




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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INVENTORY




SAMPLES



CONTACT

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 | | | | | | |
|-----------------|--|-----------------|---------------------------------------|---------------------|-------------------------------------|---------------|---------------------------------|-----------------------|----------------------------|--------------------------|----------------|
| | Max. Continuous Operating Voltage (MCOV) | | Maximum Leakage @ MCOV ⁽²⁾ | Nominal Capacitance | I _{nom} ^{(3) (4)} | | I _{max} ⁽⁴⁾ | Energy ⁽⁵⁾ | Ring Wave Surge IEEE 62.41 | Maximum Clamping Voltage | |
| | V _{rms} | V _{dc} | A _{dc} | 20 kHz | 15 Operations | 10 Operations | 1 Operation | 1 Operation | 200 A | V _c | I _c |
| | V | V | μA | pF | A | | A | J | Operations | V | A |
| IsoM3-175 | 175 | 225 | < 10 | 30 | 3,000 | | 6,000 | 88 | ± 250 | 470 | 50 |
| IsoM3-230 | 230 | 300 | < 10 | 30 | 3,000 | | 6,000 | 109 | ± 250 | 620 | 50 |
| IsoM3-250 | 250 | 320 | < 10 | 30 | 3,000 | | 6,000 | 117 | ± 250 | 675 | 50 |
| IsoM3-275 | 275 | 350 | < 10 | 30 | 3,000 | | 6,000 | 126 | ± 250 | 730 | 50 |
| IsoM3-300 | 300 | 385 | < 10 | 30 | 3,000 | | 6,000 | 136 | ± 250 | 800 | 50 |
| IsoM3-320 | 320 | 415 | < 10 | 30 | 3,000 | | 6,000 | 144 | ± 250 | 875 | 50 |
| IsoM5-175 | 175 | 225 | < 10 | 40 | 5,000 | | 10,000 | 144 | ± 250 | 470 | 100 |
| IsoM5-230 | 230 | 300 | < 10 | 40 | 5,000 | | 10,000 | 188 | ± 250 | 620 | 100 |
| IsoM5-250 | 250 | 320 | < 10 | 40 | 5,000 | | 10,000 | 203 | ± 250 | 675 | 100 |
| IsoM5-275 | 275 | 350 | < 10 | 40 | 5,000 | | 10,000 | 223 | ± 250 | 730 | 100 |
| IsoM5-300 | 300 | 385 | < 10 | 40 | 5,000 | | 10,000 | 242 | ± 250 | 800 | 100 |
| IsoM5-320 | 320 | 415 | < 10 | 40 | 5,000 | | 10,000 | 258 | ± 250 | 875 | 100 |
| IsoM5-380 | 385 | 505 | < 10 | 40 | 5,000 | | 10,000 | 305 | ± 250 | 1000 | 100 |
| IsoM5-420 | 420 | 560 | < 10 | 40 | 5,000 | | 10,000 | 336 | ± 250 | 1100 | 100 |
| IsoM5-510 | 510 | 670 | < 10 | 40 | 5,000 | | 10,000 | 407 | ± 250 | 1300 | 100 |
| IsoM5-555 | 555 | 745 | < 10 | 40 | 5,000 | | 10,000 | 442 | ± 250 | 1400 | 100 |
| IsoM8-250 | 250 | 320 | < 10 | 50 | | 8,000 | 15,000 | 313 | ± 250 | 675 | 200 |
| IsoM8-275 | 275 | 350 | < 10 | 50 | | 8,000 | 15,000 | 340 | ± 250 | 730 | 200 |
| IsoM8-300 | 300 | 385 | < 10 | 50 | | 8,000 | 15,000 | 367 | ± 250 | 800 | 200 |
| IsoM8-320 | 320 | 415 | < 10 | 50 | | 8,000 | 15,000 | 388 | ± 250 | 875 | 200 |
| IsoM8-380 | 385 | 505 | < 10 | 50 | | 8,000 | 15,000 | 453 | ± 250 | 1000 | 200 |
| IsoM8-420 | 420 | 560 | < 10 | 50 | | 8,000 | 15,000 | 497 | ± 250 | 1100 | 200 |
| IsoM8-510 | 510 | 670 | < 10 | 50 | | 8,000 | 15,000 | 594 | ± 250 | 1300 | 200 |
| IsoM8-555 | 555 | 745 | < 10 | 50 | | 8,000 | 15,000 | 643 | ± 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.

