

# RxxC1TFxxS Series / Isolated Power Module

1W / Isolated / Input 3V-5.5VDC / 12 Pad LGA Package

## FEATURES

- Ultra-compact 5x4mm SMD package
- Low profile (1.18mm)
- 3kVAC/1s isolation
- 3.3 or 5V selectable outputs
- 3 - 5.5V wide input range
- Up to 125°C ambient temperature with derating
- Integrated solution
- 3 years warranty



Dimensions (LxWxH): 5.0 x 4.0 x 1.18mm (0.196 x 0.157 x 0.046inch)  
0.1g (0.0002lbs)

## APPLICATIONS



## SAFETY & EMC



## DESCRIPTION

The RxxC1TFxxS series is the latest breakthrough in isolated DC/DC converters. With an ultra-compact 5 x 4mm SMD package and a low profile of just 1.18mm, it sets a new standard for size and performance in its class. Offering 3kVAC/1s isolation and selectable 3.3V or 5V outputs, it's perfect for applications like COM port isolation, industrial automation, IoT, and sensor isolation. With a wide input range of 3V to 5.5V and an ambient temperature range up to 125°C with derating, it ensures reliability in diverse environments. Simplifying design with its integrated solution, the RxxC1TFxxS series is your compact, reliable choice for demanding electronic systems.

## SELECTION GUIDE

| Part Number | Input Voltage Range [VDC] | Output Voltage Range [VDC] | Output Current max. [mA] | Efficiency typ. [%] |
|-------------|---------------------------|----------------------------|--------------------------|---------------------|
| RxxC1TFxxS  | 3-5.5                     | 3.3                        | 200                      | 44                  |
|             | 4.5-5.5                   | 5                          | 200                      | 50.5                |

## MODEL NUMBERING



Note1: Add suffix "-R" for tape and reel packaging

Add suffix "-CT" for bag packaging (refer to „Packaging information“)

# RxxC1TFxxS Series / Isolated Power Module

1W / Isolated / Input 3V-5.5VDC / 12 Pad LGA Package

## ABSOLUTE MAXIMUM RATINGS

| Parameter                                      | Condition                       | Min.    | Typ. | Max.   |
|--|---------------------------------|---------|------|--------|
| Absolute Maximum Voltage                       | $V_{IN+}/CTRL$ to $V_{IN-}$     | -0.3VDC |      | 6.5VDC |
|  | $V_{OUT}/V_{SEL}$ to $V_{OUT-}$ | -0.3VDC |      | 6.5VDC |
| Maximum Continuous Power Losses <sup>(2)</sup> | $T_{AMB} = +25^{\circ}C$        |         |      | 2.05W  |
| Junction Temperature                           | $T_J$                           |         |      | +150°C |
| Lead Temperature                               |                                 |         |      | +260°C |

Note2: Exceeding maximum allowable power dissipation causes device to enter thermal shutdown which protects device from permanent damage.

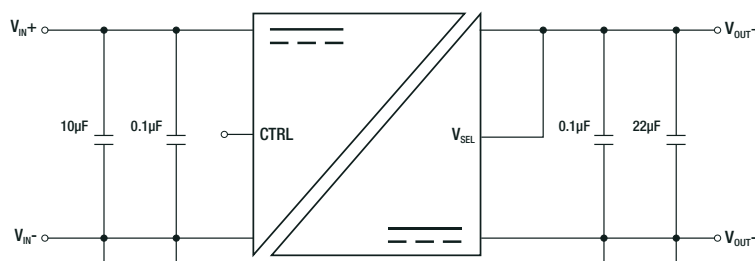
Note3: Stressed beyond those listed under absolute maximum ratings can cause permanent damage to the device.

