

1.0 ABOUT FUJITSU COMPONENTS

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Who we are

BUSINESS ACTIVITIES

- **Connectors** - PCB and I/O interconnects for the latest standards and technologies
- **microGiGaCN™ connectors** - Copper interconnects in a scaleable performance range for a variety of high-speed module applications
- **Relays** - Solid-state relays and electromechanical relays for power, automotive and signal switching
- **Resistive touch panels** - Premium quality solutions from our industry-standard 4-wire to our unique 7-wire designs
- **KVM switches** - Manage networks reliably with SERVIS™ intelligent KVM switches and our CAT5 Extender solution
- **Thermal Printers** - 24V, battery-powered print mechanisms, standalone and portable thermal printers
- **Keyboards/Mice/Pointing Devices** - Desktop and notebook keyboards, and pointing devices.

Our component research, design and manufacturing facilities utilize the world's most advance techniques enhanced by the strictest quality control procedures. Customer feedback and ongoing market trends analysis ensure that our products keep pace with the demands of the latest applications.









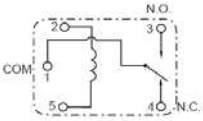
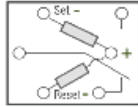
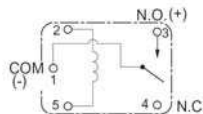
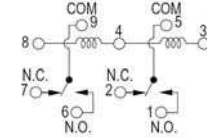
FULL CUSTOMER SUPPORT

Supplying high quality and reliable components is only one of our strengths. Our other strength is providing customer support service of the highest level. Designed to meet our commitment to customers and to develop long lasting working relationships, our support includes: customer design facility, full technical back-up, applications advice, central warehousing and distribution, full literature and documentation and a specialist network of distributors.

- ▶ Visit emea.fujitsu.com/components/ to find out more about our business activities.









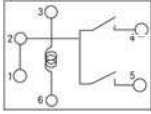
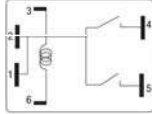
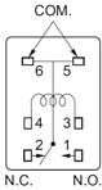
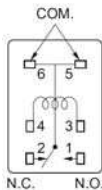
2.0 PRODUCT LINE-UP









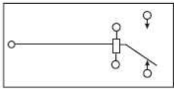
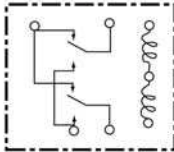
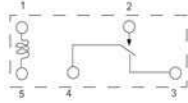
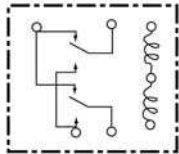
2.1 AUTOMOTIVE RELAYS

SERIES NAME	FBR51/52	FBR51NL	FBR51 (-WF)	FBR512/522
Dimensions				
W x L x H (mm)	12.1 x 15.5 x 13.7	12.1 x 15.5 x 13.7	12.1 x 15.5 x 13.7	16.2 x 24.0 x 14.1
Weight (Approx.)	6.0 g	6.0 g	6.0 g	13.0 g
Contact Form	1 c	1 c	1 a	1 c x 2
Contact Rating	30A 1Hr 	30A 1Hr 	30A 1Hr 	25A 1Hr 
Expected Life on Load example	14 VDC, free motor load, Inrush 20A 400x10 ³ ops. 14 VDC, 25A locked motor 200x10 ³ ops. (-W1 type) Inrush 60A (80A -WL type) 120W lamp load 100K (-WL) 25A/1h @20C°	14 VDC, free motor load, Inrush 20A 400x10 ³ ops. 14 VDC, 25A locked motor 200x10 ³ ops. (-W1 type) Inrush 60A (80A -WL type)	14VDC, 80W lamp load 250x10 ³ ops. Inrush 80A Special type for flasher lamp applications. 80W Lamp load	14 VDC, free motor load 400x10 ³ ops. <High power type> 14 VDC, 25A locked motor 200x10 ³ ops. (-W1 type) Inrush 60A 30A/1h @25C°
Coil Voltage (DC)	6 to 12 V	6 to 12 V	6 to 12 V	6 to 12 V
Nominal Power (DC)	0.6 W / 0.8 W	1.1 W	0.6 W	0.6 W / 0.8 W
Dielectric Strength	Open Contacts	500 VAC	500 VAC	500 VAC
	Coil and Contacts	500 VAC	500 VAC	500 VAC
Connection	Through hole	Through hole	Through hole	Through hole
Terminal layout (Bottom View)				
Remarks	<ul style="list-style-type: none"> - SMC type available - 0.3/0.6mm contact gap - High temperature types available 	<ul style="list-style-type: none"> - Dual coil latching - SMC type 	<ul style="list-style-type: none"> - SMC type available - 0.3/ 0.6mm contact gap 	<ul style="list-style-type: none"> - 0.3/ 0.6mm contact gap