(5) Measured at I_{max}: 8/20 μs using numerical integration method $E = \int_0^T P(t)dt$



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

*"IsoMOV" and "EdgMOV" are trademarks of Bourns, Inc.
*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

Specifications are subject to change without notice. Users should verify actual device performance in their specific applications. The products described herein and this document are subject to specific legal disclaimers as set forth on the last page of this document, and at www.bourns.com/docs/legal/disclaimer.pdf.

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

IsoMOV™ Series - Hybrid Protection Component

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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 - 320 - B - L2

Model Designator _____
 IsoM = IsoMOV™ Hybrid Protection Component

Component I_{nom} Rating _____
 3 = 3 kA
 5 = 5 kA
 8 = 8 kA

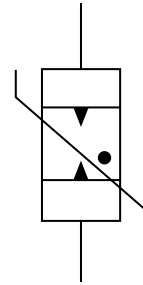
RMS Voltage _____
 See Electrical Characteristics Table

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

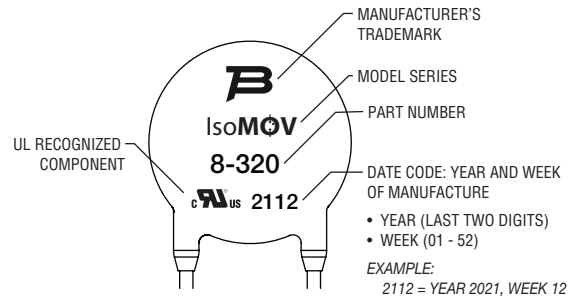
Lead Style _____
 L1 = Straight Leads
 L2 = In-Line Leads (Standard)
 L5 = Crimped Leads

*Reel Pack option not available for IsoM8 models.

Circuit Diagram

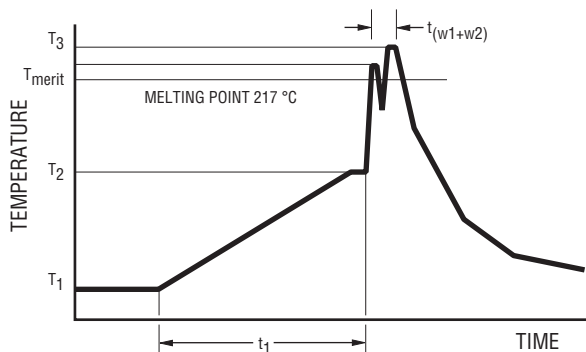


Typical Part Marking



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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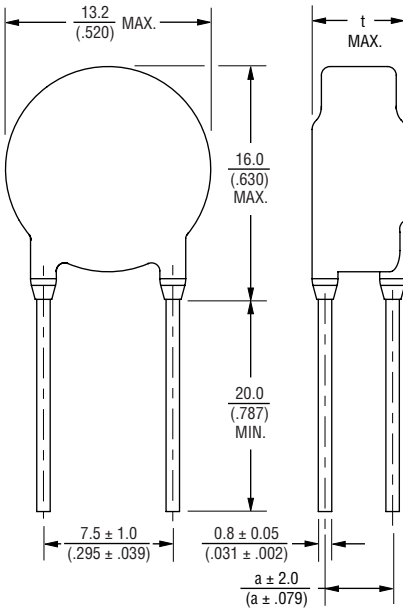
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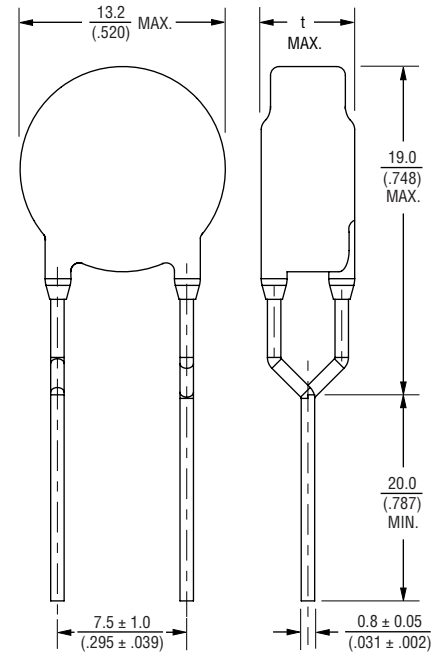
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Product Dimensions

