15$             | $\pm 333$                 | 88                 | $\pm 270$                      |



### Part Number

UC 10 - XX X XX  
A B C D E

A: Series  
B: Output Power  
C: Input Voltage  
D: Single (S) / Dual Output (D)  
E: Output Voltage

### Input Specifications

| Parameters                           | Conditions                           | Min      | Typ              | Max | Units |
|--------------------------------------|--------------------------------------|----------|------------------|-----|-------|
| Input Voltage                        | 24V models                           | 9        |                  | 36  | Vdc   |
|                                      | 48V models                           | 18       |                  | 75  |       |
| Input Surge Voltage<br>(100 ms max.) | 24V models                           | -0.7     |                  | 50  | Vdc   |
|                                      | 48V models                           | -0.7     |                  | 100 |       |
| Start-up Voltage                     | 24V models                           |          |                  | 9   | Vdc   |
|                                      | 48V models                           |          |                  | 18  |       |
| Under Voltage Shutdown               | 24V models                           |          | 8                |     | Vdc   |
|                                      | 48V models                           |          | 15               |     |       |
| Start-up Time                        | Constant Resistive Load, Nominal Vin | Power-up | 30               |     | ms    |
| Input Filter                         | All Models                           |          | Internal LC type |     |       |

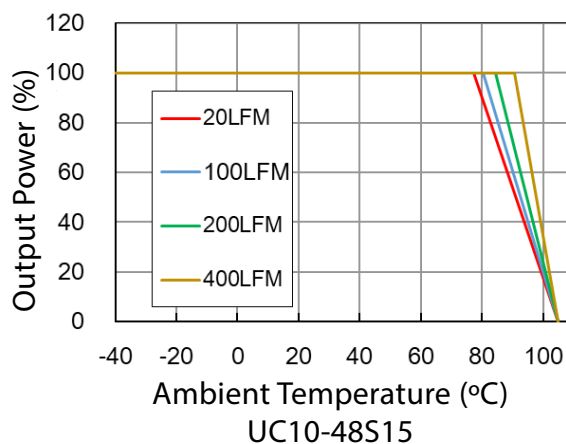
### Output Specifications

| Parameters                      | Conditions                              | Min         | Typ | Max   | Units |
|---------------------------------|-----------------------------------------|-------------|-----|-------|-------|
| Voltage Tolerance               | 100% Load                               | -2          |     | +2    | %     |
| Line Regulation                 | Vin (min) to Vin (max) @100% Load       | -0.5        |     | +0.5  | %     |
| Load Regulation                 | 0% Load to 100% Load                    | -0.5        |     | +0.5  | %     |
| Load Cross Regulation           | Asymmetrical Load 25% / 100% Load       | Dual Output |     | +5.0  | %     |
| Ripple & Noise<br>(BW=20MHz)    | All models                              |             | 60  | 100   | mVp-p |
| Transient Response Setting Time | 25% Load Step Change                    |             | 350 | 500   | us    |
| Transient Response Deviation    | 25% Load Step Change                    | -5          | ±3  | +5    | %     |
| Temperature Coefficient         |                                         | -0.03       |     | +0.03 | %/°C  |
| Output Power Protection         | % of Io, Hiccup mode, Auto-recovery     | 120         | 155 | 190   | %     |
| Short Circuit Protection        | Continuous [Hiccup Mode], Auto-Recovery |             |     |       |       |
| Over Voltage Protection         | 5Vout                                   |             | 6.2 |       | Vdc   |
|                                 | 12Vout                                  |             | 15  |       |       |
|                                 | 15Vout                                  |             | 18  |       |       |
|                                 | 24Vout                                  |             | 30  |       |       |

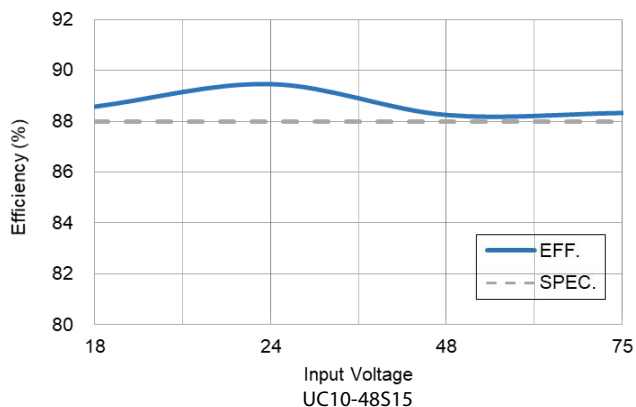
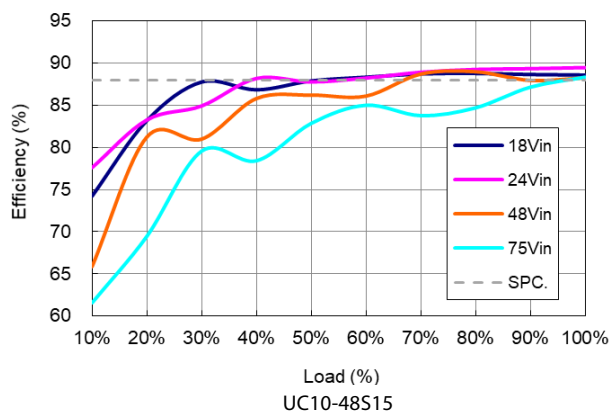
## General Specifications

