PRELIMINARY

Features

- High energy handling density
- Hybrid (MOV and GDT) design
- Extended temperature range
- Ring-wave tolerant
- Low capacitance
- UL recognized (pending)
- RoHS compliant*

IsoMOV™

IsoMOV™ Series - Hybrid Protection Component

General Information

Bourns introduces its hybrid technology that combines the breakthrough surge performance of EdgMOV™ protection devices with an integrated Gas Discharge Tube (GDT) isolation structure to create the innovative IsoMOV™ Series Hybrid Protection Component. By combining the best features of both MOV and GDT technologies into a single component, the IsoMOV™ Series achieves high performance as a long life protector with lower capacitance, very low leakage and state-of-the-art energy handling density. The IsoMOV™ Series is ideally suited for AC and DC power applications where premium performance and/or space savings are required.

Additional Information

Click these links for more information:

PRODUCT | TECHNICAL LIBRARY | INVENTORY | SAMPLES | CONTACT

Agency Recognition (Pending)

Agency	Standard	File Number
UL	1449 - 4th Ed. Type 4 CA	E313168

Electrical Characteristics (1) (@ T_A = 25 °C Unless Otherwise Noted)

Bourns Part No.	Operating				Protection				
	Max. Continuous Operating Voltage (MCOV)		Max. Leakage @ MCOV (2)	Nominal Capacitance	I_{nom} IEC 61000-4-5 UL 1449/4th.	I_{max}	Ring Wave Surge IEEE 62.41	Max. Clamping Voltage IEC 61000-4-5	
	V_{rms}	V_{dc}	A_{dc}	20 kHz	15 Operations	1 Operation	200 A		
	V	V	μA	pF	A	A	Operations	V_C	I_C
IsoM3-175	175	225	< 10	50	3,000	6,000	± 250	470	50
IsoM3-230	230	300	< 10	50	3,000	6,000	± 250	620	50
IsoM3-250	250	320	< 10	50	3,000	6,000	± 250	675	50
IsoM3-275	275	350	< 10	50	3,000	6,000	± 250	730	50
IsoM3-300	300	385	< 10	50	3,000	6,000	± 250	800	50
IsoM3-320	320	415	< 10	50	3,000	6,000	± 250	875	50
IsoM5-175	175	225	< 10	75	5,000	10,000	± 250	470	100
IsoM5-230	230	300	< 10	75	5,000	10,000	± 250	620	100
IsoM5-250	250	320	< 10	75	5,000	10,000	± 250	675	100
IsoM5-275	275	350	< 10	75	5,000	10,000	± 250	730	100
IsoM5-300	300	385	< 10	75	5,000	10,000	± 250	800	100
IsoM5-320	320	415	< 10	75	5,000	10,000	± 250	875	100
IsoM5-380	385	505	< 10	75	5,000	10,000	± 250	1000	100
IsoM5-420	420	560	< 10	75	5,000	10,000	± 250	1100	100
IsoM5-510	510	670	< 10	75	5,000	10,000	± 250	1300	100
IsoM5-555	555	745	< 10	75	5,000	10,000	± 250	1400	100
IsoM8-250	250	320	< 10	100	8,000	15,000	± 250	675	200
IsoM8-275	275	350	< 10	100	8,000	15,000	± 250	730	200
IsoM8-300	300	385	< 10	100	8,000	15,000	± 250	800	200
IsoM8-320	320	415	< 10	100	8,000	15,000	± 250	875	200
IsoM8-380	385	505	< 10	100	8,000	15,000	± 250	1000	200
IsoM8-420	420	560	< 10	100	8,000	15,000	± 250	1100	200
IsoM8-510	510	670	< 10	100	8,000	15,000	± 250	1300	200
IsoM8-555	555	745	< 10	100	8,000	15,000	± 250	1400	200

NOTE: General parameters are shown. Specific values are being determined.

(1) At delivery AQL 0.65 Level II, DIN SO 285.
(2) Max. leakage limits after life ratings may exceed 10 μA, but will continue to protect at MCOV.

