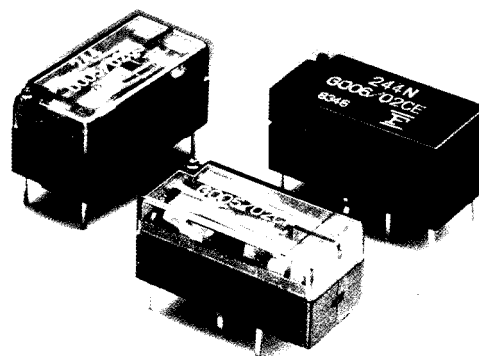


FBR244**/02C*** **FBR240 SERIES RELAYS**

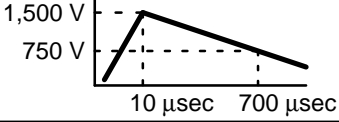
MINIATURE RELAY, 2 POLE 1 TO 2A (SIGNAL SWITCHING)

FEATURES

- **Gold-overlay bifurcated contact**
Contact material and shape especially suitable for signal switching assures reliability at low level switching.
- **Conforms to FCC68 standards**
High voltage relays are also available with dielectric withstand voltage greater than 1,000 V AC and surge voltage resistance greater than 1,500 V.
- **Formed terminals for temporary mounting**
Kink terminals enable FBR240 series relays to be mounted temporarily on a PC board.
- **Automatic mounting**
Shipped in carrier case plastic magazine suitable for automatic mounting.
- **UL recognized**
File No. E63615
- **CSA certified**
File No. LR64026



SPECIFICATIONS

Item	Specifications
Contact arrangement	2 form C (DPDT)
Contact material	Gold-overlay silver contacts (contact symbol S or T) Gold-overlay silver-palladium contacts (contact symbol P or E) Thick gold-overlay silver-palladium contacts (contact symbol F)
Contact resistance	100 mΩ max. (measured at 6 V DC, 0.1 A) initial value
Insulation resistance	100 MΩ min. (measured at 500 V DC) initial value
Dielectric withstand voltage	Standard : 500 V AC for 1 min. High withstand coil voltage : 1,000 V AC for 1 min. (between open contacts 500 V AC for 1 min.)
Surge voltage (for high withstand voltage types)	1,500 V/10 μs/700 μs (between coil and contacts, between adjacent contacts) <div style="text-align: right;">  </div>
Electrostatic capacitance between contacts	2 pF max. (reference value)
Vibration	No contact opening : 10 to 55 Hz (1.5 mm double amplitude) No damage : 10 to 55 Hz (1.5 mm double amplitude)
Shock	No contact opening : 20 G (11 ms) No damage : 100 G (11 ms)
Operate time	6 ms max. (bounce time 3 ms max.) (See REFERENCE DATA [2])
Release time	3 ms max. (bounce time 8 ms max.) (See REFERENCE DATA [3])
Service life Mechanical Electrical	2 x 10 ⁷ ops. min. 5 x 10 ⁵ ops. min. (at rated load) 1 x 10 ⁵ ops. min. (at rated load) (See REFERENCE DATA [1])
Operating temperature	−30°C to +70°C (No frozen) (See REFERENCE DATA [4][5])
Operating humidity	45% to 85% RH
Weight	Approx. 4.5 g

CONTACT PERFORMANCE

Item	DC load	AC load	Remarks
Contact rating	30 V – 1 A	120 V – 0.5 A	With resistive load
Maximum switching voltage *1	150 V	220 V	
Maximum switching current	2.0 A	1.25 A	
Maximum carrying current	2 A		
Maximum switching power	30 W	60 VA	
Minimum applicable load *2 (reference values)	02CS type 5 V DC – 1 mA 02CT, CP type 1 V DC – 1 mA 02CE type 0.1 V DC – 100 μA		

*1 If the switching voltage exceeds the rated contact voltage, reduce the current. 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 applicable load varies with the switching frequency and operating environment.

COIL RATINGS 1

Type	Coil power consumption	Pickup power consumption	Coil voltage range	Pickup voltage	Remarks
Standard	Approx. 500 mW	Approx. 280 mW	3 V to 48 V	75% max. of rated voltage	For general use, AV and telephone equipment, and PBXs
G series	Approx. 550 mW	Approx. 250 mW	4.5 V to 48 V	68% max. of rated voltage	For electronic switching system, PBXs and telephone equipment
Low power consumption (special order)*	Approx. 360 mW	Approx. 200 mW	3 V to 24 V	75% max. of rated voltage	For telephone and portable equipment

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

* Low power dissipation relays available on request.

