

## Features

- 1kVDC Isolation
- Internal SMD Construction
- UL94V-0 Package Material
- Toroidal Magnetics
- Efficiency to 80%

## Unregulated Converters

## ECONOLINE

DC/DC-Converter

# RQS & RQD Series

### Selection Guide

| Part Number | Input Voltage (VDC)        | Output Voltage (VDC) | Output Current (mA) | Efficiency (%) |
|-------------|----------------------------|----------------------|---------------------|----------------|
| RQS-xx1.8   | 1.8, 3.3, 5, 9, 12, 15, 24 | 1.8                  | 139                 | 70             |
| RQS-xx3.3   | 1.8, 3.3, 5, 9, 12, 15, 24 | 3.3                  | 76                  | 65-70          |
| RQS-xx05    | 1.8, 3.3, 5, 9, 12, 15, 24 | 5                    | 50                  | 66-72          |
| RQS-xx09    | 1.8, 3.3, 5, 9, 12, 15, 24 | 9                    | 28                  | 70-72          |
| RQS-xx12    | 1.8, 3.3, 5, 9, 12, 15, 24 | 12                   | 21                  | 70-72          |
| RQS-xx15    | 1.8, 3.3, 5, 9, 12, 15, 24 | 15                   | 17                  | 70-76          |
| RQS-xx24    | 1.8, 3.3, 5, 9, 12, 15, 24 | 24                   | 10                  | 70-80          |
| RQD-xx1.8   | 1.8, 3.3, 5, 9, 12, 15, 24 | ±1.8                 | ±70                 | 70             |
| RQD-xx3.3   | 1.8, 3.3, 5, 9, 12, 15, 24 | ±3.3                 | ±38                 | 65-70          |
| RQD-xx05    | 1.8, 3.3, 5, 9, 12, 15, 24 | ±5                   | ±25                 | 66-72          |
| RQD-xx09    | 1.8, 3.3, 5, 9, 12, 15, 24 | ±9                   | ±14                 | 70-72          |
| RQD-xx12    | 1.8, 3.3, 5, 9, 12, 15, 24 | ±12                  | ±11                 | 70-72          |
| RQD-xx15    | 1.8, 3.3, 5, 9, 12, 15, 24 | ±15                  | ±9                  | 70-76          |
| RQD-xx24    | 1.8, 3.3, 5, 9, 12, 15, 24 | ±24                  | ±5                  | 70-80          |

xx = Input Voltage

### Specifications (Core Operating Area)

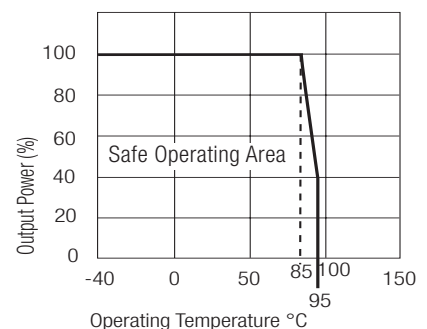
|   |   |  |                              |
|---|---|--|------------------------------|
| Input Voltage Range                               |   | ±10%                                   |                              |
| Output Voltage Accuracy                           |   | ±5%                                    |                              |
| Line Voltage Regulation                           |   | 1.2%/1% of Vin max.                    |                              |
| Load Voltage Regulation (10% to 100% full load)   | 1.8V, 3.3V output types<br>5V output type<br>9V, 12V, 15V, 24V output types | 20% max.<br>15% max.<br>10% max.       |                              |
| Output Ripple and Noise (20MHz limited)           |   | 100mVp-p max.                          |                              |
| Operating Frequency                               |   | 50kHz min. / 100kHz typ. / 105kHz max. |                              |
| Efficiency at Full Load                           |   | 65% min. / 75% typ.                    |                              |
| No Load Power Consumption                         |   | 45mW min. / 75mW typ. / 105mW max.     |                              |
| Isolation Voltage (tested for 1 second)           |   | 1.000VDC min.                          |                              |
| Rated Working Voltage (long term isolation)       |   | see Application Notes                  |                              |
| Isolation Capacitance                             |   | 25pF min. / 82pF max.                  |                              |
| Isolation Resistance                              |   | 10 GΩ min.                             |                              |
| Short Circuit Protection                          |   | 1 Second                               |                              |
| Operating Temperature Range (free air convection) |   | -40°C to +85°C (see Graph)             |                              |
| Storage Temperature Range                         |   | -55°C to +125°C                        |                              |
| Reflow Temperature                                | ROHS compliant<br>(for more details see Application Notes)                  | 245°C (30 sec) max.                    |                              |
| Relative Humidity                                 | MSL Level 1   | 95% RH                                 |                              |
| Package Weight                                    | RQS types<br>RQD types  | 1.5g<br>2.2g                           |                              |
| MTBF (+25°C)                                      | } Detailed Information see Application Notes chapter "MTBF"                 | using MIL-HDBK 217F                    | 1345 x 10 <sup>3</sup> hours |
| (+85°C)   |   | using MIL-HDBK 217F                    | 310 x 10 <sup>3</sup> hours  |

