FUJITSU

SIBILITIES ARE INF

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 (a) N (b) D (c) 12 (d) –□ (e) –M (f) –** (g) (–CSA) (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	N : 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

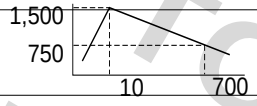
■ SAFETY STANDARD AND FILE NUMBERS

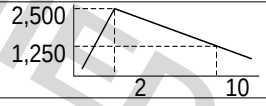
UL508, 1950, 114 (File No. E63615)
C22.2 No. 0, No. 14 (File No. LR40304 or LR64026)

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

■ 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	1,000 VAC 1 minimum	
		adjacent contacts		
		between coil and contacts	1,500 VAC 1 minimum	
	Surge Strength	between open contacts, adjacent contact	1,500 V (at 10 × 700 μs)	
		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	5×10^5 operations minimum
		AC	1×10^5 operations minimum	2×10^5 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.

■ COIL DATA CHART

FBR-18 N type

MODEL		Nominal voltage	Coil resistance (±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.

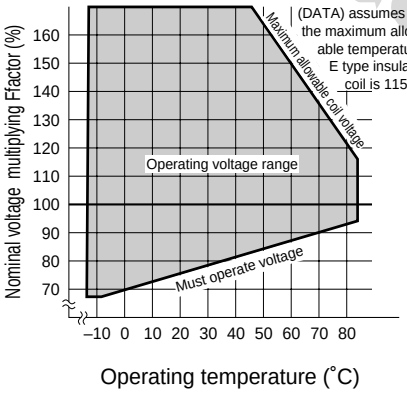
FBR-18 W type

MODEL		Nominal voltage	Coil resistance (±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

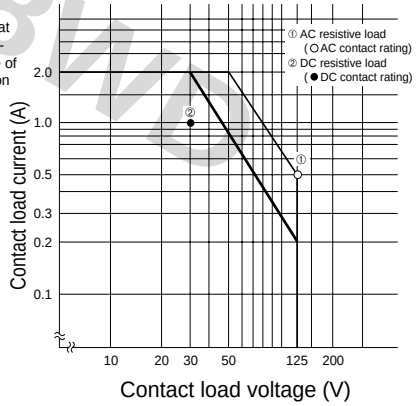
*1: Specified values are subject to pulse wave voltage.
Note: All values in the table are measured at 20°C.

■ CHARACTERISTIC DATA

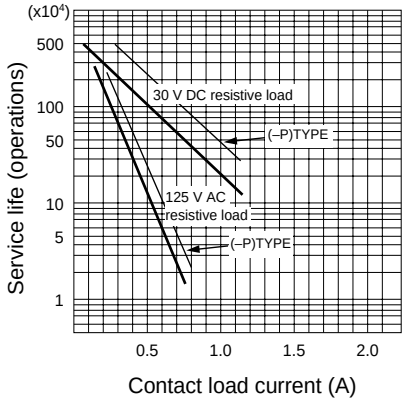
Range of operation temperature and voltage



Maximum switching capacity

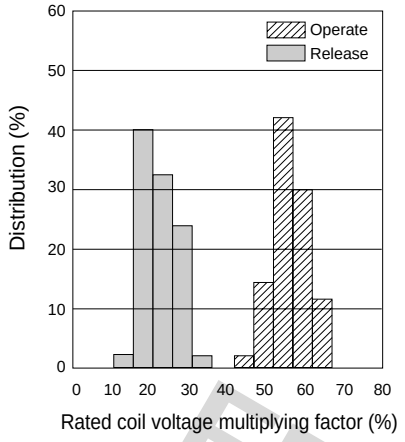


Life curve

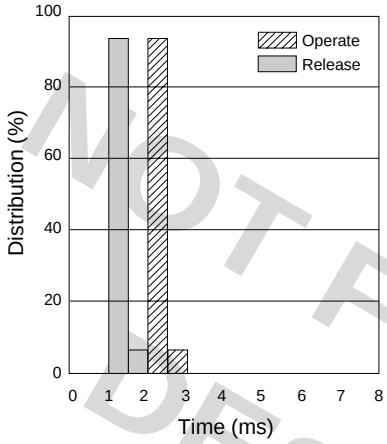


■ REFERENCE DATA

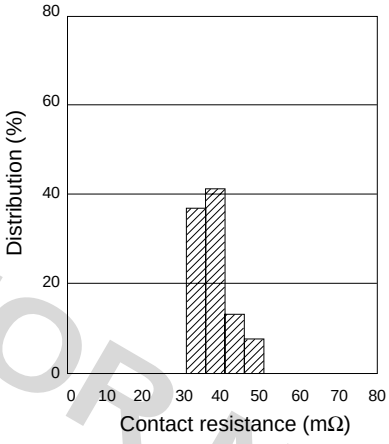
Distribution of operate and release voltage



