

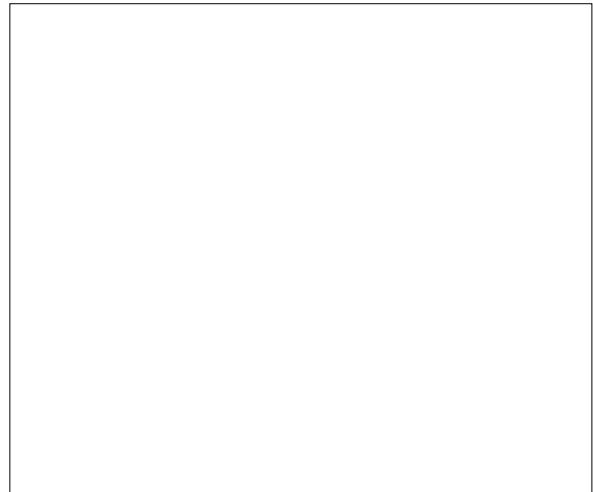
MINIATURE RELAY (SURFACE MOUNT TYPE)

2 POLES—1 to 2 A (FOR SIGNAL SWITCHING)

FBR18 SERIES

■ FEATURES

- 2 form C small size, surface mounting relay.
- Super miniature size: 0.2 inch × 0.1 inch grid, 12 pin DIP
Up to 50% less volume and board area than previous generation telecom relay.
- UL, CSA recognized.
- High dielectric and surge strength:
2.5 KV surge (per Bellcore TA-NWT-001089)
1.5 KV surge (per FCC part 68)
1,000 Vrms, open contacts
- Low power consumption: 80 mW operate
140 mW nominal
- Tape and reel packing for automatic mounting.



■ ORDERING INFORMATION

[Example] FBR18 N D 12 -P -M -** (-CSA) -□
(a) (b) (c) (d) (e) (f) (g) (h) (i)

| | | |
|-----|--------------------|--|
| (a) | Series Name | FBR18 : FBR18 Series [2 pole double throw (2 form C)] |
| (b) | Enclosure | N : Plastic sealed (washable type) |
| (c) | Coil Type | D : DC coil |
| (d) | Nominal Voltage | Refer to the COIL DATA CHART |
| (e) | Contact Material | Nil : Gold-overlay silver-nickel -P : Gold-overlay silver-palladium |
| (f) | Terminal | Nil : Standard -M : High density mounting |
| (g) | Custom Designation | To be assigned custom specification |
| (h) | CSA Standard | -CSA: UL114 + CSA recognized |
| (i) | Packing | Nil : Tape and reel (500 pieces/tape and reel) |

Note: The designation name is stamped on the top of the relay case as follows:

(Example) designation ordered : FBR18ND05

Stamp : 18ND05

■ SAFETY STANDARD AND FILE NUMBERS

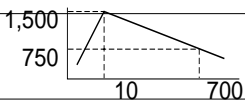
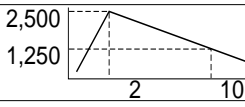
UL508, 1950, 114 (File No. E63615)

C22.2 No. 0, No. 14 (File No. LR40304 or LR64026)

| Nominal voltage | Contact rating |
|-----------------|-------------------------|
| 3 to 24 VDC | 2 A 30 VDC resistive |
| | 0.3 A 110 VDC resistive |
| | 0.5 A 125 VAC resistive |