2.0 PRODUCT LINE-UP









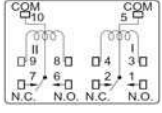
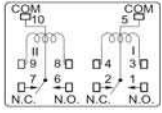
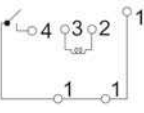
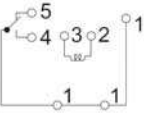
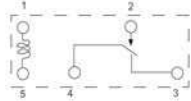
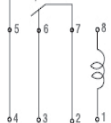
2.1 AUTOMOTIVE RELAYS



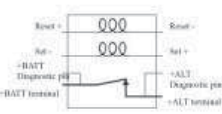
SERIES NAME		FBR53	FBR53HW	FBR57	FBR56
Dimensions					
W x L x H (mm)		12.1 x 15.5 x 13.7	12.1x1 5.5 x 13.7	14.4 x 20.0 x 16.2	14.4 x 20 x 16.2
Weight (Approx.)		6.0 g	6.0 g	9.4 g	9.4 g
Contact Form		1 u	1 u	1 c	1 c
Contact Rating		30A 1Hr 	40A 1Hr 	30A 1Hr 	30A 1Hr 
Expected Life on Load example		14 VDC, 25W resistive load 150x10 ³ ops. 14VDC, 6 x 21W lamp load 100x10 ³ ops. Inrush 60A, 20A continuous Inrush 80A, 40A continuous (-HW type) 30A/1h @20C°	Inrush 80A 100x10 ³ ops. 80A/1h @20C°	28 VDC, 2A locked motor 100x10 ³ ops. 28 VDC, 12A free motor load 500x10 ³ ops. Inrush 70A (-W type) 30A/1h @25C°	14VDC, 30A locked motor 100x10 ³ ops. Inrush 70A 14VDC, 27A free motor 100x10 ³ ops. Inrush 27A
Coil Voltage (DC)		9 to 12 V	9 to 12 V	24 V	6 to 12 V
Nominal Power (DC)		0.6 W	0.86 W	1.5 W	0.85 W
Dielectric Strength	Open Contacts	500 VAC	500 VAC	500 VAC	500 VAC
	Coil and Contacts	500 VAC	500 VAC	500 VAC	500 VAC
Connection		Through hole	Through hole	Through hole	Through hole
Terminal layout (Bottom View)		Standard 	High capacity (-HW type) 		
Remarks		- SMC type available - 0.25mm contact gap	- SMC type available - High power type	- For 24V battery applications - 0.8mm contact gap	-

