# Miniature Circuit Breakers
# **Series 3SB6**



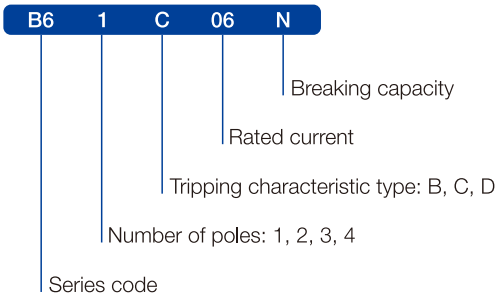
## Functions

- Overload protection
- Short circuit protection
- Isolation
- Controlling
- Used in residential building, non-residential building, industry, energy and infrastructure.

## Technical specifications

- Standards: IEC 60898-1
- Rated current In (A): 6, 10, 16, 20, 25, 32, 40, 50, 63
- Rated voltage Un (VAC): 1P: 230/400; 2-4P: 400
- Operational voltage (V AC): Min. : 24; Max. : 250/440
- Rated frequency (Hz): 50/60
- Rated insulation voltage (V AC):
  - Phase to ground: 250
  - Phase to phase: 500
- Number of poles (P): 1, 2, 3, 4
- Tripping characteristic:
  - Characteristic curve B (In): 3-5
  - Characteristic curve C (In): 5-10
  - Characteristic curve D (In): 10-20
- Thermal operating limit (In): 1.13 - 1.45
- Degree of protection: IP20, with connected conductors
- Electrical endurance (Cycles): 4,000
- Mechanical endurance (Cycles): 10,000
- Breaking Capacity: 6 kA
- Fire resistance according to IEC 60695: 960 °C
- Busbar connection: Pin type
- Mounting position: Any
- Conductor cross-sections
  - Solid and stranded ($mm^2$): 1-35
  - Finely stranded with end sleeve ($mm^2$): 1-16
- Terminal tightening torque (N·m): 2.5
- Ambient temperature (°C): -5 ~ +40, max. 95 % humidity
- Altitude (meters): Max. 2,000


## Instruction of type code




## Features

- The handle being sealable or equipped with padlock bracket avoids dangerous operation changes (ON / OFF)
- The handle provides a clear indication of the contact position
- Adequate printing of all data on the front provides long-term identification
- Energy limiting class: 3
- The emission of ionized gases is limited to the severest restrictions: 45 mm grid distance
- This MCB for household in accordance with: IEC 60898-1, B, C and D tripping characteristics