FBR18 SERIES

■ SPECIFICATIONS

| Item | | Standard (Gold-overlay silver-nickel) | -P type (Gold-overlay silver-palladium) |
|----------------|---|--|--|
| Contact | Arrangement | 2 form C (DPDT) | |
| | Material | Gold-overlay silver-nickel | Gold-overlay silver-palladium |
| | Style | Bifurcated | |
| | Resistance (initial) | Maximum 100 mΩ (at 0.1 A 6 VDC) | |
| | Rating (resistive) | 0.5 A 125 VAC or 1 A 30 VDC | |
| | Maximum Carrying Current | 2 A (at 20°C) | |
| | Maximum Switching Power | 62.5 VA or 60 W | |
| | Max. Switching Voltage*1 | 250 VAC or 220 VDC | |
| | Maximum Switching Current | 2 A | |
| | Minimum Switching Load*2 | 0.01 mA 10 mVDC (reference) | |
| | Capacitance (at 10 kHz) | Approximately 1.0 pF (between open contacts, adjacent contacts) Approximately 1.0 pF (between coil and contacts) | |
| Coil | Nominal Power (at 20°C) | Approximately 0.14 W (0.2 W for 24 V coil) | |
| | Operate Power (at 20°C) | Maximum 0.08 W (0.112 W for 24 V coil) | |
| | Thermal Resistance at Continuous Thermal Load | Approximately 115°C/W | |
| | Operating Temperature | -40°C to +85°C (no frost) (refer to the CHARACTERISTIC DATA) | |
| | Operating Humidity | 45 to 85%RH | |
| Time Value | Operate (at nominal voltage) | Maximum 4 msec. | |
| | Release (at nominal voltage) | Maximum 4 msec. | |
| | Max. Switching Frequency | Mechanical 3 Hz or electrical 0.5 Hz (at contact rating) | |
| Insulation | Resistance (initial) | Minimum 1,000 MΩ (at 500 VDC) | |
| | Dielectric Strength | between open contacts |  <p>1,500 VAC 750 V minimum</p> |
| | | adjacent contacts | |
| | | between coil and contacts | 1,500 VAC 1 minimum |
| Surge Strength | between open contacts, adjacent contact |  <p>2,500 V 1,250 V minimum</p> | |
| | between coil and contacts | | 2,500 V (at 2 × 10 μs) |
| Life | Mechanical | 1 × 10 ⁸ operations minimum | |
| | Electrical (at contact rating) | DC | 2 × 10 ⁵ operations minimum |
| | | AC | 1 × 10 ⁵ operations minimum |
| Other | Vibration Resistance | Misoperation | 10 to 55 Hz (double amplitude of 1.5 mm) |
| | | Endurance | 10 to 55 Hz (double amplitude of 3.0 mm) |
| | Shock Resistance | Misoperation | 500 m/s ² (11 ± 1 ms) |
| | | Endurance | 1,000 m/s ² (11 ± 1 ms) |
| | Weight | Approximately 1.9 g | |

*1 If the switching voltage exceeds the rated contact voltage, reduce the current. The current values vary according to the type of load.

*2 Values when switching a resistive load at normal room temperature and humidity and in a clean atmosphere. The minimum switching load varies with the switching frequency and operation environment.

FBR18 SERIES

COIL DATA CHART

FBR-18 N type

| MODEL | | Nominal voltage | Coil resistance ($\pm 10\%$) | Nominal current (at nominal voltage) approx. | Must operate voltage*1 | Must release voltage*1 | Nominal power | Operate power | Coil temperature rise |
|-----------|-------------|-----------------|--------------------------------|--|-----------------------------|-----------------------------|-------------------------------------|---------------------|-------------------------------------|
| Standard | -P type | | | | | | | | |
| FBR18ND03 | FBR18ND03-P | 3 VDC | 64.3 Ω | 46 mA | 75% max. of nominal voltage | 10% min. of nominal voltage | Approx. 0.14 W (at nominal voltage) | Approx. 0.08 W Max. | Approx. 20 deg (at nominal voltage) |
| FBR18ND04 | FBR18ND04-P | 4.5 VDC | 145 Ω | 31 mA | | | | | |
| FBR18ND05 | FBR18ND05-P | 5 VDC | 178 Ω | 28 mA | | | | | |
| FBR18ND06 | FBR18ND06-P | 6 VDC | 257 Ω | 23 mA | | | | | |
| FBR18ND09 | FBR18ND09-P | 9 VDC | 579 Ω | 15 mA | | | | | |
| FBR18ND12 | FBR18ND12-P | 12 VDC | 1,028 Ω | 11 mA | | | | | |
| FBR18ND24 | FBR18ND24-P | 24 VDC | 2,880 Ω | 8 mA | 0.2 W | 0.112 W | 30 deg | | |

*1: Specified values are subject to pulse wave voltage.

