FUJITSU

COMPACT POWER RELAY

1 POLE - 30A (For Automotive Applications)

FBR53 Series

■ FEATURES

- Compact for high density packaging
- High contact capability (30A continuous)
- High temperature grade (-40˚C to 125˚C)
- Contact arrangement Form U (form A)
- 60A inrush
- Coil wire temp. class F

■ PARTNUMBER INFORMATION

	FBR53	N	D12	-	Y
[Example]	(a)	(b)	(c)		(d)

(a)	Relay type	FBR53 : FBR53 Series
(b)	Enclosure	N : Plastic sealed
(c)	Coil rated voltage	D12 : 9....12VDC Coil rating table at page 3
(d)	Contact material	Y : Silver-tin oxide

Actual marking does not carry the type name: "FBR"
E.g.: Ordering code: FBR53ND12-Y; Actual marking: 53ND12-Y

■ SPECIFICATION

Item			FBR53
Contact Data	Configuration		Form U
	Material		Silver-tin oxide ($AgSnO_2$)
	Voltage drop		Max. 100 mV at 1A (12VDC open contact voltage) Average 1.5mΩ at 7A, 12VDC
	Contact rating		14VDC, 25A (resistive load)
	Max. carrying current		30A continuous (15A each contact) at 25 °C
	Max. inrush current		60A (30A each contact) at 25 °C
	Min. switching load *		6 VDC, 1A
Life	Mechanical		Min.10 x 10^6 operations (with no load for contact)
	Electrical		Min.100 x 10^3 operations, 14VDC, 20A (resistive load)
Coil Data	Rated power		600 mW
	Operate power		220 mW
	Operating temperature range		-40 °C to +125 °C (no frost)
	Storage temperature range		-40 °C to +125 °C (no frost)
	Operating humidity		45 to 85% RH
	Coil wire temp. class		F
Timing Data	Operate (at nominal voltage)		Max. 10 ms
	Release (at nominal voltage)		Max. 5 ms (no diode)
Insulation	Resistance (initial)		Minimum 100 M Ω
	Dielectric strength	Open contacts	500 VAC (50/60 Hz) 1min.
		Contacts to coil	500 VAC (50/60 Hz) 1min.
Other	Vibration resistance	Misoperation	10 to 55Hz double amplitude 1.5mm, direction X, Y, Z
		Endurance	10 to 100Hz double amplitude 1.5mm, direction X, Y, Z No damage (mechanical and electrical) after test. Coil energizing: 1 hr each direction, Coil not energized: 1 hr each direction
	Shock	Misoperation	100m/s² (11ms), direction X, Y, Z
		Endurance	1,000m/s ² (11ms), direction X, Y, Z, each 6 shocks. No damage (mechanical and electrical) after test. Coil energizing: 3 shocks. Coil not energized: 3 shocks, total 36 shocks.
	Terminal	Solderability	At 270 ± 10 °C for 3 ± 0.5sec.
		Strength	9.8N (1 Kgf) Pull force in longitudinal direction for 10 sec.
	Weight		Approximately 6 g
	Sealing		Sealed, cat III

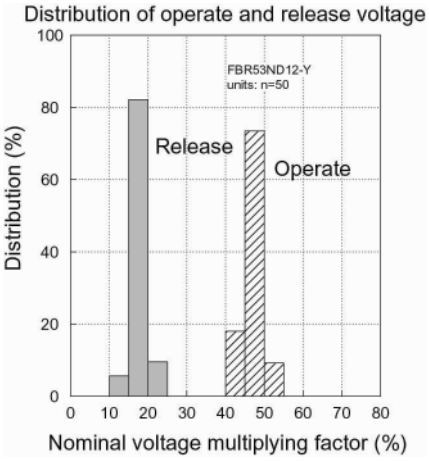
* Minimum switching loads mentioned above are reference values. Please perform the confirmation test with actual load before production since reference values may vary according to switching frequencies, environmental conditions and expected reliability levels.