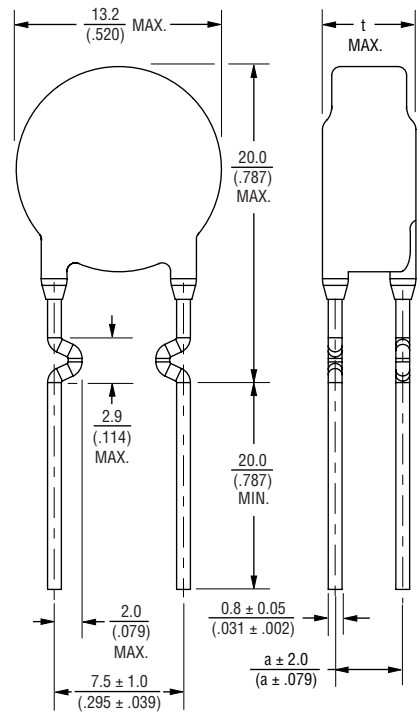
**IsoM3-xxx-L1
Straight Leads**



**IsoM3-xxx-L2
In-Line Leads**



**IsoM3-xxx-L5
Crimped Leads**



| Model | IsoM3-xxx-L1 | | IsoM3-xxx-L2 | | IsoM3-xxx-L5 | |
|-----------|----------------------|----------------------|--------------|----------------------|----------------------|----------------------|
| | a | t | a | t | a | t |
| IsoM3-175 | $\frac{2.8}{(.110)}$ | $\frac{6.1}{(.240)}$ | -- | $\frac{6.1}{(.240)}$ | $\frac{2.8}{(.110)}$ | $\frac{6.1}{(.240)}$ |
| IsoM3-230 | $\frac{3.3}{(.129)}$ | $\frac{6.5}{(.256)}$ | -- | $\frac{6.5}{(.256)}$ | $\frac{3.3}{(.129)}$ | $\frac{6.5}{(.256)}$ |
| IsoM3-250 | $\frac{3.5}{(.137)}$ | $\frac{6.7}{(.264)}$ | -- | $\frac{6.7}{(.264)}$ | $\frac{3.5}{(.137)}$ | $\frac{6.7}{(.264)}$ |
| IsoM3-275 | $\frac{3.6}{(.141)}$ | $\frac{6.9}{(.272)}$ | -- | $\frac{6.9}{(.272)}$ | $\frac{3.6}{(.141)}$ | $\frac{6.9}{(.272)}$ |
| IsoM3-300 | $\frac{3.9}{(.153)}$ | $\frac{7.1}{(.280)}$ | -- | $\frac{7.1}{(.280)}$ | $\frac{3.9}{(.153)}$ | $\frac{7.1}{(.280)}$ |
| IsoM3-320 | $\frac{4.0}{(.157)}$ | $\frac{7.2}{(.283)}$ | -- | $\frac{7.2}{(.283)}$ | $\frac{4.0}{(.157)}$ | $\frac{7.2}{(.283)}$ |

