

## Features

### Unregulated Converter

- 1 : 1 Input Range
- 0.5W SMD Package
- Efficiency up to 80%
- Approved for Medical Applications
- 1kVDC and 3 kVDC Isolation Option
- Operating Temperature from -40°C to +100°C

### Specifications (measured at $T_A = 25^\circ\text{C}$ , nominal input voltage, full load and after warm-up)

| Part Number SMD | Input Voltage (VDC) | Output Voltage (VDC) | Output Current (mA) | Efficiency typ. (%) | Max Capacitive Load <sup>(1)**</sup> |
|-----------------|---------------------|----------------------|---------------------|---------------------|--------------------------------------|
| R0.5S**-3.305*  | 3.3                 | 5                    | 100                 | 80                  | 1000 $\mu\text{F}$                   |
| R0.5S**-3.312*  | 3.3                 | 12                   | 42                  | 77                  | 150 $\mu\text{F}$                    |
| R0.5S**-3.315*  | 3.3                 | 15                   | 33                  | 77                  | 150 $\mu\text{F}$                    |
| R0.5S**-0505*   | 5                   | 5                    | 100                 | 72                  | 1000 $\mu\text{F}$                   |
| R0.5S**-0512*   | 5                   | 12                   | 42                  | 77                  | 150 $\mu\text{F}$                    |
| R0.5S**-0515*   | 5                   | 15                   | 33                  | 79                  | 150 $\mu\text{F}$                    |
| R0.5S**-1205*   | 12                  | 5                    | 100                 | 74                  | 1000 $\mu\text{F}$                   |
| R0.5S**-1212*   | 12                  | 12                   | 42                  | 75                  | 150 $\mu\text{F}$                    |
| R0.5S**-1215*   | 12                  | 15                   | 33                  | 75                  | 150 $\mu\text{F}$                    |
| R0.5S**-2405*   | 24                  | 5                    | 100                 | 75                  | 1000 $\mu\text{F}$                   |
| R0.5S**-2412*   | 24                  | 12                   | 42                  | 77                  | 150 $\mu\text{F}$                    |
| R0.5S**-2415*   | 24                  | 15                   | 33                  | 77                  | 150 $\mu\text{F}$                    |
| R0.5D**-3.305*  | 3.3                 | $\pm 5$              | $\pm 50$            | 79                  | $\pm 470\mu\text{F}$                 |
| R0.5D**-3.312*  | 3.3                 | $\pm 12$             | $\pm 21$            | 76                  | $\pm 68\mu\text{F}$                  |
| R0.5D**-3.315*  | 3.3                 | $\pm 15$             | $\pm 17$            | 77                  | $\pm 68\mu\text{F}$                  |
| R0.5D**-0505*   | 5                   | $\pm 5$              | $\pm 50$            | 79                  | $\pm 470\mu\text{F}$                 |
| R0.5D**-0512*   | 5                   | $\pm 12$             | $\pm 21$            | 77                  | $\pm 68\mu\text{F}$                  |
| R0.5D**-0515*   | 5                   | $\pm 15$             | $\pm 17$            | 79                  | $\pm 68\mu\text{F}$                  |
| R0.5D**1205*    | 12                  | $\pm 5$              | $\pm 50$            | 76                  | $\pm 470\mu\text{F}$                 |
| R0.5D**1212*    | 12                  | $\pm 12$             | $\pm 21$            | 75                  | $\pm 68\mu\text{F}$                  |
| R0.5D**1215*    | 12                  | $\pm 15$             | $\pm 17$            | 75                  | $\pm 68\mu\text{F}$                  |
| R0.5D**2405*    | 24                  | $\pm 5$              | $\pm 50$            | 77                  | $\pm 470\mu\text{F}$                 |
| R0.5D**2412*    | 24                  | $\pm 12$             | $\pm 21$            | 75                  | $\pm 68\mu\text{F}$                  |
| R0.5D**2415*    | 24                  | $\pm 15$             | $\pm 17$            | 75                  | $\pm 68\mu\text{F}$                  |

\*add Suffix "/H" for 3kVDC Isolation Voltage

\*add Suffix "/P" for continuous short circuit protection

\*add Suffix "-R" for tape & reel packing

For more details and dimensions of the tapes and reels see Application Notes

R0.5S\*\*:

\*\*without marking denotes 5 pins out of 8 fitted (includes „/H“ option)

\*\*with marking 8 denotes 8 pins out of 8 fitted („/H“ option not available)

\*\*with marking 12 denotes 10 pins out of 12 fitted (includes „/H“ option)

R0.5D\*\*:

\*\*without marking denotes 6 pins out of 10 fitted (includes „/H“ option)

\*\*with marking 10 denotes 10 pins out of 10 fitted („/H“ option not available)

\*\*with marking 12 denotes 10 pins out of 12 fitted (includes „/H“ option)