## BASIC CHARACTERISTICS (measured @ $T_{AMB} = 25^{\circ}C$ , nom. $V_{IN}$ , full load and after warm-up unless otherwise stated)

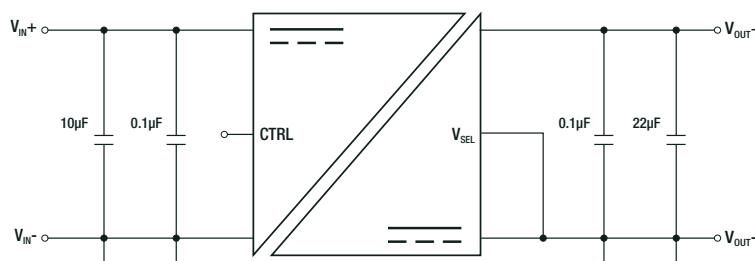
| Parameter                        | Symbol   | Condition  | Min.   | Typ.   | Max.   |
|----------------------------------|----------|--|--------|--------|--------|
| Input Voltage Range              | $V_{IN}$ |  | 3VDC   |        | 5.5VDC |
| Input Current                    |          | $V_{IN} = 5VDC, V_{OUT} = 5VDC, Load = 0mA$      |        | 8mA    |        |
|                                  |          | $V_{IN} = 5VDC, V_{OUT} = 5VDC, Load = 200mA$    |        | 395mA  |        |
|                                  |          | $V_{IN} = 5VDC, V_{OUT} = 3.3VDC, Load = 0mA$    |        | 5mA    |        |
|                                  |          | $V_{IN} = 5VDC, V_{OUT} = 3.3VDC, Load = 200mA$  |        | 354mA  |        |
|                                  |          | $V_{IN} = 3.3VDC, V_{OUT} = 3.3VDC, Load = 0A$   |        | 5mA    |        |
|                                  |          | $V_{IN} = 3.3VDC, V_{OUT} = 3.3VDC, Load = 50mA$ |        | 115mA  |        |
| Under Voltage Lockout UVLO       |          | rising   |        | 2.6VDC | 2.8VDC |
| Under Voltage Lockout Hysteresis |          |  |        | 220mV  |        |
| Output Voltage Accuracy          |          | $V_{OUT} = 5VDC$                                 | 4.9VDC | 5VDC   | 5.1VDC |
|                                  |          | $V_{OUT} = 3.3VDC$                               | 3.2VDC | 3.3VDC | 3.4VDC |
| Soft Start Time                  |          | from 0-100% $V_{IN} = 5VDC, V_{OUT} = 5VDC$      |        | 1.1ms  |        |
|                                  |          | $V_{IN} = 5VDC, V_{OUT} = 3.3VDC$                |        | 0.6ms  |        |
|                                  |          | $V_{IN} = 3.3VDC, V_{OUT} = 3.3VDC$              |        | 1.5ms  |        |
| Shutdown Current                 |          | $V_{CTRL} = 0VDC$ , measured on $V_{IN}$ pin     |        | 7µA    |        |
| Output Ripple Voltage            |          | $V_{IN} = 5VDC, V_{OUT} = 5VDC, Load = 200mA$    |        | 60mV   |        |
|                                  |          | $V_{IN} = 5VDC, V_{OUT} = 3.3VDC, Load = 200mA$  |        | 50mV   |        |
|                                  |          | $V_{IN} = 3.3VDC, V_{OUT} = 3.3VDC, Load = 50mA$ |        | 30mV   |        |

