




Features

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

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Agency Recognition

Agency	Standard	File Number
	1449 - 4th Ed. Type 4 CA Canadian Type 5 SPD CSA C22.2 No. 269.4-17	E313168

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

Bourns Part No.	Operating				Protection					
	Maximum Continuous Operating Voltage (MCOV)		Maximum Leakage @ MCOV ⁽²⁾	Nominal Capacitance	I _{nom} ^{(3) (4)}		I _{max} ⁽⁴⁾	Ring Wave Surge IEEE 62.41	Maximum Clamping Voltage	
	V _{rms}	V _{dc}	A _{dc}	20 kHz	15 Operations	10 Operations	1 Operation	200 A	V _c	I _c
	V	V	μA	pF	A		A	Operations	V	A
IsoM3-175	175	225	< 10	30	3,000		6,000	± 250	470	50
IsoM3-230	230	300	< 10	30	3,000		6,000	± 250	620	50
IsoM3-250	250	320	< 10	30	3,000		6,000	± 250	675	50
IsoM3-275	275	350	< 10	30	3,000		6,000	± 250	730	50
IsoM3-300	300	385	< 10	30	3,000		6,000	± 250	800	50
IsoM3-320	320	415	< 10	30	3,000		6,000	± 250	875	50
IsoM5-175	175	225	< 10	40	5,000		10,000	± 250	470	100
IsoM5-230	230	300	< 10	40	5,000		10,000	± 250	620	100
IsoM5-250	250	320	< 10	40	5,000		10,000	± 250	675	100
IsoM5-275	275	350	< 10	40	5,000		10,000	± 250	730	100
IsoM5-300	300	385	< 10	40	5,000		10,000	± 250	800	100
IsoM5-320	320	415	< 10	40	5,000		10,000	± 250	875	100
IsoM5-380	385	505	< 10	40	5,000		10,000	± 250	1000	100
IsoM5-420	420	560	< 10	40	5,000		10,000	± 250	1100	100
IsoM5-510	510	670	< 10	40	5,000		10,000	± 250	1300	100
IsoM5-555	555	745	< 10	40	5,000		10,000	± 250	1400	100
IsoM8-250	250	320	< 10	50		8,000	15,000	± 250	675	200
IsoM8-275	275	350	< 10	50		8,000	15,000	± 250	730	200
IsoM8-300	300	385	< 10	50		8,000	15,000	± 250	800	200
IsoM8-320	320	415	< 10	50		8,000	15,000	± 250	875	200
IsoM8-380	385	505	< 10	50		8,000	15,000	± 250	1000	200
IsoM8-420	420	560	< 10	50		8,000	15,000	± 250	1100	200
IsoM8-510	510	670	< 10	50		8,000	15,000	± 250	1300	200
IsoM8-555	555	745	< 10	50		8,000	15,000	± 250	1400	200

⁽¹⁾ At delivery AQL 0.65 Level II, DIN ISO 2859.

⁽²⁾ Maximum leakage limits after life ratings may exceed 10 μA, but will continue to protect at MCOV.

⁽³⁾ I_{nom} service life specified at 3-minute time intervals between surges with rated MCOV applied during the entire resting period and 15 minutes after the last surge.

⁽⁴⁾ Surge profile 8/20 μs per IEC 61000-4-5.



WARNING Cancer and Reproductive Harm

www.P65Warnings.ca.gov

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*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

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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

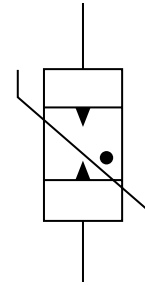
How to Order

Model Designator **IsoM 8 - 320 - B - L2**
 IsoM = IsoMOV™ Hybrid Protection Component
 Component I_{nom} Rating
 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)

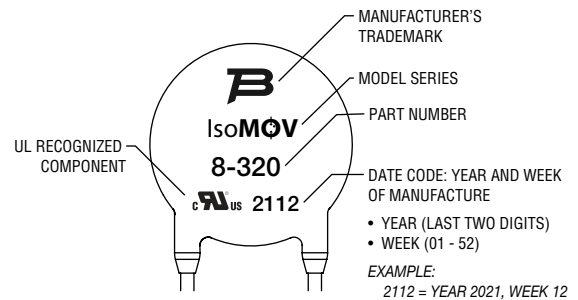
*Reel Pack option not available for IsoM8 models.