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

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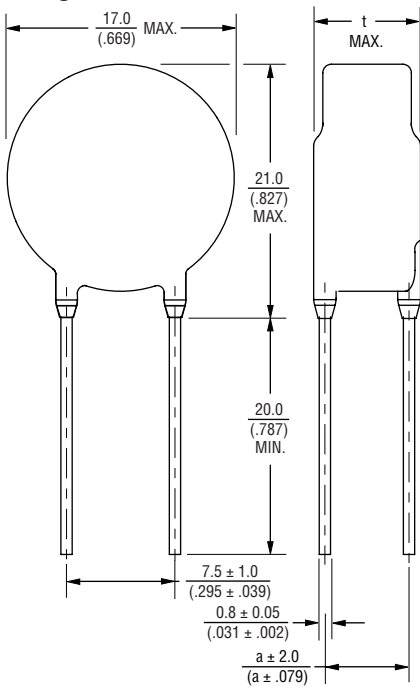
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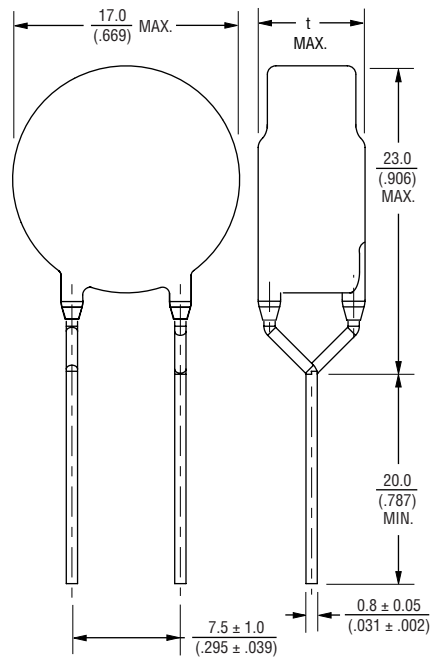
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Product Dimensions (Continued)