## ECONOLINE

### DC/DC-Converter

with 3 year Warranty

## RECOM

## 0.5 Watt SMD Isolated Single or Dual Output

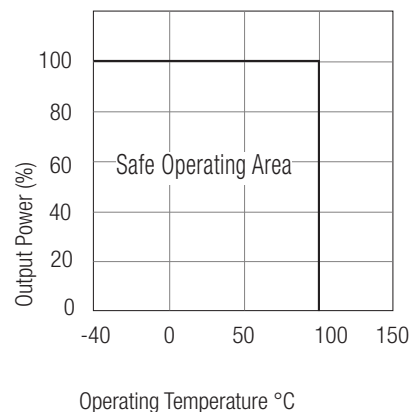


E358085

UL-60950-1 Certified

## R0.5S\_D

## Derating-Graph (Ambient Temperature)



Refer to Application Notes

### Specifications (measured at $T_A = 25^\circ\text{C}$ , nominal input voltage, full load and after warm-up)

|                                             |                                              |                                                           |                                             |
|---------------------------------------------|----------------------------------------------|-----------------------------------------------------------|---------------------------------------------|
| Input Voltage Range                         |                                              |                                                           | $\pm 10\%$ max.                             |
| Voltage set accuracy                        | 100% Load/nominal Vin                        |                                                           | -1% typ. / $\pm 5\%$ max.                   |
| Line Regulation                             | Low Line to High Line @ max. Load            |                                                           | 1.2% typ.                                   |
| Load Regulation                             | 5V output                                    |                                                           | 6% typ. / 15% max.                          |
| (10% to 100% Load)                          | 12/15V output                                |                                                           | 5%typ. / 10% max.                           |
| Ripple & Noise @ 20MHz BW                   |                                              |                                                           | 50 mVp-p typ. / 100mVp-p max.               |
| Efficiency at Full Load                     |                                              |                                                           | 70% min.                                    |
| Operating Temperature                       |                                              |                                                           | $-40^\circ\text{C}$ to $+100^\circ\text{C}$ |
| Storage Temperature                         |                                              |                                                           | $-55^\circ\text{C}$ to $+125^\circ\text{C}$ |
| Isolation Voltage                           | (tested for 1 second)                        |                                                           | 1000VDC                                     |
|                                             | (rated for 1 minute <sup>***</sup> )         |                                                           | 500VAC / 60Hz                               |
| Isolation Voltage                           | H-Suffix                                     | (tested for 1 second)                                     | 3000VDC                                     |
|                                             | H-Suffix                                     | (rated for 1 minute <sup>***</sup> )                      | 1500VAC / 60Hz                              |
| Isolation Capacitance                       |                                              |                                                           | 75pF max.                                   |
| Isolation Resistance                        | Viso = 500V                                  |                                                           | 10 G $\Omega$ min.                          |
| Humidity                                    |                                              |                                                           | 95% max.                                    |
| Operating Frequency                         | Vin (nom.)                                   |                                                           | 20kHz min. / 50 kHz typ. / 90 kHz max.      |
| Short-Circuit Protection                    |                                              |                                                           | 1 Second                                    |
| MTBF                                        | Using MIL-HDBK 217F ( $+100^\circ\text{C}$ ) |                                                           | 1003 x 10 <sup>3</sup> hours                |
| Using MIL-HDBK 217F ( $+25^\circ\text{C}$ ) | 3962 x 10 <sup>3</sup> hours                 | Detailed Information see Application Notes chapter „MTBF“ |                                             |
| Weight                                      | Single Types                                 |                                                           | 1.0 g                                       |
|                                             | Dual Types                                   |                                                           | 1.2 g                                       |
| Certification                               |                                              |                                                           |                                             |
| UL General Safety                           | Report: E358085                              |                                                           | UL 60950-1 2nd Ed.                          |

\*\*\*Any data referred to in this datasheet are of indicative nature and based on our practical experience only. For further details, please refer to our Application Notes.