## 0.25 Watt SMD Single & Dual Output



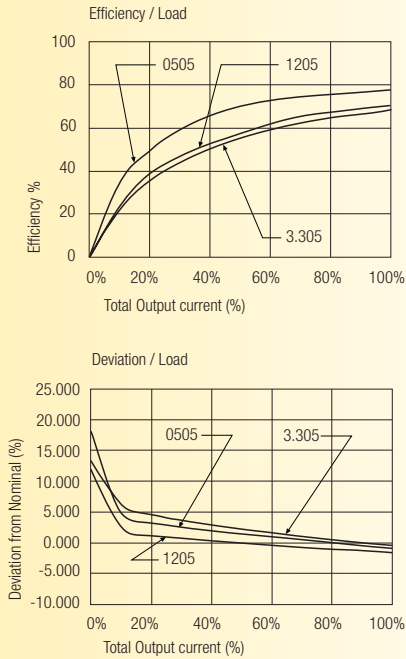
# RECOM

## Derating-Graph (Ambient Temperature)

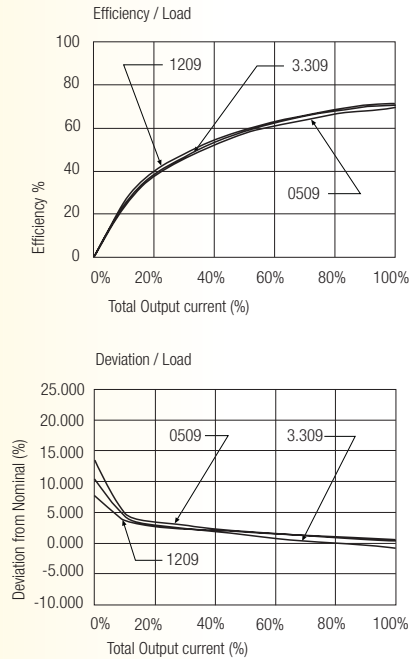


**Typical Characteristics**

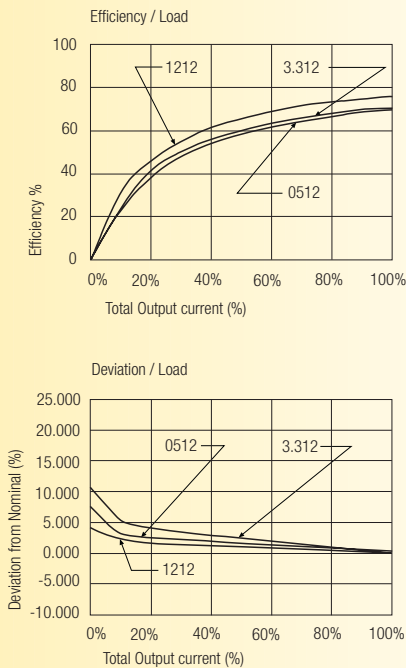
**RQS/RQD-xx05**



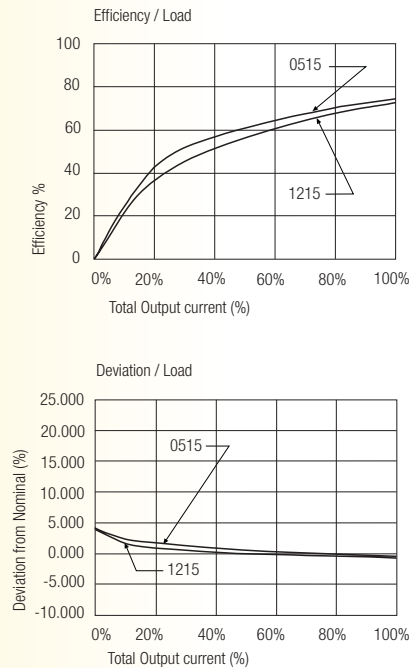
**RQS/RQD-xx09**



**RQS/RQD-xx12**



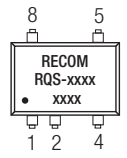
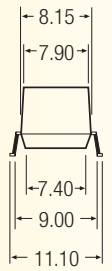
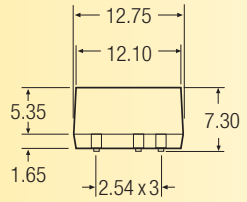
**RQS/RQD-xx15**



# RQS & RQD Series

## Package Style and Pinning (mm)

### 8 PIN SMD Package

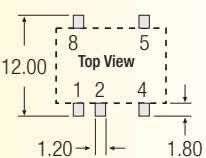
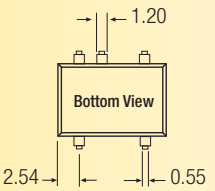


#### Pin Connections

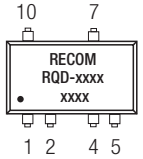
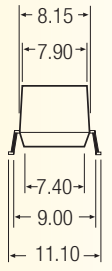
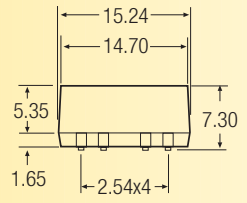
| Pin # | Single |
|-------|--------|
| 1     | -Vin   |
| 2     | +Vin   |
| 4     | -Vout  |
| 5     | +Vout  |
| 8     | NC     |

NC = No Connection  
 XX.X ± 0.5 mm  
 XX.XX ± 0.25 mm

#### Recommended Footprint Details



### 10 PIN SMD Package



#### Pin Connections

| Pin # | Dual  |
|-------|-------|
| 1     | -Vin  |
| 2     | +Vin  |
| 4     | Com   |
| 5     | -Vout |
| 7     | +Vout |
| 10    | NC    |

NC = No Connection  
 XX.X ± 0.5 mm  
 XX.XX ± 0.25 mm

#### Recommended Footprint Details