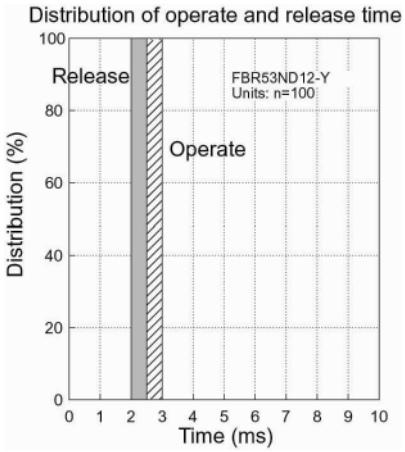
■ COIL RATING

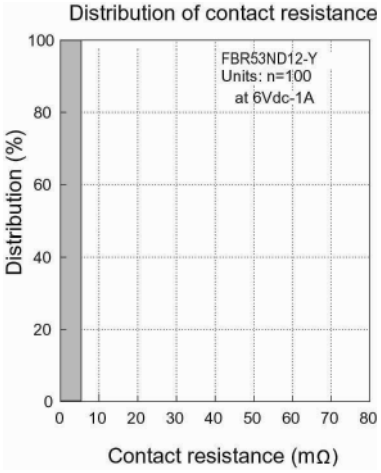
Coil Code	Rated Coil Voltage (VDC)	Coil Resistance +/- 10% (Ohm)	Must Operate Voltage (VDC) *	Must Release Voltage (VDC) *
D09	9	135	5.4	0.7
			6.8 (at 85 °C)	0.9 (at 85 °C)
D10	10	180	6.3	0.8
			7.9 (at 85 °C)	1.0 (at 85 °C)
D12	12	240	7.3	1.0
			9.2 (at 85 °C)	1.3 (at 85 °C)

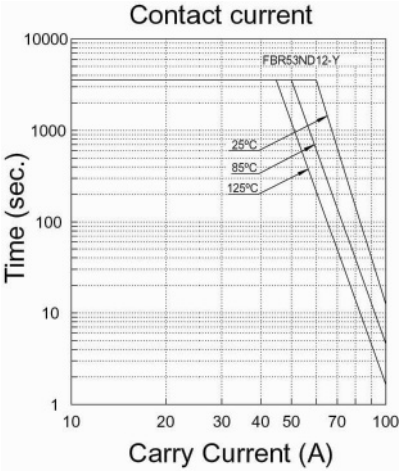
Note: All values in the table are valid for 20°C and zero contact current, unless otherwise indicated.
* Specified operate values are valid for pulse wave voltage.

