

## Features

- 2:1 Wide Input Voltage Range
- 30 Watts Output Power
- 1.6kVDC Isolation
- UL Certified
- Fixed Operating Frequency
- Six-Sided Continuous Shield
- International Safety Standard Approvals
- Standard 50.8 x40.6x10.2mm Package
- Efficiency to 90%

## POWERLINE

DC/DC-Converter

# RP30-S\_DE Series

## 30 Watt Single & Dual Output



**UL-60950-1 Certified**

**RECOM**

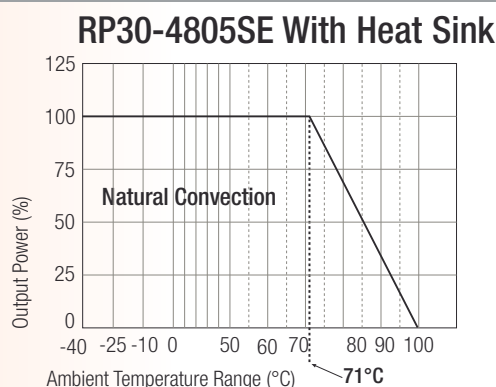
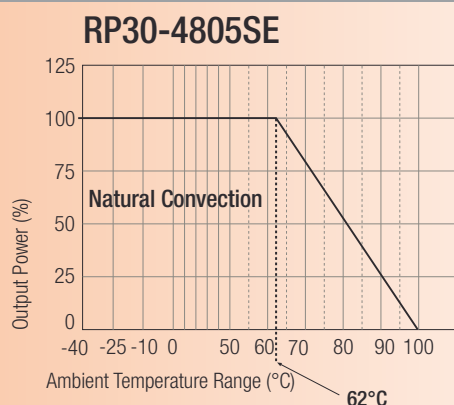
### Selection Guide 12V, 24V and 48V Input Types

| Part Number  | Input Range | Output Voltage | Output Current | Input <sup>(4)</sup> Current | Efficiency <sup>(5)</sup> % | Capacitive <sup>(6)</sup> Load max. $\mu$ F |
|--------------|-------------|----------------|----------------|------------------------------|-----------------------------|---------------------------------------------|
| RP30-121.5SE | 9-18        | 1.5            | 6000           | 1014                         | 78                          | 85800                                       |
| RP30-121.8SE | 9-18        | 1.8            | 6000           | 1169                         | 81                          | 65000                                       |
| RP30-122.5SE | 9-18        | 2.5            | 6000           | 1582                         | 83                          | 33000                                       |
| RP30-123.3SE | 9-18        | 3.3            | 6000           | 2037                         | 85                          | 19500                                       |
| RP30-1205SE  | 9-18        | 5              | 6000           | 3012                         | 87                          | 10200                                       |
| RP30-1212SE  | 9-18        | 12             | 2500           | 2976                         | 88                          | 3240                                        |
| RP30-1215SE  | 9-18        | 15             | 2000           | 2976                         | 88                          | 1100                                        |
| RP30-241.5SE | 18-36       | 1.5            | 6000           | 493                          | 80                          | 85800                                       |
| RP30-241.8SE | 18-36       | 1.8            | 6000           | 580                          | 82                          | 65000                                       |
| RP30-242.5SE | 18-36       | 2.5            | 6000           | 780                          | 84                          | 33000                                       |
| RP30-243.3SE | 18-36       | 3.3            | 6000           | 1010                         | 86                          | 19500                                       |
| RP30-2405SE  | 18-36       | 5              | 6000           | 1490                         | 88                          | 10200                                       |
| RP30-2412SE  | 18-36       | 12             | 2500           | 1470                         | 89                          | 3300                                        |
| RP30-2415SE  | 18-36       | 15             | 2000           | 1470                         | 89                          | 1100                                        |
| RP30-481.5SE | 36-75       | 1.5            | 6000           | 244                          | 81                          | 85800                                       |
| RP30-481.8SE | 36-75       | 1.8            | 6000           | 290                          | 83                          | 65000                                       |
| RP30-482.5SE | 36-75       | 2.5            | 6000           | 390                          | 85                          | 33000                                       |
| RP30-483.3SE | 36-75       | 3.3            | 6000           | 500                          | 87                          | 19500                                       |
| RP30-4805SE  | 36-75       | 5              | 6000           | 740                          | 89                          | 10200                                       |
| RP30-4812SE  | 36-75       | 12             | 2500           | 730                          | 90                          | 3300                                        |
| RP30-4815SE  | 36-75       | 15             | 2000           | 730                          | 90                          | 1100                                        |
| RP30-1212DE  | 9-18        | $\pm 12$       | $\pm 1250$     | 3012                         | 87                          | $\pm 1020$                                  |
| RP30-1215DE  | 9-18        | $\pm 15$       | $\pm 1000$     | 3012                         | 87                          | $\pm 675$                                   |
| RP30-2412DE  | 18-36       | $\pm 12$       | $\pm 1250$     | 1488                         | 88                          | $\pm 1020$                                  |
| RP30-2415DE  | 18-36       | $\pm 15$       | $\pm 1000$     | 1488                         | 88                          | $\pm 675$                                   |
| RP30-4812DE  | 36-75       | $\pm 12$       | $\pm 1250$     | 744                          | 88                          | $\pm 1020$                                  |
| RP30-4815DE  | 36-75       | $\pm 15$       | $\pm 1000$     | 744                          | 88                          | $\pm 675$                                   |