COIL RATINGS 2

• Standard type

Voltage designation	Rated coil voltage	Coil resistance (± 10%)	Rated current (at rated voltage)	Pickup voltage	Dropout voltage (reference)	Maximum allowable voltage	Coil power consumption	Pickup power consumption	Coil temperature rise
D003	3 V DC	18 Ω	Approx. 167 mA	75% max. of rated coil voltage	10% min. of rated coil voltage	See REFERENCE DATA 4	Approx. 500 mW (at rated coil voltage)	Approx. 280 mW max.	Approx. 45°C (at rated coil voltage)
D005	5 V DC	50 Ω	Approx. 100 mA						
D006	6 V DC	72 Ω	Approx. 83 mA						
D009	9 V DC	162 Ω	Approx. 56 mA						
D012	12 V DC	290 Ω	Approx. 41 mA						
D024	24 V DC	1,150 Ω	Approx. 21 mA						
D048	48 V DC	4,000 Ω	Approx. 12 mA				Approx. 580 mW		Approx. 53°C

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

• G series

Voltage designation	Rated coil voltage	Coil resistance (± 10%)	Rated current (at rated voltage)	Pickup voltage	Dropout voltage	Maximum allowable voltage	Coil power consumption	Pickup power consumption	Coil temperature rise
G005	4.5 V DC	36 Ω	Approx. 125 mA	3.1 V max.	0.2 V min.	See REFERENCE DATA 5	Approx. 550 mW (at rated coil voltage)	Approx. 250 mW max.	Approx. 50°C (at rated coil voltage)
G006	6 V DC	66 Ω	Approx. 91 mA	4.0 V max.	0.27 V min.				
G009	9 V DC	140 Ω	Approx. 64 mA	6.0 V max.	0.38 V min.				
G012	12 V DC	280 Ω	Approx. 43 mA	8.1 V max.	0.55 V min.				
G024	24 V DC	1,050 Ω	Approx. 23 mA	15.8 V max.	1.06 V min.				
G048	48 V DC	4,100 Ω	Approx. 11 mA	30.5 V max.	2.12 V min.				

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

ORDERING INFORMATION

[Example] FBR244 (N) D 003 / 02C S (-B -2 -CSA)
 (A) (B) (C) (D) (E) (F) (G) (H) (I)

- (A) Series name
FBR244: FBR240 series
- (B) Construction
No designation: Automatic soldering
N: Automatic soldering + immersion-cleanable N type
- (C) Coil ratings
D: Standard type
G: G series
 See COIL RATINGS [1](#) for details.
- (D) Rated coil voltage
 (Example) 003: 3 VDC use
 012: 12 VDC use
 See COIL RATINGS [2](#) for details.
- (E) Contact material
02C: 2 form C
- (F) Contact shape and material
T: Bifurcated contact, gold-overlay silver
E: Bifurcated contact, gold-overlay silver-palladium
S: Single contact, gold-overlay silver
P: Single contact, gold-overlay silver-palladium
F: Bifurcated contact, thick gold-overlay silver-palladium
- (G) Cover material
No designation: Smoke brown cover (flammability grade UL 94V-2)
 (All N Series relays have black covers with flammability grade UL 94V-0.)
-B: Black cover (flammability grade UL 94V-0)
- (H) Special specifications
No designation: Standard
-2: High withstand voltage (1,000 V AC)
- (I) Safety standards
No designation: Standard
-UL: UL recognized
-CSA: UL recognized + CSA certified

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

(Example) Designation ordered: **FBR244 D012/02CE**
 Stamp: **244 D012/02CE**

PART NUMBER LIST

- Standard

Contact		Rated coil voltage (VDC)	Part number
Form	Material		
Bifurcated contact	Gold-overlay Silver	3	FBR244(N)D003/02CT
		5	FBR244(N)D005/02CT
		6	FBR244(N)D006/02CT
		9	FBR244(N)D009/02CT
		12	FBR244(N)D012/02CT
		24	FBR244(N)D024/02CT
	Gold-overlay Silver-palladium	3	FBR244(N)D003/02CE
		5	FBR244(N)D005/02CE
		6	FBR244(N)D006/02CE
		9	FBR244(N)D009/02CE
		12	FBR244(N)D012/02CE
		24	FBR244(N)D024/02CE
Single contact	Gold-overlay Silver	3	FBR244(N)D003/02CS
		5	FBR244(N)D005/02CS
		6	FBR244(N)D006/02CS
		9	FBR244(N)D009/02CS
		12	FBR244(N)D012/02CS
		24	FBR244(N)D024/02CS
	Gold-overlay Silver-palladium	3	FBR244(N)D003/02CP
		5	FBR244(N)D005/02CP
		6	FBR244(N)D006/02CP
		9	FBR244(N)D009/02CP
		12	FBR244(N)D012/02CP
		24	FBR244(N)D024/02CP

