

# 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. [%]
R05C1TF05S	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“)

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## 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 $^{\circ}C$
Lead Temperature				+260 $^{\circ}C$

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

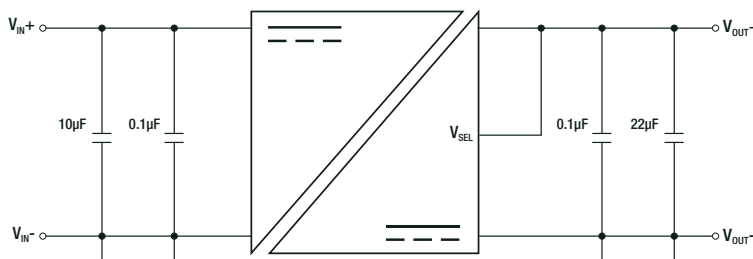
Note3: Stressed beyond those listed under absolute maximum ratings can cause permanent damage to the device.

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

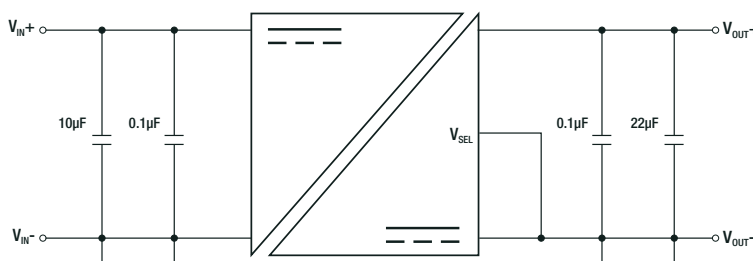
Parameter	Symbol	Condition	Min.	Typ.	Max.
Input Voltage Range	$V_{IN}$		3VDC		5.5VDC
Input Current		$V_{IN} = 5VDC, V_{OUT} = 5VDC, Load = 0mA$		8mA	
		$V_{IN} = 5VDC, V_{OUT} = 5VDC, Load = 200mA$		395mA	
		$V_{IN} = 5VDC, V_{OUT} = 3.3VDC, Load = 0mA$		5mA	
		$V_{IN} = 5VDC, V_{OUT} = 3.3VDC, Load = 200mA$		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		7 $\mu A$	
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

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



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

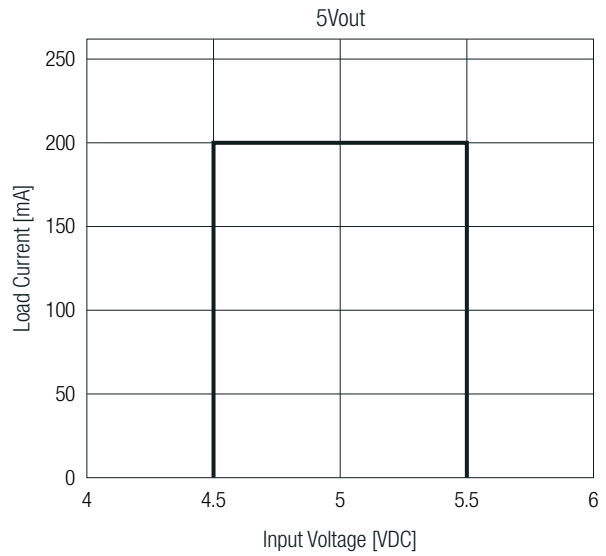
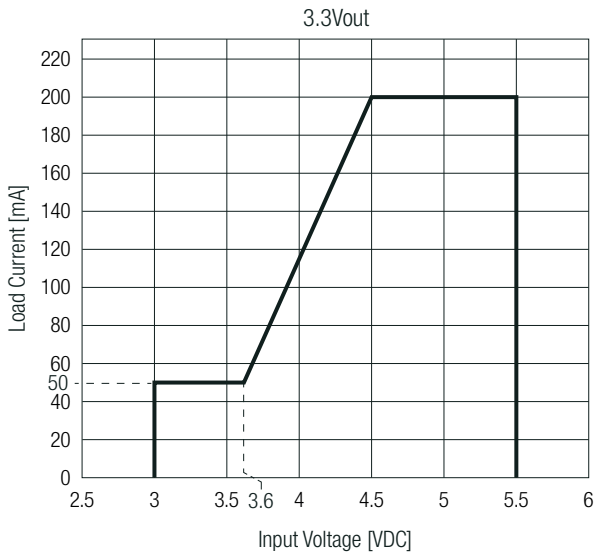


