

# Features

- Low cost 1W converter
- Industry standard pinout
- SIP4 package
- 1kVDC isolation
- Efficiency up to 79%
- Wide operating temperature range -40°C to +85°C
- UL60950-1, CAN/CSA C22.2 No. 60950-1 certified

# Unregulated Converters

## Description

The RFM DC/DC converter is typically used in cost sensitive general purpose power isolation and voltage matching applications. Despite its low cost, it is a fully specified converter with 1kVDC isolation, industrial operating temperature range of -40°C to +85°C without derating and UL/EN certifications.

## Selection Guide

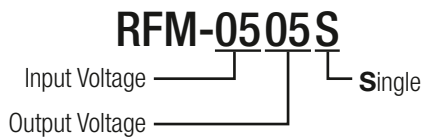
Part Number	Input Voltage [VDC]	Output Voltage [VDC]	Output Current [mA]	Efficiency <sup>(1)</sup> typ. [%]	Max. Capacitive Load <sup>(2)</sup> [µF]
RFM-0505S	5	5	200	79	470

### Notes:

Note1: Efficiency is tested at nominal input and full load at +25°C ambient

Note2: Max. Cap Load is tested at nominal input and full resistive load

## Model Numbering



## Specifications (measured @ Ta= 25°C, nominal input voltage, full load and after warm-up)

BASIC CHARACTERISTICS				
Parameter	Condition	Min.	Typ.	Max.
Internal Input Filter				capacitor
Input Voltage Range			±10%	
Input Current	max. load		250mA	
Quiescent Current	nom. Vin = 5VDC		25mA	30mA
Minimum Load <sup>(3)</sup>		0%		
Internal Operating Frequency		50kHz	80kHz	100kHz
Output Ripple and Noise <sup>(4)</sup>	20MHz BW		50mVp-p	100mVp-p
Reflected Back Ripple Current	20MHz BW, no external choke		20mA <sub>p-p</sub>	

### Notes:

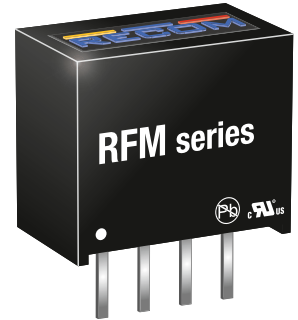
Note3: Operation below 10% load won't harm the converter, but specifications may not be met

Note4: Measurements are made with a 100nF MLCC across output (low ESR)

