



Features

- Two resistance-matched PTCs in a ceramic housing
- Narrow resistance tolerance
- RoHS compliant*



Model CMF-SD is currently available, although not recommended for new designs. Model **CMF-SDP** is recommended.

CMF-SD Series - Telecom CPTC Resettable Fuses

Electrical Characteristics

Model	Induction Voltage Withstand	Rated Voltage	Rated Resistance (RN) @ 25°C		Resistance Matching in Housing	Hold Current	Trip Current	I _{max} @ 230 VAC	Time to Trip @ I _{max} / 230 VAC
	VAC	Volts	Ohms	Tolerance	Ohms	Amps @ 25 °C	Amps @ 25 °C	Amps	Seconds
CMF-SD10	600	220	10	±20 %	±1.0	0.150	0.360	1	<4.5
CMF-SD25	600	230	25	±20 %	±0.5	0.130	0.260	2.8	< 0.3
CMF-SD25-10	600	220	25	±10 %	±0.5	0.130	0.260	2.5	< 0.3
CMF-SD35	600	230	35	±20 %	±0.5	0.100	0.200	3	< 0.2
CMF-SD35-10	600	230	35	±10 %	±0.5	0.100	0.200	3	< 0.2
CMF-SD35A	600	230	35	±20 %	±0.5	0.100	0.200	2.5	< 0.2
CMF-SD35A-10	600	230	35	±10 %	±0.5	0.100	0.200	2.5	< 0.2
CMF-SD50	600	230	50	±20 %	±0.5	0.090	0.190	3	< 0.1
CMF-SD50-10	600	230	50	±10 %	±0.5	0.090	0.190	3	< 0.1
CMF-SD50A	600	230	50	±20 %	±0.5	0.090	0.190	3	< 0.1
CMF-SD50A-10	600	230	50	±10 %	± 0.5	0.090	0.190	3	< 0.1

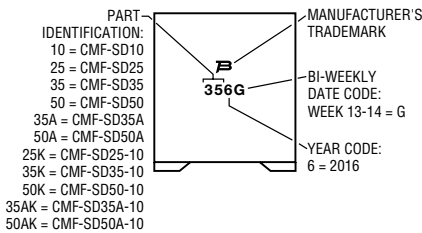
Test Procedures And Requirements For Model CMF-SD Series

Test	Primary Protection	Test Condition	Requirements
Mains Power Contact - ITU-T K.20, K.21	None	230 V rms, 10 ohms, 15 Min.	(Ri-Rf) / Ri < ±10 %
Power Induction - ITU-T K.20, K.21	None	600V rms, 600 ohms, 0.2 seconds, 10 cycles, every 1 Min.	(Ri-Rf) / Ri < ±10 %
Power Induction - ITU-T K.20, K.21	GDT	600 V rms, 600 ohms, 1 second, 10 cycles, every 1 Min.	(Ri-Rf) / Ri < ±10 %
Power Induction - ITU-T K.20, K.21	GDT	600 V rms, 200 ohms, 1 second, 10 cycles, every 1 Min.	(Ri-Rf) / Ri < ±10 %
Lightning Surge - ITU-T K.20, K.21		10/700 μs, 25 ohms, 1.0 kV, 10 Tests, every 1 Min.	(Ri-Rf) / Ri < ±10 %
Lightning Surge		10/1000 μs, 40 ohms, 1.0 kV, 30 Tests, every 3 Min.	(Ri-Rf) / Ri < ±10 %

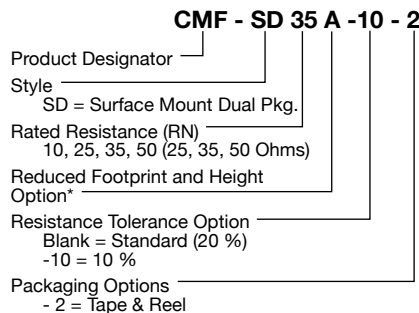
Ri = R initial
Rf = R final

Typical Part Marking

Represents total content. Layout may vary.



How to Order



*Reduced footprint and height option currently unavailable for Model CMF-SD25.