**L1 and L5 lead styles available upon request.

Circuit Diagram

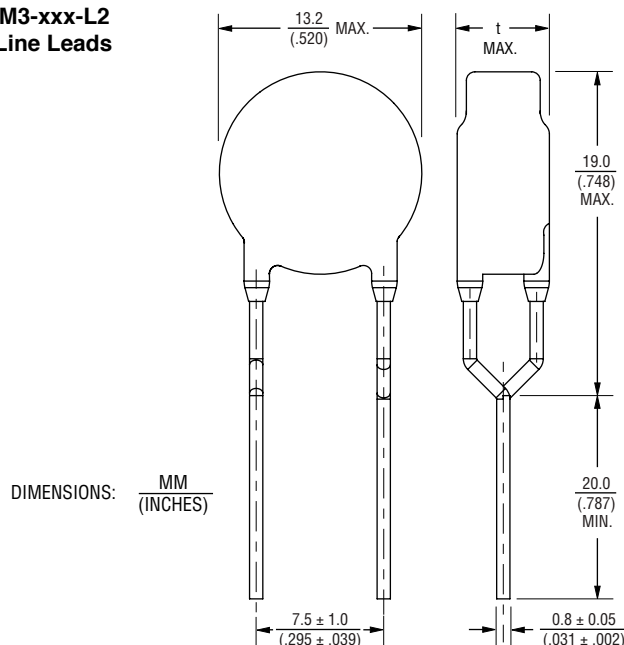


Typical Part Marking



Product Dimensions

IsoM3-xxx-L2 In-Line Leads



Model	IsoM3-xxx-L2
	t MAX.
IsoM3-175	$\frac{6.1}{(.240)}$
IsoM3-230	$\frac{6.5}{(.256)}$
IsoM3-250	$\frac{6.7}{(.264)}$
IsoM3-275	$\frac{6.9}{(.272)}$
IsoM3-300	$\frac{7.0}{(.276)}$
IsoM3-320	$\frac{7.2}{(.283)}$

