



# THE DATASHEET OF RFM-0505S



# Features

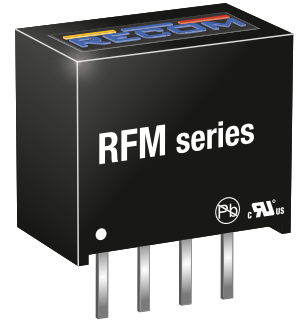
# Unregulated Converters

- 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



# RFM

1 Watt  
SIP4  
Single Output



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

## 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.

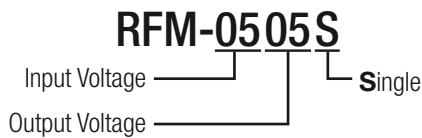
## Selection Guide

| 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> |           |

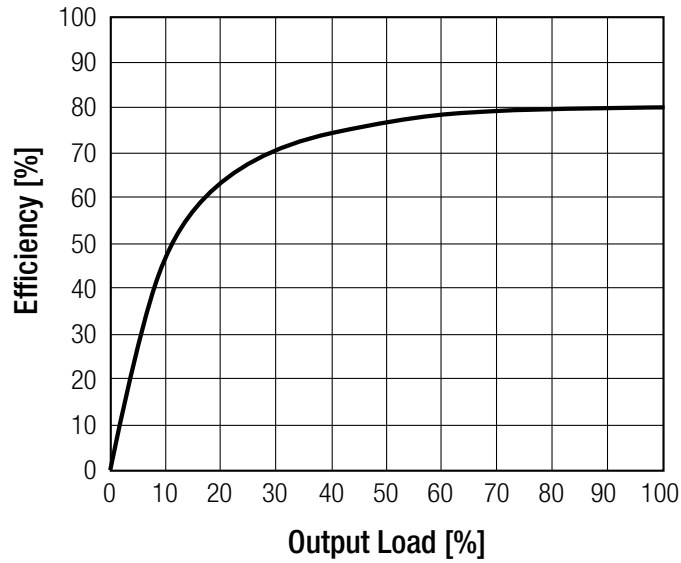
### Notes:

- 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

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

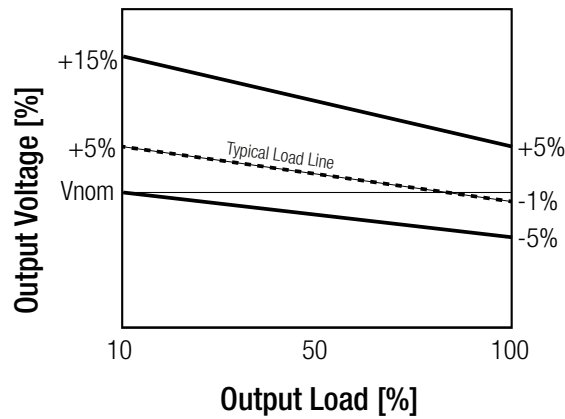
**Efficiency vs. Load**  
(nominal Vin= 5VDC)



**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

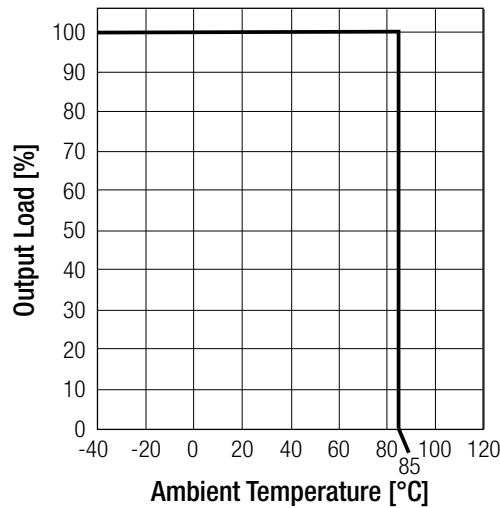
Specifications (measured @ Ta= 25°C, nominal input voltage, full load and after warm-up)