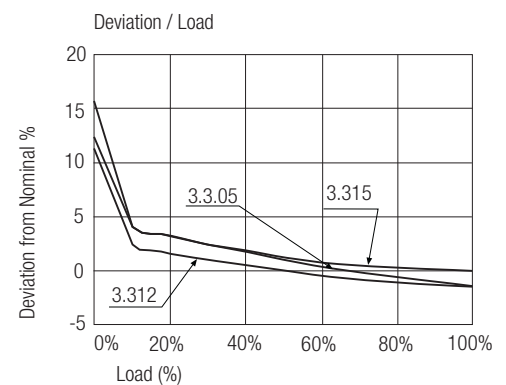
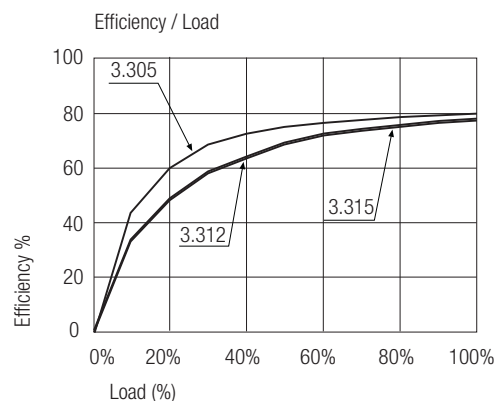
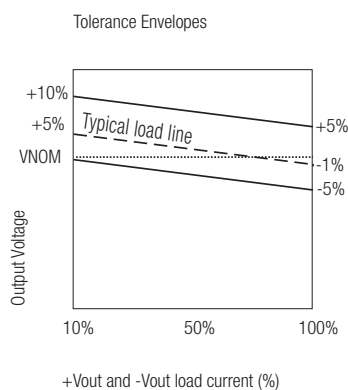
#### Notes

Note1: Maximum capacitive load is defined as the capacitive load that will allow start up in under 1second without damage to the converter.

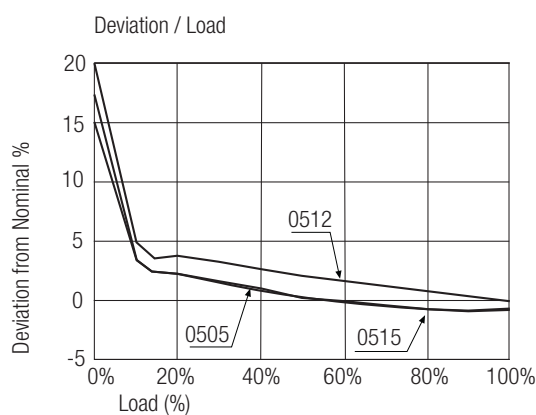
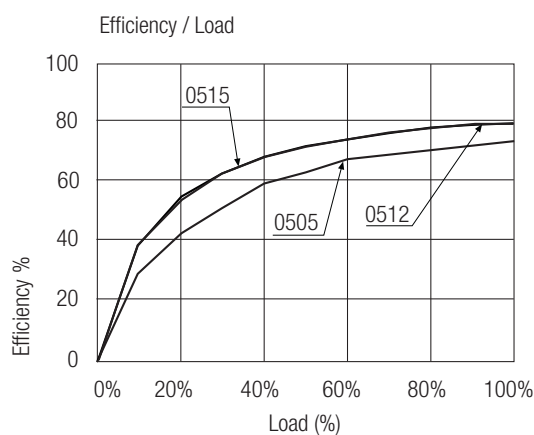
### Typical Characteristics

## R0.5S-3.3xx

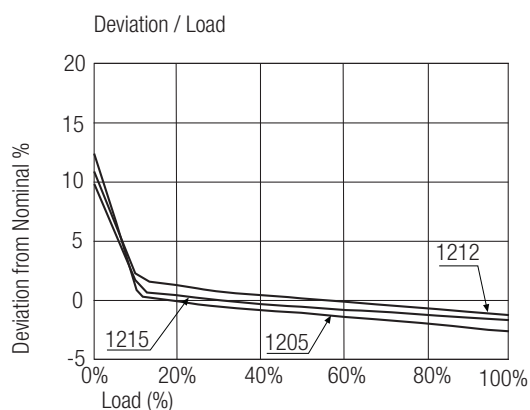
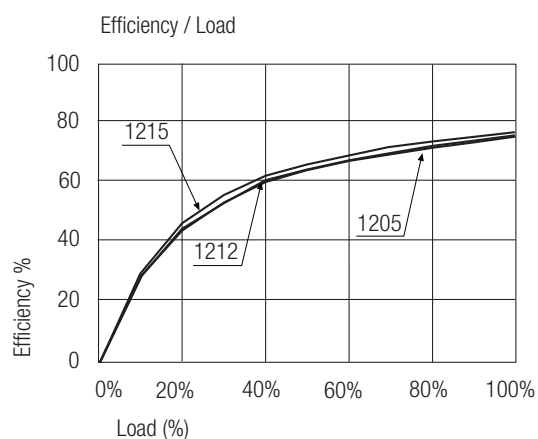
#### Tolerance Envelope