WARNING Cancer and Reproductive Harm
www.P65Warnings.ca.gov

Applications

AC Line Protection
- White goods
- Fire alarm systems
- High value consumer goods
- LED lighting
- UL1449 SPD
- Industrial equipment

DC Line Protection
- Solar inverters
- Power supplies
- Distribution systems

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Environmental Specifications

Storage Temperature Range (T_{STG}) ..... -40 °C to +125 °C
Operating Temperature Range (T_{OPR}) ..... -40 °C to +125 °C
Climatic Category (IEC 60068-1) ..... 40 / 125 / 21
Moisture Sensitivity Level 1
ESD Classification (HBM) ..... N/A

How to Order

IsoM 8 - xxx - B - L2

Model Designator
IsoM = IsoMOV™ Hybrid Protection Component

Disc Surge Level
3 = 3 kA
5 = 5 kA
8 = 8 kA

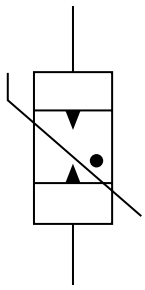
RMS Voltage
See Electrical Characteristics Table

Packaging
B = Bulk (Standard)
R = Reel Pack*

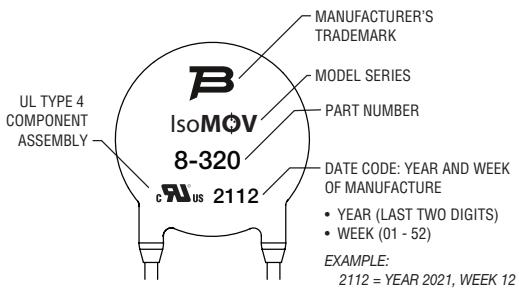
Lead Style
L2 = In-Line Leads (Standard)

*Reel Pack option not available for IsoM8 models.

Circuit Diagram

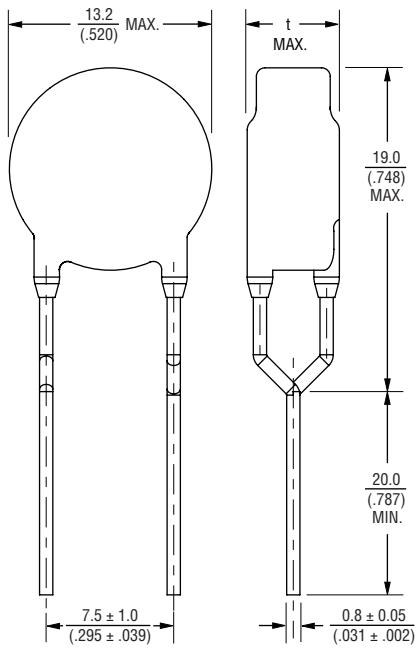


Typical Part Marking



Product Dimensions

IsoM3-xxx-L2
In-Line Leads



Model	IsoM3-xxx-L2	
	a	t
IsoM3-175	--	6.1 (.240)
IsoM3-230	--	6.5 (.256)
IsoM3-250	--	6.7 (.264)
IsoM3-275	--	6.9 (.272)
IsoM3-300	--	7.0 (.276)
IsoM3-320	--	7.2 (.283)

DIMENSIONS: MM (INCHES)

IsoMOV™ Series - Hybrid Protection Component

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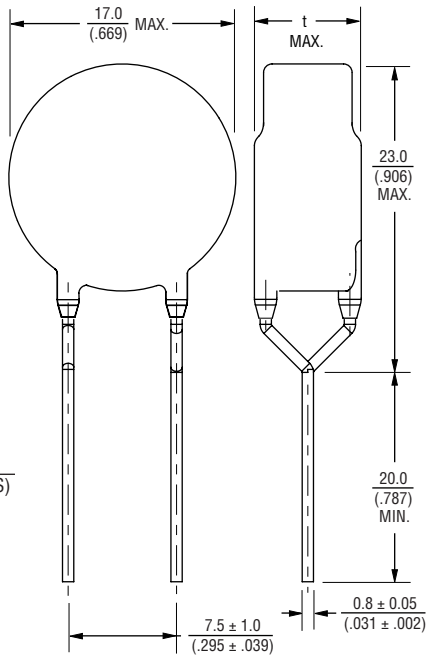
Product Dimensions (Continued)

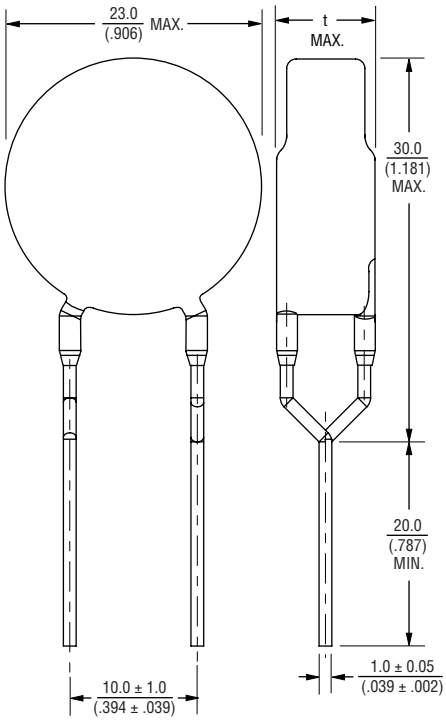
IsoM5-xxx-L2
In-Line Leads



DIMENSIONS: MM / (INCHES)

