

По вопросам продаж и поддержки обращайтесь:

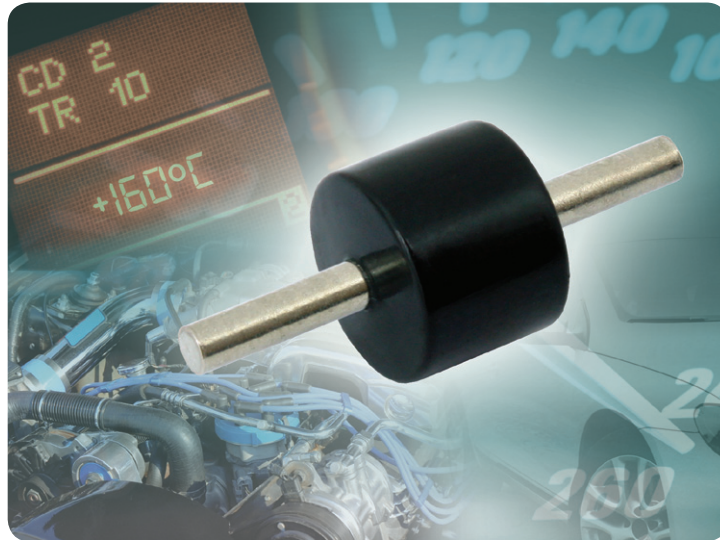
Алматы (7273)495-231	Казань (843)206-01-48	Новокузнецк (3843)20-46-81	Смоленск (4812)29-41-54
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Россия (495)268-04-70	Киргизия (996)312-96-26-47	Казахстан (7172)727-132	

HIGH-CURRENT THERMAL FUSE

HCTF Series



High-Current Thermal Fuse



KEY BENEFITS

- Functioning temperature: $\vartheta_F = (235 \pm 15) \text{ }^\circ\text{C}$
- Holding temperature: $\vartheta_H = 160 \text{ }^\circ\text{C}$
- Current: $\leq 55 \text{ A}$
- Safety interrupt of electrical power

APPLICATIONS

- | | |
|--|--|
| <ul style="list-style-type: none"> • Fan cooling units • Liquid cooling pump control units • Inlet air control units • Diesel pre-heater | <ul style="list-style-type: none"> • Engine control units • ABS control units • Heater plug |
|--|--|

END PRODUCTS

- Cars and trucks

Fuses - High Current Range Up to 55 A

High Current Thermal Fuse



FEATURES

- Functioning temperature: $\vartheta_F = (235 \pm 15) \text{ }^\circ\text{C}$
- Holding temperature: $\vartheta_H = 160 \text{ }^\circ\text{C}$
- Current: $\leq 55 \text{ A}$
- Suitable for resistive welding systems



RoHS
COMPLIANT

APPLICATIONS

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

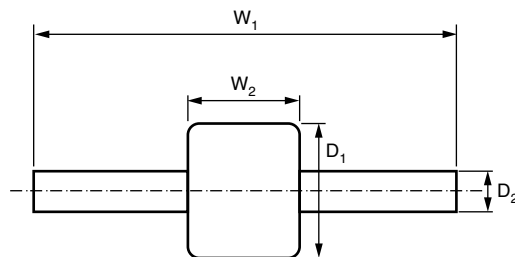
The HCTF series is especially designed for high current applications with an operation temperature up to $160 \text{ }^\circ\text{C}$. In case of excess heat in the range of the functioning temperature of $(235 \pm 15) \text{ }^\circ\text{C}$ the thermo fuse opens automatically and disconnects the circuit.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

TECHNICAL SPECIFICATIONS	
DESCRIPTION	HCTF 235
Functioning temperature ϑ_F	$(235 \pm 15) \text{ }^\circ\text{C}$
Holding temperature ϑ_H (1000 h)	$160 \text{ }^\circ\text{C}$
Voltage U_{DC}	24 V
Current I_{DC} ⁽¹⁾	$\leq 55 \text{ A}$
Cold resistance R_{cold}	$\leq 0.1 \text{ m}\Omega$
Residual resistance R_s after breaking	$> 1 \text{ M}\Omega$

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 (mm)	D_2 (mm)	MASS (g)
HCTF	19.8 ± 0.5	6.5 ± 0.5	8.0 ± 0.5	1.8 ± 0.2	1.3 ± 0.3