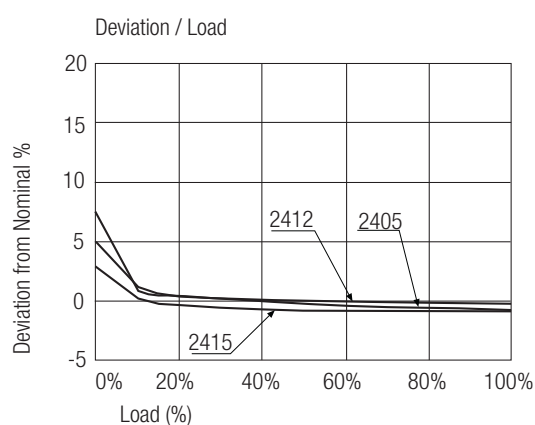
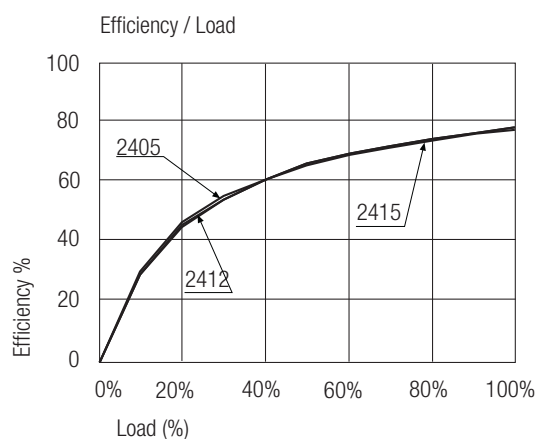
## R0.5S-05xx



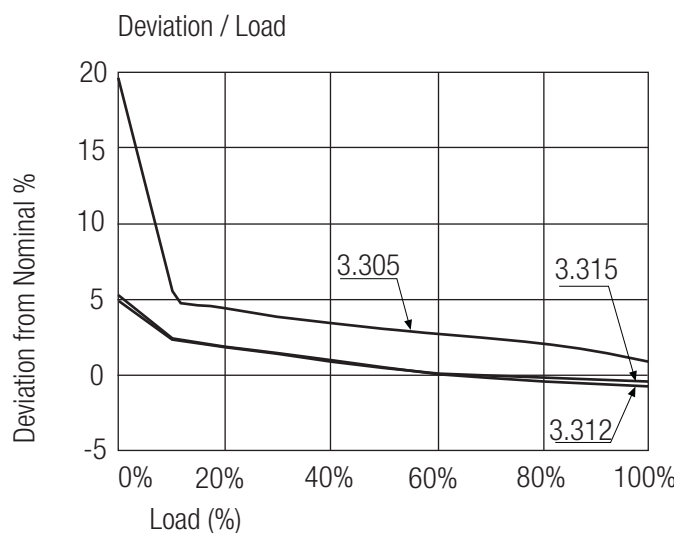
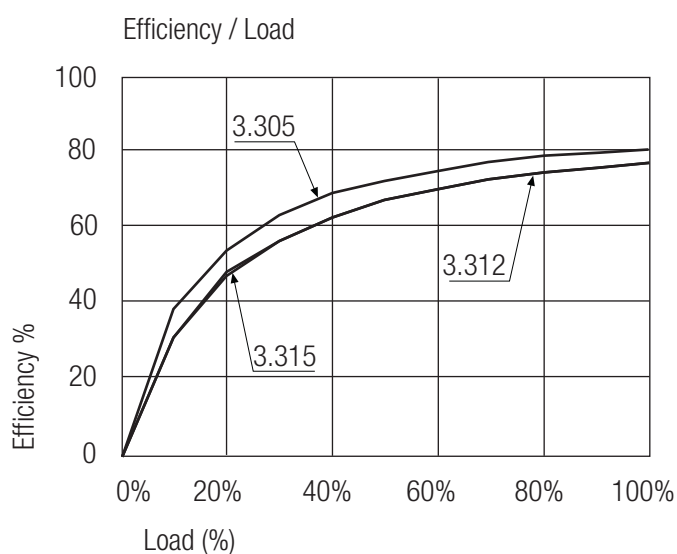
## R0.5S-12xx