continued on next page

## RFM

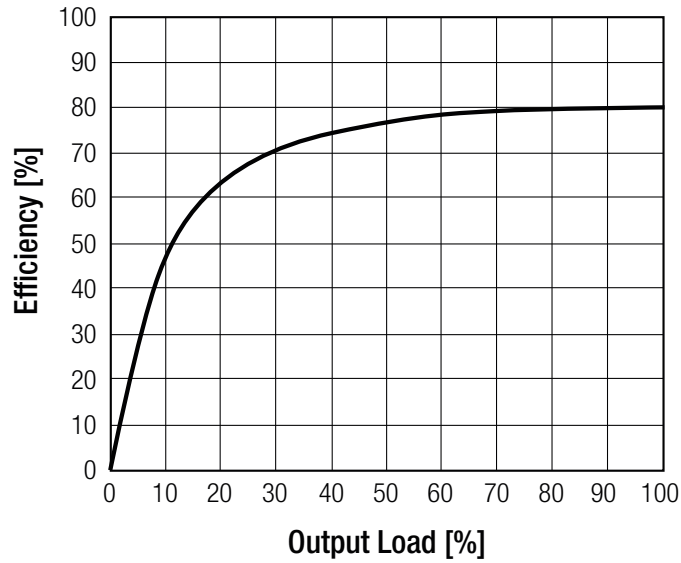
1 Watt  
SIP4  
Single Output



UL60950-1 certified  
CAN/CSA-C22.2 No 60950-1 certified  
EN55032 compliant

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

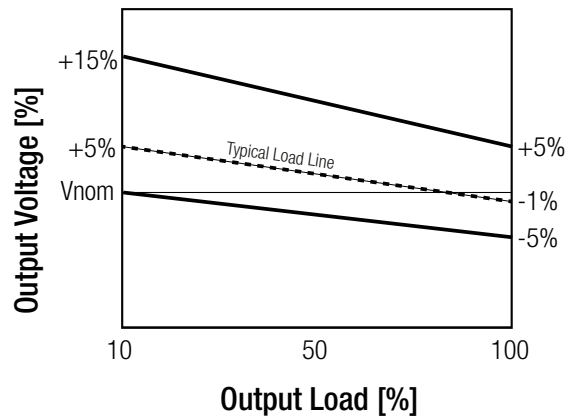
Efficiency vs. Load  
(nominal Vin= 5VDC)



**REGULATIONS**

Parameter	Condition	Values
Output Accuracy		±5.0% max.
Line Regulation	low line to high line, full load	±1.2% typ. / ±1% max.
Load Regulation	10% to 100%	±10% typ. / ±15% max.

**Tolerance Envelope**



**PROTECTIONS**

Parameter	Condition		Value
Isolation Voltage <sup>(5)</sup>	I/P to O/P	tested for 1 second	1KVDC
Isolation Resistance			1GΩ min.
Isolation Capacitance			75pF max.
Leakage Current	500VAC, 50Hz		1μA max.
Insulation Grade			Functional

**Notes:**

Note5: For repeat Hi-Pot testing, reduce the time and/or the test voltage

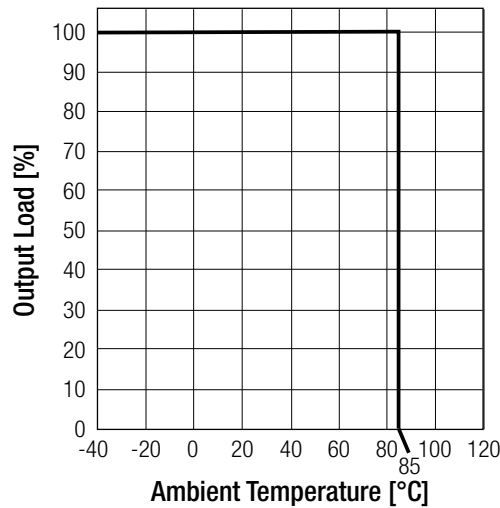
Specifications (measured @ Ta= 25°C, nominal input voltage, full load and after warm-up)

**ENVIRONMENTAL**

Parameter	Condition		Value
Operating Temperature Range	(@ natural convection 0.1m/s) (see graph)	without derating	-40°C to +85°C
Maximum Case Temperature			+105°C
Temperature Coefficient			±0.05%/°C
Thermal Impedance	0.1 m/s, horizontal direction		60°C/W
Operating Altitude			2000m
Operating Humidity	non-condensing		95% RH max.
Pollution Degree			PD2
Vibration			MIL-STD-202G
MTBF	according to MIL-HDBK-217F, G.B.	+25°C +85°C	20100 x 10 <sup>3</sup> hours 8700 x 10 <sup>3</sup> hours

**Derating Graph**

(@ Chamber and natural convection 0.1m/s)



