

High Current Thermal Fuse



The HCTF CP series is especially designed for high current applications with an operating temperature up to 160 °C. In case of excess heat in the range of the functioning temperature of $(235 \pm 15) \text{ }^\circ\text{C}$ the thermo fuse opens automatically and disconnects the circuit. Typical applications are automotive power electronics that are connected to steady battery power (B+ or terminal number 30).

FEATURES

- Functioning temperature: $\vartheta_F = (235 \pm 15) \text{ }^\circ\text{C}$
- Holding temperature: $\vartheta_H = 160 \text{ }^\circ\text{C}$
- Current: $\leq 50 \text{ A}$
- Suitable for insert assembly systems
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912


RoHS
COMPLIANT

APPLICATIONS

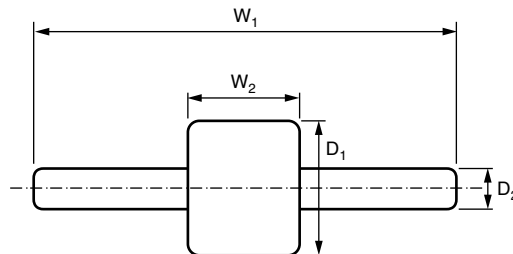
- Automotive
 - Fan control units
 - ABS
 - Diesel glow plug relays
 - Diesel pre-heaters
 - Electric coolant pumps

TECHNICAL SPECIFICATIONS	
DESCRIPTION	HCTF 235 CP
Functioning temperature ϑ_F	$(235 \pm 15) \text{ }^\circ\text{C}$
Holding temperature ϑ_H (1000 h)	160 °C
Voltage U_{DC}	24 V
Current $I_{DC}^{(1)}$	$\leq 50 \text{ A}$
Cold resistance R_{cold}	$\leq 0.1 \text{ m}\Omega$
Residual resistance R_s	$> 1 \text{ M}\Omega$

Note

⁽¹⁾ Current rating depends on external thermal management.

DIMENSIONS



DIMENSIONS - Mass and relevant physical dimensions					
TYPE	W_1 (mm)	W_2 (mm)	$D_1^{(2)}$ (mm)	D_2 (mm)	MASS (g)
HCTF CP	26 ± 0.5	6.5 ± 0.5	7.7 ± 0.3	1.8 ± 0.2	1.45 ± 0.3

Note

⁽²⁾ Between sleek surfaces

PART NUMBER AND PRODUCT DESCRIPTION (1)																	
PART NUMBER: HCTF235L15000BR00																	
H	C	T	F	2	3	5	L	1	5	0	0	0	0	B	R	0	0
TYPE/ FUNCTIONING TEMPERATURE	TOLERANCE	SPECIAL	CURRENT		PACKAGING	SPECIAL											
HCTF235	L = ± 15 °C	1 digit 1 = Clamp	Current in mA. 50000 = 50 A		BR	Up to 2 digits 00 = Standard											
PRODUCT DESCRIPTION: HCTF 235 15 °C CP BR 50A0																	
HCTF	235	15 °C	CP	BR	50A0												
TYPE	FUNCTIONING TEMPERATURE	TOLERANCE	SPECIAL	PACKAGING	RATED CURRENT VALUE												
HCTF	235	± 15 °C	CP = Clamp	BR	50A0 = 50 A												

Note

(1) Products can be ordered using either the PART NUMBER or the PRODUCT DESCRIPTION

PACKAGING						
TYPE	CODE	QUANTITY	CARRIER TAPE	WIDTH	PITCH	REEL DIAMETER
HCTF CP	BR	750	Blister tape acc. IEC 60286-3 Type III	44 mm	12 mm	360 mm/14.2"

ASSEMBLY

The high current thermal fuse HCTF 235 CP is suitable for processing on automatic insert assembly systems e.g. into clamp or crimp terminations. Any deformation and overheating of the component body to levels above the holding temperature has to be avoided during the assembly.

The HCTF 235 CP complies with the JIG 101 list of legal restrictions on hazardous substances.