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

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

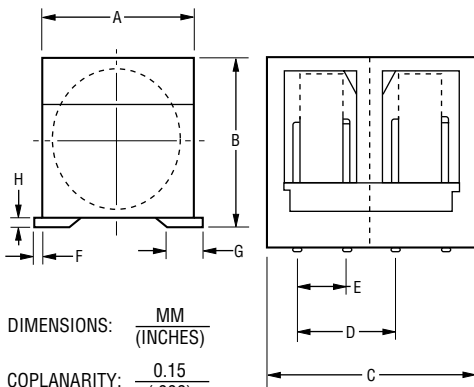
Used as a secondary overcurrent protection device in:

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

CMF-SD Series - Telecom CPTC Resettable Fuses

BOURNS®

Product Dimensions



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

COPLANARITY: $\frac{0.15}{(.006)}$

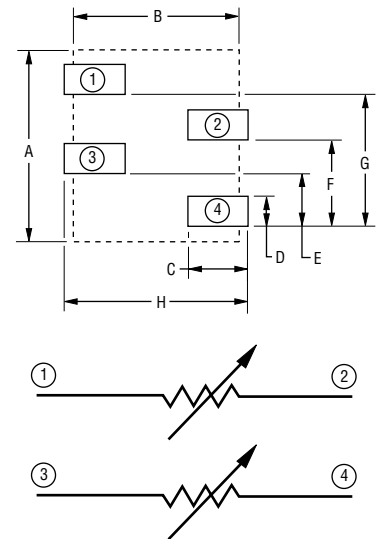
(Reduced value available on request.)

Packaging Options - Tape and Reel:

CMF-SD10, CMF-SD25, CMF-SD35 & CMF-SD50 = 400 pcs. per reel;
CMF-SD35A & CMF-SD50A = 500 pcs. per reel

Dim.	CMF-SD10 CMF-SD25 CMF-SD35 CMF-SD50	CMF-SD35A CMF-SD50A
A	$\frac{9.00}{(.354)}$ MAX.	$\frac{7.15}{(.281)}$ MAX.
B	$\frac{10.80}{(.425)}$ MAX.	$\frac{8.50}{(.355)}$ MAX.
C	$\frac{10.20}{(.402)}$ MAX.	$\frac{8.10}{(.319)}$ MAX.
D	$\frac{4.88 - 5.28}{(.192 - .208)}$	$\frac{3.25 - 3.65}{(.128 - .144)}$
E	$\frac{2.41 - 2.61}{(.095 - .103)}$	$\frac{2.41 - 2.61}{(.095 - .103)}$
F	$\frac{0.5}{(.020)}$ MAX.	$\frac{0.5}{(.020)}$ MAX.
G	$\frac{2.5}{(.098)}$	$\frac{2.5}{(.098)}$
H	$\frac{1.0}{(.039)}$	$\frac{1.0}{(.039)}$

Recommended Pad Layout



Dim.	CMF-SD10 CMF-SD25 CMF-SD35 CMF-SD50	CMF-SD35A CMF-SD50A
A	$\frac{10.0}{(.394)}$	$\frac{8.00}{(.315)}$
B	$\frac{8.80}{(.346)}$	$\frac{7.05}{(.278)}$
C	$\frac{3.20}{(.126)}$	$\frac{2.75}{(.108)}$
D	$\frac{2.00}{(.079)}$	$\frac{2.00}{(.079)}$
E	$\frac{2.60}{(.102)}$	$\frac{2.51}{(.099)}$
F	$\frac{5.00}{(.197)}$	$\frac{3.45}{(.136)}$
G	$\frac{7.60}{(.299)}$	$\frac{5.95}{(.234)}$
H	$\frac{10.0}{(.394)}$	$\frac{8.15}{(.321)}$

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

Solder Reflow Recommendations



Solder reflow

- Recommended reflow methods: IR, vapor phase oven, hot air oven.
- Devices are not designed to be wave soldered to the bottom side of the board.
- Gluing the devices is not recommended.
- Recommended maximum paste thickness is 0.25 mm (.010 inch).
- Devices can be cleaned using standard industry methods and solvents.

Note:

- If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.

Rework

- A device should not be reworked.

CMF-SD SERIES, REV. P, 03/17

Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

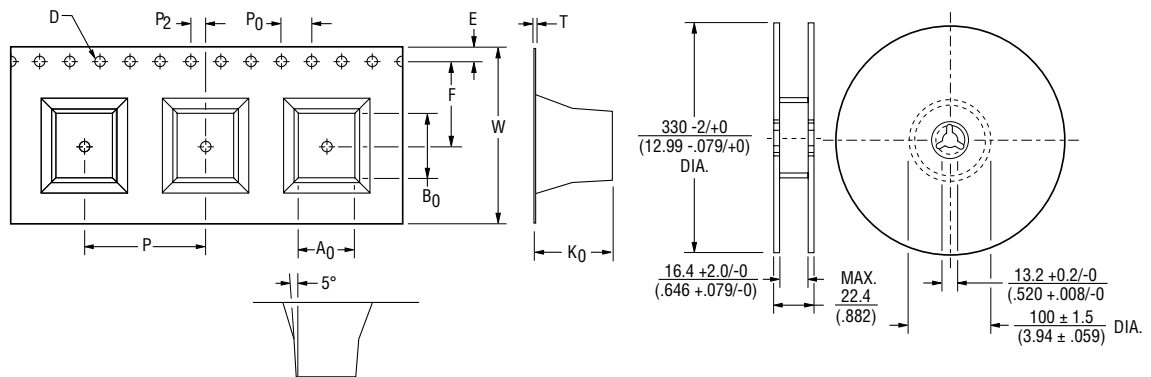
The products described herein and this document are subject to specific legal disclaimers as set forth on the last page of this document, and at www.bourns.com/docs/legal/disclaimer.pdf.