### Typical Application

$V_{IN} = 4.5-5.5VDC, V_{OUT} = 5VDC, I_{OUT} = 200mA$

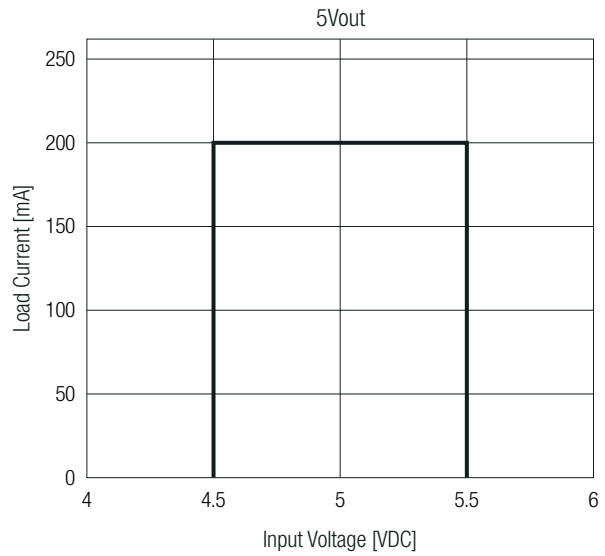
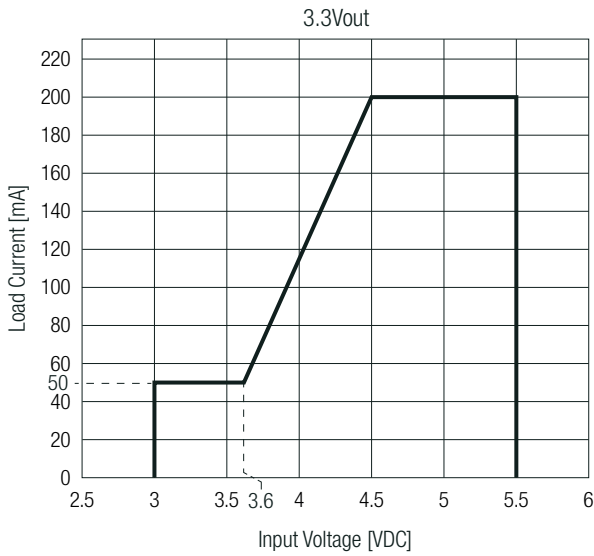


$V_{IN} = 3-3.6VDC, V_{OUT} = 3.3VDC, I_{OUT} = 200mA$

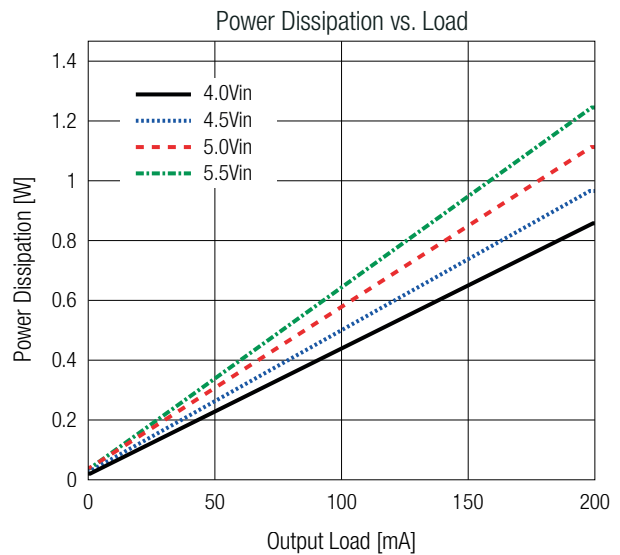
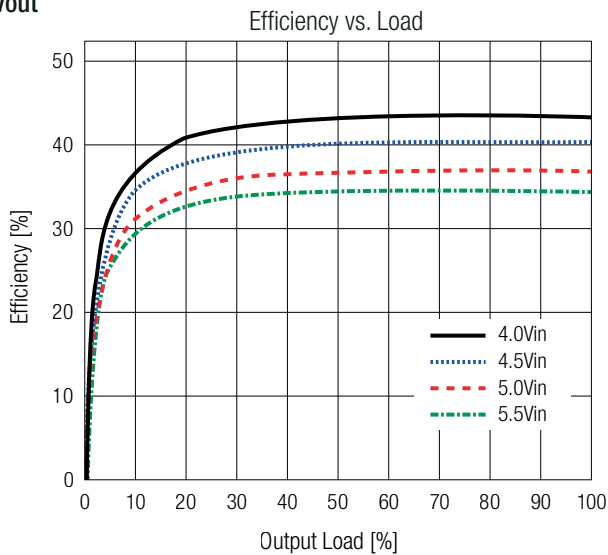


