

# PTCB TM1 0.5A F2 NO P - Thermal-magnetic device circuit breaker



1509512

<https://www.phoenixcontact.com/us/products/1509512>

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Thermal-magnetic device circuit breaker, 1-position, tripping characteristic: F2, mounting type: With base element on 35 mm DIN rail in accordance with EN 60715, rated current: 0.5 A

## Your advantages

- More space in the control cabinet: protection and signaling in an overall width of just 8 mm
- Easy to set up applications thanks to flexible use of connectors with fixed nominal currents
- Transparency of load and switching status thanks to integrated remote signaling
- Easy handling from commissioning right through to maintenance due to clear functionality and switching state at all times

## Commercial data

Item number	1509512
Packing unit	4 pc
Minimum order quantity	4 pc
Sales key	CL10
Product key	CLA127
GTIN	4063151969196
Weight per piece (including packing)	27.415 g
Weight per piece (excluding packing)	21.576 g
Customs tariff number	85362010
Country of origin	DE

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## Technical data

### Product properties

Product type	Thermomagnetic device circuit breakers
Product family	PTCB TM
Number of positions	1
No. of channels	1
Mechanical service life	25 insertion cycles

### Insulation characteristics

Protection class	II (according to EN 61140 for the actuation area)
Overvoltage category	II (250 V AC / IEC 60934)
	III (UL 1077)
	III (80 V DC / IEC 60934)
Pollution degree	2 (250 V AC / IEC 60934)
	3 (UL 1077)
	2 (80 V DC / IEC 60934)

### Electrical properties

#### General

Operating voltage	10 V AC ... 277 V AC (UL 1077)
	10 V AC ... 240 V AC (IEC 60934)
	10 V DC ... 56 V DC
Rated voltage	240 V AC (IEC 60934)
	277 V AC (UL 1077)
	56 V DC (IEC 60934)
	56 V DC (UL 1077)
Rated insulation voltage $U_i$	250 V AC (IEC 60934)
	80 V DC (IEC 60934)
	277 V AC (UL 1077)
Rated current $I_N$	0.5 A
Rated surge voltage	2.5 kV (IEC 60934, reinforced insulation between load/auxiliary circuit and in the actuation area)
Insulation resistance $R_{iso}$	> 100 M $\Omega$ (500 V DC)
Type of actuation	S type
Tripping method	TM (thermal-magnetic)
Tripping level	Trip-free mechanism (positive)
Device resistance	3660 m $\Omega$
Required backup fuse	16 A ( $I > I_{cn}$ , RK5 (UL 1077), type gG (IEC 60934))
Rated short-circuit switching capacity $I_{cn}$	300 A (240 V AC / IEC 60934)
	600 A (56 V DC/IEC 60934)
Short-circuit switching capacity	1000 A (277 V AC C1 / UL 1077)

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	1000 A (56 V DC C1 / UL 1077)
Dielectric strength	3000 V AC (Actuation area)
	3000 V AC (between load and auxiliary circuits in accordance with IEC 60934)
	1554 V AC (between open contacts in accordance with UL 1077)
Switching cycles, max.	6000 (low-induction, UL 1077)
	3000 (IEC 60934, 240 V AC/56 V DC, inductive, -5°C ... +60°C)
	1000 (IEC 60934, 240 V AC/56 V DC, inductive, -30°C ... +60°C)
Fuse	F2
Power dissipation	0 W (No-load operation)
	0.9 W (Nominal operation)
Voltage drop	1.8 V (at 1 x I <sub>n</sub> )

## Indicator/remote signaling

Connection name	Connection 3 / 4
Switching function	N/O contact
Operating voltage	10 V AC ... 277 V AC
	10 V DC ... 56 V DC
Operating current	10 mA AC ... 200 mA AC
	10 mA DC ... 200 mA DC

## Dimensions

Dimensional drawing	
Width	8.2 mm
Height	52.3 mm
Depth	63.7 mm

## Material specifications

Color	light gray (RAL 7035)
Material	PA
Flammability rating according to UL 94	V-0
Insulating material group	I
Fire protection for rail vehicles (DIN EN 45545-2) R22	HL 1 - HL 3
Fire protection for rail vehicles (DIN EN 45545-2) R23	HL 1 - HL 3

## Mechanical properties

### Mechanical data

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Open side panel	No
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## Environmental and real-life conditions

