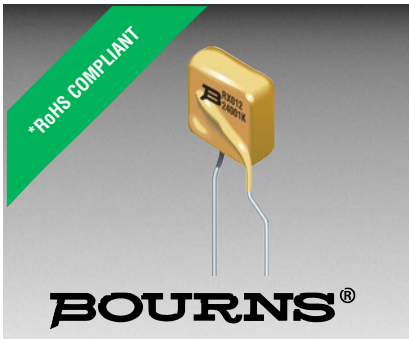






**THE DATASHEET OF  
MF-RX012/250-0**





## Features

- Radial leaded devices
- Fast tripping resettable PTCs
- Binned and sorted narrow resistance ranges available
- RoHS compliant\*
- Agency recognition:  

## Applications

- Customer Premise Equipment (CPE)
- Central Office / Telecom Centers (CO)
- Access equipment

# MF-RX/250 Series - Telecom PTC Resettable Fuses

## Electrical Characteristics

Model	Max. Operating Voltage (Vdc)	Max. Interrupt Ratings		Hold Current	Initial Resistance		One Hour Post-Trip Resistance
		Volts (Vrms)	Amps (A)		Amps at 23 °C	Ohms at 23 °C	
		Max.	Max.	I <sub>H</sub>	Min.	Max.	Max.
MF-RX012/250	60	250	3.0	0.12	4.0	8.0	16.0
MF-RX012/250-A	60	250	3.0	0.12	7.0	9.0	16.0
MF-RX012/250-C	60	250	3.0	0.12	5.5	7.5	14.0
MF-RX012/250-F	60	250	3.0	0.12	6.0	10.5	16.0
MF-RX012/250-1	60	250	3.0	0.12	6.0	9.0	16.0
MF-RX012/250-2	60	250	3.0	0.12	8.0	10.5	16.0
MF-RX012/250-T	60	250	3.0	0.12	7.0	12.0	16.0
MF-RX012/250U	60	250	3.0	0.12	6.0	10.0	16.0
MF-RX014/250	60	250	3.0	0.145	3.0	6.0	14.0
MF-RX014/250-A	60	250	3.0	0.145	3.0	5.5	12.0
MF-RX014/250-B	60	250	3.0	0.145	4.5	6.0	14.0
MF-RX014/250-T	60	250	3.0	0.145	5.4	7.5	14.0
MF-RX014/250U	60	250	3.0	0.145	3.5	6.5	12.0
MF-RX018/250	60	250	10.0	0.18	0.8	2.0	4.0
MF-RX018/250U	60	250	10.0	0.18	0.8	2.0	4.0

"U" suffix indicates product without insulation coating.

## Environmental Characteristics

Operating/Storage Temperature .....	-40 °C to +85 °C
Maximum Device Surface Temperature	
in Tripped State .....	125 °C
Passive Aging .....	+85 °C, 1000 hours..... ±15 % typical resistance change
Humidity Aging .....	+85 °C, 85 % R.H. 1000 hours ..... ±15 % typical resistance change
Thermal Shock .....	+125 °C to -55 °C, 10 times..... ±15 % typical resistance change
Solvent Resistance.....	MIL-STD-202, Method 215B..... No change
Lead Solderability .....	ANSI/J-STD-002..... >95 % coverage
Vibration .....	MIL-STD-883C, Method 2007.1, Condition A ..... ±5 % typical resistance change
Moisture Sensitivity Level (MSL) .....	Level 1
ESD Classification - HBM.....	Class 6

## Test Procedures And Requirements For Model MF-RX/250 Series

Test	Test Conditions	Accept/Reject Criteria
Visual/Mech .....	Verify dimensions and materials .....	Per MF physical description
Resistance .....	In still air @ 23 °C.....	R <sub>min</sub> ≤ R ≤ R <sub>max</sub>
Time to Trip.....	TTT current, V <sub>max</sub> , 23 °C.....	T ≤ max. time to trip (seconds)
Hold Current .....	30 min. at I <sub>hold</sub> .....	No trip
Trip Cycle Life.....	250 Vrms, 3A, 10 cycles .....	No arcing or burning
UL File Number .....	E174545	
TÜV File Number.....	50260658	

\*RoHS Directive 2002/95/EC Jan. 27, 2003 including annex and RoHS Recast 2011/65/EU June 8, 2011.