SERIES NAME		FTR-G1	FTR-P2	FTR-P3	FTR-P4
Dimensions					
W x L x H (mm)		6.6 x 13.7 x 13.5	16.5 x 21.0 x 18.0	7.2 x 17.4 x 13.5	14.2 x 17.4 x 13.5
Weight (Approx.)		3.5 g	13.0 g	5.0 g	10.0 g
Contact Form		1 c	H-bridge	1 c	H-bridge
Contact Rating		25A 1Hr 	25A 1Hr 	25A 1Hr 	25A 1Hr 
Expected Life on Load example		14 VDC Inrush 25A, power window motor (1 operation: 1 forward and 1 reverse) 100x10 ³ ops. 14VDC Inrush 19A, 12A break power window motor 200x10 ³ ops. 14VDC Inrush 20A, door lock locked motor 100x10 ³ ops. 25A/1h @20C°	14 VDC, free motor load Inrush 17A 300x10 ³ ops. 14 VDC, 25A locked motor 100x10 ³ ops. 25A/1h @25C°	14 VDC, free motor load, Inrush 17A 300x10 ³ ops. 14 VDC, 25A locked motor 100x10 ³ ops. Inrush 35A 25A/1h @20C°	14VDC, 25A locked motor 100x10 ³ ops. Inrush 35A 25S/1h @20C°
Coil Voltage (DC)		9 to 12 V	9 to 12 V	9 to 12 V	9 to 12 V
Nominal Power (DC)		0.64 W	0.45 W	0.6 to 0.86 W	0.6 W
Dielectric Strength	Open Contacts	500 VAC	500 VAC	500 VAC	500 VAC
	Coil and Contacts	500 VAC	500 VAC	500 VAC	500 VAC
Connection		Through hole	Through hole	Through hole	Through hole
Terminal layout (Bottom View)					
Remarks		- 0.3mm contact gap	- Average acoustic noise level: 50 dB - Pin compatible with P4 - 0.3mm contact gap	- SMC type available - Higher stand-off types available - High temp. versions available - 0.3 or 0.6mm contact gap	- SMC type available - High temp. versions available - 0.3 or 0.6mm contact gap

2.0 PRODUCT LINE-UP





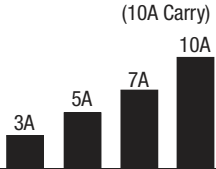
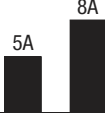


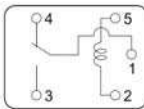
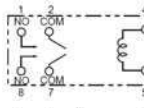
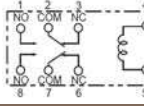
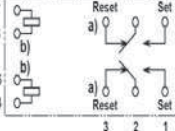
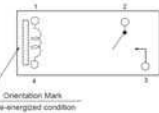
2.1 AUTOMOTIVE RELAYS





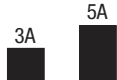



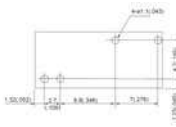
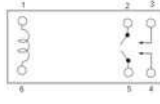

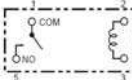
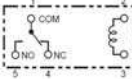
SERIES NAME		FBR572/582	FRL-274	FTR-P5	FTR-P6
Dimensions					
W x L x H (mm)		20.0 x 26.0 x 16.2 (FBR572) 20.0 x 26.0 x 17.0 (FBR582)	21.3 x 23.7 x 19.2	9.7 x 20.4 x 16.7	9.0 x 12.0 x 10.3
Weight (Approx.)		18.0 g	20.0 g	7.0 g	3.3 g
Contact Form		1 c x 2	1 a, 1 c	1 c	1 c
Contact Rating		30A 1Hr 	30A 40A 	25A 1Hr 	25A 1Hr 
Expected Life on Load example		28 VDC, 12A locked motor 100x10 ³ ops. Wide gap type Maximum break rating locked motor load 32V, 14A 30A/1h @25C° 60A inrush	14VDC, 30A locked motor 14VDC, 40A locked motor 100x10 ³ ops.	14 VDC, 30A free motor load 300x10 ³ ops. 14 VDC, 25A locked motor 100x10 ³ ops. 25A/1h @25C°	14 VDC, 25A locked motor 100x10 ³ ops. Inrush 35A 25A/1h @20C°
Coil Voltage (DC)		24 V	9 to 24 V	9 to 12 V	10 to 12 V
Nominal Power (DC)		1.5 W / 3.4 W	0.6 W to 2.1 W	0.45 W	0.8 W
Dielectric Strength	Open Contacts	500 VAC	500 VAC	500 VAC	500 VAC
	Coil and Contacts	500 VAC	500 VAC	500 VAC	500 VAC
Connection		Through hole	Through hole	Through hole	Surface mount
Terminal layout (Bottom View)		FBR572  FBR582 	1 form A  1 form C 		
Remarks		- 24V battery applications - 0.8/ 1.4mm contact gap	- 0.4/ 1.4mm contact gap - 24V battery applications	- Average accoustic noise level: 50 dB - 0.3mm contact gap	- Average accoustic noise level: 60 dB - 0.25mm contact gap - SMD