# RxxC1TFxxS Series $\diamond$ Isolated Power Module

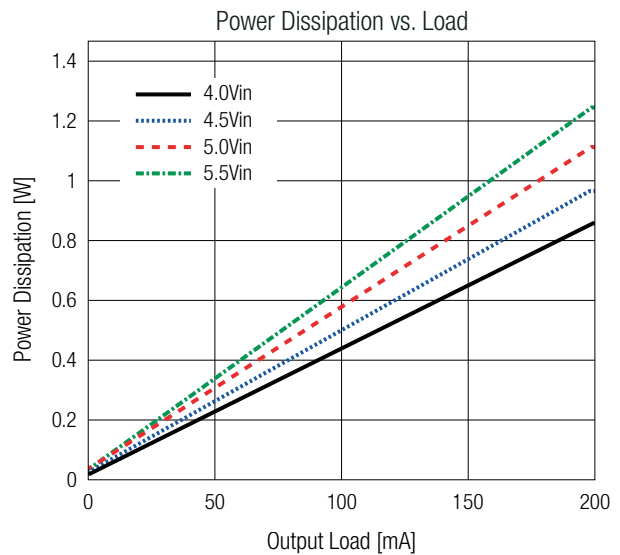
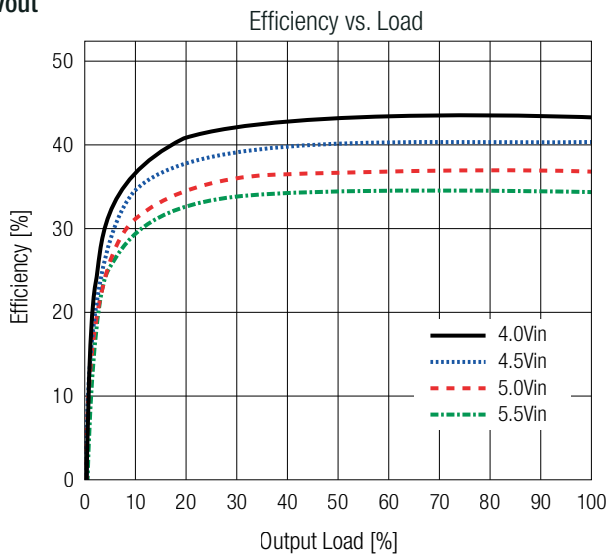
1W  $\diamond$  Isolated  $\diamond$  Input 3V-5.5VDC  $\diamond$  12 Pad LGA Package

## BASIC CHARACTERISTICS

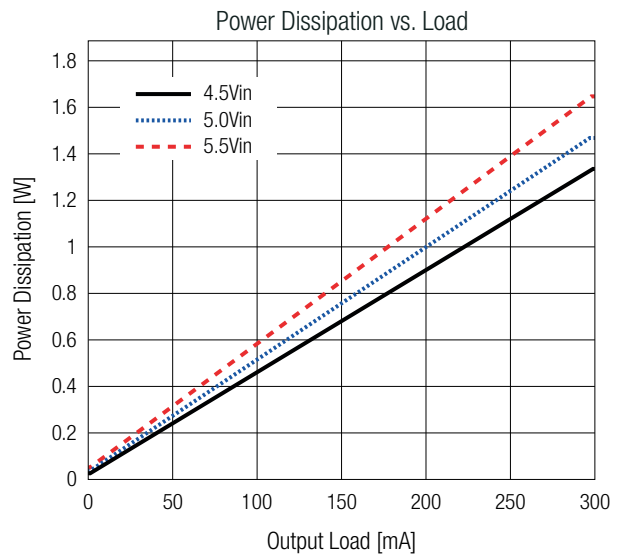
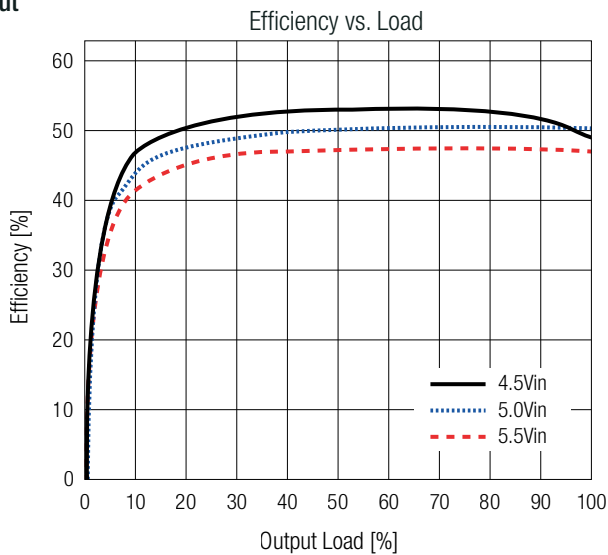
### Safe Operating Area