PART NUMBER AND PRODUCT DESCRIPTION ⁽¹⁾																		
PART NUMBER: HCTF235L055000BR00																		
H	C	T	F	2	3	5	L	0	5	5	0	0	0	0	B	R	0	0
TYPE/ FUNCTIONING TEMPERATURE		TOLERANCE			SPECIAL			CURRENT			PACKAGING			SPECIAL				
HCTF235		L = ± 15 °C			0 = Standard			Current in mA. 55000 = 55 A			BR			Up to 2 digits 00 = Standard				
PRODUCT DESCRIPTION: HCTF 235 15 °C BR 55A0																		
HCTF		235			15 °C			BR			55A0							
TYPE		FUNCTIONING TEMPERATURE			TOLERANCE			PACKAGING			CURRENT							
HCTF		235			± 15 °C			BR			55A0 = 55 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	BR	750	Blisters tape acc. IEC 60286-3 type III	32 mm	12 mm	360 mm/14.2"

ASSEMBLY

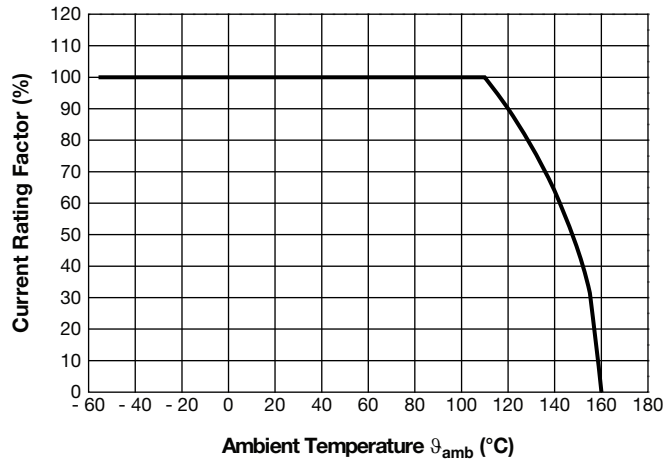
The high current thermal fuse HCTF 235 is suitable for processing on e.g. automatic electric resistance welding or crimping assembly systems. Any deformation and overheating of the component body to levels above the holding temperature has to be avoided during the assembly.

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)

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
 ICE 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; 1000 h	$R \leq 0.2 \text{ m}\Omega$
-	-	Operational life acc. to MIL-STD-202 METHOD 108A	55 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	$R \leq 0.2 \text{ m}\Omega$
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 $200 \text{ }^\circ\text{C}$ oil bath at $275 \text{ }^\circ\text{C} \pm 5 \text{ K}$	$\leq 2.0 \text{ min}$
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

SMD Chip Fuse for Secondary Over-Current Protection



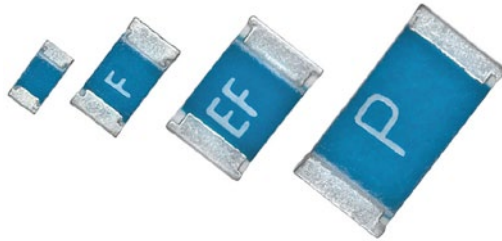
KEY BENEFITS

- Circuit protection
- Very quick acting fuse characteristics
- Outstanding stability of fusing characteristics
- Supports lead (Pb)-free soldering
- Meets requirements of IEC 60127-4 and UL 248-14
- Standard metric SMD sizes

APPLICATIONS

- Information technology
- Industrial electronics
- Automotive electronics
- Telecommunication
- Medical equipment
- Audio/video electronics

SMD Chip Fuse for Secondary Over-Current Protection



MFU Thin Film Chip Fuses are the perfect choice for the most fields of modern electronics. The highly controlled manufacturing thin film process guarantees an outstanding stability of fusing characteristics. Typical applications include information technology, telecommunication, medical equipment, industrial, audio/video, and automotive electronics.