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## Additional Features

- Ability to withstand AC power cross conditions
- Assists equipment with meeting ITU-T K.20/K.21/K.45
- Assists equipment with meeting Telcordia GR-1089-C Intrabuilding

## MF-RX/250 Series - Telecom PTC Resettable Fuses

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### Thermal Derating Chart - $I_{hold}$ (Amps)

Model	Ambient Operating Temperature								
	-40 °C	-20 °C	0 °C	23 °C	40 °C	50 °C	60 °C	70 °C	85 °C
MF-RX012/250	0.186	0.165	0.143	0.120	0.099	0.088	0.077	0.066	0.050
MF-RX014/250	0.225	0.199	0.172	0.145	0.119	0.106	0.093	0.080	0.060
MF-RX018/250	0.269	0.240	0.211	0.180	0.153	0.138	0.123	0.109	0.087

$I_{trip}$  is approximately two times  $I_{hold}$ .

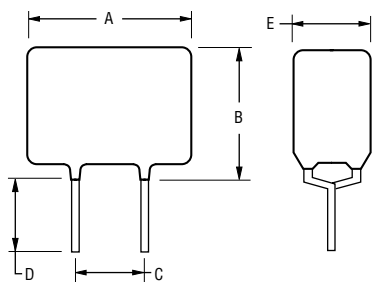
### Product Dimensions

Model	A Max.	B Max.	C Nom.	D Min.	E Max.	Physical Characteristics		
						Lead Dia.	Style	Material
MF-RX012/250	$\frac{6.5}{(0.256)}$	$\frac{11.0}{(0.433)}$	$\frac{5.1 \pm 0.7}{(0.201 \pm 0.028)}$	$\frac{4.7}{(0.185)}$	$\frac{4.6}{(0.181)}$	$\frac{0.65}{(0.026)}$	1	Sn/Cu
MF-RX012/250U	$\frac{6.0}{(0.236)}$	$\frac{10.0}{(0.394)}$	$\frac{5.1 \pm 0.7}{(0.201 \pm 0.028)}$	$\frac{4.7}{(0.185)}$	$\frac{3.8}{(0.150)}$	$\frac{0.65}{(0.026)}$	2	Sn/Cu
MF-RX014/250	$\frac{6.5}{(0.256)}$	$\frac{11.0}{(0.433)}$	$\frac{5.1 \pm 0.7}{(0.201 \pm 0.028)}$	$\frac{4.7}{(0.185)}$	$\frac{4.6}{(0.181)}$	$\frac{0.65}{(0.026)}$	1	Sn/Cu
MF-RX014/250U	$\frac{6.0}{(0.236)}$	$\frac{10.0}{(0.394)}$	$\frac{5.1 \pm 0.7}{(0.201 \pm 0.028)}$	$\frac{4.7}{(0.185)}$	$\frac{3.8}{(0.150)}$	$\frac{0.65}{(0.026)}$	2	Sn/Cu
MF-RX018/250	$\frac{11.0}{(0.433)}$	$\frac{13.6}{(0.535)}$	$\frac{5.1 \pm 0.7}{(0.201 \pm 0.028)}$	$\frac{4.7}{(0.185)}$	$\frac{4.6}{(0.181)}$	$\frac{0.65}{(0.026)}$	1	Sn/Cu
MF-RX018/250U	$\frac{10.4}{(0.409)}$	$\frac{12.6}{(0.496)}$	$\frac{5.1 \pm 0.7}{(0.201 \pm 0.028)}$	$\frac{4.7}{(0.185)}$	$\frac{3.8}{(0.150)}$	$\frac{0.65}{(0.026)}$	2	Sn/Cu

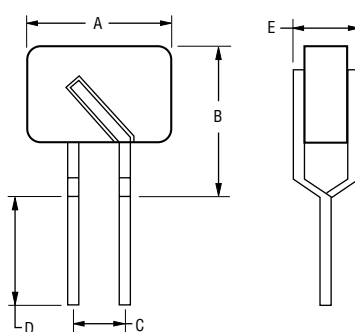
Packaging options: BULK: 500 pcs. per bag. TAPE & REEL: 1500 pcs. per reel (available binned).