### Description

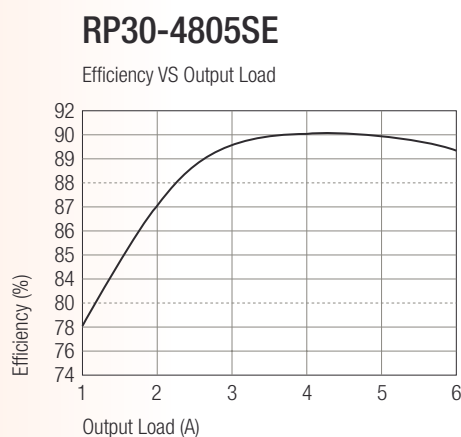
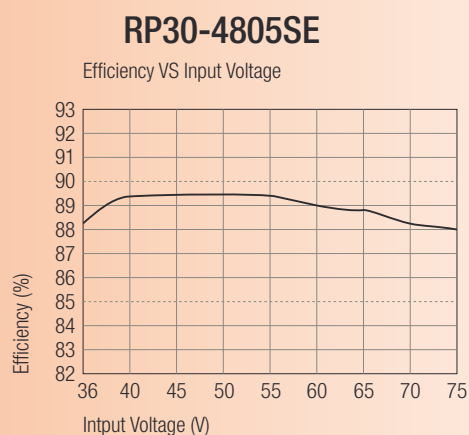
The E-series of these DC/DC-converters is designed to meet UL 60950. This makes them ideal for all telecom and safety applications where approved isolation is required. They are also designed to meet UL 1950 and CSA 950 standards.

## Derating-Graph (Ambient Temperature)



Derating graphs are valid only for the shown part numbers. If you need detailed derating-information about a part-number not shown here please contact our technical customer service at [info@recom-development.at](mailto:info@recom-development.at)

## Typical Characteristics



## Specifications (typical at nominal input and 25°C unless otherwise noted)

|                                                                 |                                     |                         |                     |
|-----------------------------------------------------------------|-------------------------------------|-------------------------|---------------------|
| Input Voltage Range                                             | 12V nominal input                   |                         | 9-18VDC             |
|                                                                 | 24V nominal input                   |                         | 18-36VDC            |
|                                                                 | 48V nominal input                   |                         | 36-75VDC            |
| Under Voltage Lockout                                           | 12V input                           | DC-DC ON                | 9VDC                |
|                                                                 |                                     | DC-DC OFF               | 8VDC                |
|                                                                 | 24V input                           | DC-DC ON                | 17.8VDC             |
|                                                                 |                                     | DC-DC OFF               | 16VDC               |
|                                                                 | 48V input                           | DC-DC ON                | 36VDC               |
|                                                                 |                                     | DC-DC OFF               | 33VDC               |
| Input Filter (see Note 1)                                       |                                     |                         | L-C Type            |
| Input Voltage Variation dv/dt                                   | (Complies with ETS300 132 part 4.4) |                         | 5V/ms max           |
| Input Surge Voltage (100 ms max.)                               | 12V Input                           |                         | 36VDC               |
|                                                                 | 24V Input                           |                         | 50VDC               |
|                                                                 | 48V Input                           |                         | 100VDC              |
| Input Reflected Ripple (nominal Vin and full load) (see Note 3) |                                     |                         | 30mA <sub>p-p</sub> |
| Start Up Time (nominal Vin and constant resistor load)          |                                     |                         | 25ms typ.           |
| Remote ON/OFF (see Note 7)                                      | DC-DC ON                            | Open or 3.0V < Vr < 12V |                     |
|                                                                 | DC-DC OFF                           | Short or 0V < Vr < 1.2V |                     |
| Remote OFF input current                                        | Nominal input                       |                         | 2.5mA               |