Distribution of operate and release time



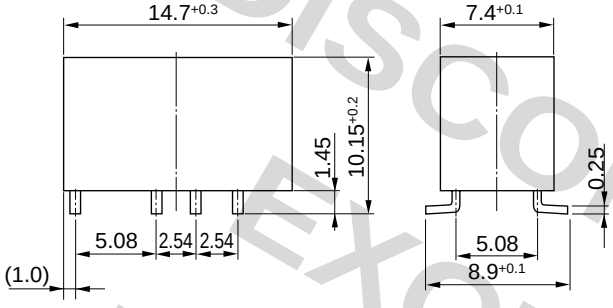
Distribution of contact resistance



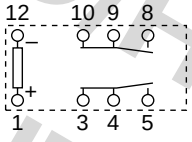
■ DIMENSIONS

●Dimensions

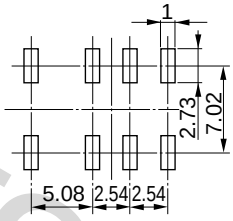
Standard (FBR18 type)



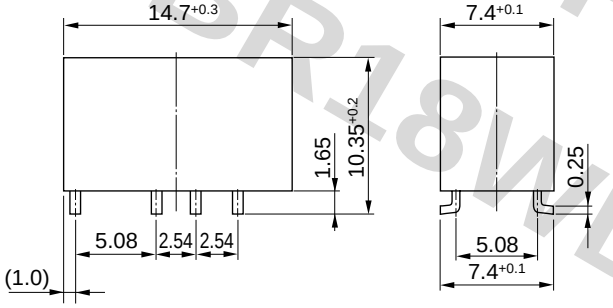
●Schematics (TOP VIEW)

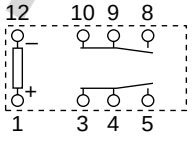


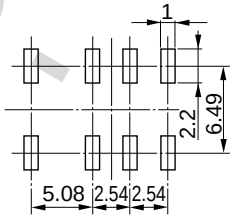
●PC board mounting pad layout (TOP VIEW)



High density mounting (FBR18-M type)



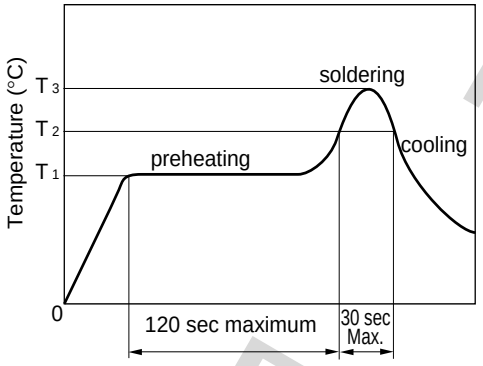




Unit: mm

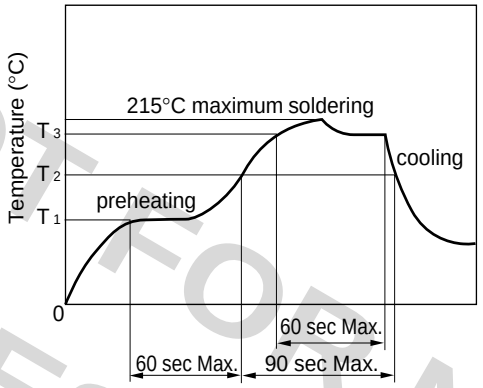
■ RECOMMENDED SOLDERING CONDITIONS (TEMPERATURE PROFILE)

IRS (Infrared Reflow Soldering)



T 3 = 245°C max.
T 2 = 200°C max.
T 1 = 165°C max.

VPS (Vapor Phase Soldering)



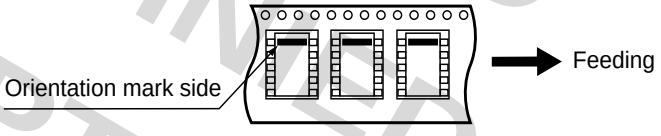
T 3 = 200°C maximum
T 2 = 165°C maximum
T 1 = 100°C maximum

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

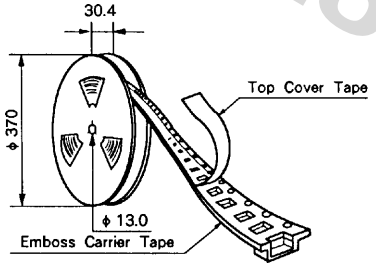
(1) Quantity of 1 reel : 500 pieces

• Packing orientation code: B

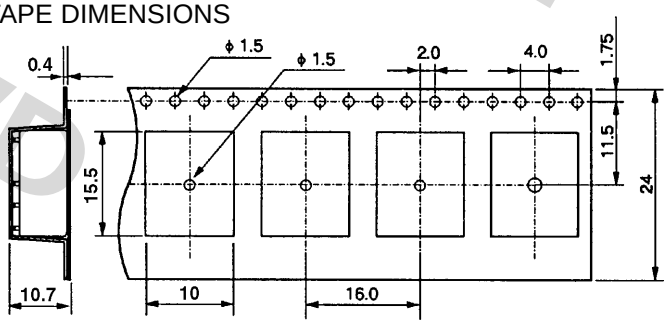


(2) Dimensions (in mm)

• REEL DIMENSIONS



• TAPE DIMENSIONS



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

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