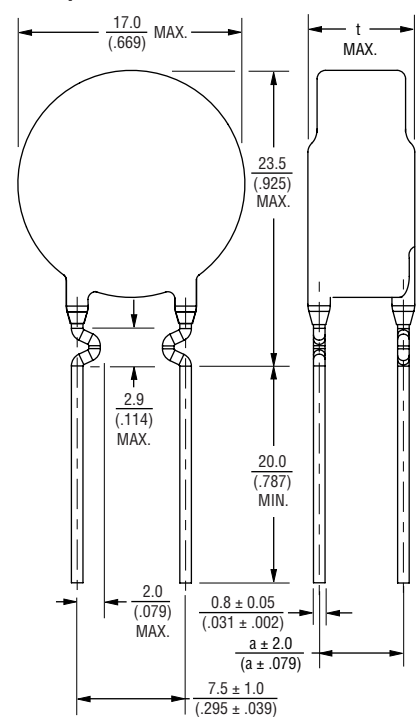
**IsoM5-xxx-L1
Straight Leads**



**IsoM5-xxx-L2
In-Line Leads**



**IsoM5-xxx-L5
Crimped Leads**



| Model | IsoM5-xxx-L1 | | IsoM5-xxx-L2 | | IsoM5-xxx-L5 | |
|-----------|----------------------|----------------------|--------------|----------------------|----------------------|----------------------|
| | a | t | a | t | a | t |
| IsoM5-175 | $\frac{2.8}{(.110)}$ | $\frac{6.0}{(.236)}$ | -- | $\frac{6.0}{(.236)}$ | $\frac{2.8}{(.110)}$ | $\frac{6.0}{(.236)}$ |
| IsoM5-230 | $\frac{3.3}{(.130)}$ | $\frac{6.5}{(.256)}$ | -- | $\frac{6.5}{(.256)}$ | $\frac{3.3}{(.130)}$ | $\frac{6.5}{(.256)}$ |
| IsoM5-250 | $\frac{3.5}{(.138)}$ | $\frac{6.7}{(.264)}$ | -- | $\frac{6.7}{(.264)}$ | $\frac{3.5}{(.138)}$ | $\frac{6.7}{(.264)}$ |
| IsoM5-275 | $\frac{3.6}{(.142)}$ | $\frac{6.8}{(.268)}$ | -- | $\frac{6.8}{(.268)}$ | $\frac{3.6}{(.142)}$ | $\frac{6.8}{(.268)}$ |
| IsoM5-300 | $\frac{3.9}{(.154)}$ | $\frac{7.1}{(.280)}$ | -- | $\frac{7.1}{(.280)}$ | $\frac{3.9}{(.154)}$ | $\frac{7.1}{(.280)}$ |
| IsoM5-320 | $\frac{3.9}{(.154)}$ | $\frac{7.1}{(.280)}$ | -- | $\frac{7.1}{(.280)}$ | $\frac{3.9}{(.154)}$ | $\frac{7.1}{(.280)}$ |
| IsoM5-380 | $\frac{4.5}{(.177)}$ | $\frac{7.7}{(.303)}$ | -- | $\frac{7.7}{(.303)}$ | $\frac{4.5}{(.177)}$ | $\frac{7.7}{(.303)}$ |
| IsoM5-420 | $\frac{4.9}{(.193)}$ | $\frac{8.1}{(.319)}$ | -- | $\frac{8.1}{(.319)}$ | $\frac{4.9}{(.193)}$ | $\frac{8.1}{(.319)}$ |
| IsoM5-510 | $\frac{5.6}{(.220)}$ | $\frac{8.8}{(.346)}$ | -- | $\frac{8.8}{(.346)}$ | $\frac{5.6}{(.220)}$ | $\frac{8.8}{(.346)}$ |
| IsoM5-555 | $\frac{5.8}{(.228)}$ | $\frac{9.0}{(.354)}$ | -- | $\frac{9.0}{(.354)}$ | $\frac{5.8}{(.228)}$ | $\frac{9.0}{(.354)}$ |

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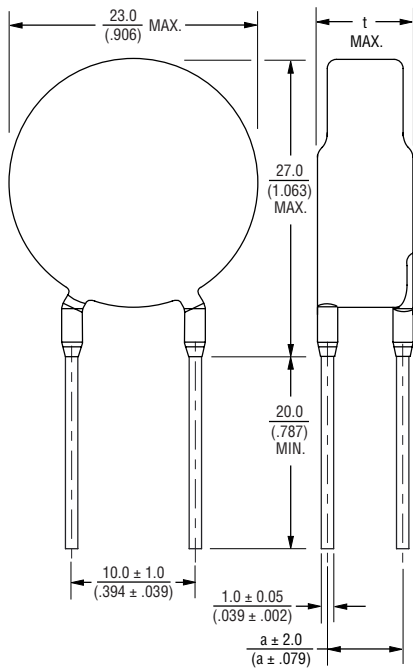
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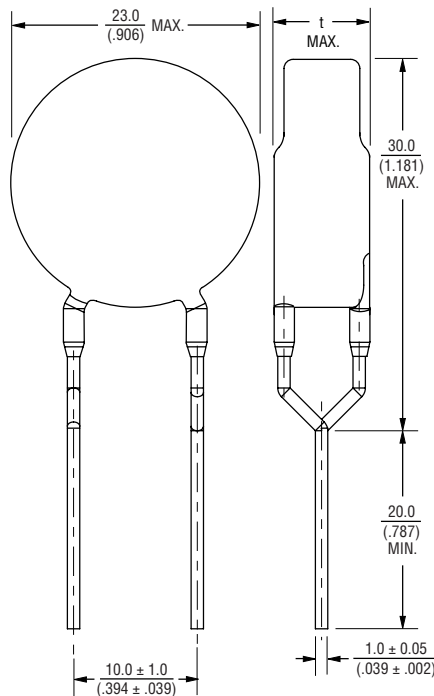
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Product Dimensions (Continued)