### Ambient conditions

Degree of protection	IP20 (Connection area) IP30 (Actuation area)
Ambient temperature (operation)	-30 °C ... 60 °C
Ambient temperature (storage/transport)	-40 °C ... 80 °C
Altitude	≤ 2000 m (250 V AC / IEC 60934)
Humidity test	96 h, 95 % RH, 40 °C
Shock (operation)	30g (IEC 60068-2-27, Test Ea) Category 1, Class B (DIN EN 61373)
Vibration (operation)	10 Hz ... 150 Hz, 20 cycles (IEC 60068-2-6, Test Fc) 10 Hz ... 75 Hz (Amplitude ±0.35 mm; in accordance with IEC 60068-2-6, Test Fc) 75 Hz ... 150 Hz (8g) Category 1, Class B (DIN EN 61373)

## Approvals

### UL approval

Identification	UL Recognized UL 1077
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### CSA, Canada

Identification	CSA C22.2 No. 235-04
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## Standards and regulations

Standards/specifications	IEC 60934
Note	2019
Standards/specifications	UL 1077
Note	Additional protective devices for use in electrical equipment
Standards/specifications	CSA C22.2 No. 235-04
Note	2017
Standards/specifications	IEC 60068-2-6
Note	Environmental influences – Vibrations (sinusoidal)
Standards/specifications	IEC 60068-2-11
Note	Environmental influences - corrosion resistance/salt spray, test Ka
Standards/specifications	EN 60068-2-27
Note	Environmental influences – Shocks
Standards/specifications	EN 60068-2-78
Note	Environmental influences – Moisture and heat, constant
Standards/specifications	DIN EN 50274
Note	Touch protection and back-of-hand safety

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Standards/specifications	IEC 60529
Note	2019
Standards/specifications	EN 61373
Note	Railway applications - Rolling stock equipment - Shock and vibration tests
Standards/specifications	EN 45545-2
Note	Railway applications - Fire protection on railway vehicles - Part 2: Requirements for fire behavior of materials and components

## Mounting

Mounting type	With base element on 35 mm DIN rail in accordance with EN 60715
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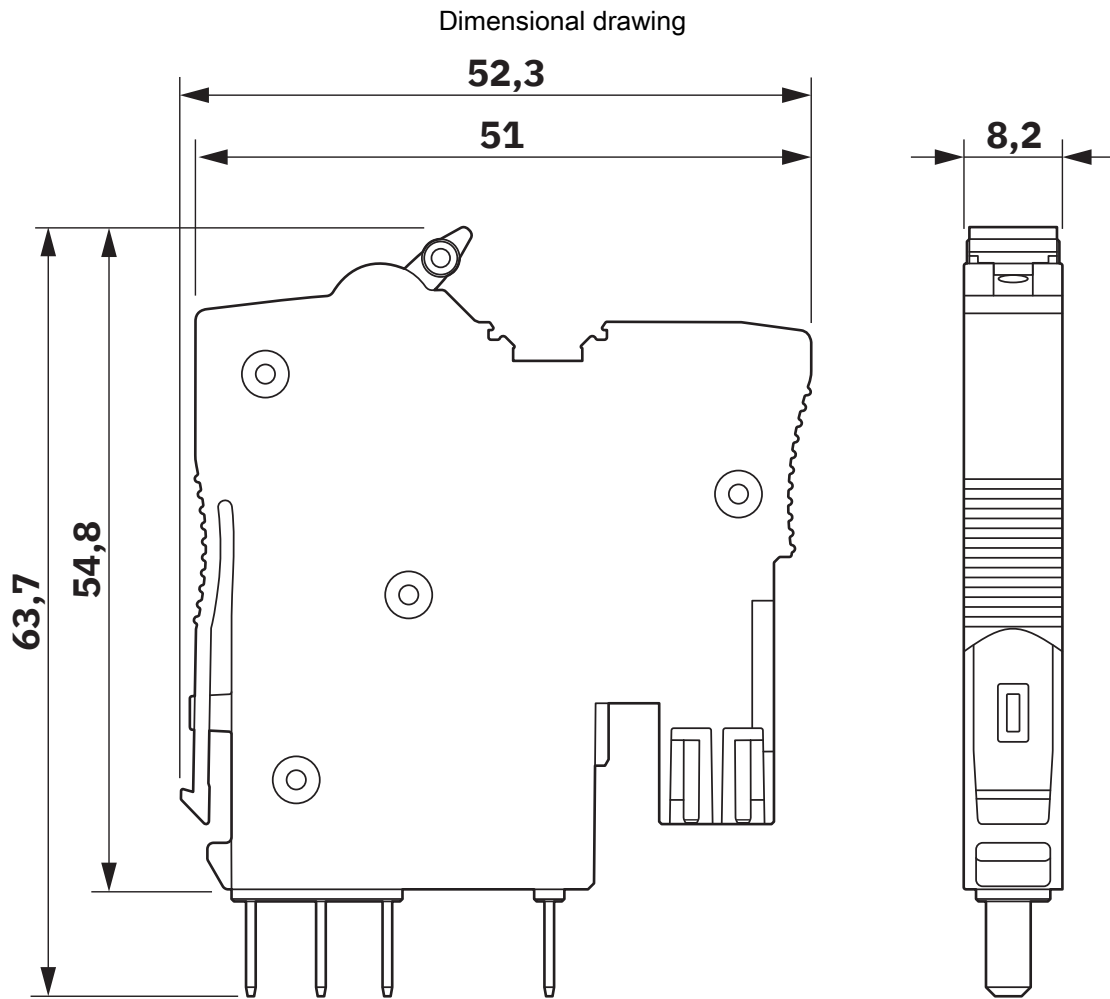
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## Drawings