CMF-SD Series Tape and Reel Specifications

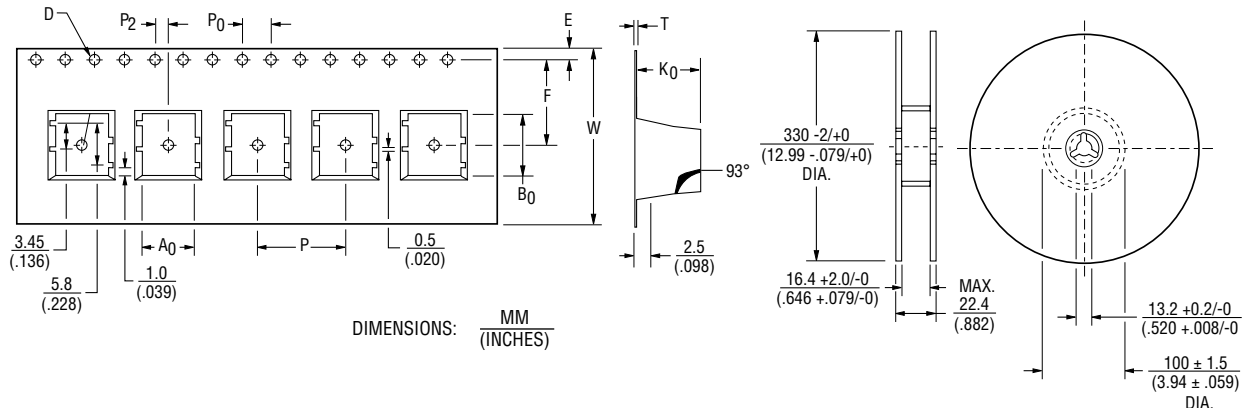
BOURNS®

Tape Dimensions per EIA 481-2	CMF-SD10	CMF-SD35A-2
	CMF-SD25-2 CMF-SD35-2 CMF-SD50-2	CMF-SD50A-2
W	$\frac{24.0 +0.30/-0.10}{(0.945 +0.012/-0.004)}$	$\frac{24.0 \pm 0.20}{(0.945 \pm 0.008)}$
P ₀	$\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$	$\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$
P	$\frac{16.0 \pm 0.10}{(0.630 \pm 0.004)}$	$\frac{12.0 \pm 0.10}{(0.472 \pm 0.004)}$
P ₂	$\frac{2.00 \pm 0.10}{(0.079 \pm 0.004)}$	$\frac{2.00 \pm 0.10}{(0.079 \pm 0.004)}$
A ₀	$\frac{10.2 \pm 0.10}{(0.402 \pm 0.004)}$	$\frac{7.30 \pm 0.10}{(0.287 \pm 0.004)}$
B ₀	$\frac{9.0 \pm 0.10}{(0.354 \pm 0.004)}$	$\frac{8.30 \pm 0.10}{(0.327 \pm 0.004)}$
D	$\frac{1.5 + 0.10/-0.0}{(0.059 + 0.004/-0)}$	$\frac{1.5 \pm 0.10}{(0.059 \pm 0.004)}$
F	$\frac{11.5 \pm 0.10}{(0.453 \pm 0.004)}$	$\frac{11.5 \pm 0.10}{(0.453 \pm 0.004)}$
E	$\frac{1.75 \pm 0.10}{(0.069 \pm 0.004)}$	$\frac{1.75 \pm 0.10}{(0.069 \pm 0.004)}$
T max.	$\frac{0.50}{(0.020)}$	$\frac{0.50 \pm 0.005}{(0.020 \pm 0.002)}$
T ₁ max.	$\frac{0.1}{(0.004)}$	$\frac{0.1}{(0.004)}$
K ₀	$\frac{11.0 \pm 0.10}{(0.433 \pm 0.004)}$	$\frac{8.80 \pm 0.10}{(0.346 \pm 0.004)}$

**CMF-SD25-2
CMF-SD35-2
CMF-SD50-2**



**CMF-SD35A-2
CMF-SD50A-2**



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

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.

