

Features

Regulated Converters

Rev.0

- 2:1 and 3:1 Wide Input Voltage Ranges
- 1kVDC, 2kVDC & 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 of -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 isolation of 2kV or 3kV by choosing option "/H2" or "/H3"

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 18-36, 36-72	3.3	600	73-75 77-78	1000µF
RS3-xx05S (H2/H3)		4.5-9, 9-18 18-36, 36-72	5	600	76-79 80-81	1000µF
	RS3-xx09S (H2/H3)	4.5-9, 9-18 18-36, 36-72	9	333	77-80 81-82	470µF
RS3-xx12S (H2/H3)		4.5-9, 9-18 18-36, 36-72	12	250	80-81 83	220µF
	RS3-xx15S (H2/H3)	4.5-9, 9-18 18-36, 36-72	15	200	80-81 83	100µF
RS3-xx3.3D (H2/H3)		4.5-9, 9-18 18-36, 36-72	±3.3	±300	73-75 75	±470µF
	RS3-xx05D (H2/H3)	4.5-9, 9-18 18-36, 36-72	±5	±300	76-80 80-81	±470µF
RS3-xx09D (H2/H3)		4.5-9, 9-18 18-36, 36-72	±9	±167	77-81 81	±220µF
	RS3-xx12D (H2/H3)	4.5-9, 9-18 18-36, 36-72	±12	±125	78-83 83	±100µF
RS3-xx15D (H2/H3)		4.5-9, 9-18 18-36, 36-72	±15	±100	79-83 83	±47µF
	RS3-xx3.3SZ (H2/H3)	9-27 20-60	3.3	600	73 74	1000µF
RS3-xx05SZ (H2/H3)		9-27 20-60	5	600	76-79 78	1000µF
	RS3-xx09SZ (H2/H3)	9-27 20-60	9	333	77 79	470µF
RS3-xx12SZ (H2/H3)		9-27 20-60	12	250	80 80	220µF
	RS3-xx15SZ (H2/H3)	9-27 20-60	15	200	80 80	100µF
RS3-xx3.3DZ (H2/H3)		9-27 20-60	±3.3	±300	73 74	±470µF
	RS3-xx05DZ (H2/H3)	9-27 20-60	±5	±300	77 78	±470µF
RS3-xx09DZ (H2/H3)		9-27 20-60	±9	±167	79 79	±220µF
	RS3-xx12DZ (H2/H3)	9-27 20-60	±12	±125	80 80	±100µF
RS3-xx15DZ (H2/H3)		9-27 20-60	±15	±100	80 80	±47µF

ECONOLINE

DC/DC-Converter

RS3-S_D(Z) Series

3 Watt SIP8 Isolated Single & Dual Output



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

RECOM

2:1 Input
(RS3-S/D)

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

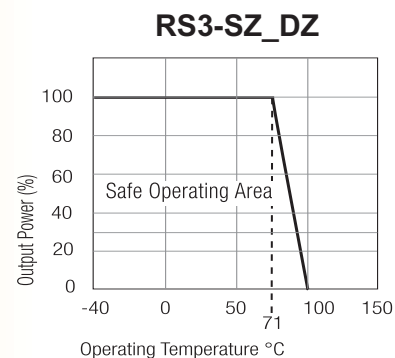
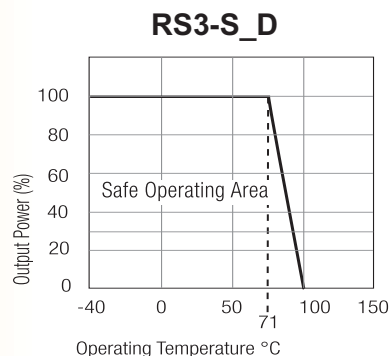
3:1 Input
(RS3-SZ/DZ)