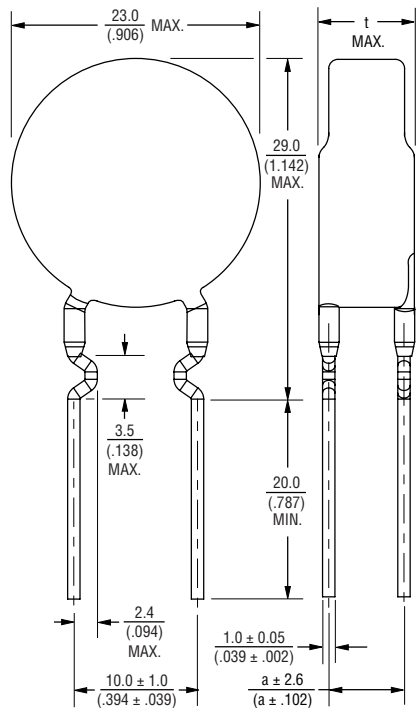
IsoM8-xxx-L1
Straight Leads



IsoM8-xxx-L2
In-Line Leads



IsoM8-xxx-L5
Crimped Leads



| Model | IsoM8-xxx-L1 | | IsoM8-xxx-L2 | | IsoM8-xxx-L5 | |
|-----------|----------------------|----------------------|--------------|----------------------|----------------------|----------------------|
| | a | t | a | t | a | t |
| IsoM8-250 | $\frac{3.7}{(.146)}$ | $\frac{7.1}{(.280)}$ | -- | $\frac{7.1}{(.280)}$ | $\frac{3.7}{(.146)}$ | $\frac{7.1}{(.280)}$ |
| IsoM8-275 | $\frac{3.8}{(.150)}$ | $\frac{7.2}{(.283)}$ | -- | $\frac{7.2}{(.283)}$ | $\frac{3.8}{(.150)}$ | $\frac{7.2}{(.283)}$ |
| IsoM8-300 | $\frac{4.1}{(.161)}$ | $\frac{7.5}{(.295)}$ | -- | $\frac{7.5}{(.295)}$ | $\frac{4.1}{(.161)}$ | $\frac{7.5}{(.295)}$ |
| IsoM8-320 | $\frac{4.2}{(.165)}$ | $\frac{7.6}{(.299)}$ | -- | $\frac{7.6}{(.299)}$ | $\frac{4.2}{(.165)}$ | $\frac{7.6}{(.299)}$ |
| IsoM8-380 | $\frac{4.6}{(.181)}$ | $\frac{8.0}{(.315)}$ | -- | $\frac{8.0}{(.315)}$ | $\frac{4.6}{(.181)}$ | $\frac{8.0}{(.315)}$ |
| IsoM8-420 | $\frac{5.0}{(.197)}$ | $\frac{8.4}{(.331)}$ | -- | $\frac{8.4}{(.331)}$ | $\frac{5.0}{(.197)}$ | $\frac{8.4}{(.331)}$ |
| IsoM8-510 | $\frac{5.8}{(.228)}$ | $\frac{9.2}{(.362)}$ | -- | $\frac{9.2}{(.362)}$ | $\frac{5.8}{(.228)}$ | $\frac{9.2}{(.362)}$ |
| IsoM8-555 | $\frac{6.0}{(.236)}$ | $\frac{9.4}{(.370)}$ | -- | $\frac{9.4}{(.370)}$ | $\frac{6.0}{(.236)}$ | $\frac{9.4}{(.370)}$ |

