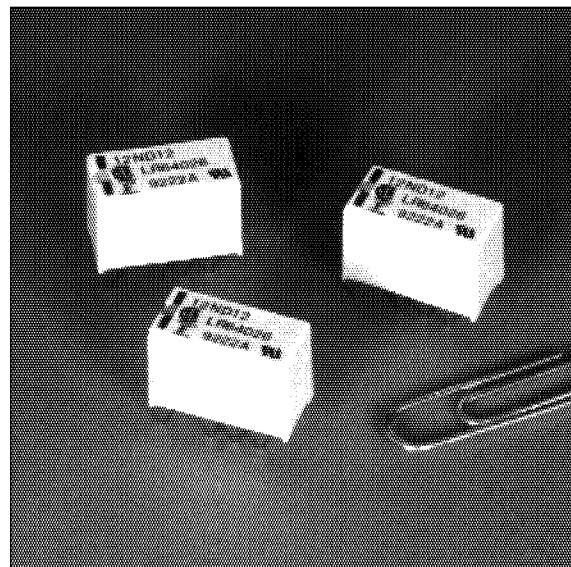


FBR10 Series

SUPER-MINI 2-POLE SIGNAL RELAY

FEATURES

- Super Miniature Size: 0.2 inch x 0.1 inch grid, 12 pin DIP
Up to 50% less volume and board area than previous generation telecom relays.
- High Dielectric and Surge Voltage:
2.5 KV surge (per Bellcore TR-NWT-001089)
1.5 KV surge (per FCC part 68)
1,000 VRMs, open contacts
- Low Power Consumption: 80 mW pick-up
140 mW nominal
- Stable Contact Resistance for Signal Switching
- Worldwide Telecommunications Standard of the 1990's
- Features Ideal for many Non-Telecommunications Applications
- UL Recognized — file no. E63615
- CSA Certified — file no. LR64026-27
- UL/CSA Ratings:
0.5A, 125 VAC, Resistive
2.0A, 30 VDC, Resistive
0.3A, 110 VDC, Resistive

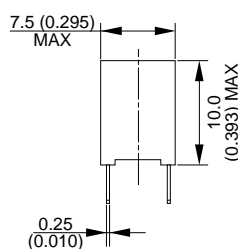
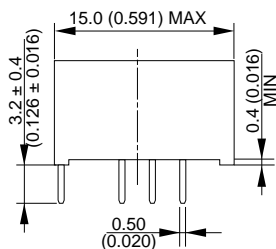


APPLICATION

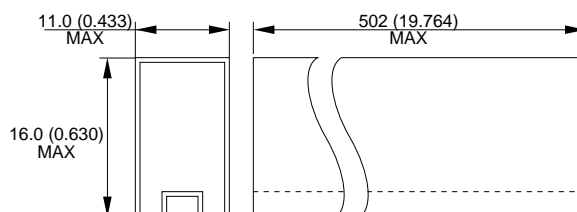
Specific telecom applications include: central office line cards, fiber-to-the-curb systems, PBX/PABX, transmission equipment, modems (including those built in to PCs and laptops), data networks/LANs, and telecommunications test equipment. Although designed for telecommunications requirements, the FBR10's small size, low power, and high isolation make this relay suitable for applications in many other industries. These include security and alarm, medical electronics, test equipment, and instrumentation.

Dimensions and Schematic

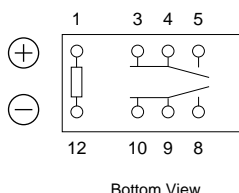
Dimensions



Shipping Tube Dimensions (30 relays per tube)

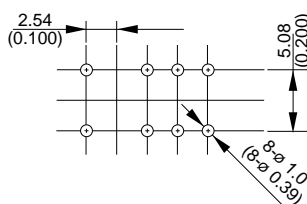


Schematic



Units: mm (in.)

Mounting Hole Layout



- Schematic as shown is de-energized for non-latching and "Reset" for latching.
- Coil polarity shown must be observed for non-latching.
- "Set" polarity shown for latching version.
- Reverse polarity for "Reset".