This legal disclaimer applies to purchasers and users of Bourns® products manufactured by or on behalf of Bourns, Inc. and its affiliates (collectively, “Bourns”).

Unless otherwise expressly indicated in writing, Bourns® products and data sheets relating thereto are subject to change without notice. Users should check for and obtain the latest relevant information and verify that such information is current and complete before placing orders for Bourns® products.

The characteristics and parameters of a Bourns® product set forth in its data sheet are based on laboratory conditions, and statements regarding the suitability of products for certain types of applications are based on Bourns’ knowledge of typical requirements in generic applications. The characteristics and parameters of a Bourns® product in a user application may vary from the data sheet characteristics and parameters due to (i) the combination of the Bourns® product with other components in the user’s application, or (ii) the environment of the user application itself. The characteristics and parameters of a Bourns® product also can and do vary in different applications and actual performance may vary over time. Users should always verify the actual performance of the Bourns® product in their specific devices and applications, and make their own independent judgments regarding the amount of additional test margin to design into their device or application to compensate for differences between laboratory and real world conditions.

Unless Bourns has explicitly designated an individual Bourns® product as meeting the requirements of a particular industry standard (e.g., ISO/TS 16949) or a particular qualification (e.g., UL listed or recognized), Bourns is not responsible for any failure of an individual Bourns® product to meet the requirements of such industry standard or particular qualification. Users of Bourns® products are responsible for ensuring compliance with safety-related requirements and standards applicable to their devices or applications.

Bourns® products are not recommended, authorized or intended for use in nuclear, lifesaving, life-critical or life-sustaining applications, nor in any other applications where failure or malfunction may result in personal injury, death, or severe property or environmental damage. Unless expressly and specifically approved in writing by two authorized Bourns representatives on a case-by-case basis, use of any Bourns® products in such unauthorized applications might not be safe and thus is at the user’s sole risk. Life-critical applications include devices identified by the U.S. Food and Drug Administration as Class III devices and generally equivalent classifications outside of the United States.

Bourns expressly identifies those Bourns® standard products that are suitable for use in automotive applications on such products’ data sheets in the section entitled “Applications.” Unless expressly and specifically approved in writing by two authorized Bourns representatives on a case-by-case basis, use of any other Bourns® standard products in an automotive application might not be safe and thus is not recommended, authorized or intended and is at the user’s sole risk. If Bourns expressly identifies a sub-category of automotive application in the data sheet for its standard products (such as infotainment or lighting), such identification means that Bourns has reviewed its standard product and has determined that if such Bourns® standard product is considered for potential use in automotive applications, it should only be used in such sub-category of automotive applications. Any reference to Bourns® standard product in the data sheet as compliant with the AEC-Q standard or “automotive grade” does not by itself mean that Bourns has approved such product for use in an automotive application.

Bourns® standard products are not tested to comply with United States Federal Aviation Administration standards generally or any other generally equivalent governmental organization standard applicable to products designed or manufactured for use in aircraft or space applications. Bourns expressly identifies Bourns® standard products that are suitable for use in aircraft or space applications on such products’ data sheets in the section entitled “Applications.” Unless expressly and specifically approved in writing by two authorized Bourns representatives on a case-by-case basis, use of any other Bourns® standard product in an aircraft or space application might not be safe and thus is not recommended, authorized or intended and is at the user’s sole risk.

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.

Users shall not sell, transfer, export or re-export any Bourns® products or technology for use in activities which involve the design, development, production, use or stockpiling of nuclear, chemical or biological weapons or missiles, nor shall they use Bourns® products or technology in any facility which engages in activities relating to such devices. The foregoing restrictions apply to all uses and applications that violate national or international prohibitions, including embargos or international regulations. Further, Bourns® products and Bourns technology and technical data may not under any circumstance be exported or re-exported to countries subject to international sanctions or embargoes. Bourns® products may not, without prior authorization from Bourns and/or the U.S. Government, be resold, transferred, or re-exported to any party not eligible to receive U.S. commodities, software, and technical data.

To the maximum extent permitted by applicable law, Bourns disclaims (i) any and all liability for special, punitive, consequential, incidental or indirect damages or lost revenues or lost profits, and (ii) any and all implied warranties, including implied warranties of fitness for particular purpose, non-infringement and merchantability.

For your convenience, copies of this Legal Disclaimer Notice with German, Spanish, Japanese, Traditional Chinese and Simplified Chinese bilingual versions are available at:

Web Page: <http://www.bourns.com/legal/disclaimers-terms-and-policies>

PDF: <http://www.bourns.com/docs/Legal/disclaimer.pdf>