Features

Regulated Converters

- 1kVDC & 2kVDC Isolation
- UL94V-0 Package Material
- RoHS 6/6
- Toroidal Magnetics
- Optional Continuous Short Circuit Protected
- Built-In EN55022 Class A Filter

ECONOLINE
DC/DC-Converter
with 3 year Warranty

RECOM

Description

The R1Z series DC/DC converter has been designed for isolating or converting DC power rails where an SMD format with regulated output is required, although it is no larger than a standard unregulated SMD converter.

1 Watt SMD Miniature Isolated Single Output

E358085

RoHS 2011/65/EU 6/6

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

R1Z

Selection Guide

Part Number SMD	2kVDC	Input Voltage (VDC)	Output Voltage (VDC)	Output Current (mA)	Max Capacitive Load[1]
R1Z-xx3.3*	(/H)	3.3, 5, 12, 15, 24	3.3	303	2200µF
R1Z-xx05*	(/H)	3.3, 5, 12, 15, 24	5	200	1200µF
R1Z-xx09*	(/H)	3.3, 5, 12, 15, 24	9	111	680µF
R1Z-xx12*	(/H)	3.3, 5, 12, 15, 24	12	84	680µF
R1Z-xx15*	(/H)	3.3, 5, 12, 15, 24	15	66	470µF

xx= Input Voltage (other input and output voltage combinations available on request
*add suffix -R for tape & reel packing e.g. R1Z-0505-R
*add suffix /P for continuous short circuit protection, e.g. R1Z-0505/P-R

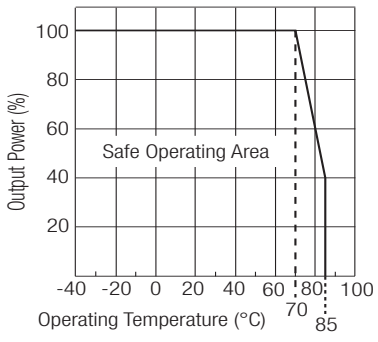
Specifications (measured at T_A = 25°C, nominal input voltage, full load and after warm-up)

Input Voltage Range			±5%
Output Voltage Accuracy			±2%
Line Voltage Regulation			1% max.
Load Voltage Regulation			1% max.
Output Ripple and Noise (at 20MHz BW)			100mVp-p max.
Operating Frequency			20kHz min. / 40kHz typ. / 80kHz max.
Efficiency at Full Load			50% min. / 60% typ.
Minimum Load			10% [2]
No Load Power Consumption			134mW min. / 217mW typ. / 350mW max.
Isolation Voltage		(tested for 1 second)	1000VDC
		(rated for 1 minute**)	500VAC / 60Hz
Isolation Voltage	H-Suffix	(tested for 1 second)	2000VDC
	H-Suffix	(rated for 1 minute**)	1000VAC / 60Hz
Isolation Capacitance			70pF typ.
Isolation Resistance			10 GW min.
Short Circuit Protection			1 Second
P-Suffix			Continuous
Operating Temperature Range (natural convection)			-40°C to +70°C (see Graph)
Storage Temperature Range			-55°C to +125°C
Reflow Temperature		ROHS compliant	245°C (30 sec) max.
Vapour Phase Process			230°C (90 sec) max.
			(for more details see Application Notes)
Relative Humidity			95% RH
Package Weight			1.6g
Packing Quantity			33 pcs per tube
			250 pcs per Reel
MTBF R1Z	(+25°C)	using MIL-HDBK 217F	2203 x 10^3 hours
	(+70°C)	using MIL-HDBK 217F	391 x 10^3 hours
R1Z/P	(+25°C)	using MIL-HDBK 217F	2387 x 10^3 hours
	(+70°C)	using MIL-HDBK 217F	641 x 10^3 hours

For detailed information see Application Notes chapter "MTBF"

Conducted / Radiated Emissions	EN55022	Level A
EN General Safety	Report: SPCLVD1211033-3	EN60950-1:2006 + A12:2011
EN Medical Safety	Report: MDD1205098-4 + RM1205098-4	IEC/EN 60601-1 3rd Edition
		Medical Report + ISO14971 Risk Assessment
UL General Safety	Report: E358085	UL60950-1, 2nd Edition

Derating-Graph
(Ambient Temperature)

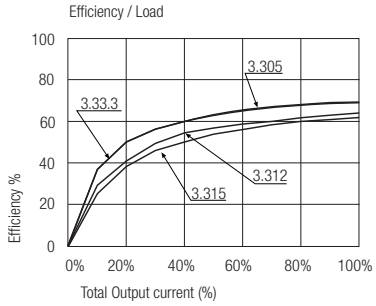


**Any data referred to in this datasheet are of indivative nature and based on our practical experience only. For further details, please refer to our Application Notes.

