

Features

Regulated Converters

- 2:1 and 3:1 Wide Input Voltage Ranges
- 1kVDC, 2kVDC and 3kVDC Isolation
- UL94V-0 Package Material
- Continuous Short Circuit Protection
- Low Ripple and Noise
- Remote On/Off Control
- Efficiency to 83 %

Description

Very high power density, 2:1 or 3:1 input voltage range and a wide operating temperature range -40°C~+71°C and extra features such as On/Off control are just some of the characteristics of this converter which is ideal for highly sophisticated industrial designs. The RS3 is available with 2kV or 3kV isolation options (1kVDC is standard)

Selection Guide

| Part Number | | Input Voltage Range (VDC) | Rated Output Voltage (VDC) | Output Current Full Load (mA) | Efficiency typ. (%) | Capacitive Load max. |
|---------------------|--------------------|---------------------------|----------------------------|-------------------------------|---------------------|----------------------|
| SIP8 | RS3-xx3.3S (H2/H3) | 4.5-9, 9-18 | 3.3 | 600 | 73-75 | 1000µF |
| | | 18-36, 36-72 | | | 77-78 | |
| RS3-xx05S (H2/H3) | 4.5-9, 9-18 | 5 | 600 | 76-79 | 1000µF | |
| | 18-36, 36-72 | | | 80-81 | | |
| RS3-xx09S (H2/H3) | 4.5-9, 9-18 | 9 | 333 | 77-80 | 470µF | |
| | 18-36, 36-72 | | | 81-82 | | |
| RS3-xx12S (H2/H3) | 4.5-9, 9-18 | 12 | 250 | 80-81 | 220µF | |
| | 18-36, 36-72 | | | 83 | | |
| RS3-xx15S (H2/H3) | 4.5-9, 9-18 | 15 | 200 | 80-81 | 100µF | |
| | 18-36, 36-72 | | | 83 | | |
| RS3-xx3.3D (H2/H3) | 4.5-9, 9-18 | ±3.3 | ±300 | 73-75 | ±470µF | |
| | 18-36, 36-72 | | | 75 | | |
| RS3-xx05D (H2/H3) | 4.5-9, 9-18 | ±5 | ±300 | 76-80 | ±470µF | |
| | 18-36, 36-72 | | | 80-81 | | |
| RS3-xx09D (H2/H3) | 4.5-9, 9-18 | ±9 | ±167 | 77-81 | ±220µF | |
| | 18-36, 36-72 | | | 81 | | |
| RS3-xx12D (H2/H3) | 4.5-9, 9-18 | ±12 | ±125 | 78-83 | ±100µF | |
| | 18-36, 36-72 | | | 83 | | |
| RS3-xx15D (H2/H3) | 4.5-9, 9-18 | ±15 | ±100 | 79-83 | ±47µF | |
| | 18-36, 36-72 | | | 83 | | |
| RS3-xx3.3SZ (H2/H3) | 9-27 | 3.3 | 600 | 73 | 1000µF | |
| | 20-60 | | | 74 | | |
| RS3-xx05SZ (H2/H3) | 9-27 | 5 | 600 | 76-79 | 1000µF | |
| | 20-60 | | | 78 | | |
| RS3-xx09SZ (H2/H3) | 9-27 | 9 | 333 | 77 | 470µF | |
| | 20-60 | | | 79 | | |
| RS3-xx12SZ (H2/H3) | 9-27 | 12 | 250 | 80 | 220µF | |
| | 20-60 | | | 80 | | |
| RS3-xx15SZ (H2/H3) | 9-27 | 15 | 200 | 80 | 100µF | |
| | 20-60 | | | 80 | | |
| RS3-xx3.3DZ (H2/H3) | 9-27 | ±3.3 | ±300 | 73 | ±470µF | |
| | 20-60 | | | 74 | | |
| RS3-xx05DZ (H2/H3) | 9-27 | ±5 | ±300 | 77 | ±470µF | |
| | 20-60 | | | 78 | | |
| RS3-xx09DZ (H2/H3) | 9-27 | ±9 | ±167 | 79 | ±220µF | |
| | 20-60 | | | 79 | | |
| RS3-xx12DZ (H2/H3) | 9-27 | ±12 | ±125 | 80 | ±100µF | |
| | 20-60 | | | 80 | | |
| RS3-xx15DZ (H2/H3) | 9-27 | ±15 | ±100 | 80 | ±47µF | |
| | 20-60 | | | 80 | | |