Engineering Data

Item			Specifications
Contact Data	Arrangement		2 pole double throw (2 form C)
	Contact Material and Style		Gold overlay on silver alloy, bifurcated
	Ratings		Max. Switched Voltage: 220 VDC, 250 VAC Max. Switched Current: 2.0A Max. Switched Power: 60W, 62.5 VA Max. Carry Current: 2 amps at 20°C Minimum Load: 10uA, 10m VDC * ¹
	Electrical Life (minimum)		1 x 10 ⁵ operations, 0.5 A, 125 VAC, resistive 2 x 10 ⁵ operations, 1.0 A, 30 VDC, resistive
	Initial Contact Resistance		100mΩ Max. at 6 VDC, 0.1 A
Initial Insulation Resistance	Between Mutually Insulated Conductors		10 ⁹ Ω Min. at 500 VDC
Capacitance	Open Contacts		< 1pF at 10 kHz
	Adjacent Contact Sets		< 1pF at 10 kHz
Coil Data	Rated Voltage Range Available		3 to 24 VDC
	Nominal Power		140 mW (200 mW for 24 V coil)
	Thermal Resistance at Continuous Thermal Load		115°C/W (approx.)
Operate Data (at 20°C)	Must Operate Coil Voltage		75% of nominal coil voltage
	Operate, Set, or Reset Time (Excluding Bounce)* ²		4 ms. max.
	Operate or Set Bounce* ²		3 ms. max.
	Must Release Voltage * ²		10% of nominal coil voltage
	Release Time (excluding Bounce, No Diode Suppres- sion) * ²		4 ms. max.
	Release or Reset Bounce		3 ms max.
	Max. Switching Frequency		Mechanical: 3 Hz Electrical: 0.5 Hz (at rated lead)
Environmental Data	Operating Temperature Range		-40 to 85°C
	Vibration	Operational, no contact opening > 10 μs	20G (10-55Hz 3.3mm Double amplitude)
		Non-Destructive	30G (10-55Hz 5mm Double amplitude)
	Shock	Operation, no contact opening > 10 μs	50 G min., 11 ms, 1/2 sine wave
		Non-Destructive	100 G min., 11 ms
	Operating Humidity		45% to 85% RH
Mechanical Data	Flammability, All Plastics		UL 94 V-0, 30 minimum Oxygen Index
	Mechanical Life		100 x 10 ⁶ Operations @ 3Hz
	Termination		Through-hole printed circuit board, 0.2 x 0.1 in. grid
	Enclosure Type		Immersion cleanable
	Weight		Approx. 1.5 g (0.5 oz.)*

Notes: *¹ Values when switching resistive load under normal environmental conditions (room temperature and humidity)
The minimum applicable load varies with the switching frequency and operating environment.

*² At or from nominal coil voltage.

Initial Dielectric Strength (minimum)

	VRMS, 1 min.	Surge *		
		Peak (V)	Rise Time (μs)	Decay Time (μs) (1/2 peak)
Between Open Contacts	1000	1500	10	160
Between Contact Sets	1000	1500	2	160
Between Coil and Contacts	1800	2500	2	10

Note: * Decay time measured from beginning of surge.

Coil Data — Single side Stable (Standard, Non-Latching)

Designation		Nominal Voltage (VDC at 20°C)	Nominal Coil Power Dissipation (W at 20°C)	Coil Resistance (Ω ±10% at 20°C)	Pick-up Voltage (max) (Volts at 20°C)	Drop-out Voltage (min) (Volts at 20°C)	Temperature Rise (°C at Nominal Coil Voltage)
FBR12N	D03	3	Approx. 0.14	64	2.25	0.3	Approx. 18
	D04	4.5		145	3.38	0.45	
	D05	5		178	3.75	0.5	
	D06	6		257	4.5	0.6	
	D09	9		579	6.75	0.9	
	D12	12		1028	9.0	1.2	
	D24	24	Approx. 0.20	2880	18.0	2.4	Approx. 30