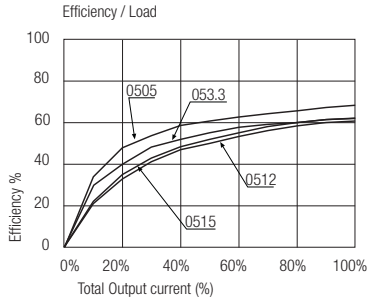
Refer to Application Notes

Typical Characteristics

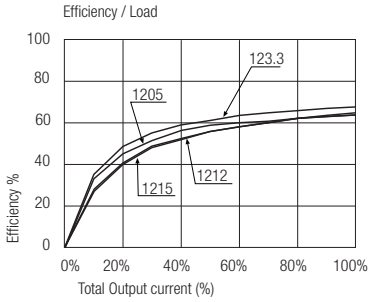
R1Z-3.3xx/P



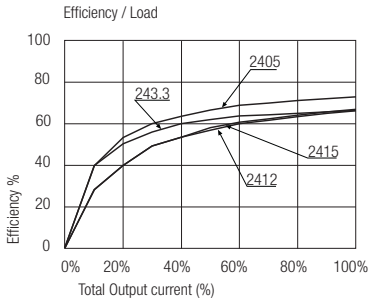
R1Z-05xx/P



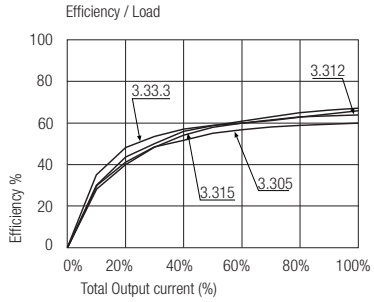
R1Z-12xx/P



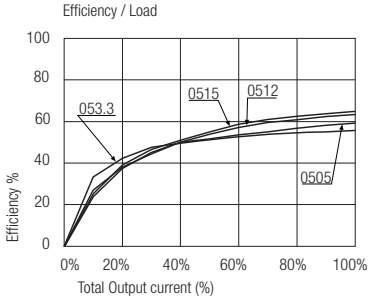
R1Z-15xx/P



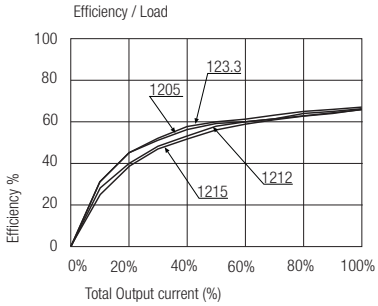
R1Z-3.3xx



R1Z-05xx



R1Z-12xx

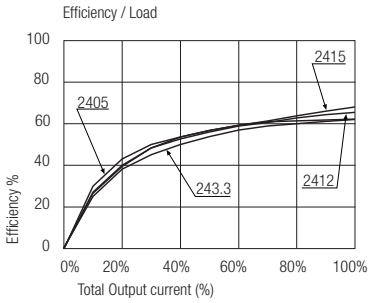


Notes

Note 1: Maximum capacitive load is defined as the capacitive load that will allow start up in under 1second without damage to the converter

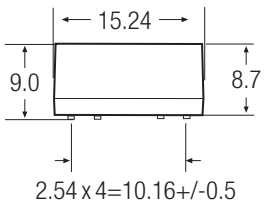
Note 2: The R1Z series require a minimum of 10% loading on the output to the maintain specified regulation. Operating under no-load condition will not damage these devices, however they may not meet all listed specifications.

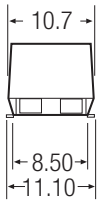
R1Z-15xx



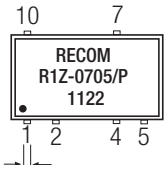
Package Style and Pinning (mm)

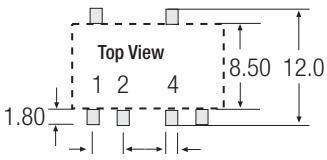
10 PIN Single SMD Package





Recommended Footprint Details





Ordering Example: R1Z-0505 (5V Input, 5V Output, not short circuit protected)
R1Z-0505/HP (5V Input, 5V Output, 2kVDC Isolation and short circuit protection)

Pin Connections

Pin #	Function
1	–Vin
2	+Vin
4	-Vout
5	-Vout
7	+Vout
10	NC

NC= No Connection

XX.X ± 0.5 mm
XX.XX ± 0.25 mm