### 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<br>+85°C   | 20100 x 10 <sup>3</sup> hours<br>8700 x 10 <sup>3</sup> hours |

### Derating Graph

(@ Chamber and natural convection 0.1 m/s)



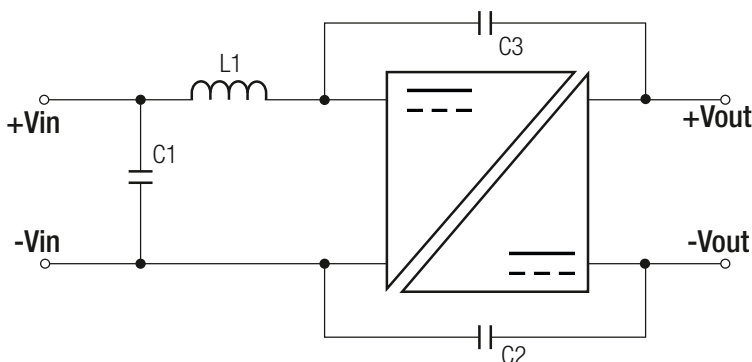
### SAFETY AND CERTIFICATIONS

| 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<br>(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                  | -  | -  | -  |

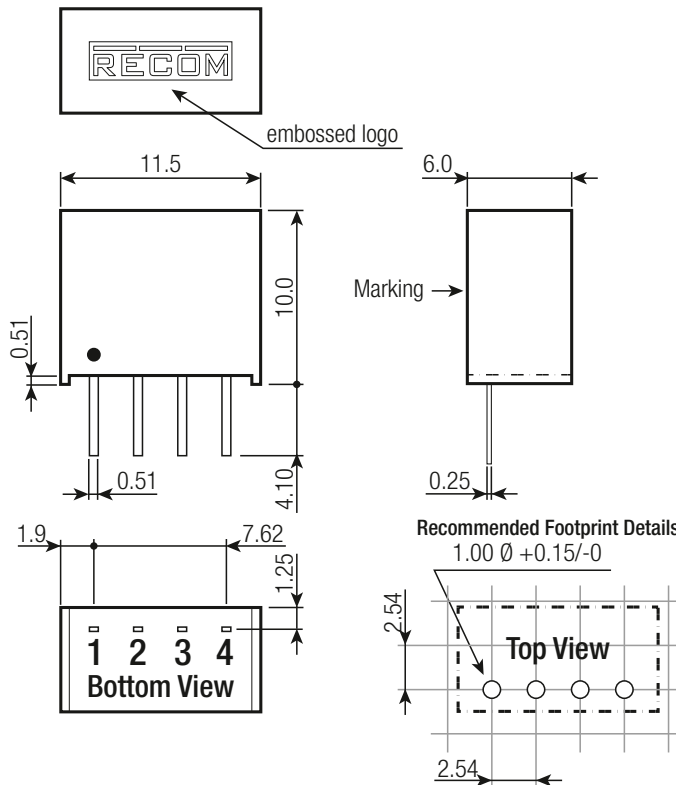
| Component List Class B |      |           |
|------------------------|------|-----------|
| C1                     | L1   | C2 and C3 |
| 10μF                   | 22μH | 330pF/1kV |

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)<br>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         |

The product information and specifications may be subject to changes even without prior written notice. The product has been designed for various applications; its suitability lies in the responsibility of each customer. The products are not authorized for use in safety-critical applications without RECOM's explicit written consent. A safety-critical application is an application where a failure may reasonably be expected to endanger or cause loss of life, inflict bodily harm or damage property. The applicant shall indemnify and hold harmless RECOM, its affiliated companies and its representatives against any damage claims in connection with the unauthorized use of RECOM products in such safety-critical applications.

## Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

-  [View RFM-0505S on WIN SOURCE](#)
-  [Recom Power Information](#)

## Optimize Your Supply Chain with WIN SOURCE Solutions

-  Global Sourcing Solution
-  Obsolete Management
-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management