Note: All values in the table are measured at 20°C.

FBR-18 W type

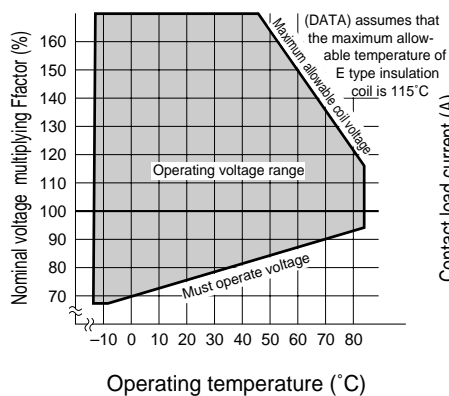
| MODEL | | Nominal voltage | Coil resistance ($\pm 10\%$) | Must operate voltage*1 | Must release voltage*1 | Nominal power | Operate power | Coil temperature rise |
|-----------|-------------|-----------------|--------------------------------|-----------------------------|-----------------------------|-------------------------------------|---------------------|-------------------------------------|
| Standard | -P type | | | | | | | |
| FBR18WD03 | FBR18WD03-P | 3 VDC | 39 Ω | 75% max. of nominal voltage | 10% min. of nominal voltage | Approx. 0.23 W (at nominal voltage) | Approx. 0.13 W Max. | Approx. 30 deg (at nominal voltage) |
| FBR18WD04 | FBR18WD04-P | 4.5 VDC | 88 Ω | | | | | |
| FBR18WD05 | FBR18WD05-P | 5 VDC | 108 Ω | | | | | |
| FBR18WD06 | FBR18WD06-P | 6 VDC | 156 Ω | | | | | |
| FBR18WD09 | FBR18WD09-P | 9 VDC | 352 Ω | | | | | |
| FBR18WD12 | FBR18WD12-P | 12 VDC | 626 Ω | | | | | |
| FBR18WD24 | FBR18WD24-P | 24 VDC | 2,304 Ω | 0.25 W | 0.14W | 33 deg | | |

*1: Specified values are subject to pulse wave voltage.

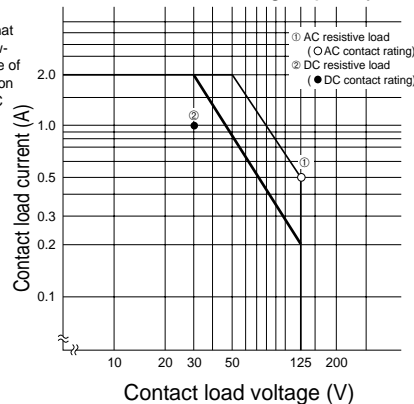
Note: All values in the table are measured at 20°C.

CHARACTERISTIC DATA

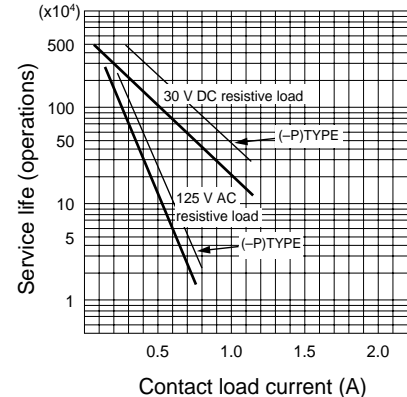
Range of operation temperature and voltage