| Parameters                                                           | Conditions                      |                                                                                                      | Min  | Typ                 | Max  | Units |    |
|----------------------------------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------|------|---------------------|------|-------|----|
| Isolation Voltage                                                    | Input To Output (60 sec)        |                                                                                                      | 1600 |                     |      | Vdc   |    |
| Isolation Resistance                                                 | 500Vdc                          |                                                                                                      | 1000 |                     |      | MΩ    |    |
| Isolation Capacitance                                                | 100kHz, 1V                      |                                                                                                      |      |                     | 2200 | pF    |    |
| Switching Frequency                                                  | 100% Load, Nominal Input        | Other Output                                                                                         |      | 390                 |      | KHz   |    |
| Operating Ambient Temperature<br>(Power Derating See Derating Graph) | Nominal Vin, 100% Load          | UC10-24S05, UC10-48S05                                                                               | -40  | +66                 | °C   |       |    |
|                                                                      |                                 | UC10-24S12, UC10-48S12                                                                               |      | +74                 |      |       |    |
|                                                                      |                                 | UC10-24S15, UC10-48S15<br>UC10-24S24, UC10-48S24<br>UC10-24D12, UC10-48D12<br>UC10-24D15, UC10-48D15 |      | +77                 |      |       |    |
|                                                                      |                                 |                                                                                                      |      |                     |      |       |    |
| Thermal Impedance                                                    | 20LFM                           |                                                                                                      | 20.4 | °C/W                |      |       |    |
|                                                                      | 100LFM                          |                                                                                                      | 18.1 |                     |      |       |    |
|                                                                      | 200LFM                          |                                                                                                      | 15.1 |                     |      |       |    |
|                                                                      | 400LFM                          |                                                                                                      | 10.5 |                     |      |       |    |
| Maximum Case Temperature                                             |                                 |                                                                                                      |      |                     | +105 | °C    |    |
| Storage Temperature                                                  |                                 |                                                                                                      |      |                     | -55  | +125  | °C |
| Humidity                                                             | Non Condensing                  |                                                                                                      | 5    |                     | 95   | %     |    |
| Cooling                                                              | Natural Convection              |                                                                                                      |      |                     |      |       |    |
| Case Material                                                        | Copper, Black Coating           |                                                                                                      |      |                     |      |       |    |
| Potting Material                                                     | Silicone (UL94-V0)              |                                                                                                      |      |                     |      |       |    |
| MTBF                                                                 | MIL-HDBK-217F@25°C (calculated) |                                                                                                      |      | 1.1X10 <sup>6</sup> |      | Hours |    |
| Weight                                                               |                                 |                                                                                                      |      | 10                  |      | g     |    |
| Dimensions                                                           | 24.0 x 14.0 x 9.8               |                                                                                                      |      |                     |      | mm    |    |

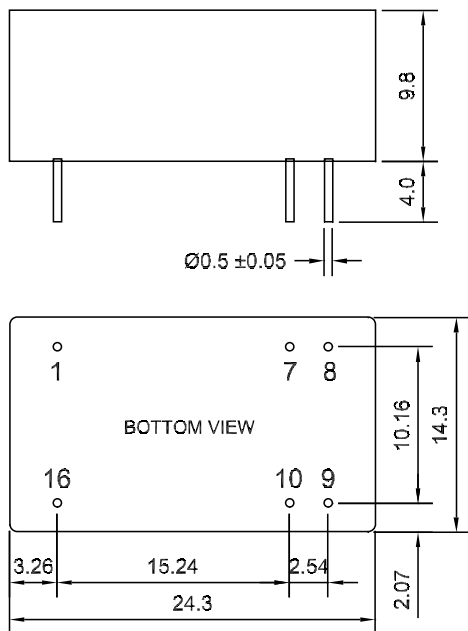
## Temperature Derating Graph



## Characteristic Curve



## Dimensions



UNIT: mm  
Tolerances are XX.X±0.5, XX.XX±0.25

UNIT: mm  
Tolerances are XX.X±0.5, XX.XX±0.25

## PIN Assignment

| PIN | Single | Dual  | Diameter      |
|-----|--------|-------|---------------|
| 1   | -Vin   | -Vin  | 0.5mm [0.02"] |
| 7   | NC     | NC    | 0.5mm [0.02"] |
| 8   | NC     | Com   | 0.5mm [0.02"] |
| 9   | +Vout  | +Vout | 0.5mm [0.02"] |
| 10  | -Vout  | -Vout | 0.5mm [0.02"] |
| 16  | +Vin   | +Vin  | 0.5mm [0.02"] |

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