### BASIC CHARACTERISTICS

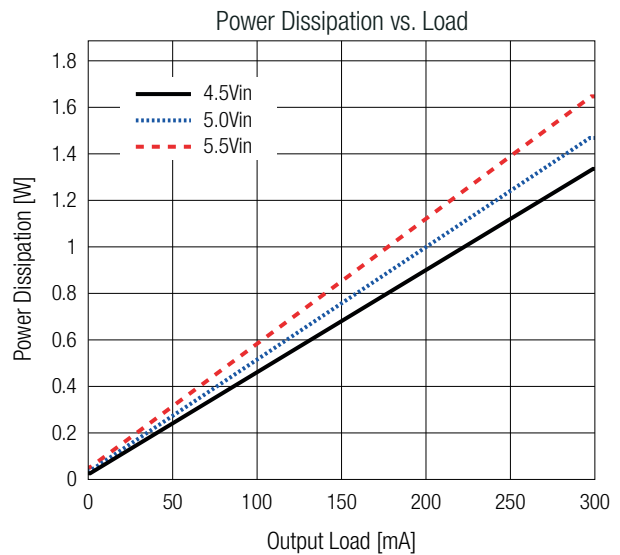
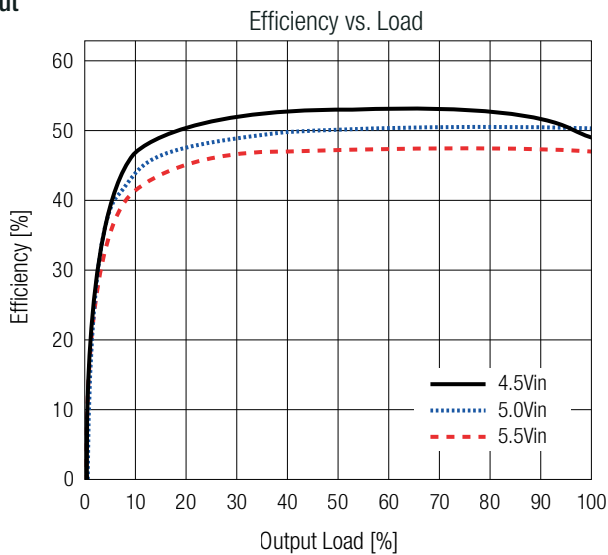
#### Safe Operating Area



#### 3.3Vout



#### 5Vout



# RxxC1TFxxS Series / Isolated Power Module

## 1W / Isolated / Input 3V-5.5VDC / 12 Pad LGA Package

### REGULATIONS

| Parameter       | Condition                          | Value            |
|-----------------|------------------------------------|------------------|
| Line Regulation | $V_{IN} = 3V-3.6VDC$ , full load   | $\pm 0.5\%$ typ. |
|                 | $V_{IN} = 4.5V-5.5VDC$ , full load | $\pm 0.5\%$ typ. |
| Load Regulation | from 0-100%                        | $\pm 0.4\%$ typ. |

### CTRL AND SYNC OPERATING CONDITIONS

| Parameter                  | Condition                                | Min.   | Typ.         | Max. |
|----------------------------|--|--------|--------------|------|
| CTRL Input High Threshold  |  |        |              | 2VDC |
| CTRL Input Low Threshold   |  | 0.4VDC |              |      |
| CTRL Input Leakage Current | $V_{IN} = 5VDC$ , CTRL connect to VIN-   |        | -5 $\mu$ A   |      |
|                            | $V_{IN} = 3.3VDC$ , CTRL connect to VIN- |        | -3.3 $\mu$ A |      |

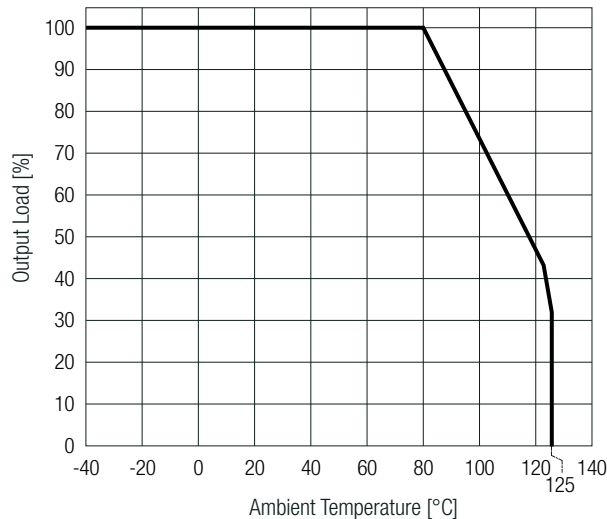
### THERMAL OPERATING CONDITIONS (measured @ $T_{AMB} = 25^{\circ}C$ , $V_{IN} = 3V-5.5VDC$ , full load and after warm-up unless otherwise stated)