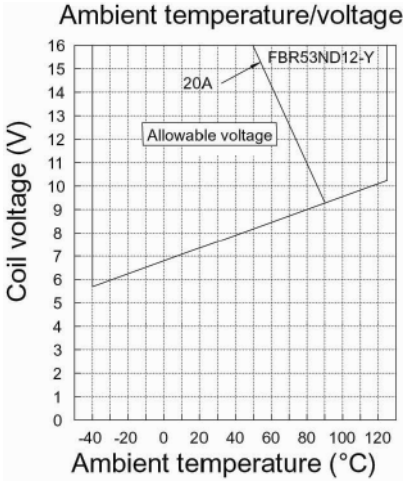
■ REFERENCE DATA

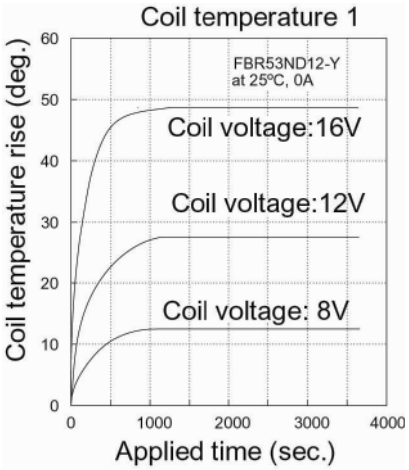


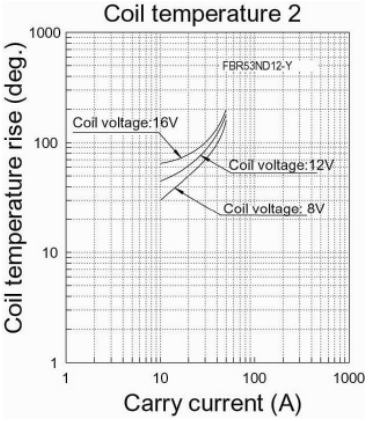


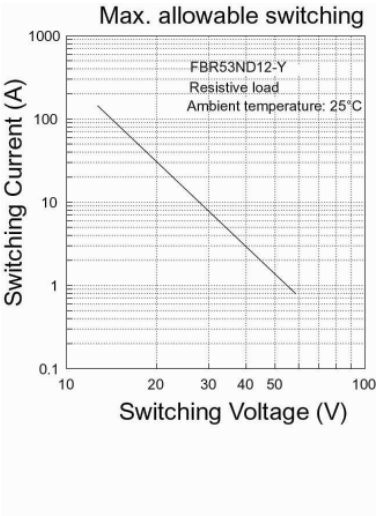






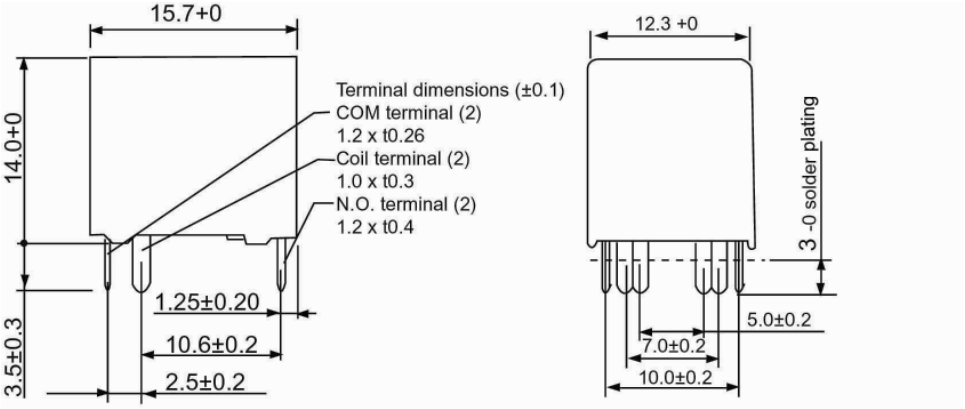




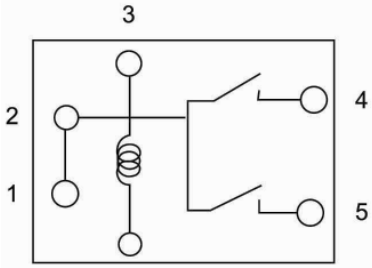


■ DIMENSIONS

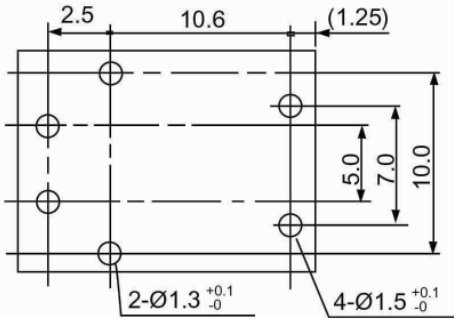
- **Dimensions**



- **Schematics**
(BOTTOM VIEW)