Maximum switching capacity

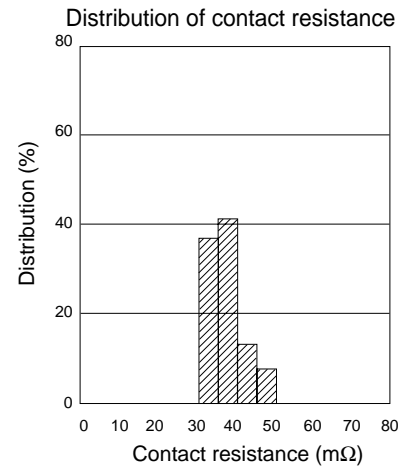
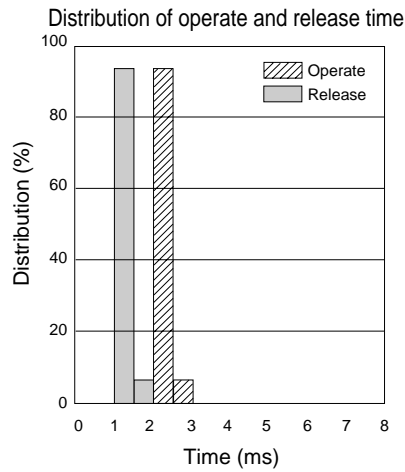
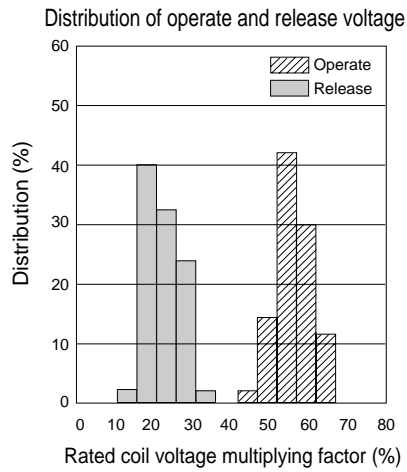


Life curve



FBR18 SERIES

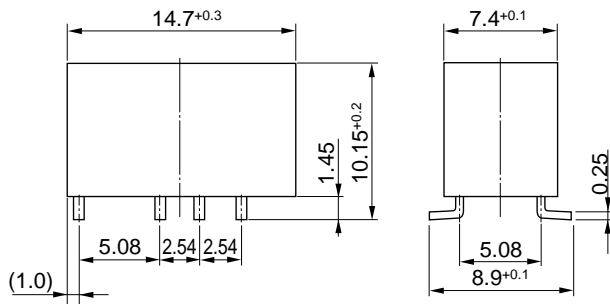
REFERENCE DATA



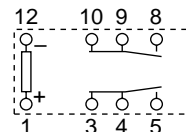
DIMENSIONS

●Dimensions

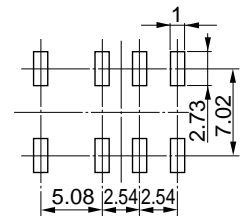
Standard (FBR18 type)



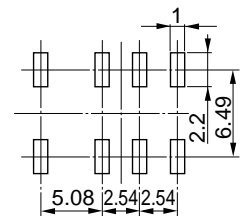
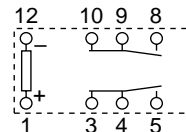
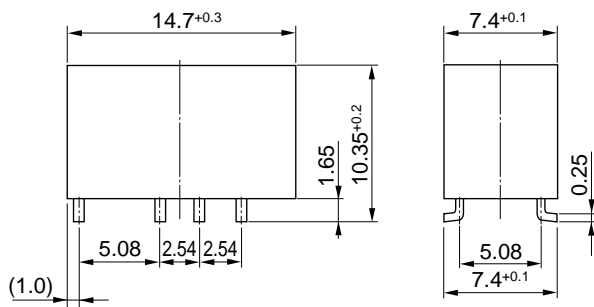
●Schematics
(TOP VIEW)



●PC board mounting pad layout
(TOP VIEW)