This includes full compliance with the following directives:

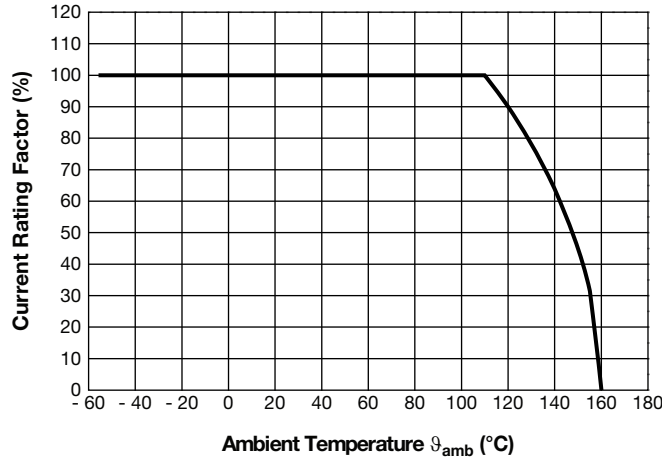
- 2000/53/EC End of Life Vehicle Directive (ELV) and Annex II (ELV II)
- 2011/65/EU Restriction of the use of Hazardous Substances Directive (RoHS)
- 2002/96/EC Waste Electrical and Electronic Equipment Directive (WEEE)

RELATED PRODUCTS

A version for automatic electric resistance welding assembly systems is available, too. See the datasheet:

- HCTF 235 Series: www.vishay.com/doc?28798

FUNCTIONAL PERFORMANCE



Current Rating Factor vs. Ambient Temperature ϑ_{amb}

Note

- The current rating factor depends on the mounting and environmental conditions. The power dissipation on the thermal fuse generates a temperature rise against the local ambient, depending on the heat flow supported by additional conductive materials as electrical wires, lead frames or other electrical connections (thermal resistance). Please contact the factory (please refer to e-mail contact below) for support and further technical details.

TESTS AND REQUIREMENTS

All tests are carried out in accordance with the following test procedures and specifications:

- IEC 60115-1
- IEC 60068-1
- IEC 61340-3-1
- MIL-STD-202

Unless otherwise specified the following values apply:

- Temperature: 15 °C to 35 °C
- Relative humidity: 25 % to 75 %
- Air pressure: 86 kPa to 106 kPa (860 mbar to 1060 mbar).

The tests are carried out under standard atmospheric conditions in accordance with IEC 60068-1, 5.3.

TEST PROCEDURES AND REQUIREMENTS				
EN 60115-1 CLAUSE	IEC 60068-2 TEST METHOD	TEST	PROCEDURE	REQUIREMENTS
4.25.3	-	Endurance	Unpowered; 160 °C; 500 h	$R \leq 0.2 \text{ m}\Omega$
-	-	Operational life acc. to MIL-STD-202 METHOD 108A	50 A; 1000 h; case temperature max. 160 °C	$R \leq 0.2 \text{ m}\Omega$
4.19	14 (Na)	Rapid change of temperature	10 min at - 55 °C and 10 min at 155 °C; transition time < 10 s; 1000 cycles	$R \leq 0.2 \text{ m}\Omega$
4.23.6	30 (Db)	Damp heat, cyclic	55 °C; 5 days > 90 % RH; 5 cycles	$R \leq 0.2 \text{ m}\Omega$
-	27 (Ea)	Mechanical shock	Half sine pulse shape; 6 ms; peak acceleration 100 g; 3 shocks in both directions of each axis	$R \leq 0.2 \text{ m}\Omega$



TEST PROCEDURES AND REQUIREMENTS				
EN 60115-1 CLAUSE	IEC 60068-2 TEST METHOD	TEST	PROCEDURE	REQUIREMENTS
4.22	6 (Fc)	Vibration	f ₁ : 10 Hz; f ₂ : 2000 Hz amplitude ± 1.5 mm or acceleration 50 m/s ² (5 g), whatever is less severe 20 min/cycle (f ₁ - f ₂ - f ₁); 10 cycles each for 3 axes	R ≤ 0.2 mΩ
4.40	-	ESD; Human body model acc. to IEC 61340-3-1	U = 4 kV; C = 100 pF; R = 1.5 kΩ; 3 pos. + 3 neg.	R ≤ 0.2 mΩ
-	-	Time until opening	Unpowered; pre-heated at 200 °C oil bath at 275 °C ± 5 K	≤ 2.0 min
4.16	21 (Ua1)	Robustness of terminations	Tensile force (40 ± 4) N; 10 s	R ≤ 0.2 mΩ
4.35	-	Flammability	Needle flame test; 10 s	No burning after 30 s



Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

Material Category Policy

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.

Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.