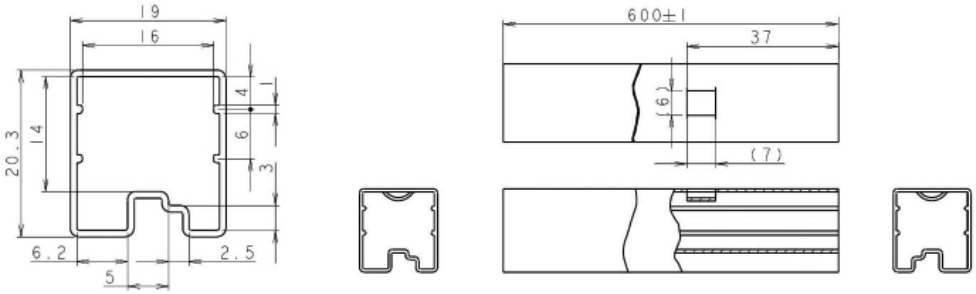


- **Mounting hole layout**
(BOTTOM VIEW)



Unit: mm

- **Tube carrier**
(pokayoke)



Unit: mm

RoHS Compliance and Lead Free Information

1. General Information

- All automotive relays produced by Fujitsu Components are compliant with RoHS directive 2002/95EC including amendments.
- Cadmium as used in electrical contacts is exempted from the RoHS directives on October 21st, 2005. (Amendment to Directive 2002/95/EC)
- All our automotive relays are lead-free.
- Lead free solder plating on relay terminals is Sn-3.0Ag-0.5Cu, unless otherwise specified. This material has been verified to be compatible with PbSn assembly process.

2. Recommended Lead Free Solder Profile

- Recommended solder Sn-3.0Ag-0.5Cu.

Flow Solder condition:

Pre-heating:	maximum 120˚C
Soldering:	dip within 5 sec. at 260˚C solder bath

Solder by Soldering Iron:

Soldering Iron	
Temperature:	maximum 360˚C
Duration:	maximum 3 sec.

We highly recommend that you confirm your actual solder conditions

3. Moisture Sensitivity

- Moisture Sensitivity Level standard is not applicable to through hole mounted electromechanical relays, unless otherwise indicated.

4. Tin Whiskers

- Dipped SnAgCu solder is known as presenting a low risk to tin whisker development. No considerable length whisker was found by our in house test.

Fujitsu Components International Headquarter Offices

Japan
Fujitsu Component Limited
Gotanda-Chuo Building
3-5, Higashigotanda 2-chome, Shinagawa-ku
Tokyo 141, Japan
Tel: (81-3) 5449-7010
Fax: (81-3) 5449-2626
Email: promothq@ft.ed.fujitsu.com
Web: www.fcl.fujitsu.com

North and South America
Fujitsu Components America, Inc.
250 E. Caribbean Drive
Sunnyvale, CA 94089 U.S.A.
Tel: (1-408) 745-4900
Fax: (1-408) 745-4970
Email: components@us.fujitsu.com
Web: http://us.fujitsu.com/components

Europe
Fujitsu Components Europe B.V.
Diamantlaan 25
2132 WV Hoofddorp
Netherlands
Tel: (31-23) 5560910
Fax: (31-23) 5560950
Email: info@fceu.fujitsu.com
Web: emea.fujitsu.com/components/

Asia Pacific
Fujitsu Components Asia Ltd.
102E Pasir Panjang Road
#01-01 Citilink Warehouse Complex
Singapore 118529
Tel: (65) 6375-8560
Fax: (65) 6273-3021
Email: fcal@fcal.fujitsu.com
Web: http://www.fujitsu.com/sg/services/micro/components/

AMEYA360
Components Supply Platform

Authorized Distribution Brand :

Website :

Welcome to visit www.ameya360.com

Contact Us :

- ### Address :

  401 Building No.5, JiuGe Business Center, Lane 2301, Yishan Rd
  Minhang District, Shanghai , China

- ### Sales :

  Direct +86 (21) 6401-6692

  Email amall@ameya360.com

  QQ 800077892

  Skype ameyasales1 ameyasales2

- ### Customer Service :

  Email service@ameya360.com

- ### Partnership :

  Tel +86 (21) 64016692-8333

  Email mkt@ameya360.com