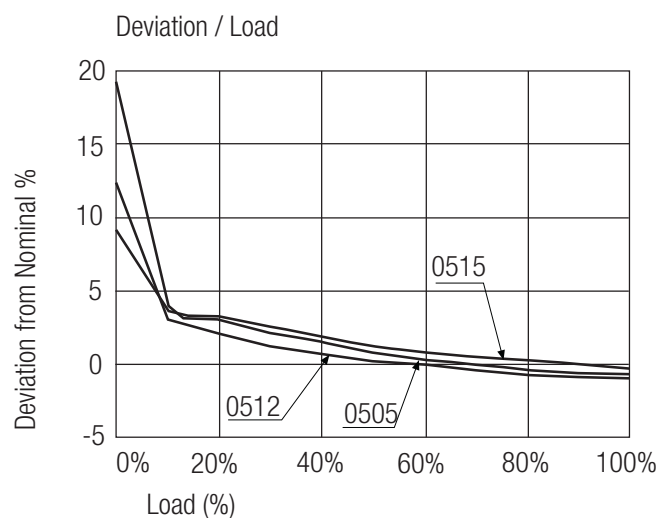
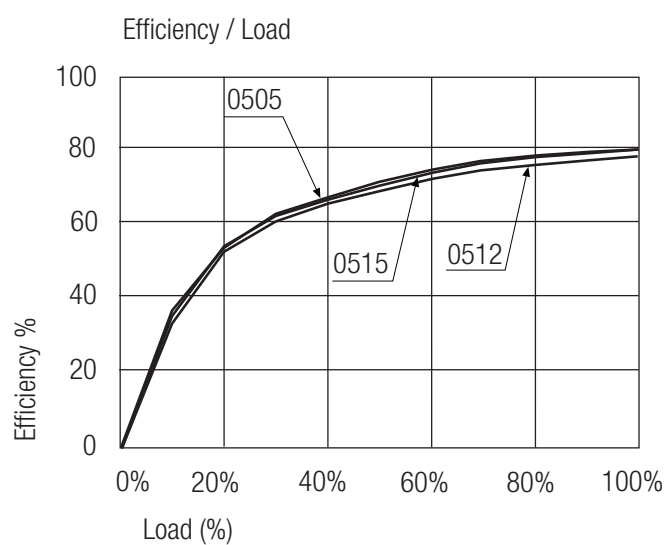
## R0.5S-24xx



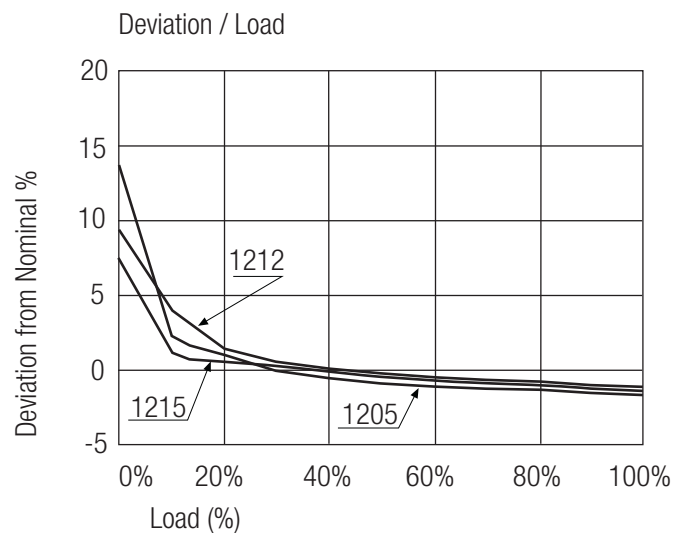
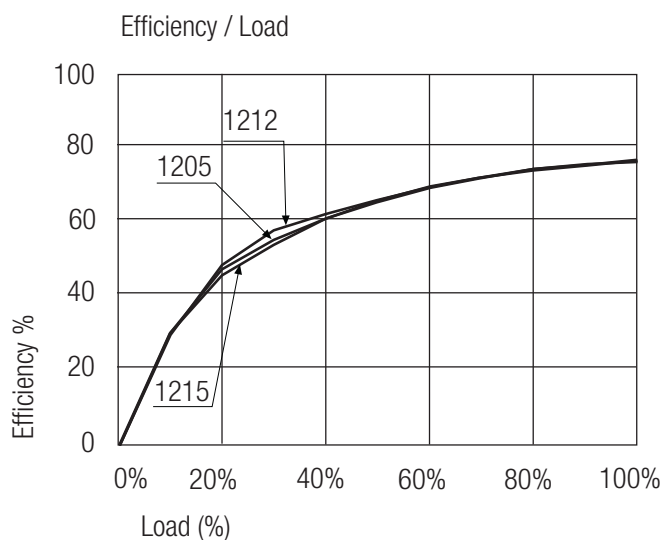
## R0.5D-3.3xx