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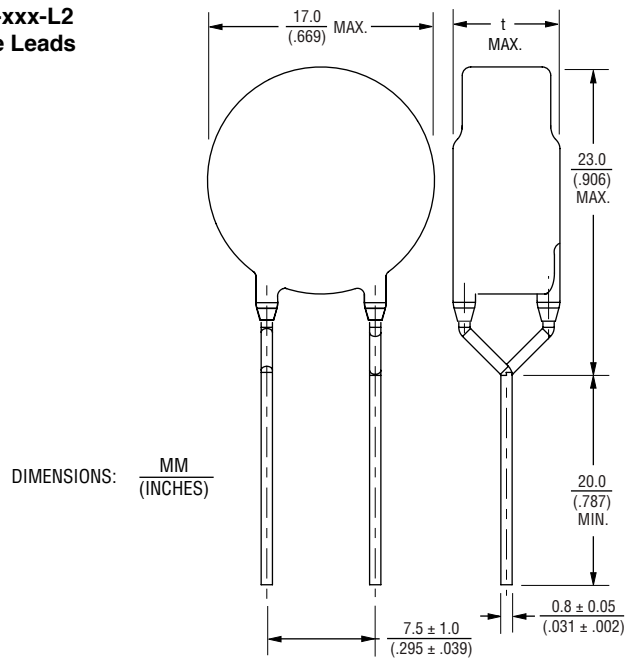
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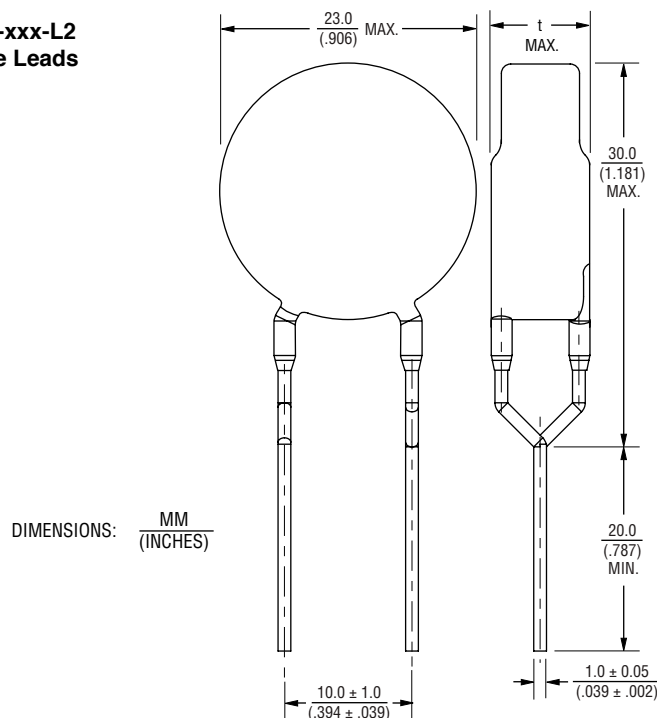
Product Dimensions (Continued)

IsoM5-xxx-L2 In-Line Leads



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

IsoM8-xxx-L2 In-Line Leads



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

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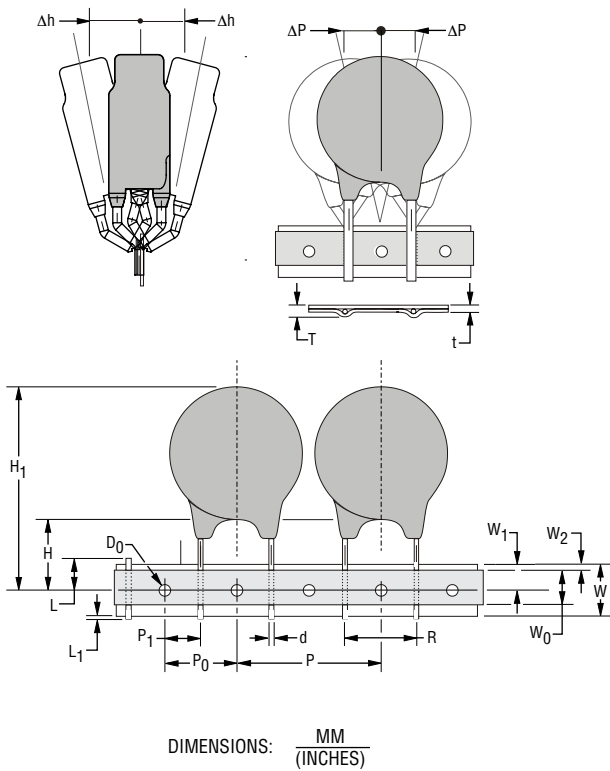
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Packaging Specifications

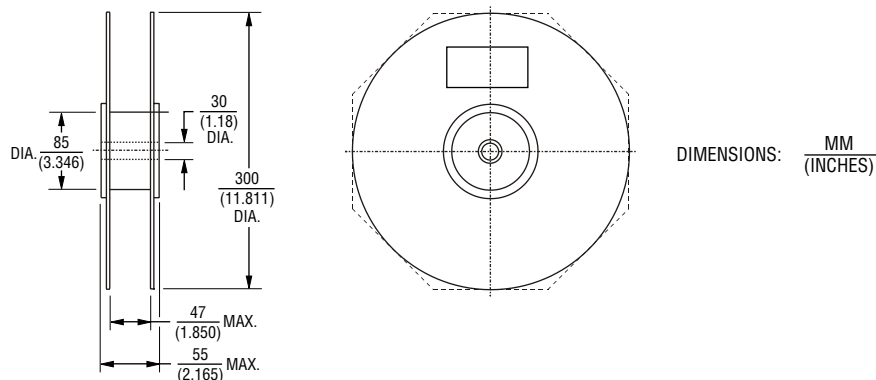
TAPE

Conforms to IEC 60286-2:2015.