ECONOLINE

DC/DC-Converter



3 Watt SIP8 Isolated Single & Dual Output



EN-60950-1 Certified
EN-60601-1 Certified
(Suffix /H2 or /H3)

RS3

2:1 Input
(RS3-S/D)

xx = 4.5-9Vin = 05
xx = 9-18Vin = 12
xx = 18-36Vin = 24
xx = 36-72Vin = 48

3:1 Input
(RS3-SZ/DZ)

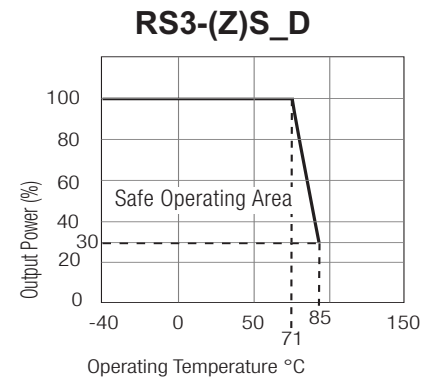
xx = 9-27Vin = 24
xx = 20-60Vin = 48

Refer to Application Notes

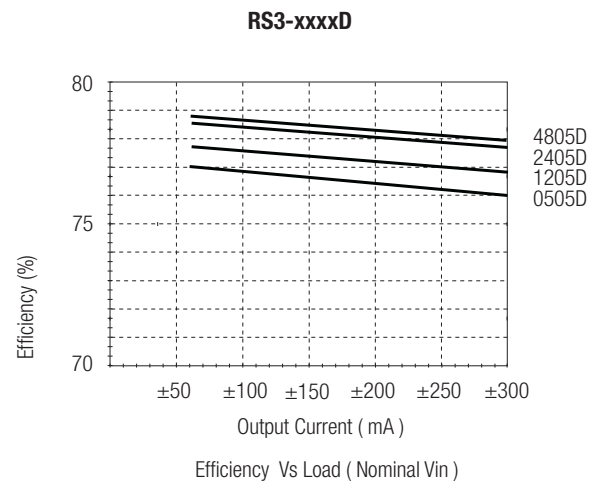
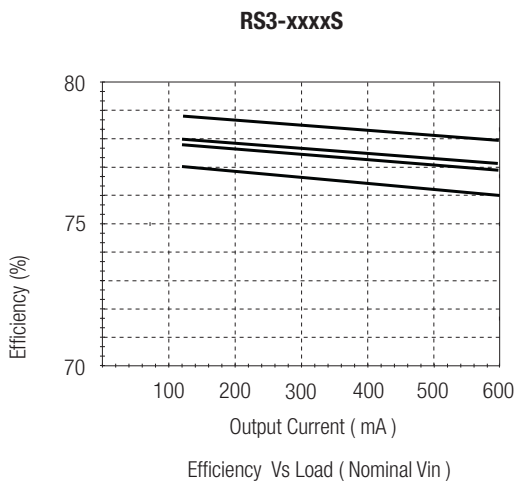
Electrical Specifications (measured at $T_A = 25^\circ\text{C}$, at nominal input voltage and rated output current unless otherwise specified)