Model	IsoM5-xxx-L2	
	a	t
IsoM5-175	--	5.6 (.220)
IsoM5-230	--	6.1 (.240)
IsoM5-250	--	6.2 (.244)
IsoM5-275	--	6.3 (.248)
IsoM5-300	--	6.7 (.264)
IsoM5-320	--	6.8 (.268)
IsoM5-380	--	7.0 (.276)
IsoM5-420	--	7.7 (.303)
IsoM5-510	--	8.2 (.323)
IsoM5-555	--	8.7 (.343)

IsoM8-xxx-L2
In-Line Leads



Model	IsoM8-xxx-L2	
	a	t
IsoM8-250	--	6.6 (.260)
IsoM8-275	--	6.7 (.264)
IsoM8-300	--	7.0 (.276)
IsoM8-320	--	7.2 (.283)
IsoM8-380	--	7.5 (.295)
IsoM8-420	--	7.9 (.311)
IsoM8-510	--	8.6 (.339)
IsoM8-555	--	8.9 (.350)

DIMENSIONS: MM / (INCHES)

IsoMOV™ Series - Hybrid Protection Component

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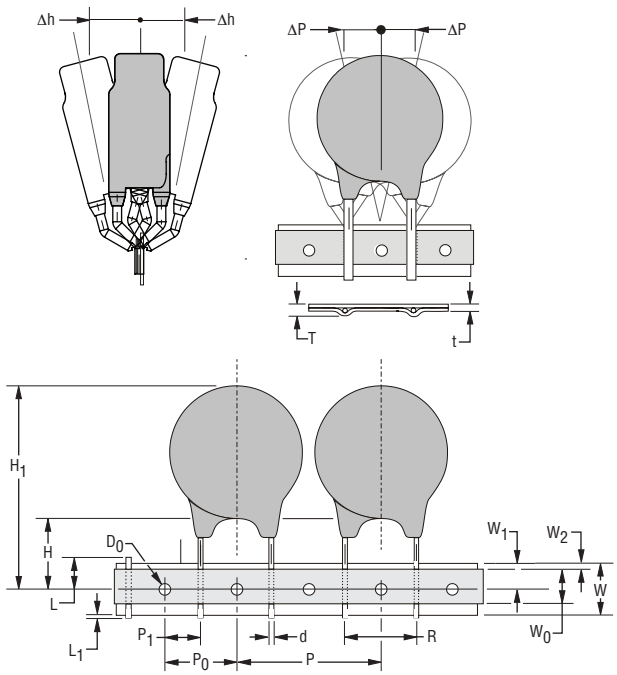
Packaging Specifications

TAPE

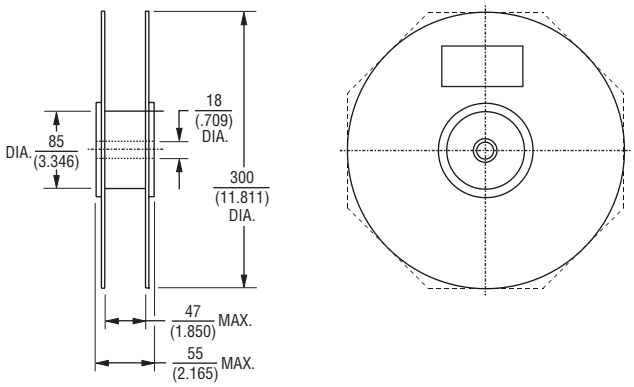
Conforms to IES Publication 286-2 Ed. 3: 2008-03



DIMENSIONS: MM (INCHES)

Symbol	Parameter	Model		
		IsoM3	IsoM5	IsoM8
W	Carrier tape width	18 +1.0/-0.5 (.709 +.039/-.020)		
W_0	Hold down tape width	5 (.197) MIN.		
W_1	Sprocket hole position	9 +0.75/-0.5 (.354 +.030/-.020)		
W_2	Distance between the upper edges of the carrier tape and hold down tape	3 (.118) MAX.		
T	Total tape thickness	1.7 (.067) MAX.		1.9 (.075) MAX.
t	Tape thickness	0.9 (.035) MAX.		
P	Pitch of component	12.7 ± 0.3 (.500 ± .012)	25.4 ± 1.0 (1.000 ± .039)	
P_0	Feed hole pitch	12.7 ± 0.3 (.500 ± .012)		
P_1	Feed hole center to pitch	8.95± 0.7 (.352 ± .028)		7.7± 0.7 (.303 ± .028)
R	Lead spacing	7.5 +0.5/-0.2 (.295 +.020/-.008)		10 +0.5/-0.2 (.394 +.020/-.008)
ΔP	Component alignment	±1.3 (±.051) MAX.		
Δh	Component alignment	±2.0 (±.079) MAX.		
d	Wire diameter	0.8 (.31) MAX.		1.0 (.039) MAX.
D_0	Feed hold diameter	4 ± 0.2 (.157 ± .008)		
H	Height from tape center to component base	18 +2.0/-0.0 (.709 +.079/-.000)		
H_0	Seating plane height	16 ± 0.5 (.630 ± .020)		
H_1	Component height	46.5 (1.831) MAX.		
L	Protrusion - cut out	11 (.433) MAX.		
L_1	Protrusion - cut off	0.5 (.020) MAX.		