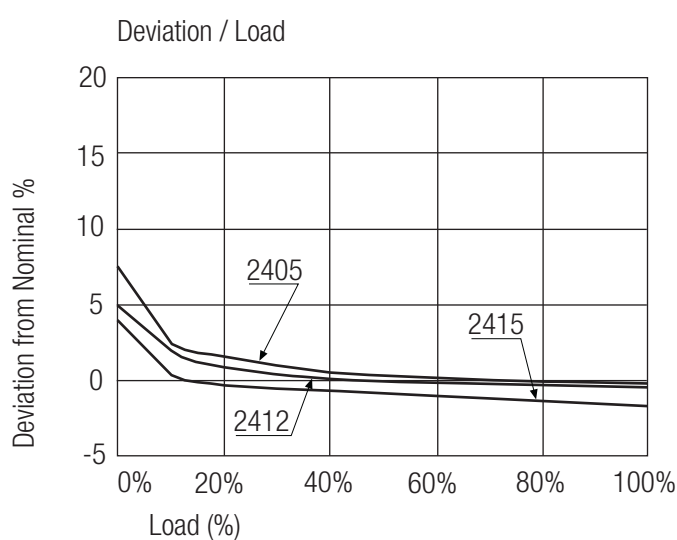
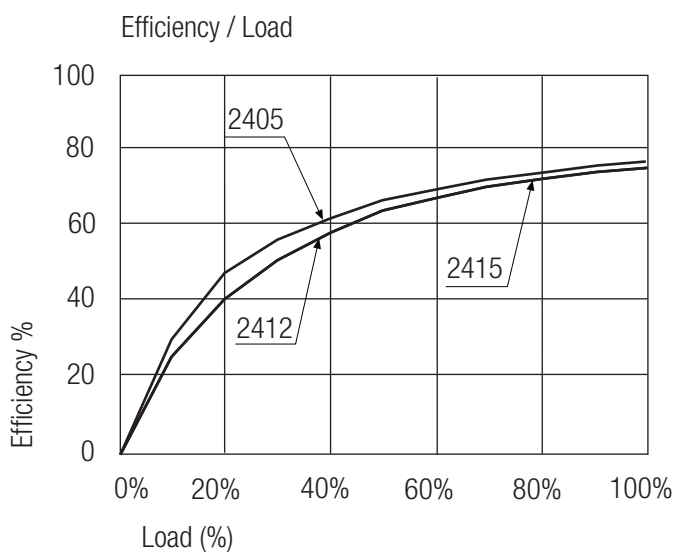
## R0.5D-05xx