Symbol	Parameter	Model		
		IsoM3	IsoM5	IsoM8
W	Carrier tape width	$\frac{18 \pm 1.0/-0.5}{(.709 + .039/- .020)}$		
W ₀	Hold down tape width	$\frac{5}{(.197)}$ MIN.		
W ₁	Sprocket hole position	$\frac{9 \pm 0.75/-0.5}{(.354 + .030/- .020)}$		
W ₂	Distance between the upper edges of the carrier tape and hold down tape	$\frac{3}{(.118)}$ MAX.		
T	Total tape thickness	$\frac{1.7}{(.067)}$ MAX.	$\frac{1.9}{(.075)}$ MAX.	
t	Tape thickness	$\frac{0.9}{(.035)}$ MAX.		
P	Pitch of component	$\frac{12.7 \pm 0.3}{(.500 \pm .012)}$	$\frac{25.4 \pm 1.0}{(1.000 \pm .039)}$	
P ₀	Feed hole pitch	$\frac{12.7 \pm 0.3}{(.500 \pm .012)}$		
P ₁	Feed hole center to pitch	$\frac{8.95 \pm 0.7}{(.352 \pm .028)}$	$\frac{7.7 \pm 0.7}{(.303 \pm .028)}$	
R	Lead spacing	$\frac{7.5 \pm 0.5/-0.2}{(.295 \pm .020/- .008)}$	$\frac{10 \pm 0.5/-0.2}{(.394 \pm .020/- .008)}$	
ΔP	Component alignment	$\frac{\pm 1.3}{(\pm .051)}$ MAX.		
Δh	Component alignment	$\frac{\pm 2.0}{(\pm .079)}$ MAX.		
d	Wire diameter	$\frac{0.8}{(.31)}$ MAX.	$\frac{1.0}{(.039)}$ MAX.	
D ₀	Feed hold diameter	$\frac{4 \pm 0.2}{(.157 \pm .008)}$		
H	Height from tape center to component base	$\frac{18 \pm 2.0/-0.0}{(.709 \pm .079/- .000)}$		
H ₀	Seating plane height	$\frac{16 \pm 0.5}{(.630 \pm .020)}$		
H ₁	Component height	$\frac{46.5}{(1.831)}$ MAX.		
L	Protrusion - cut out	$\frac{11}{(.433)}$ MAX.		
L ₁	Protrusion - cut off	$\frac{0.5}{(.020)}$ MAX.		

REEL



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IsoMOV™ Series - Hybrid Protection Component

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Packaging Quantities - Bulk

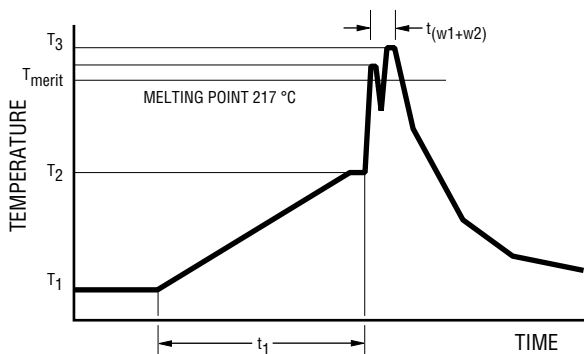
Voltage	Model		
	IsoM3	IsoM5	IsoM8
175	500	300	200
230			
250			
275			
300			
320			
380			
420			
510			
555			

Packaging Quantities - Reel

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

Assembly Recommendations for Through-Hole Components

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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