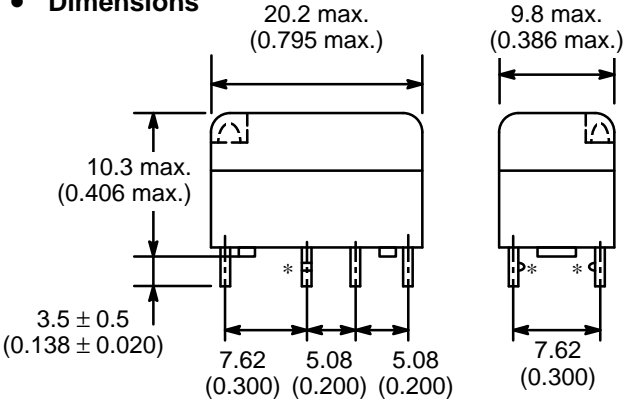
- G series

Contact		Rated coil voltage (VDC)	Part number
Form	Material		
Bifurcated contact	Gold-overlay Silver-palladium	4.5	FBR244(N)G005/02CE
		6	FBR244(N)G006/02CE
		9	FBR244(N)G009/02CE
		12	FBR244(N)G012/02CE
		24	FBR244(N)G024/02CE
		48	FBR244(N)G048/02CE
	Thick Gold-overlay Silver-palladium	4.5	FBR244(N)G005/02CF
		6	FBR244(N)G006/02CF
		9	FBR244(N)G009/02CF
		12	FBR244(N)G012/02CF
		24	FBR244(N)G024/02CF
		48	FBR244(N)G048/02CF
Single contact	Gold-overlay Silver-palladium	4.5	FBR244(N)G005/02CP
		6	FBR244(N)G006/02CP
		9	FBR244(N)G009/02CP
		12	FBR244(N)G012/02CP
		24	FBR244(N)G024/02CP
		48	FBR244(N)G048/02CP

Unit: mm (in.)

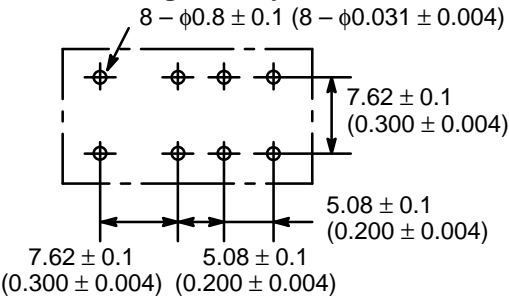
DIMENSIONS AND SCHEMATICS

• Dimensions

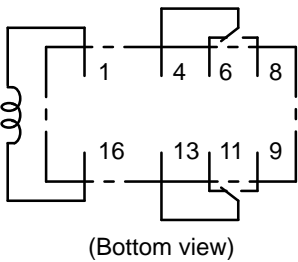


* The terminals marked with an asterisk are kinked for temporary mounting on PC board.

• Mounting hole layout

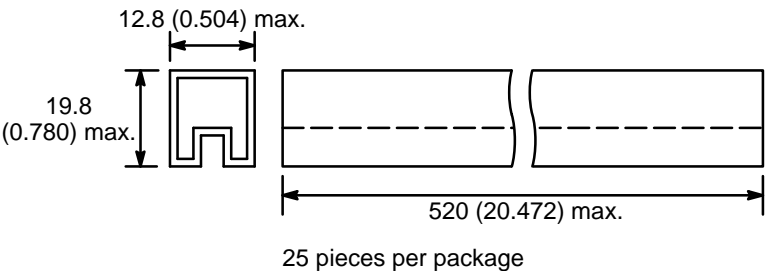


• Schematics



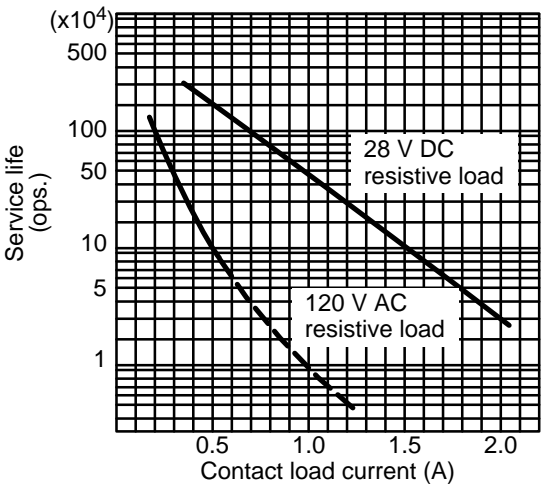
Note: Terminal numbers are not shown on the relays.