## R0.5D-12xx

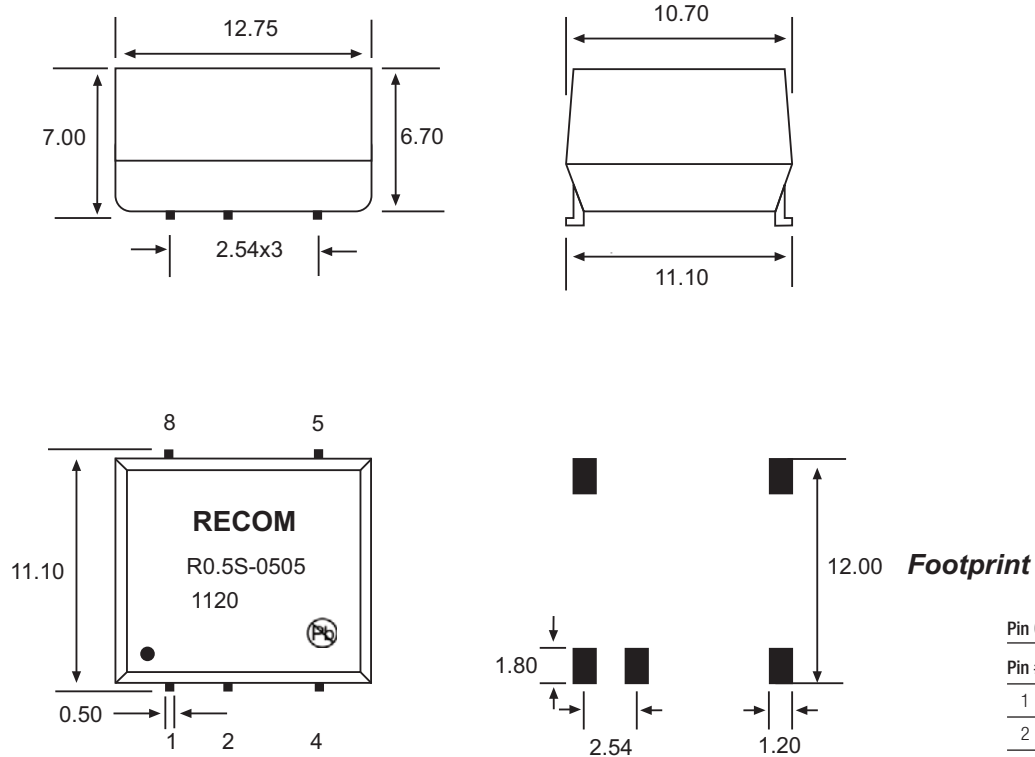


## R0.5D-24xx



### Package Style and Pinning (mm)

#### 5 PINS Single SMD Package



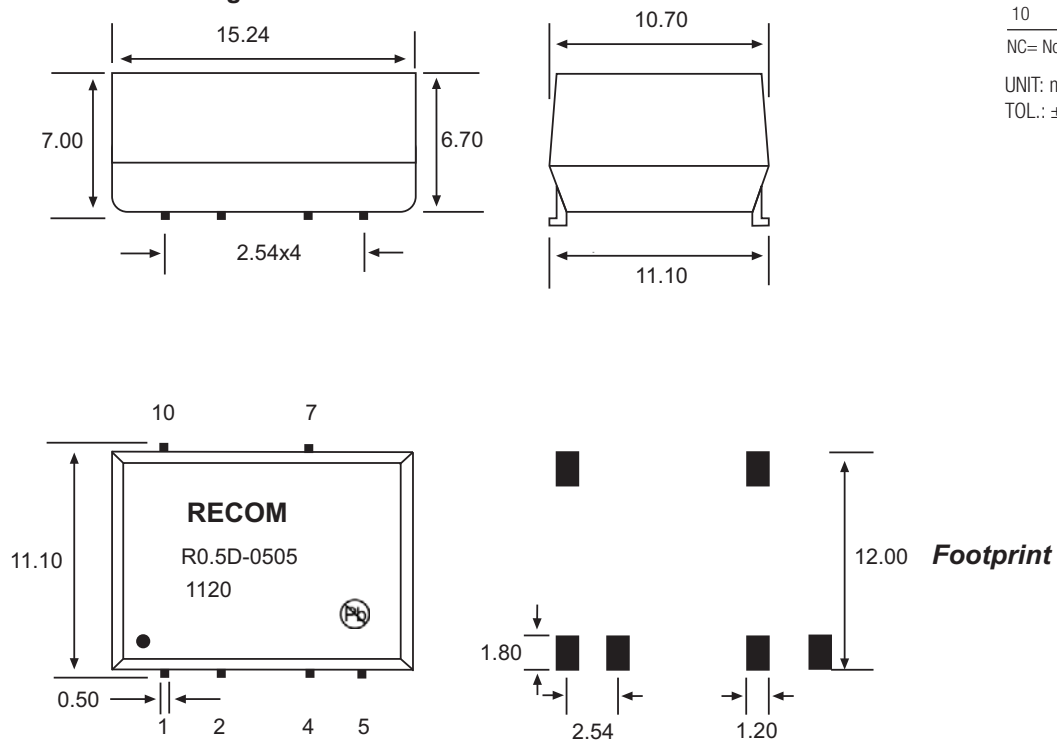
Pin Connections

| Pin # | Single | Dual   |
|-------|--------|--------|
| 1     | -Vin   | -Vin   |
| 2     | +Vin   | +Vin   |
| 4     | -Vout  | Com.   |
| 5     | +Vout  | -Vout  |
| 7     | No Pin | +Vout  |
| 8     | NC     | No Pin |
| 10    | No Pin | NC     |