continued on next page

**Specifications** (typical at nominal input and 25°C unless otherwise noted)

|                                                                         |                                                                    |                                       |
|-------------------------------------------------------------------------|--------------------------------------------------------------------|---------------------------------------|
| Output Power                                                            |                                                                    | 30W max.                              |
| Output Voltage Accuracy (full Load and nominal Vin)                     |                                                                    | ±1%                                   |
| Voltage Adjustability                                                   |                                                                    | ±10%                                  |
| Minimum Load                                                            | Single & Dual                                                      | 0%                                    |
| Line Regulation (low line, high line at full load)                      | Single<br>Dual                                                     | ±0.2%<br>±0.5%                        |
| Load Regulation (25% to 100% full load)                                 | Single<br>Dual                                                     | ±0.5%<br>±1%                          |
| Cross Regulation                                                        |                                                                    | ±5%                                   |
| Ripple and Noise (20MHz bandwidth)<br>(Measured with a 1004pF/50V MLCC) | Single 1.5, 1.8, 2.5, 3.3, 5V<br>Single 12, 15V<br>Dual 5, 12, 15V | 50mVp-p<br>75mVp-p<br>100mVp-p        |
| Temperature Coefficient                                                 |                                                                    | ±0.02%/°C max.                        |
| Transient Response (25% load step change)                               |                                                                    | 300µs                                 |
| Over Voltage Protection                                                 | 1.5, 1.8, 2.5, 3.3V                                                | 3.9V                                  |
| Zener diode clamp (only single)                                         | 5V<br>12V<br>15V                                                   | 6.2V<br>15V<br>18V                    |
| Over Load Protection (% of full load at nominal Vin)                    |                                                                    | 150% typ                              |
| Short Circuit Protection                                                |                                                                    | Hiccup, automatic recovery            |
| Efficiency                                                              |                                                                    | see „Selection Guide“ table           |
| Isolation Voltage                                                       |                                                                    | 1600VDC min.                          |
| Isolation Resistance                                                    |                                                                    | 1 GΩ min.                             |
| Isolation Capacitance                                                   |                                                                    | 1000pF max.                           |
| Operating Frequency                                                     |                                                                    | 300kHz typ.                           |
| Approved to Safety Standards                                            |                                                                    | UL 1950, EN60950                      |
| Operating Temperature Range                                             |                                                                    | -40°C to +85°C(with derating)         |
| Maximum Case Temperature                                                |                                                                    | +100°C                                |
| Storage Temperature Range                                               |                                                                    | -55°C to +105°C                       |
| Over Temperature Protection                                             |                                                                    | 115°C typ.                            |
| Thermal Impedance<br>(see Note 8)                                       | Natural convection<br>Natural convection with Heat Sink            | 10°C/Watt<br>8.24°C/Watt              |
| Thermal Shock                                                           |                                                                    | MIL-STD-810D                          |
| Vibration                                                               |                                                                    | 10-55Hz, 2G, 30 Min. along X, Y and Z |
| Relative Humidity                                                       |                                                                    | 5% to 95% RH                          |
| Case Material                                                           |                                                                    | Nickel plated copper                  |
| Base Material                                                           |                                                                    | Non-conductive black plastic          |
| Potting Material                                                        |                                                                    | Epoxy (UL94-V0)                       |
| Conducted Emissions (see Note 9)                                        | EN55022                                                            | Class A                               |
| Radiated Emissions                                                      | EN55022                                                            | Class A                               |
| ESD                                                                     | EN61000-4-2                                                        | Perf. Criteria 2                      |
| Radiated Immunity                                                       | EN61000-4-3                                                        | Perf. Criteria 2                      |
| Fast Transient                                                          | EN61000-4-4                                                        | Perf. Criteria 2                      |
| Surge                                                                   | EN61000-4-5                                                        | Perf. Criteria 2                      |
| Conducted Immunity                                                      | EN61000-4-6                                                        | Perf. Criteria 2                      |