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Dimensional drawing



The figure shows the complete module consisting of a base element and connector

Application drawing



System and energy monitoring

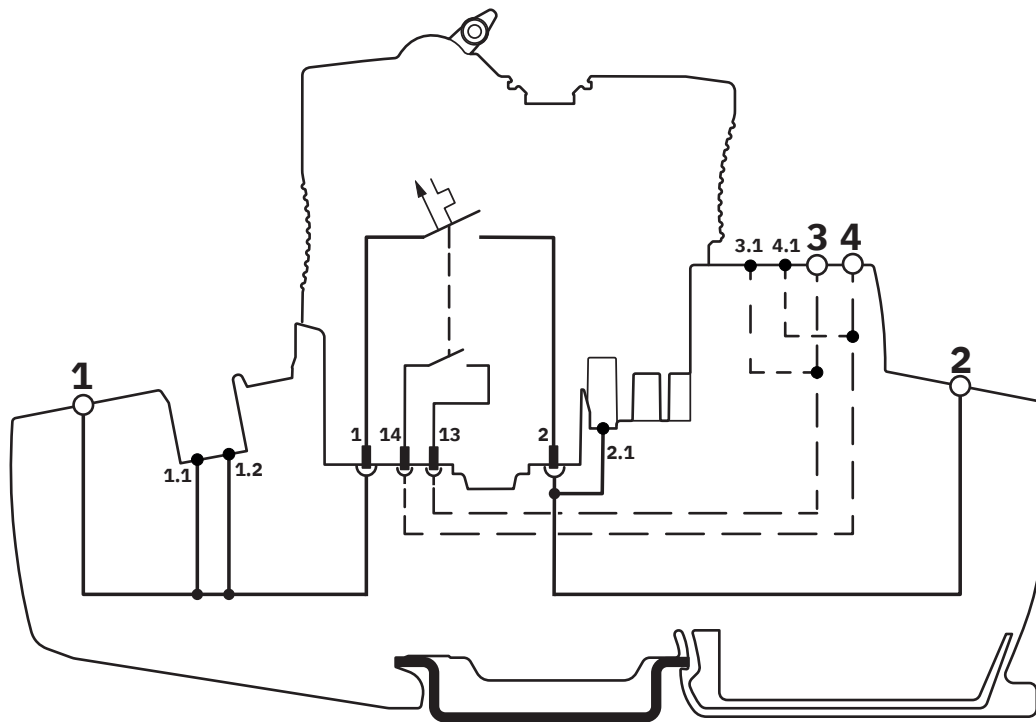
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Connection diagram