### 3.3Vout



### 5Vout



# RxxC1TFxxS Series $\diamond$ Isolated Power Module

## 1W $\diamond$ Isolated $\diamond$ Input 3V-5.5VDC $\diamond$ 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 $\mu A$	

Note4: CTRL pin shouldn't be floating and can connect to Vin+ directly or through resistor divider.

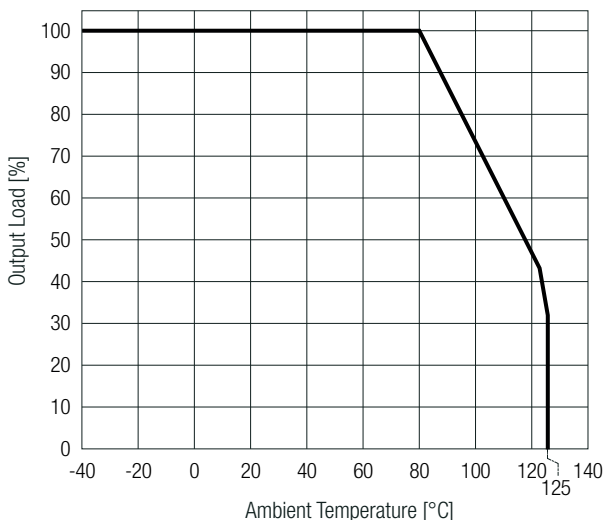
### THERMAL OPERATING CONDITIONS (measured @ $T_{AMB} = 25^{\circ}C$ , $V_{IN} = 3V-5.5VDC$ , full load and after warm-up unless otherwise stated)

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 2oz copper, natural convection

### Derating Graph

(@ Chamber and natural convection 0.1m/s)



### ENVIRONMENTAL

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

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## 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.

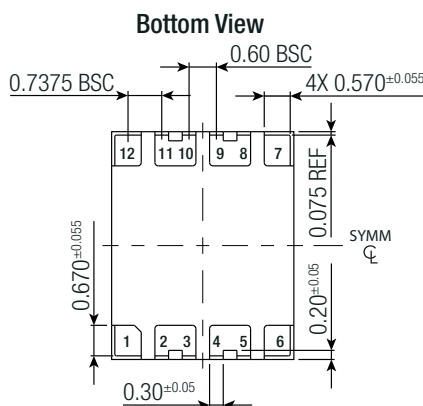
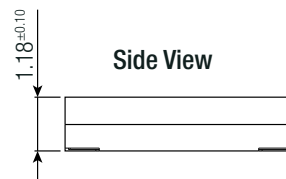
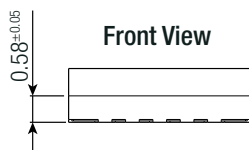
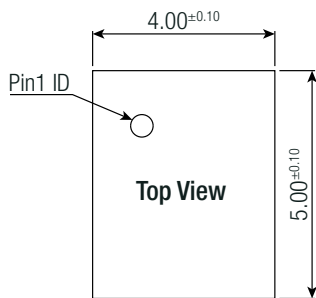
## SAFETY & CERTIFICATIONS

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

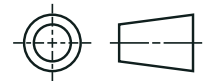
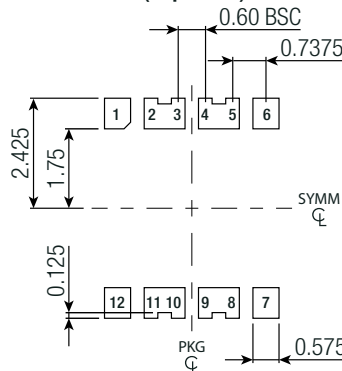
## DIMENSION & PHYSICAL CHARACTERISTICS

Parameter	Type	Value
Dimension (LxWxH)		5.0 x 4.0 x 1.18mm 0.197 x 0.157 x 0.046inch
Weight		0.1g typ. 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

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## 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.

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