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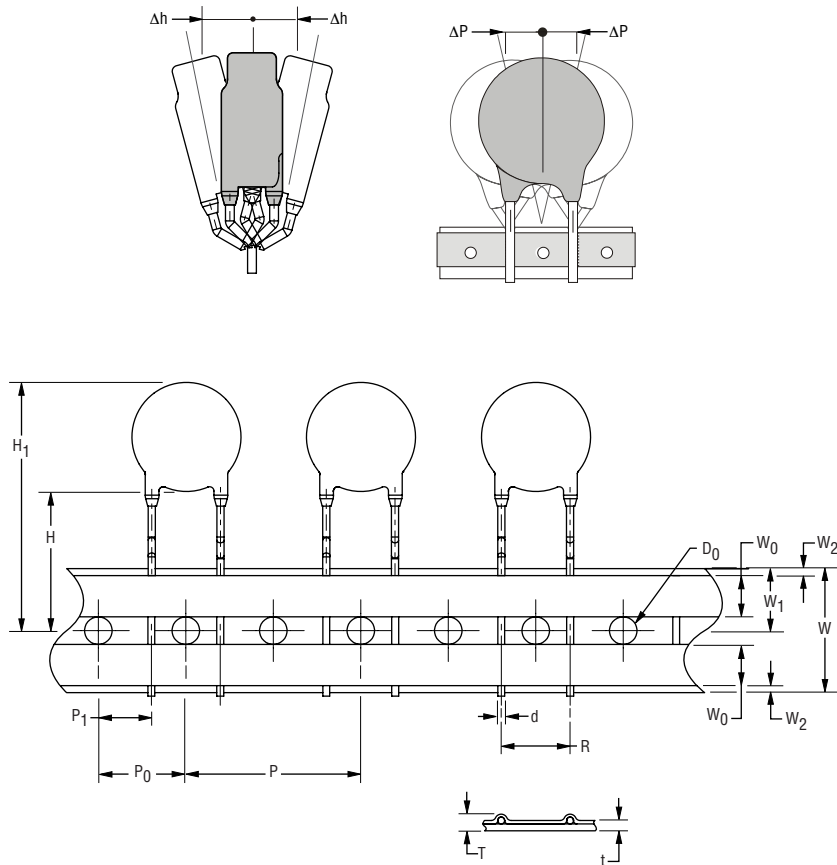
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IsoMOV™ Series - Hybrid Protection Component BOURNS®

Packaging Specifications

TAPE

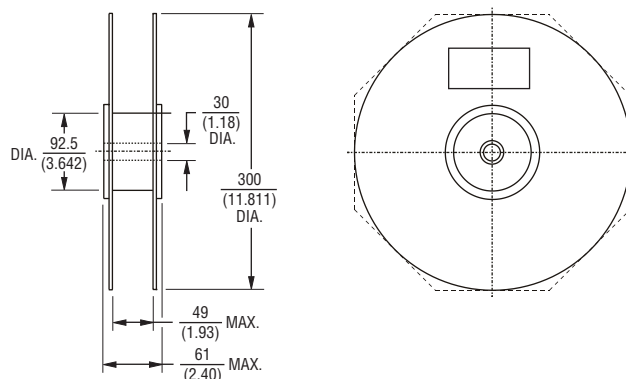
Conforms to IEC 60286-2:2015.



| Symbol | Parameter | Dimension |
|----------------|---|--|
| W | Carrier tape width | $\frac{18 + 1.0/-0.5}{(.709 + .039/-0.020)}$ |
| W ₀ | Hold down tape width | $\frac{5}{(.197)}$ MIN. |
| W ₁ | Sprocket hole position | $\frac{9 + 0.75/-0.5}{(.354 + .030/-0.020)}$ |
| 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. |
| t | Tape thickness | $\frac{0.9}{(.035)}$ MAX. |
| P | Pitch of component | $\frac{25.4 \pm 1.0}{(1.000 \pm .039)}$ |
| P ₀ | Feed hole pitch | $\frac{12.7 \pm 0.3}{(.500 \pm .012)}$ |
| P ₁ | Feed hole center to pitch | $\frac{8.95 \pm 0.7}{(.352 \pm .028)}$ |
| R | Lead spacing | $\frac{7.5 \pm 1.0}{(.295 + .039)}$ |
| ΔP | Component alignment | $\frac{\pm 1.3}{(\pm .051)}$ MAX. |
| Δh | Component alignment | $\frac{\pm 2.0}{(\pm .079)}$ MAX. |
| d | Wire diameter | $\frac{0.8 \pm 0.05}{(.031 \pm .002)}$ |
| D ₀ | Feed hole diameter | $\frac{4 \pm 0.2}{(.157 \pm .008)}$ |
| H | Height from tape center to component base | $\frac{18 + 2.0/-0.0}{(.709 + .079/-0.000)}$ |
| H ₁ | Component height | $\frac{46.5}{(1.831)}$ MAX. |

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

REEL



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

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IsoMOV™ Series - Hybrid Protection Component

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Packaging Quantities - Bulk

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

Packaging Quantities - Reel

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

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