

## 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](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

### APPLICATIONS

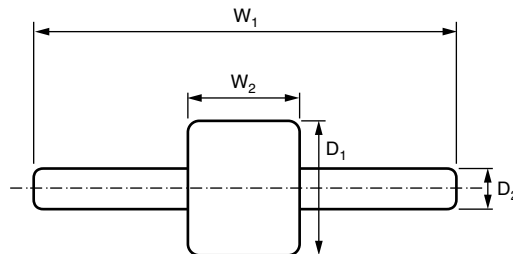
- Automotive
  - Fan control units
  - ABS
  - Diesel glow plug relays
  - Diesel pre-heaters
  - Electric coolant pumps

TECHNICAL SPECIFICATIONS	
DESCRIPTION	HCTF 235 CP
Functioning temperature $\vartheta_F$	$(235 \pm 15) \text{ }^\circ\text{C}$
Holding temperature $\vartheta_H$ (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

<sup>(1)</sup> 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	$26 \pm 0.5$	$6.5 \pm 0.5$	$7.7 \pm 0.3$	$1.8 \pm 0.2$	$1.45 \pm 0.3$

#### Note

<sup>(2)</sup> Between sleek surfaces



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

**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.

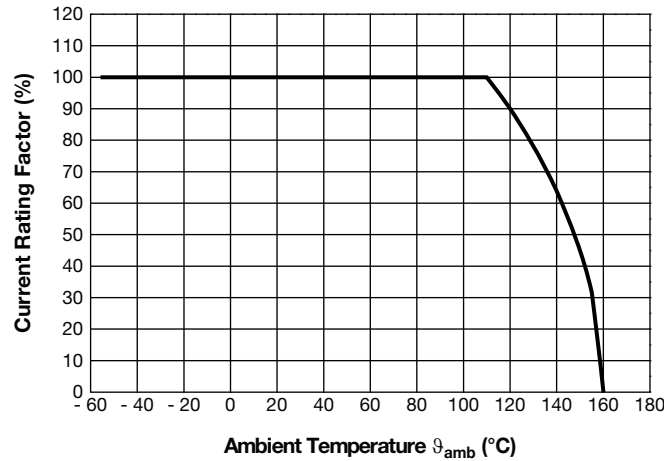
This includes full compliance with the following directives:

- 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](http://www.vishay.com/doc?28798)

**FUNCTIONAL PERFORMANCE**

**Current Rating Factor vs. Ambient Temperature  $\theta_{amb}$** 
**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 <sub>1</sub> : 10 Hz; f <sub>2</sub> : 2000 Hz amplitude ± 1.5 mm or acceleration 50 m/s <sup>2</sup> (5 g), whatever is less severe 20 min/cycle (f <sub>1</sub> - f <sub>2</sub> - f <sub>1</sub> ); 10 cycles each for 3 axes	$R \leq 0.2 \text{ m}\Omega$
4.40	-	ESD; Human body model acc. to IEC 61340-3-1	$U = 4 \text{ kV}$ ; $C = 100 \text{ pF}$ ; $R = 1.5 \text{ k}\Omega$ ; 3 pos. + 3 neg.	$R \leq 0.2 \text{ m}\Omega$
-	-	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	$R \leq 0.2 \text{ m}\Omega$
4.35	-	Flammability	Needle flame test; 10 s	No burning after 30 s



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## 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.**

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