NC= No Connection

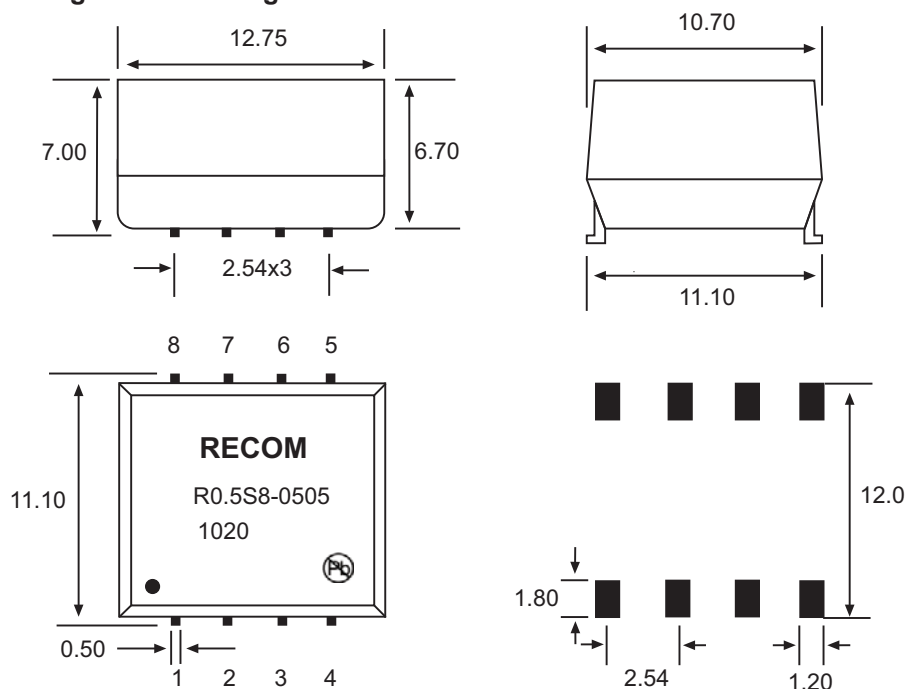
UNIT: mm  
TOL.:  $\pm 0.25$  mm

#### 6 PINS Dual SMD Package



### Package Style and Pinning (mm)

#### 8 PINS Single SMD Package



#### Footprint

##### Pin Connections

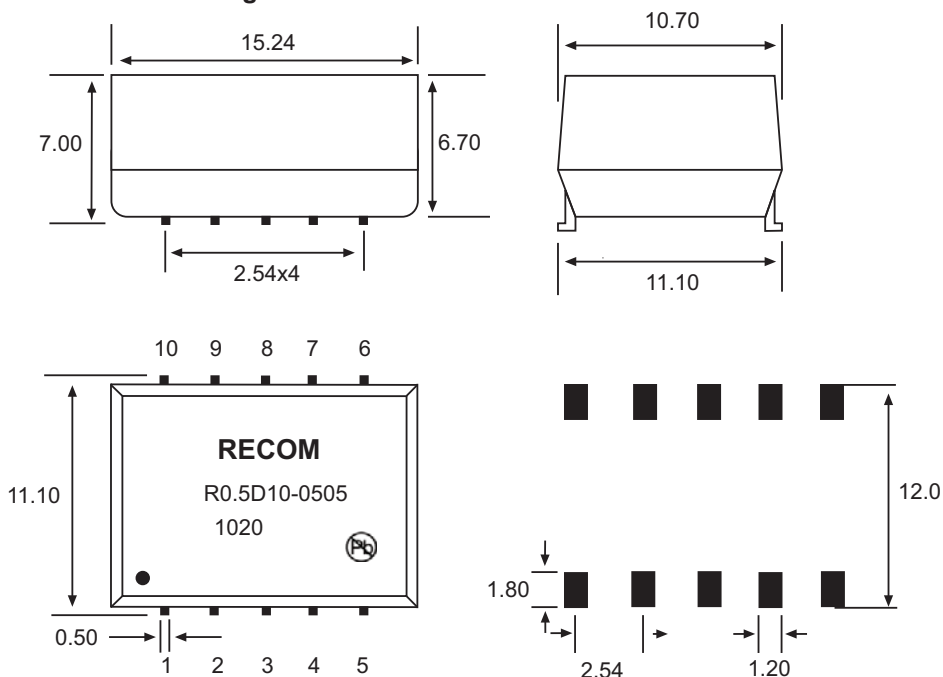
| Pin #   | Single | Dual  |
|---------|--------|-------|
| 1       | -Vin   | -Vin  |
| 2       | +Vin   | +Vin  |
| 4       | -Vout  | Com.  |
| 5       | +Vout  | -Vout |
| 7       | NC     | +Vout |
| 3, 6, 8 | NC     | NC    |
| 9, 10   | No Pin | NC    |

NC= No Connection

UNIT: mm

TOL.:  $\pm 0.25$  mm

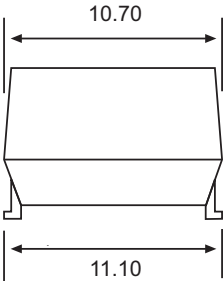
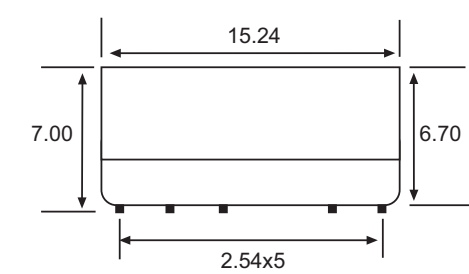
#### 10 PINS Dual SMD Package



#### Footprint

Package Style and Pinning (mm)

12 PINS Dual SMD Package

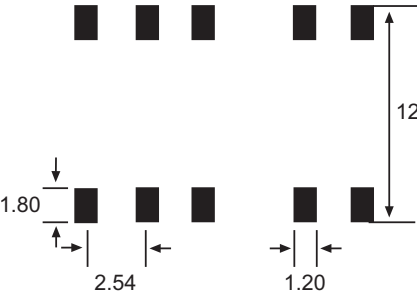
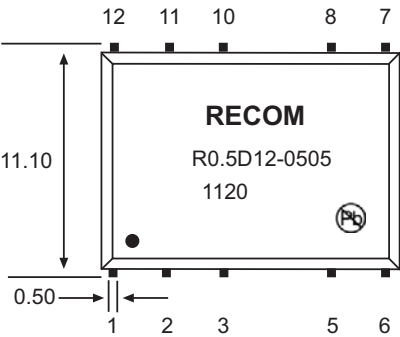


| Pin Connections |                 |               |
|-----------------|-----------------|---------------|
| Pin #           | Function Single | Function Dual |
| 1               | -Vin            | -Vin          |
| 2               | +Vin            | +Vin          |
| 5               | -Vout           | Com.          |
| 6               | NC              | -Vout         |
| 8               | +Vout           | +Vout         |
| 3,7,10,11,12    | NC              | NC            |

NC= No Connection

Unit: mm

TOL.: ± 0.25 mm



Footprint