| Parameter                         | Symbol      | Condition                 | Min.            | Typ.  | Max.             |
|-----------------------------------|-------------|---------------------------|-----------------|-------|------------------|
| Operating Junction Temperature    | $T_J$       | refer to „Derating Graph“ | -40 $^{\circ}C$ |       | +125 $^{\circ}C$ |
| Thermal Resistance <sup>(4)</sup> | $R_{th,JA}$ | junction to ambient       |                 | 61K/W |                  |
|                                   | $R_{th,JC}$ | junction to case          |                 | 19K/W |                  |

Note4: Test PCB= 6.4 x 6.4cm double sided PCB with 20oz copper, natural convection

### Derating Graph

(@ Chamber and natural convection 0.1 m/s)



### ENVIRONMENTAL

| Parameter                | Condition            | Value     |
|--------------------------|----------------------|-----------|
| Moisture Sensitive Level |                      | Level 3   |
| ESD                      | human-body-model     | $\pm 5kV$ |
|                          | charged-device-model | $\pm 2kV$ |

# RxxC1TFxxS Series / Isolated Power Module

1W / Isolated / Input 3V-5.5VDC / 12 Pad LGA Package

## PROTECTIONS

| Parameter                                 | Condition            | Value                       |
|---|----------------------|-----------------------------|
| Short Circuit Protection (SCP)            |                      | current limited, continuous |
| Over Load Protection (OLP) <sup>(5)</sup> |                      | current limited, continuous |
| Isolation Voltage                         | rated for 60 seconds | 2.5kVAC                     |
|   | tested for 1 second  | 3kVAC                       |
| Isolation Resistance                      | $V_{ISO} = 500VDC$   | 50GΩ min.                   |
| Isolation Capacitance                     |                      | 5pF typ.                    |
| Thermal Shutdown                          | IC junction          | 150°C typ.                  |
|   | hysteresis           | 20°C                        |

Note5: During over load or output short circuit condition, the output voltage drops due to internal current limit. After over current or short circuit condition removed, RxxC1TFxxS will resume.

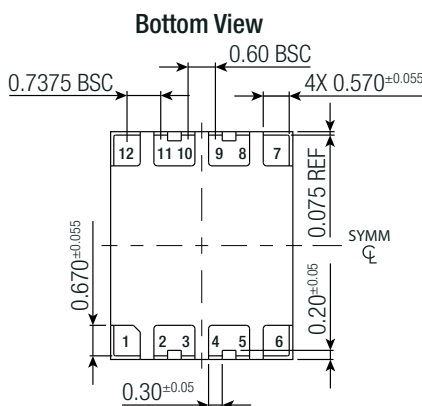
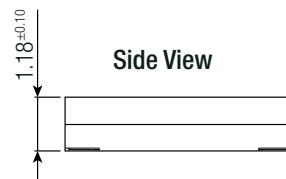
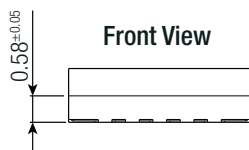
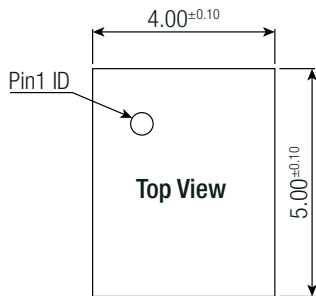
## SAFETY & CERTIFICATIONS

| Certificate Type (Safety) | Report Number | Standard                    |
|---------------------------|---------------|-----------------------------|
| RoHS2                     |               | RoHS 2011/65EU + AM2015/863 |