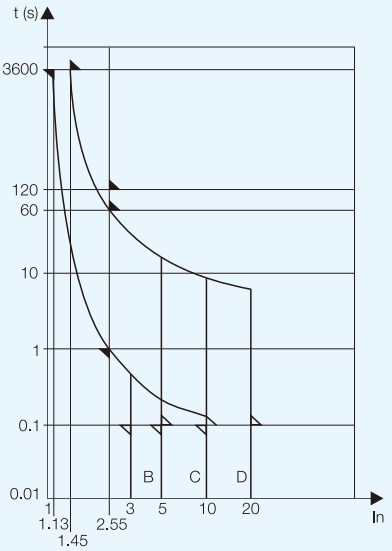
## Selection and ordering data

**IEC 60898-1 6 kA**

| | Number of poles | Rated current In (A) | Curve B | | Curve C | | Curve D | | Pack. |
|---|---|---|---|---|---|---|---|---|---|
| | | | Type code | Order code | Type code | Order code | Type code | Order code | |
|  | 1 | 6 | B6 1B06N | **29859** | B6 1C06N | **29872** | B6 1D06N | **29885** | 12 |
| | | 10 | B6 1B10N | **29860** | B6 1C10N | **29873** | B6 1D10N | **29886** | 12 |
| | | 16 | B6 1B16N | **29861** | B6 1C16N | **29874** | B6 1D16N | **29887** | 12 |
| | | 20 | B6 1B20N | **29862** | B6 1C20N | **29875** | B6 1D20N | **29888** | 12 |
| | | 25 | B6 1B25N | **29863** | B6 1C25N | **29876** | B6 1D25N | **29889** | 12 |
| | | 32 | B6 1B32N | **29864** | B6 1C32N | **29877** | B6 1D32N | **29890** | 12 |
| | | 40 | B6 1B40N | **29865** | B6 1C40N | **29878** | B6 1D40N | **29891** | 12 |
| | | 50 | B6 1B50N | **29866** | B6 1C50N | **29879** | B6 1D50N | **29892** | 12 |
| | | 63 | B6 1B63N | **29867** | B6 1C63N | **29880** | B6 1D63N | **29893** | 12 |
|  | 2 | 6 | B6 2B06N | **29898** | B6 2C06N | **29911** | B6 2D06N | **29924** | 6 |
| | | 10 | B6 2B10N | **29899** | B6 2C10N | **29912** | B6 2D10N | **29925** | 6 |
| | | 16 | B6 2B16N | **29900** | B6 2C16N | **29913** | B6 2D16N | **29926** | 6 |
| | | 20 | B6 2B20N | **29901** | B6 2C20N | **29914** | B6 2D20N | **29927** | 6 |
| | | 25 | B6 2B25N | **29902** | B6 2C25N | **29915** | B6 2D25N | **29928** | 6 |
| | | 32 | B6 2B32N | **29903** | B6 2C32N | **29916** | B6 2D32N | **29929** | 6 |
| | | 40 | B6 2B40N | **29904** | B6 2C40N | **29917** | B6 2D40N | **29930** | 6 |
| | | 50 | B6 2B50N | **29905** | B6 2C50N | **29918** | B6 2D50N | **29931** | 6 |
| | | 63 | B6 2B63N | **29906** | B6 2C63N | **29919** | B6 2D63N | **29932** | 6 |
|  | 3 | 6 | B6 3B06N | **29937** | B6 3C06N | **29950** | B6 3D06N | **29963** | 4 |
| | | 10 | B6 3B10N | **29938** | B6 3C10N | **29951** | B6 3D10N | **29964** | 4 |
| | | 16 | B6 3B16N | **29939** | B6 3C16N | **29952** | B6 3D16N | **29965** | 4 |
| | | 20 | B6 3B20N | **29940** | B6 3C20N | **29953** | B6 3D20N | **29966** | 4 |
| | | 25 | B6 3B25N | **29941** | B6 3C25N | **29954** | B6 3D25N | **29967** | 4 |
| | | 32 | B6 3B32N | **29942** | B6 3C32N | **29955** | B6 3D32N | **29968** | 4 |
| | | 40 | B6 3B40N | **29943** | B6 3C40N | **29956** | B6 3D40N | **29969** | 4 |
| | | 50 | B6 3B50N | **29944** | B6 3C50N | **29957** | B6 3D50N | **29970** | 4 |
| | | 63 | B6 3B63N | **29945** | B6 3C63N | **29958** | B6 3D63N | **29971** | 4 |
|  | 4 | 6 | B6 4B06N | **29976** | B6 4C06N | **29989** | B6 4D06N | **10003** | 3 |
| | | 10 | B6 4B10N | **29977** | B6 4C10N | **29990** | B6 4D10N | **10004** | 3 |
| | | 16 | B6 4B16N | **29978** | B6 4C16N | **29991** | B6 4D16N | **10005** | 3 |
| | | 20 | B6 4B20N | **29979** | B6 4C20N | **29992** | B6 4D20N | **10006** | 3 |
| | | 25 | B6 4B25N | **29980** | B6 4C25N | **29993** | B6 4D25N | **10007** | 3 |
| | | 32 | B6 4B32N | **29981** | B6 4C32N | **29994** | B6 4D32N | **10008** | 3 |
| | | 40 | B6 4B40N | **29982** | B6 4C40N | **29995** | B6 4D40N | **10009** | 3 |
| | | 50 | B6 4B50N | **29983** | B6 4C50N | **29996** | B6 4D50N | **10010** | 3 |
| | | 63 | B6 4B63N | **29984** | B6 4C63N | **29997** | B6 4D63N | **10011** | 3 |

## Tripping characteristic curves

IEC 60898-1 Standard




## Magnetic release

An electromagnet with plunger ensures instantaneous tripping in case of short circuit. The IEC 60898-1 distinguishes three different types, following the current for instantaneous release: type B, C, D

| | Test current | Tripping time | Applications |
|---|---|---|---|
| B | 3 In | 0.1 < t < 45 s (In ≤ 32 A)<br>0.1 < t < 90 s (In > 32 A) | Only for resistive loads such as:<br>- electrical heating - water heater |
| | 5 In | t < 0.1 s | - stoves |
| C | 5 In | 0.1 < t < 15 s (In ≤ 32 A)<br>0.1 < t < 30 s (In > 32 A) | Usual loads such as:<br>- lighting - socket outlets |
| | 10 In | t < 0.1 s | - small motors |
| D | 10 In | 0.1 < t < 4 s (In ≤ 32 A)<br>0.1 < t < 8 s (In > 32 A) | Control and protection of circuits having important transient inrush currents (large motors) |
| | 20 In | t < 0.1 s | |

## Thermal release

- The release is initiated by a bimetal strip in case of overload
- The standard defines the range of release for specific overload values
- Reference ambient temperature is 30 °C

| Test current | Tripping time |
|---|---|
| 1.13 In | t ≥ 1 h (In ≤ 63 A) |
| 1.45 In | t < 1 h (In ≤ 63 A) |
| 2.55 In | 1s < t < 60 s (In ≤ 32 A)<br>1s < t < 120 s (In > 32 A) |

## Temperature derating

The maximum permissible current in a circuit breaker depends on the ambient temperature where the circuit breaker is placed. Ambient temperature is the temperature inside the enclosure or switchboard in which the circuit breakers are installed.
**The reference temperature is 30 °C**

| Rated current In | Temperature compensation coefficient under various operational temperature | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | -10 | 0 | 10 | 20 | 30 | 40 | 50 | 55 | 60 |
| (A) | °C | °C | °C | °C | °C | °C | °C | °C | °C |
| 1 6 | 1.20 | 1.14 | 1.09 | 1.05 | 1.00 | 0.96 | 0.80 | 0.75 | 0.70 |
| 10~32 | 1.18 | 1.12 | 1.08 | 1.04 | 1.00 | 0.96 | 0.92 | 0.88 | 0.84 |
| 40~60 | 1.16 | 1.12 | 1.07 | 1.03 | 1.00 | 0.97 | 0.87 | 0.83 | 0.80 |

When several simultaneously operating circuit breakers are mounted side by side in a small enclosure, the temperature rise inside the enclosure causes a reduction in current rating. you must then assign the rating (already derated if necessary according to ambient temperature) a downrating factor of 0.8.

## Outline and installation dimensions

3SB6 is installed on DIN rail.

unit in mm