Features

Regulated Converters

- 2:1 and 3:1 Wide Input Voltage Ranges
- 1kVDC, 2kVDC and3kVDC 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 to +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 SIP8	Input Voltage Range (VDC)	Rated Output Voltage (VDC)	Output Current Full Load (mA)	Efficiency typ. (%)	Max Capacitive Load[1]
RS3-xx3.3S (H2/H3)	4.5-9, 9-18	3.3	600	73-75	4700µF
	18-36, 36-72			77-78	
RS3-xx05S (H2/H3)	4.5-9, 9-18	5	600	76-79	4700µF
	18-36, 36-72			80-81	
RS3-xx09S (H2/H3)	4.5-9, 9-18	9	333	77-80	3300µF
	18-36, 36-72			81-82	
RS3-xx12S (H2/H3)	4.5-9, 9-18	12	250	80-81	2200µF
	18-36, 36-72			83	
RS3-xx15S (H2/H3)	4.5-9, 9-18	15	200	80-81	2200µF
	18-36, 36-72			83	
RS3-xx3.3D (H2/H3)	4.5-9, 9-18	±3.3	±300	73-75	±2200µF
	18-36, 36-72			75	
RS3-xx05D (H2/H3)	4.5-9, 9-18	±5	±300	76-80	±2200µF
	18-36, 36-72			80-81	
RS3-xx09D (H2/H3)	4.5-9, 9-18	±9	±167	77-81	±2200µF
	18-36, 36-72			81	
RS3-xx12D (H2/H3)	4.5-9, 9-18	±12	±125	78-83	±1000µF
	18-36, 36-72			83	
RS3-xx15D (H2/H3)	4.5-9, 9-18	±15	±100	79-83	±1000µF
	18-36, 36-72			83	
RS3-xx3.3SZ (H2/H3)	9-27	3.3	600	73	4700µF
	20-60			74	
RS3-xx05SZ (H2/H3)	9-27	5	600	76-79	4700µF
	20-60			78	
RS3-xx09SZ (H2/H3)	9-27	9	333	77	3300µF
	20-60			79	
RS3-xx12SZ (H2/H3)	9-27	12	250	80	2200µF
	20-60			80	
RS3-xx15SZ (H2/H3)	9-27	15	200	80	2200µF
	20-60			80	
RS3-xx3.3DZ (H2/H3)	9-27	±3.3	±300	73	±2200µF
	20-60			74	
RS3-xx05DZ (H2/H3)	9-27	±5	±300	77	±2200µF
	20-60			78	
RS3-xx09DZ (H2/H3)	9-27	±9	±167	79	±2200µF
	20-60			79	
RS3-xx12DZ (H2/H3)	9-27	±12	±125	80	±1000µF
	20-60			80	
RS3-xx15DZ (H2/H3)	9-27	±15	±100	80	±1000µF
	20-60			80	

No suffix is standard isolation (1kVDC) e.g, RS3-0505S

*add suffix /H2 or /H3 for 2kVDC or 3kVDC isolation, e.g, RS3-0505S/H2, R3S-0505DZ/H3

ECONOLINE

DC/DC-Converter

with 3 year Warranty

RECOM

3 Watt SIP8 Isolated Single & Dual Output

RoHS 2011/65/EU 6/6

E-224736

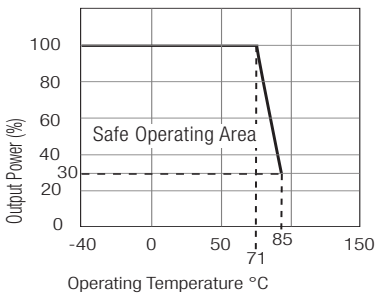
UL-60950-1 Certified
EN-60950-1 Certified
EN-60601-1 Certified*
(*/H suffix)

RS3

Derating-Graph

(Ambient Temperature)

RS3-(Z)S_D



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°C, at nominal input voltage and rated output current unless otherwise specified)

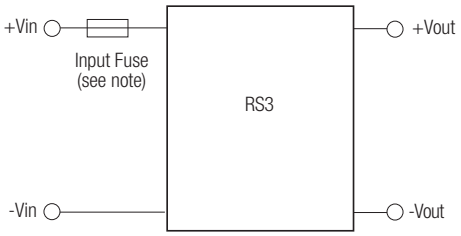
Input Voltage Range			2:1 and 3:1
Output Accuracy		Nominal Vin and full load	±2% typ.
Line Voltage Regulation		LL to HL, full load	±0.5% max.
Load Voltage Regulation		20% to 100% full load	±0.5% typ.
Minimum Load			10% (2)
Output Ripple and Noise		20MHz limited	50mVp-p max.
Switching Frequency		20% to 100% full load	200kHz typ.
Efficiency at Full Load			see Selection Guide
Quiescent Current		RS3-05xxS_D	35mA typ.
Nominal input Voltage		RS3-12xxS_D	25mA typ.
(Standard, /H2 and /H3)		RS3-24xxS_D, SZ_DZ	20mA typ.
		RS3-48xxS_D, SZ_DZ	10mA typ.
Isolation Voltage	Standard	(tested for 1 second)	1000VDC
		(rated for 1 minute*)	500VAC / 60Hz
	/H2 Version	(tested for 1 second)	2000VDC
		(rated for 1 minute*)	1000VAC / 60Hz
	/H3 Version	(tested for 1 second)	3000VDC
		(rated for 1 minute*)	1500VAC / 60Hz
Isolation Capacitance (2:1 and 3:1)		H1	200pF max.
(tested at 100kHz)		H2/H3	30pF max.
Isolation Resistance			1GΩ min.
Short Circuit Protection (see note)			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
Packing Quantity			22 pcs per Tube
MTBF (+25°C) } *Detailed Information see*		using MIL-HDBK 217F	3303 x10³ hours
(+71°C) } *Application Notes chapter "MTBF"*		using MIL-HDBK 217F	745 x10³ hours