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

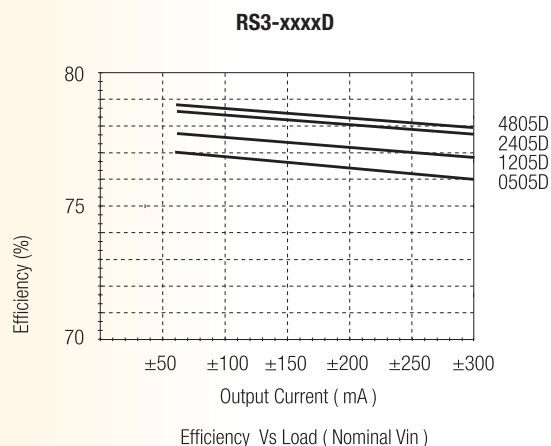
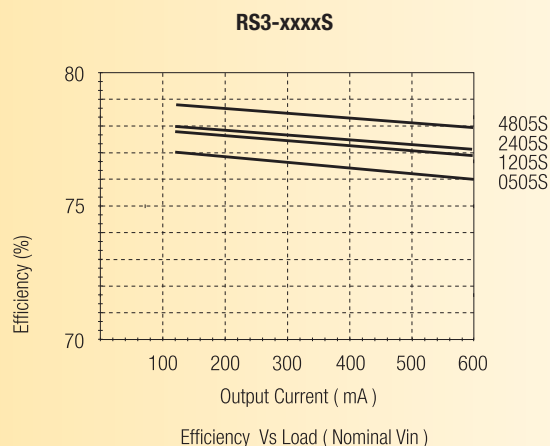
Electrical Specifications (measured at $T_A = 25^\circ\text{C}$, at nominal input voltage and rated output current unless otherwise specified)

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	
No Load Power Consumption		50mW min. / 139mW typ. / 250mW max.	
CTRL Pin drive current /see Notes)		3mA typ, 6mA max.	
Quiescent Input Current when Converter is OFF		10mA max	
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) (tested at 100kHz)	H1	200pF max.	
	H2/H3	30pF max.	
Isolation Resistance		1G Ω min.	
Short Circuit Protection		Continuous	
Operating Temperature Range		-40°C to +71°C	
Storage Temperature Range		-55°C to +125°C	
Relative Humidity		95% RH	
Package Weight		4.7g	
MTBF (+25°C)	} Detailed Information see Application Notes chapter "MTBF"	using MIL-HDBK 217F	3303 x10 ³ hours
(+71°C)		using MIL-HDBK 217F	745 x10 ³ hours

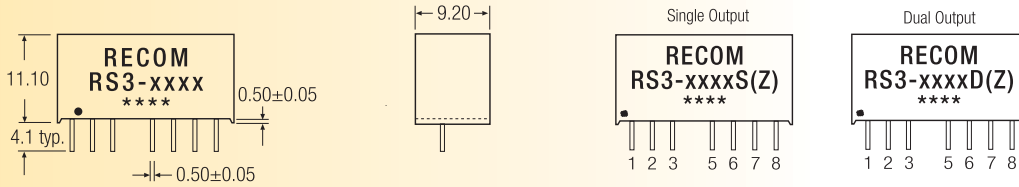
Derating-Graph (Ambient Temperature)



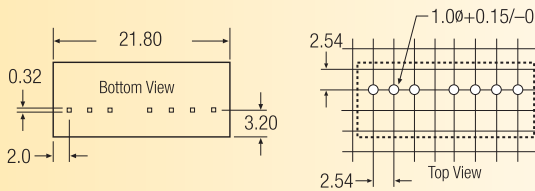
Typical Characteristics



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)

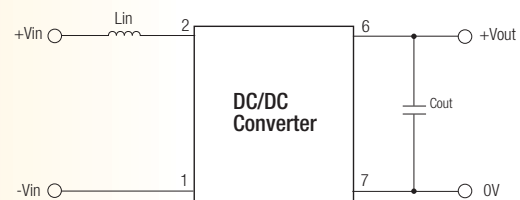
This pin provides an Off function which puts the converter into a low power mode. When the pin is 'high' the converter is OFF and when the pin is high 'Z' the converter is ON. There is no allowed low state for this pin.

Application Example

EMC Filter

use low ESR capacitor C_{out} and input inductor L_{in} to reduce output ripple and input inrush current.

L_{in}	RS3- types	4.7µH ~ 100µH
C_{out}	RS3- types	22µF ~ 100µF/25V

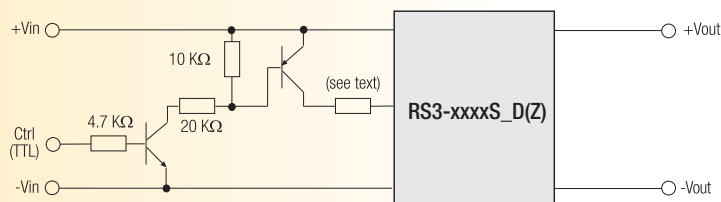


TTL Remote CTRL Circuit

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 0V: 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.