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Schematic diagram



Actuation area A

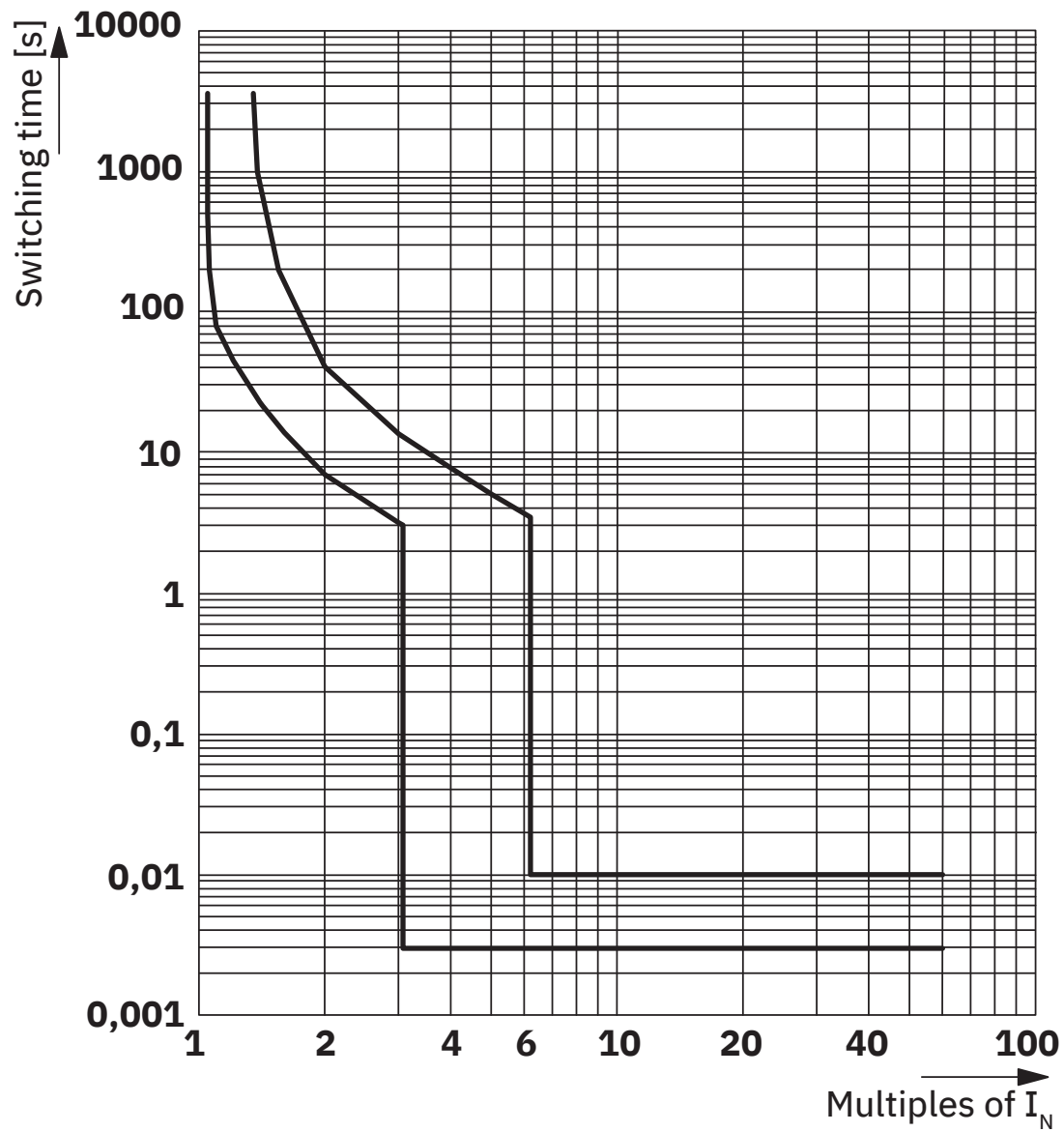
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Diagram