Certifications

EN General Safety	Report: SPCLVD1605077-10	EN60950-1, AM2:2013
EN Medical Safety	Report: MDD1205098-3 + RM1205098-3	IEC/EN 60601-1 3rd Edition
		Medical Report + ISO14971 Risk Assessment
UL General Safety	Report: E224736-A34	UL60950-1, 2nd Edition 2014
		CSA C22.2 60950-1-07, 2nd Edition 2014

Note: To protect the converter under all fault conditions, an input fuse is required. Quick-blow fuses should be rated at 2x-3x the normal input current, time-delay fuses at 1.5x the normal input current.

Typical Application



**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.

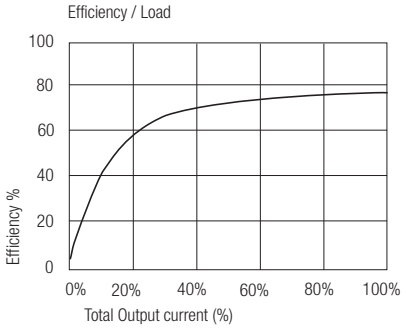
Notes

Note 1:	Maximum capacitive load is defined as the capacitive load that will allow start up in under 1 second without damage to the converter
Note 2:	The RS3 series requires a minimum of 10% load on the output to maintain specified regulation. Operating under no-load conditions will not damage these devices; however, they may not meet all listed specifications.

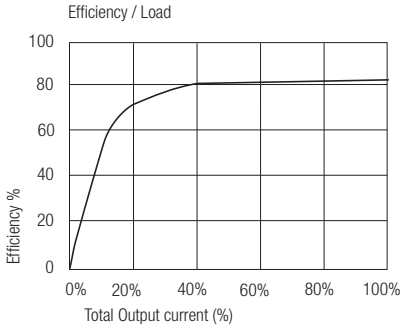
RS3-S_D/(Z) Series

Typical Characteristics

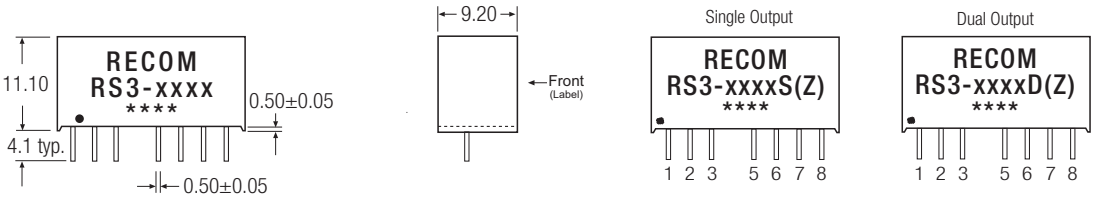
RS3-0505S



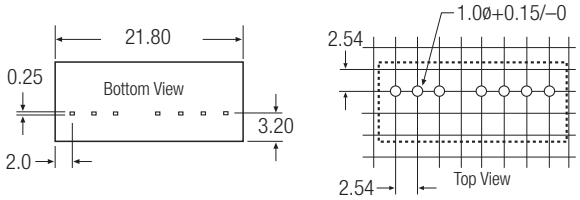
RS3-4805D



Package Style and Pinning (mm)



Recommended Footprint Details



XX.X ± 0.5 mm
XX.XX ± 0.25 mm

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

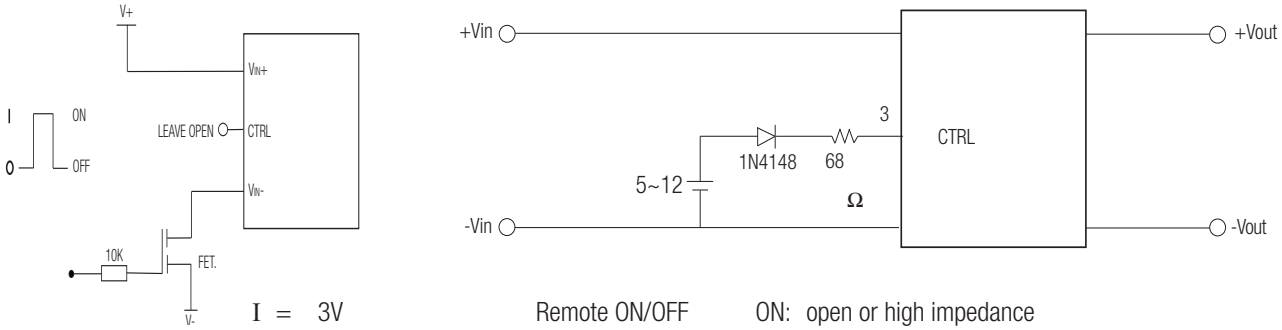
Pin 8 (NC*) This pin is used internally and must have no external connection.

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

ON/OFF CONTROL



I = 3V
0 = 0.5V or GND

Remote ON/OFF

ON: open or high impedance
OFF: external 5~12 Vdc and 1N4148+ 68Ω resistor

RS3