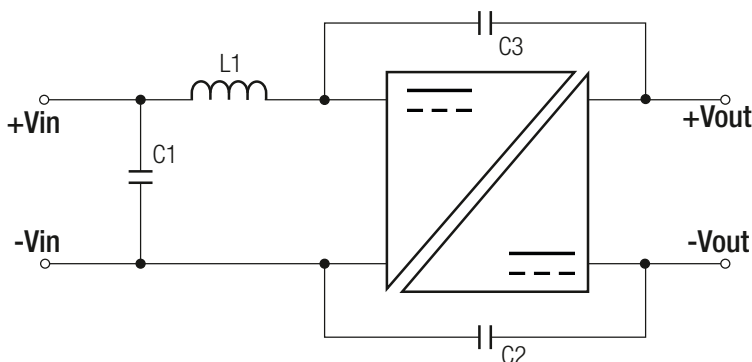
**SAFETY AND CERTIFICATIONS**

Certificate Type (Safety)	Report/File Number	Standard
Information Technology Equipment, General Requirements for Safety	E358085-A4	UL60950-1, 2nd Edition, 2007
		CSA C22.2 No. 60950-1-07, 2nd Edition, 2007
RoHs 2+		RoHs 10/10, 2015

**EMC Compliance**

EMC Compliance	Condition	Standard / Criterion
Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement	with external filter (see below filter suggestion)	EN55032, Class A, B

**EMC Filtering - Suggestions for Class A and B**



Component List Class A			
C1	L1	C2	C3
6.8µF	-	-	-

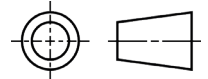
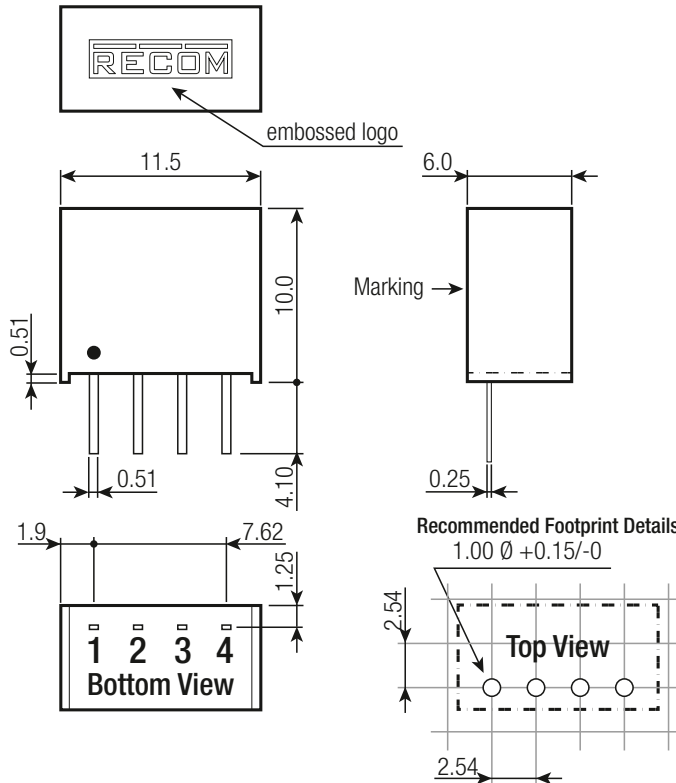
Component List Class B		
C1	L1	C2 and C3
10µF	22µH	330pF/1kV

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

**DIMENSION AND PHYSICAL CHARACTERISTICS**

Parameter	Type	Value
Material	case potting	non-conductive black plastic (UL94 V-0) epoxy (UL94 V-2)
Package Dimension (LxWxH)		11.5 x 6.0 x 10.0mm
Package Weight		1.4g

**Dimension Drawing (mm)**



**Pin Connections**

Pin #	Function
1	-Vin
2	+Vin
3	-Vout
4	+Vout

Tolerance: xx.x= ±0.5mm  
xx.xx= ±0.25mm

Pin tolerance:  
Thickness: ±0.05mm  
Length: +0.25/-0.50mm

**PACKAGING INFORMATION**

Parameter	Type	Value
Packaging Dimension (LxWxH)	tube	520.0 x 16.0 x 9.0mm
Packaging Quantity		42pcs
Storage Temperature Range		-55°C to +125°C
Storage Humidity		5% - 95%, RH

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