FEATURES

- Advanced thin film technology
- Very quick acting fuse characteristics
- Outstanding stability of fusing characteristics
- Green product, supports lead (Pb)-free soldering
- Halogen-free according to IEC 61249-2-21 definition
- Compliant to RoHS Directive 2011/65/EU



RoHS
COMPLIANT
HALOGEN
FREE

APPLICATIONS

- Information technology
- Industrial electronics
- Automotive electronics
- Telecommunication
- Medical equipment
- Audio/video electronics






SIZE				
INCH	0402	0603	0805	1206
METRIC	1005M	1608M	2012M	3216M

TECHNICAL SPECIFICATIONS				
DESCRIPTION	MFU 0402	MFU 0603	MFU 0805	MFU 1206
Metric size	1005M	1608M	2012M	3216M
Rated current range I_R	0.5 A to 3.15 A	0.5 A to 5.0 A	0.5 A to 5.0 A	0.5 A to 6.3 A
Rated voltage, $U_{max. DC}$	32 V	32 V	32 V	63 V
Breaking Capacity, $I_{max. at U_{max. DC}}$	50 A at 32 V	50 A at 32 V	50 A at 32 V	50 A at 63 V
Voltage drop at $1 \times I_R$	90 mV to 368 mV	85 mV to 361 mV	98 mV to 374 mV	116 mV to 433 mV
Cold resistance at $0.1 \times I_R$	22 mΩ to 560 mΩ	13 mΩ to 550 mΩ	15 mΩ to 570 mΩ	14 mΩ to 660 mΩ
Permissible film temperature, $\vartheta_{F max.}$	125 °C			
Operating temperature range	- 55 °C to 125 °C			
Permissible continuous current rating at $\vartheta_{amb} = 23 °C$	$0.7 \times I_R$			
Approval UL recognition file	E253806			
Approval IEC 60127-4	n/a	Refer to table: MFU 0603 RATING		Refer to table: MFU 1206 RATING
FIT _{observed}	$\leq 0.2 \times 10^{-9}/h$			

Revision 01-Sep-11

FUSES

Part Number	Product Image	Type	Technology	Description	Case	Rated Current Min. (mA)	Rated Current Max. (mA)
MFU AT Series		Fuses, Non-Resettable	Thin Film	Thin Film Chip Fuses	0603	500	5000
MFU Series		Fuses, Non-Resettable	Thin Film	Thin Film Chip Fuses	0402	500	3150
					0603		5000
					0805		
					1206		6300
RS01A...118		Resistors, Fixed Fusible	Wirewound	Fast Acting, Molded Styles, Custom Designed For Your Application	Axial Leaded		250
RS01A...143		Resistors, Fixed Fusible	Wirewound	Fast Acting, Molded Styles, Custom Designed For Your Application	Axial Leaded		400
RS01A...162		Resistors, Fixed Fusible	Wirewound	Fast Acting, Molded Styles, Custom Designed For Your Application	Axial Leaded		550
RS01A...173		Resistors, Fixed Fusible	Wirewound	Fast Acting, Molded Styles, Custom Designed For Your Application	Axial Leaded		1500
RS01A...207		Resistors, Fixed Fusible	Wirewound	Fast Acting, Molded Styles, Custom Designed For Your Application	Axial Leaded		1000
RS01A...208		Resistors, Fixed Fusible	Wirewound	Fast Acting, Molded Styles, Custom Designed For Your Application	Axial Leaded		750
RS01A...209		Resistors, Fixed Fusible	Wirewound	Fast Acting, Molded Styles, Custom Designed For Your Application	Axial Leaded		100
RS01A...212		Resistors, Fixed Fusible	Wirewound	Fast Acting, Molded Styles, Custom Designed For Your Application	Axial Leaded		300
RS01A...213		Resistors, Fixed Fusible	Wirewound	Fast Acting, Molded Styles, Custom Designed For Your Application	Axial Leaded		350

Part Number	Product Image	Type	Technology	Description	Case	Rated Current Min. (mA)	Rated Current Max. (mA)
RS01A...214		Resistors, Fixed Fusible	Wirewound	Fast Acting, Molded Styles, Custom Designed For Your Application	Axial Leaded		450
RS01A...215		Resistors, Fixed Fusible	Wirewound	Fast Acting, Molded Styles, Custom Designed For Your Application	Axial Leaded		1250
RS01A...216		Resistors, Fixed Fusible	Wirewound	Fast Acting, Molded Styles, Custom Designed For Your Application	Axial Leaded		1750
RS01A...217		Resistors, Fixed Fusible	Wirewound	Fast Acting, Molded Styles, Custom Designed For Your Application	Axial Leaded		2000
HCTF Series		Thermal Fuses, Non-Ressetable	Thermal Fuse	High Current Thermal Fuse	Axial Leaded		55000

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