• Tube dimensions

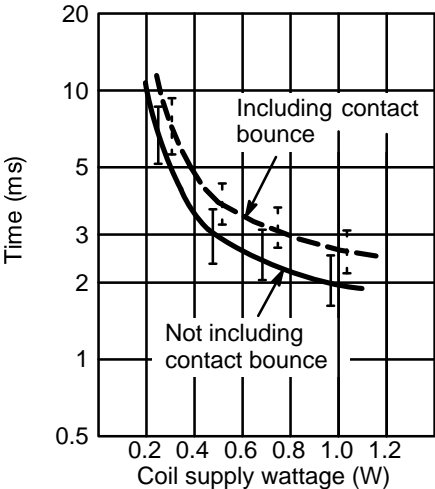


REFERENCE DATA

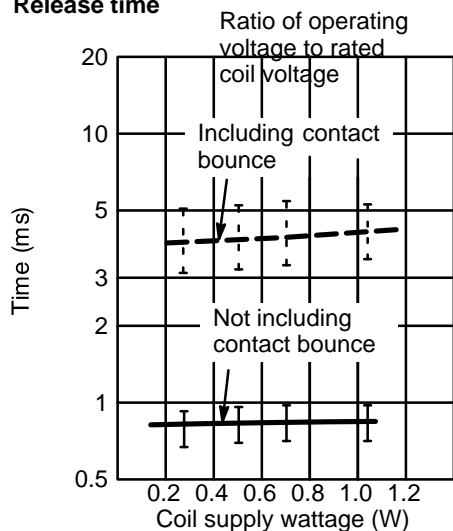
① Service life



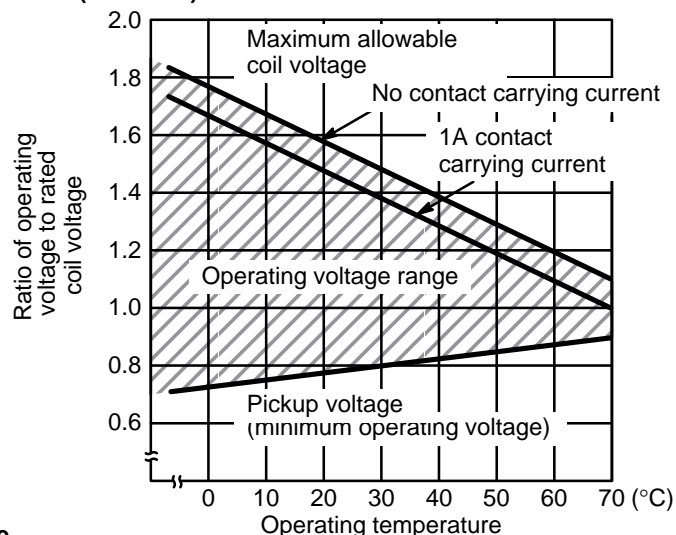
② Operate time



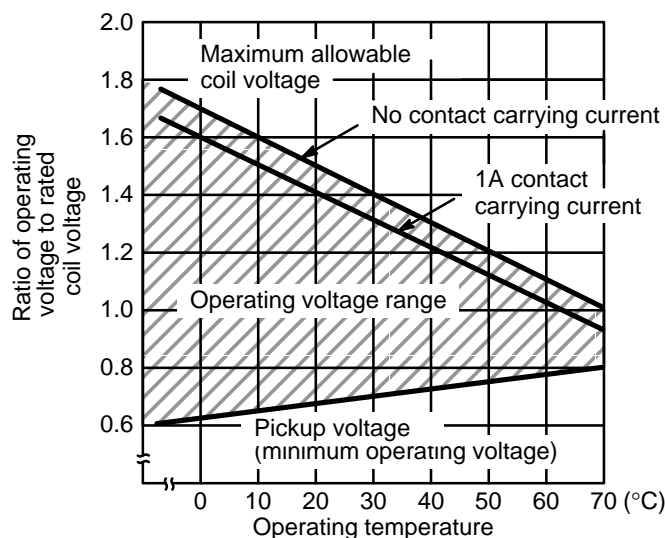
③ Release time



④ Operating temperature and operating voltage range (Standard)



⑤ Operating temperature and operating voltage range (G series)



Note: Data assumes that the maximum allowable temperature is 115°C, and is not applicable to hot start.

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