DIMENSIONS:  $\frac{MM}{(INCHES)}$

Style 1

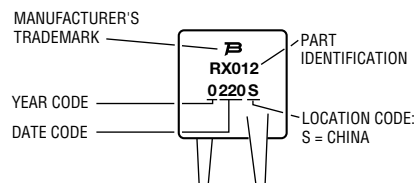


Style 2



### Typical Part Marking

Represents total content. Layout may vary.



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# MF-RX/250 Series - Telecom PTC Resettable Fuses

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## How to Order

**MF - RX 012/250 U - A 5 - 2**

Multifuse®  
Product Designator

Series  
RX = Radial Leaded Component

Hold Current,  $I_{hold}$   
008-018 (0.08-0.18 Amps)

Max. Interrupt Voltage, V  
250 (250 Volts)

Telecom Options  
U = Uncoated (radial parts only)

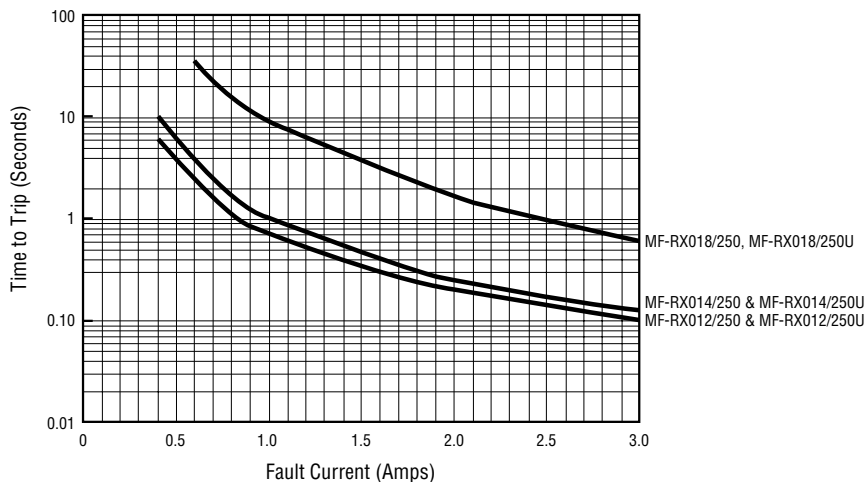
Resistance Sorted  
Narrow resistance ranges - see Resistance Options chart

Resistance Bins of 0.5 ohms  
05 = 0.5 ohm binned parts (epoxy coated)  
5 = 0.5 ohm binned parts (uncoated)

Packaging Options  
- 0 = Bulk Packaging  
- 2 = Tape and Reel\* (available with binned option)

\*Packaged per EIA486-B

## Typical Time to Trip at 23 °C



## Resistance Options

Model	Initial Resistance Values		R1max	Bin
	Ohms @ 23 °C		Ohms @ 23 °C	
	Min.	Max.	Max.	
MF-RX012/250	4.0	8.0	16.0	N/A
MF-RX012/250-A05	7.0	9.0	16.0	0.5
MF-RX012/250-C05	5.5	7.5	14.0	0.5
MF-RX012/250-F05	6.0	10.5	16.0	0.5
MF-RX012/250-105	6.0	9.0	16.0	0.5
MF-RX012/250-205	8.0	10.5	16.0	0.5
MF-RX012/250-T05	7.0	12.0	16.0	0.5
MF-RX012/250U	6.0	10.0	16.0	N/A
MF-RX014/250	3.0	6.0	14.0	N/A
MF-RX014/250-A05	3.0	5.5	12.0	0.5
MF-RX014/250-B05	4.5	6.0	14.0	0.5
MF-RX014/250U	3.5	6.5	12.0	N/A

MF-RX/250, REV. N 06/17

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# MF-RX/250 Series Tape and Reel Specifications

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Devices taped using EIA468–B/IEC286-2 standards. See table below and Figures 1 through 4 for details.