Tripping characteristic in the AC range

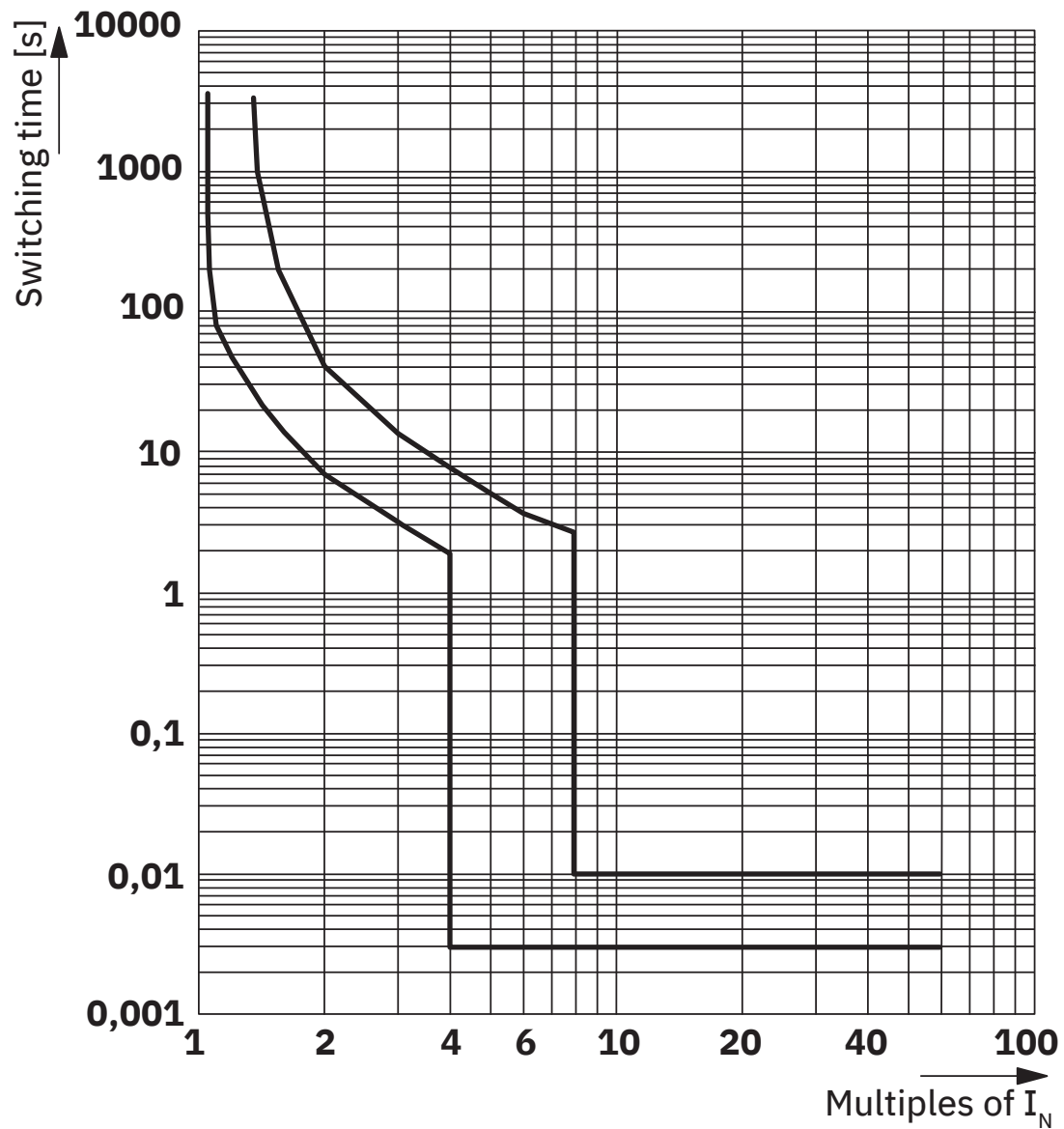
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Diagram



Trigger characteristic in the DC range

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Diagram



Operating current correction factor

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Circuit diagram



Graphic symbol

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Circuit diagram



Graphic symbol

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## Approvals

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**IECEE CB Scheme**  
Approval ID: DE1-69241



**cULus Recognized**  
Approval ID: E140459



**CSA**  
Approval ID: 80247832



**VDE Zeichengenehmigung**  
Approval ID: 40060968

**CCA**

Approval ID: CCA/DE1 35015

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## Classifications

### ECLASS

ECLASS-13.0	27140401
ECLASS-15.0	27140401

### ETIM

ETIM 10.0	EC003538
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### UNSPSC

UNSPSC 21.0	39121410
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## Environmental product compliance

### EU RoHS

Fulfills EU RoHS substance requirements	Yes, No exemptions
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### China RoHS

Environment friendly use period (EFUP)	EFUP-E
	No hazardous substances above the limits

### EU REACH SVHC

REACH candidate substance (CAS No.)	No substance above 0.1 wt%
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