| | | | |
|-------------------------------------|--|---|-----------------------------|
| Input Voltage Range | | 2:1 and 3:1 | |
| Output Accuracy | Nominal V_{in} and full load | $\pm 2\%$ typ. | |
| Line Voltage Regulation | LL to HL, full load | $\pm 0.5\%$ max. | |
| Load Voltage Regulation | 20% to 100% full load | $\pm 0.5\%$ typ. | |
| Output Ripple and Noise | 20MHz limited | 50mVp-p max. | |
| Switching Frequency | 20% to 100% full load | 200kHz typ. | |
| Efficiency at Full Load | | see Selection Guide | |
| Quiescent Current | RS-05xxS_D | 35mA typ. | |
| Nominal input Voltage | RS-12xxS_D | 25mA typ. | |
| (Standard, /H2 and /H3) | RS-24xxS_D, SZ_DZ | 20mA typ. | |
| | RS-48xxS_D, SZ_DZ | 10mA typ. | |
| Isolation Voltage (2:1 and 3:1) | (tested for 1 second) | 1000VDC min. | |
| | H2 | 2000VDC min. | |
| | H3 | 3000VDC min. | |
| Rated Working Voltage | (long term isolation) | see Application Notes | |
| Isolation Capacitance (2:1 and 3:1) | H1 | 200pF max. | |
| (tested at 100kHz) | H2/H3 | 30pF max. | |
| Isolation Resistance | | 1G Ω min. | |
| Short Circuit Protection | | Continuous | |
| Operating Temperature Range | | -40°C to $+71^\circ\text{C}$ | |
| Storage Temperature Range | | -55°C to $+125^\circ\text{C}$ | |
| Relative Humidity | | 95% RH | |
| Package Weight | | 4.7g | |
| Packing Quantity | | 22 pcs per Tube | |
| MTBF ($+25^\circ\text{C}$) | } Detailed Information see Application Notes chapter "MTBF" | using MIL-HDBK 217F | 3303 x10 ³ hours |
| ($+71^\circ\text{C}$) | | using MIL-HDBK 217F | 745 x10 ³ hours |

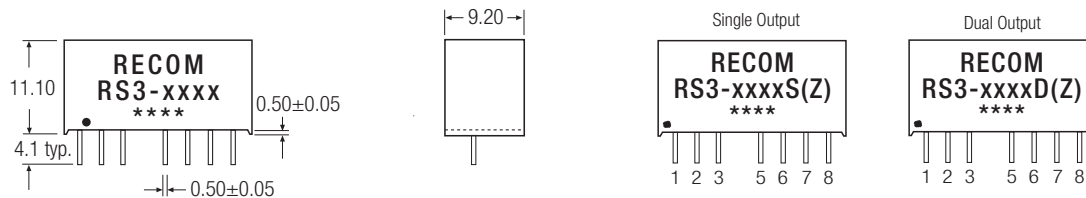
Derating-Graph (Ambient Temperature)



Typical Characteristics



Package Style and Pinning (mm)



Recommended Footprint Details

Pin Connections

| Pin # | Single | Dual |
|-------|--------|-------|
| 1 | -Vin | -Vin |
| 2 | +Vin | +Vin |
| 3 | CTRL | CTRL |
| 5 | NC | NC |
| 6 | +Vout | +Vout |
| 7 | -Vout | Com |
| 8 | NC | -Vout |

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

Notes

Pin 8 (NC*)

This pin is used internally and must have no external connection.

Pin 5 (NC) Not connected internally..

Pin 3 (CTRL)

This pin provides an Off function which puts the converter into a low power mode. When the pin is 'high' the converter is OFF and when the pin is high 'Z' the converter is ON. There is no allowed low state for this pin.

Application Examples

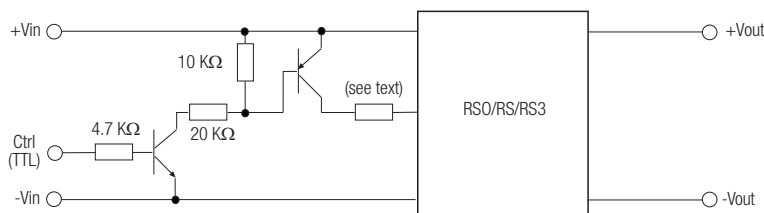
RS3

TTL Remote CTRL Circuit

Control Pin Input Current: 10mA

Voltage Set Point Accuracy with external input/output capacitors refer to recommended test circuit: typ. ± 1% max. ±2%

Control Pin (CTRL) Input Current, control voltage applied via 1K resistor, output voltage must reduce to OV: typ. 3mA max. 6mA



Voltage to be applied via a limiting resistor with a recommended value of 1K for RS3-05xx; 3.3K for RS3-12xx; RS3-24xx and 10K for RS3-48xx.

Isolated Remote CTRL Circuit