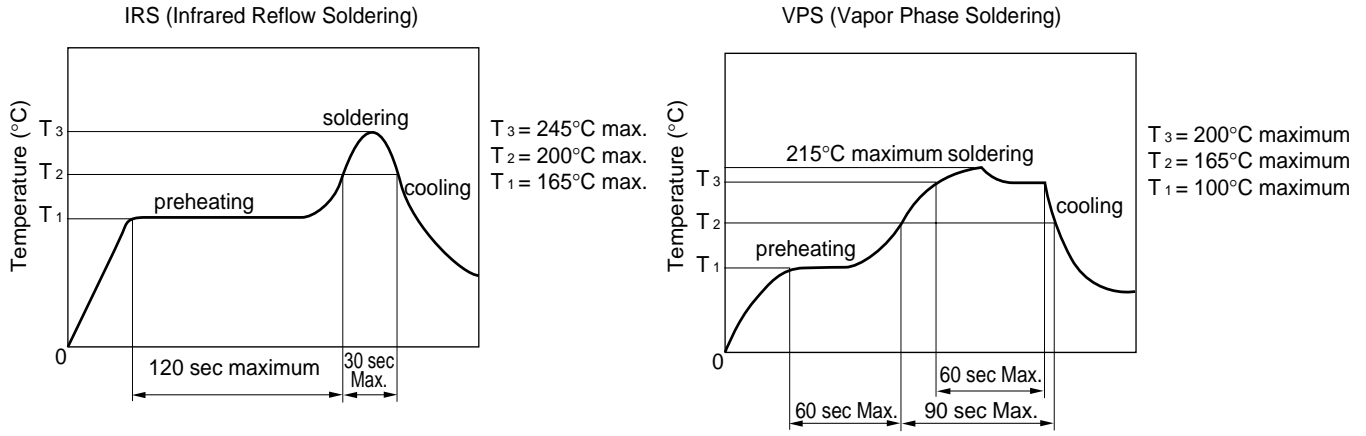


High density mounting (FBR18-M type)



Unit: mm

RECOMMENDED SOLDERING CONDITIONS (TEMPERATURE PROFILE)

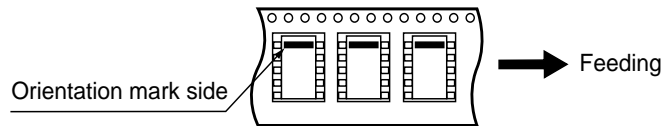


Note: 1. Temperature profiles show the temperature of PC board surface.
2. Please perform soldering test with your actual PC board before mass production, since the temperatures of PC board surfaces vary according to the size of PC board, status of parts mounting and heating method.

PACKING

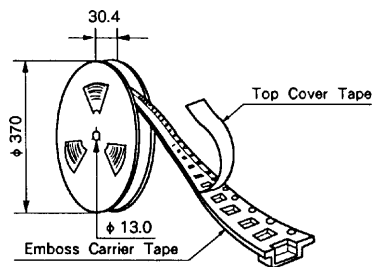
(1) Quantity of 1 reel : 500 pieces

• Packing orientation code: B

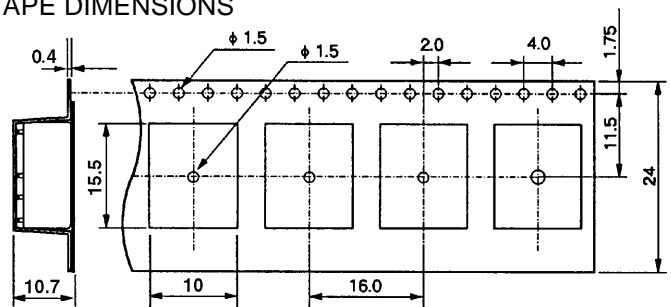


(2) Dimensions (in mm)

• REEL DIMENSIONS



• TAPE DIMENSIONS



Note: Relays are sold in packs of 500 pieces, please order 500 pieces as 1 unit.

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