REEL



DIMENSIONS: MM (INCHES)

IsoMOV™ Series - Hybrid Protection Component

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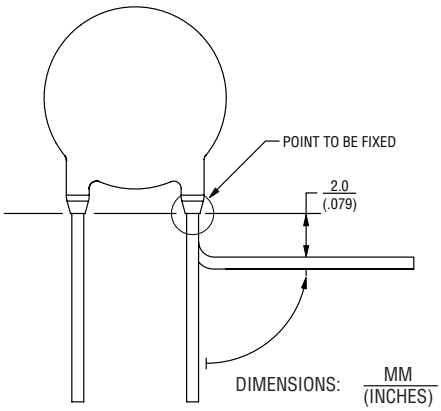
Packaging Quantities - Bulk

Voltage	Model		
	IsoM3	IsoM5	IsoM8
175	500	400	
230	500	300	
250	500	300	200
275	500	300	200
300	500	300	200
320	500	300	200
380		300	200
420		300	200
510		300	200
555		300	200

Packaging Quantities - Reel

Voltage	Model		
	IsoM3	IsoM5	IsoM8
175	1000	500	
230	1000	500	
250	800	400	
275	800	400	
300	800	400	
320	800	400	
380		400	
420		300	
510		300	
555		300	

Assembly Recommendations for Through-Hole Components



Very often before soldering through-hole components, their leads get bent. It is important not to damage the components during lead bending. Damage most commonly incurred during bending is cracks in epoxy parts, which can lead to increased humidity sensitivity of a component and, consequentially, a shorter lifetime.

In order to avoid epoxy damage, it is necessary to:
- fix the most sensitive point (epoxy parts) of a component body
- bend the wire at least 2 mm below the end of epoxy parts

Other potential damage to a component which can lead to component failure or a shorter lifetime is thermal shock during manual soldering with a soldering iron. This can occur when a soldering iron is placed too close to one point of the component body and it happens most often when the solder joint is too close to the varistor body.

Resistance to Soldering Heat

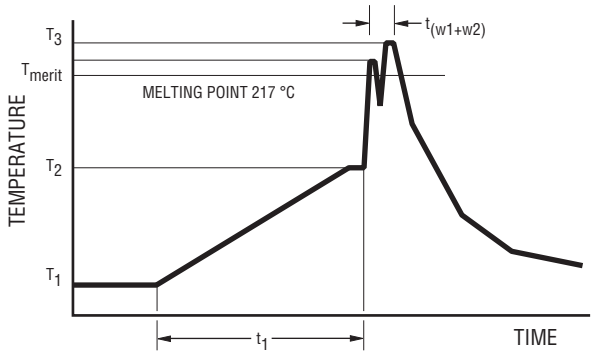
In the case of automatic wave soldering, it is important to provide sufficient resistance to soldering heat. In order to prevent any potential problems, internal standards were introduced for testing the resistance to soldering heat of through-hole components: 300 °C, 10 seconds.

Pb-free Wave Soldering Profile Recommendations

Recommended soldering profiles are in accordance with JEDEC standard curves (J-STD-020D) and are, therefore, compatible with the Pb-free process.

Assembly Recommendations for Through-Hole Components (Continued)

Lead-free Wave Soldering Profile - Pb-free wave profile requirements for soldering heat resistance of components



Parameter	Symbol	Specification
Preheating temperature gradient		4 °C/sec. max.
Preheating time	t_1	2 to 5 min.
Min. preheating temperature	T_1	130 °C
Max. preheating temperature	T_2	180 °C
Melting temperature/point	T_{meltv}	217 °C
Time in wave soldering phase (w_1+w_2)	t_{w1+w2}	10 sec.
Max. wave temperature (w_1+w_2)	T_s	265 °C +0/-5 °C
Cooling temperature gradient		6° C/sec. max.
Temperature jump from T_2 to T_3 (w_1)	$T_{3(w1)}$ - T_2	120 °C max
Time from 25 °C to T_3 (wave temperature)		8 min. max.

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