Dimension Description	IEC Mark	EIA Mark	Dimensions	
			Dimensions	Tolerance
Carrier tape width	$W$	$W$	$\frac{18}{(.709)}$	$\frac{-0.5/+1.0}{(-0.02/+0.039)}$
Hold down tape width	$W_0$	$W_4$	$\frac{11}{(.433)}$	min.
Hold down tape			No protrusion	
Top distance between tape edges	$W_2$	$W_6$	$\frac{3}{(.118)}$	max.
Sprocket hole position	$W_1$	$W_5$	$\frac{9}{(.354)}$	$\frac{-0.5/+0.75}{(-0.02/+0.03)}$
Sprocket hole diameter	$D_0$	$D_0$	$\frac{4}{(.157)}$	$\frac{\pm 0.2}{(\pm 0.078)}$
Abscissa to plane (straight lead)	$H$	$H$	$\frac{18.5}{(.728)}$	$\frac{\pm 3.0}{(\pm 1.18)}$
Abscissa to plane (kinked lead)	$H_0$	$H_0$	$\frac{16}{(.63)}$	$\frac{\pm 0.5}{(\pm 0.2)}$
Abscissa to top (straight lead)	$H_1$	$H_1$	$\frac{38.0}{(1.496)}$	max.
Abscissa to top (kinked lead)	$H_1$	$H_1$	$\frac{32.2}{(1.268)}$	max.
Overall width w/lead protrusion (straight lead)		$C_1$	$\frac{55.0}{(2.165)}$	max.
Overall width w/lead protrusion (kinked lead)		$C_1$	$\frac{43.2}{(1.7)}$	max.
Overall width w/o lead protrusion (straight lead)		$C_2$	$\frac{54.0}{(2.126)}$	max.
Overall width w/o lead protrusion (kinked lead)		$C_2$	$\frac{42.5}{(1.673)}$	max.
Protrusion of cutout	$L$	$L$	$\frac{11}{(.433)}$	max.
Sprocket hole pitch	$P_0$	$P_0$	$\frac{12.7}{(0.5)}$	$\frac{\pm 0.3}{(\pm 0.12)}$
Pitch tolerance			20 consecutive	$\frac{\pm 1}{(\pm 0.039)}$
Device pitch			$\frac{12.7}{(0.5)}$	$\frac{\pm 0.3}{(\pm 0.12)}$
Tape thickness	$t$	$t$	$\frac{0.9}{(.035)}$	max.
Tape thickness with splice		$t_1$	$\frac{1.5}{(.059)}$	max.
Splice sprocket hole alignment			0	$\frac{\pm 0.3}{(\pm 0.12)}$
Body lateral deviation	$\Delta_h$	$\Delta_h$	0	$\frac{\pm 1.0}{(\pm 0.039)}$
Body tape plane deviation	$\Delta_p$	$\Delta_p$	0	$\frac{\pm 1.3}{(\pm 0.051)}$
Lead spacing	$F$	$F$	$\frac{5.08}{(0.2)}$	$\frac{-0.5/+0.6}{(-.020/+0.024)}$
Reel width	$w$	$W_2$	$\frac{56.0}{(2.205)}$	max.
Reel diameter	$d$	$a$	$\frac{370.0}{(14.57)}$	max.
Space between flanges less device	$W_1$	$h$	$\frac{4.75}{(.187)}$	$\frac{\pm 3.25}{(\pm 1.28)}$
Arbor hole diameter	$f$	$c$	$\frac{26.0}{(1.024)}$	$\frac{\pm 12.0}{(\pm 4.72)}$
Core diameter	$h$	$n$	$\frac{91}{(3.58)}$	max.
Box			$\frac{67}{(2.64)}$ $\frac{372}{(14.6)}$ $\frac{362}{(14.25)}$	max.
Consecutive missing places			none	
Empty places per reel			0.1 %	

MM  
(INCHES)

DIMENSIONS:

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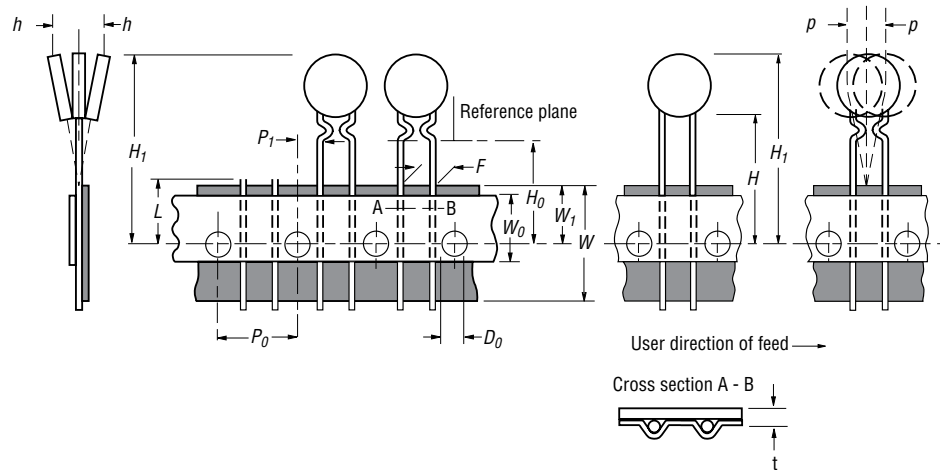
# MF-RX/250 Series Tape and Reel Specifications

**BOURNS®**

**Taped Component Dimensions - Figure 1**

**Applies to Models:**

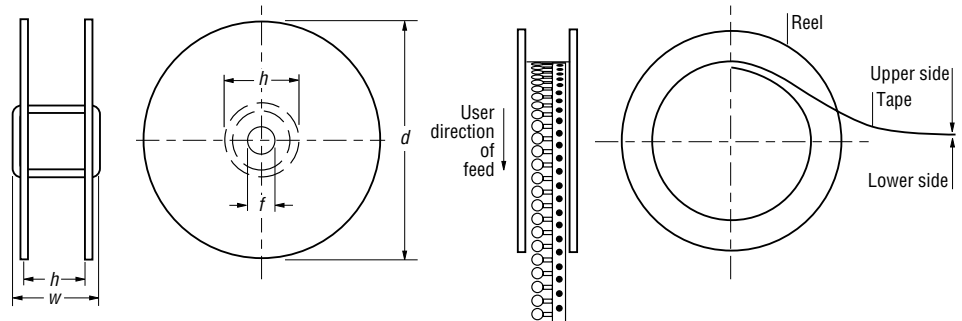
MF-RX012/250U
MF-RX014/250U
MF-RX018/250
MF-RX018/250U