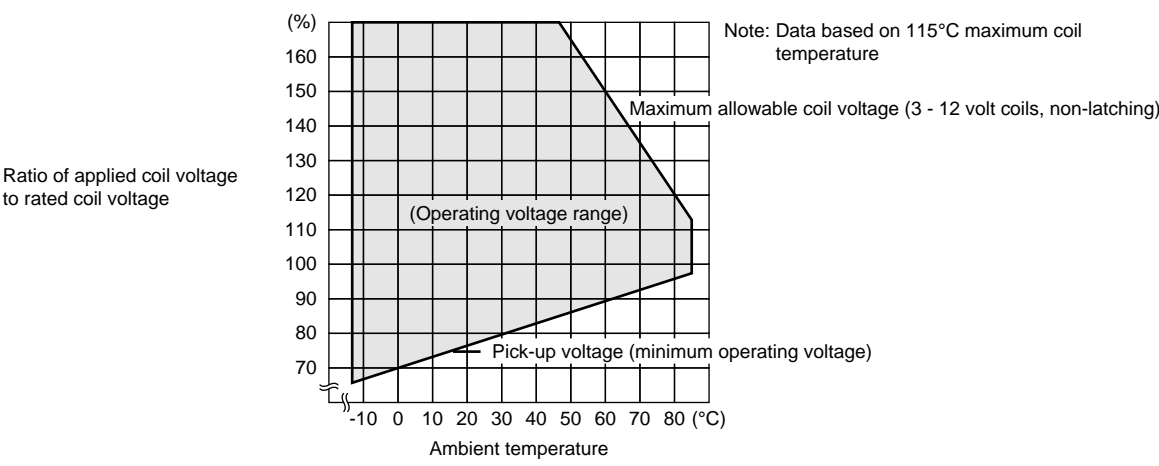
Coil Data — BI-Stable single Coil (Single Coil Latching)

Designation		Nominal Voltage (VDC at 20°C)	Nominal Coil Power Dissipation (W at 20°C)	Coil Resistance (Ω ±10% at 20°C)	Set/Reset Voltage (max) (Volts at 20°C)	Temperature Rise (°C at Nominal Coil Voltage)
FBR12NL1	03	3	Approx. 0.10	90	2.25	Approx. 13
	04	4.5		203	3.38	
	05	5		250	3.75	
	06	6		360	4.5	
	09	9		810	6.75	
	12	12		1440	9.0	

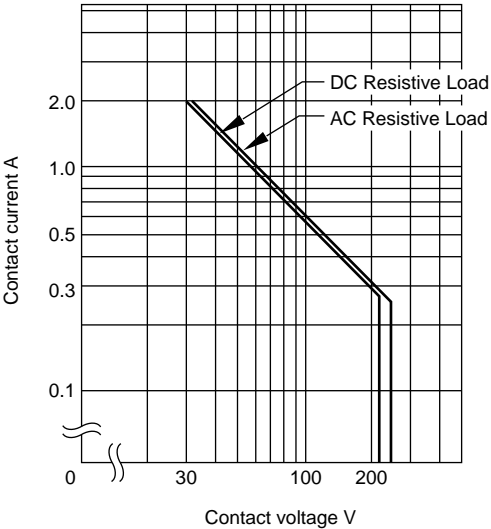
FBR10

REFERENCE DATA

Coil Operating Range

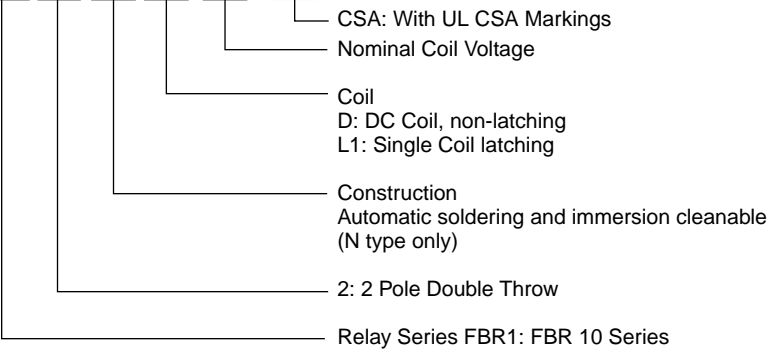


Maximum Contact Switching Capacity



Ordering Information

FBR1 2 N D 12 (- CSA)*



Designation	Nominal Coil Voltage (V)
03	3
04	4.5
05	5
06	6
09	9
12	12
24	24

* “-CSA” Does Not Appear On Part Number Marked On Relay

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Circuit diagrams utilizing Fujitsu products are included as a means of illustrating typical relay applications. Complete Information sufficient for construction purposes is not necessarily given.

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