continued on next page

## Specifications (typical at nominal input and 25°C unless otherwise noted)

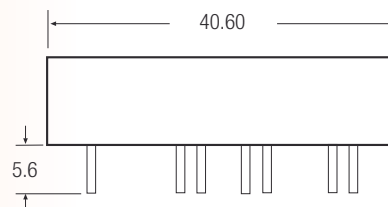
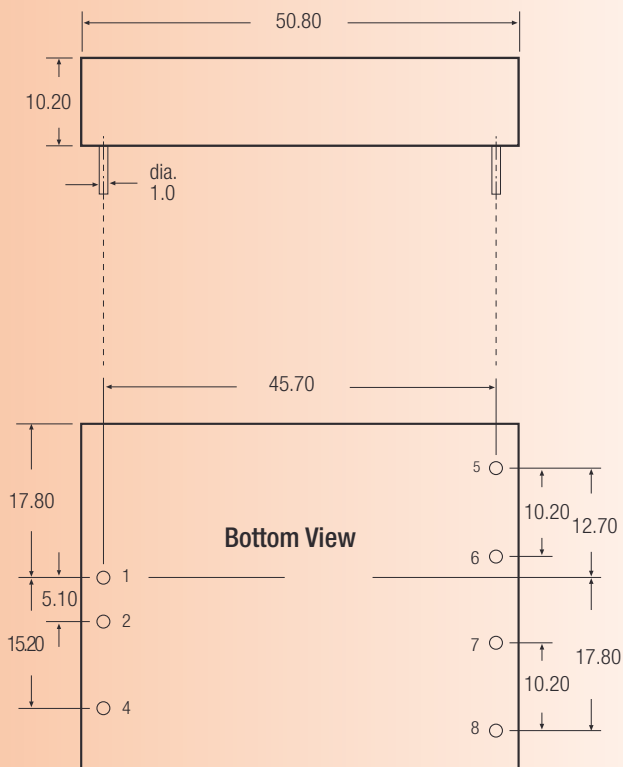
|                   |                              |
|-------------------|------------------------------|
| Weight            | 48g                          |
| Dimensions        | 50.8 x 40.6 x 10.2mm         |
| MTBF (see Note 2) | 1535 x 10 <sup>3</sup> hours |

## Notes :

1. An external filter capacitor is required for normal operation. The capacitor should be capable of handling 1A ripple current for 48V/24V models.  
RECOM suggest: Nippon chemi-con KMF series, 220μF/100V, ESR 90m Ω.
2. BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C (Ground fixed and controlled environment).
3. Simulated source impedance of 12μH. 12μH inductor in series with +Vin.
4. Maximum value at nominal input voltage and full load of standard type.
5. Typical value at nominal input voltage and full load.
6. Test by minimum Vin and constant resistor load.
7. The ON/OFF control pin voltage is referenced to negative input
8. Heat sink is optional and P/N: 7G-0011A.
9. See application notes for EMI-filtering.

## Package Style and Pinning (mm)

3rd angle projection



### Pin Connections

| Pin # | Single | Dual  |
|-------|--------|-------|
| 1     | +Vin   | +Vin  |
| 2     | -Vin   | -Vin  |
| 4     | CTRL   | CTRL  |
| 5     | No Pin | +Vout |
| 6     | +Vout  | Com   |
| 7     | -Vout  | -Vout |
| 8     | Trim   | Trim  |

Pin Pitch Tolerance ±0.35 mm

## External Output Trimming

Output can be externally trimmed by using the method shown below.

() for dual output trim