**Reel Dimensions - Figure 2**

**Applies to Models:**

MF-RX012/250U
MF-RX014/250U
MF-RX018/250
MF-RX018/250U



DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

# MF-RX/250 Series Tape and Reel Specifications

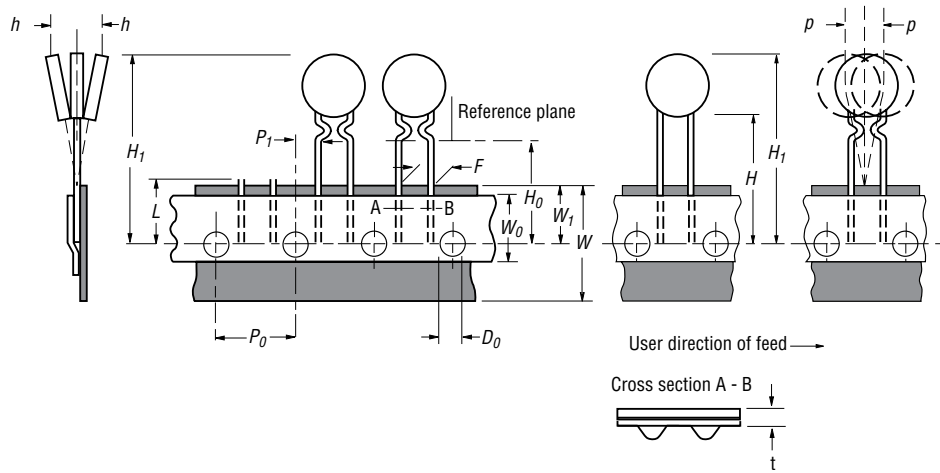
**BOURNS®**

**Taped Component Dimensions -  
Figure 3**

**Applies to Models:**

MF-RX012/250  
MF-RX012/250-A  
MF-RX012/250-C  
MF-RX012/250-F  
MF-RX012/250-1  
MF-RX012/250-2  
MF-RX012/250-T

MF-RX014/250  
MF-RX014/250-A  
MF-RX014/250-B  
MF-RX014-250-T

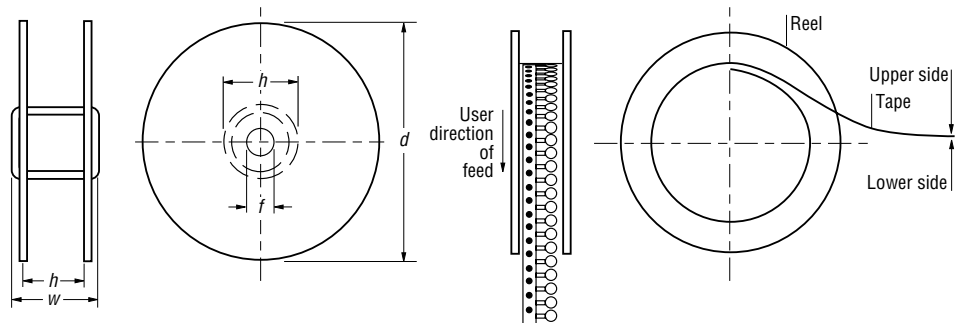


**Reel Dimensions -  
Figure 4**

**Applies to Models:**

MF-RX012/250  
MF-RX012/250-A  
MF-RX012/250-C  
MF-RX012/250-F  
MF-RX012/250-1  
MF-RX012/250-2  
MF-RX012/250-T

MF-RX014/250  
MF-RX014/250-A  
MF-RX014/250-B  
MF-RX014-250-T



DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

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**Application Notice**

- Users are responsible for independent and adequate evaluation of Bourns® Multifuse® Polymer PTC devices in the user's application, including the PPTC device characteristics stated in the applicable data sheet.
- Polymer PTC devices must not be allowed to operate beyond their stated maximum ratings. Operation in excess of such maximum ratings could result in damage to the PTC device and possibly lead to electrical arcing and/or fire. Circuits with inductance may generate a voltage above the rated voltage of the polymer PTC device and should be thoroughly evaluated within the user's application during the PTC selection and qualification process.
- Polymer PTC devices are intended to protect against adverse effects of temporary overcurrent or overtemperature conditions up to rated limits and are not intended to serve as protective devices where overcurrent or overvoltage conditions are expected to be repetitive or prolonged.
- In normal operation, polymer PTC devices experience thermal expansion under fault conditions. Thus, a polymer PTC device must be protected against mechanical stress, and must be given adequate clearance within the user's application to accommodate such thermal expansion. Rigid potting materials or fixed housings or coverings that do not provide adequate clearance should be thoroughly examined and tested by the user, as they may result in the malfunction of polymer PTC devices if the thermal expansion is inhibited.
- Exposure to lubricants, silicon-based oils, solvents, gels, electrolytes, acids, and other related or similar materials may adversely affect the performance of polymer PTC devices.
- Aggressive solvents may adversely affect the performance of polymer PTC devices. Conformal coating, encapsulating, potting, molding, and sealing materials may contain aggressive solvents including but not limited to xylene and toluene, which are known to cause adverse effects on the performance of polymer PTCs. Such aggressive solvents must be thoroughly cured or baked to ensure their complete removal from polymer PTCs to minimize the possible adverse effect on the device.
- Recommended storage conditions should be followed at all times. Such conditions can be found on the applicable data sheet and on the Multifuse® Polymer PTC Moisture/Reflow Sensitivity Classification (MSL) note:  
[https://www.bourns.com/docs/RoHS-MSL/msl\\_mf.pdf](https://www.bourns.com/docs/RoHS-MSL/msl_mf.pdf)

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The use and level of testing applicable to Bourns® custom products shall be negotiated on a case-by-case basis by Bourns and the user for which such Bourns® custom products are specially designed. Absent a written agreement between Bourns and the user regarding the use and level of such testing, the above provisions applicable to Bourns® standard products shall also apply to such Bourns® custom products.

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-  [View MF-RX012/250-0 on WIN SOURCE](#)
-  [Bourns Inc. Information](#)

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-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management