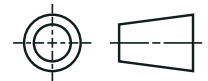
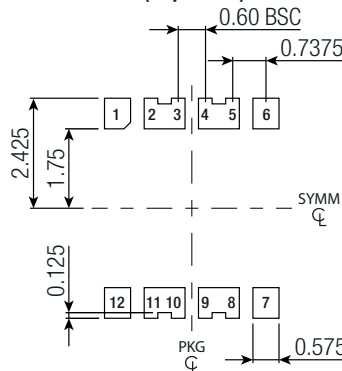
## DIMENSION & PHYSICAL CHARACTERISTICS

| Parameter         | Type | Value   |
|-------------------|------|---|
| Dimension (LxWxH) |      | 5.0 x 4.0 x 1.18mm<br>0.197 x 0.157 x 0.046inch |
| Weight            |      | 0.1g typ.<br>0.0002lbs                          |

### Dimension Drawing (mm)



### Recommended Footprint Details (Top View)



### Pad Information

| Pad #      | Function |
|------------|----------|
| 1, 2, 3    | VIN-     |
| 4, 5       | VIN+     |
| 6          | CTRL     |
| 7          | VSEL     |
| 8, 9       | VOUT+    |
| 10, 11, 12 | VOUT-    |

Tolerances:  
x.x= ±0.1mm  
x.xx= ±0.05mm

# RxxC1TFxxS Series / Isolated Power Module

## 1W / Isolated / Input 3V-5.5VDC / 12 Pad LGA Package

### PACKAGING INFORMATION

| Parameter                   | Type                              | Value            |
|-----------------------------|-----------------------------------|------------------|
| Packaging Dimension (LxWxH) | Suffix -R: tape & reel (diameter) | Ø330.2           |
|                             | tape and reel (carton)            | 370 x 350 x 55mm |
|                             | Suffix -CT: moisture barrier bag  | 100 x 100 x 30mm |
| Packaging Quantity          | Suffix -R: tape & reel            | 500pcs           |
|                             | Suffix -CT: moisture barrier bag  | 10pcs            |
| Tape Width                  |                                   | 12mm             |
| Storage Temperature Range   |                                   | -65°C to +150°C  |
| Storage Humidity            | non-condensing                    | 60% RH max.      |

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.

## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

*Click to view similar products for [Isolated DC/DC Converters - SMD category](#):*

*Click to view products by [RECOM POWER manufacturer](#):*

Other Similar products are found below :

[DCR012405U/1K](#) [RSH2-0505S/H3](#) [R5M-2412D/SMD](#) [R3M-2415D/SMD](#) [RA3-241503D/SMD](#) [R05C1TF05S-CT](#) [R24C2T25-CT](#) [R2M-2412D/SMD](#) [R3M-2415S/SMD](#) [R1M-1205S/SMD](#) [R1M-2415D/SMD](#) [R5M-2415D/SMD](#) [R2M-2415D/SMD](#) [R1M-2412S/SMD](#) [R3M-2412S/SMD](#) [R1M-2412D/SMD](#) [MGN1S1212MC-R7](#) [R5M-243.3S/SMD](#) [R3M-2412D/SMD](#) [MGN1S0512MC-R7](#) [R3M-2405S/SMD](#) [R5M-2415S/SMD](#) [MGN1D120603MC-R7](#) [MGN1S1208MC-R7](#) [R3M-1205S/SMD](#) [R2M-1205S/SMD](#) [R2M-2412S/SMD](#) [PESE1-S3-S24-M](#) [MGN1D050603MC-R7](#) [IES0103S15](#) [IES0103S12](#) [IES0224S15](#) [IES0224S24](#) [IES0205S15](#) [IES0212S15](#) [IES0224S12](#) [IES0215S15](#) [IES0212S05](#) [IES0205S12](#) [IES0205S05](#) [IES0205S3V3](#) [IES0205S09](#) [IES0212S09](#) [IES0224S09](#) [IES0205S07](#) [IES0215S05](#) [IES0205S24](#)