SERIES NAME		FTR-V1
Dimensions		
W x L x H (mm)		88 x 50.6 x 23.7
Weight (Approx.)		115 g
Contact Form		1 a
Contact Rating		150 A 1Hr 
Expected Life on Load example		14 VDC, 150A 100x10 ⁶ ops. 230A peak @ 14 VDC Inrush 1200A Capacitor load
Coil Voltage (DC)		12 V
Nominal Power (DC)		20.5 W
Dielectric Strength	Open Contacts	500 VDC
	Coil and Contacts	500 VDC
Connection		Thr. hole/Screw/Press-fit
Terminal layout (Bottom View)		
Remarks		-

2.0 PRODUCT LINE-UP





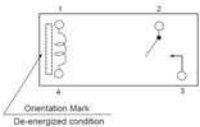

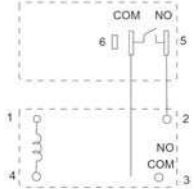
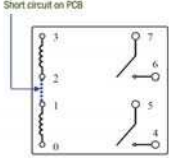
2.2 POWER RELAYS





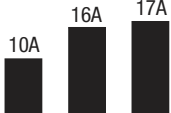



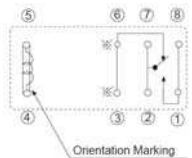
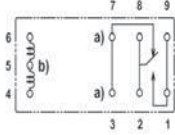
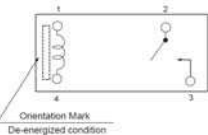
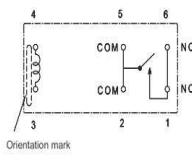
SERIES NAME	FBR160	FTR-F1	FTR-F1L	FTR-F2
Dimensions				
W x L x H (mm)	16.2 x 21.7 x 16.2	12.8 x 29.0 x 16.5	12.8 x 29 x 16.5	11.0 x 24.0 x 25.0
Weight (Approx.)	11.0 g	13.0 g	13 g	13.0 g
Contact Form	1 a, 1 c	2 a, 2 c	2 a, 2 c	1 a
Contact Rating				
Minimum Switching Load (ref.)	5VDC 30mA 5VDC 50mA 5VDC 100mA	5VDC 10mA	15VDC 10mA	5VDC 100mA
Contact Rating (Resistive Load)	3A 28VDC 3-5A 28VDC/120VAC 10A 28VDC (WB-type) 7-10A 120VAC (HP-type)	5A 250VAC/24VDC 8A 250VAC/25VDC	8A 250VAC/24VDC	5A 250VAC/30VDC
Coil Voltage (DC)	5 to 24 V	1.5 to 48 V	5 to 24 V	5 to 48 V
Nominal Power (DC)	0.36 W / 0.5 W	0.4 to 0.53 W	0.6 W	0.25 to 0.53 W
Dielectric Strength	500 VAC	1,000 VAC	1,000 VAC	1,000 VAC
Surge Strength (Coil and Contacts)	4,000 V	10,000 V	10,000 V	10,000 V
Expected Life	10 x 10 ⁶ ops.	20 x 10 ⁶ ops.	3 x 10 ⁶ ops.	20 x 10 ⁶ ops.
Safety Standards	UL, CSA, VDE	UL, CSA, VDE, SEMKO, NEMKO, DEMKO, BSI, FIMKO, IMQ	Pending	UL, CSA, VDE, SEMKO, NEMKO, DEMKO, FIMKO, CQC
Connection	Through hole	Through hole	Through hole	Through hole
Terminal layout (Bottom View)		F1A  F1C 		
Remarks	-	- Pin compatible with VB series - TV-3 rating available - Clear cover available	-1 and 2 coil versions -Latching type	- Flux-free type available - TV-5 rated

SERIES NAME		FTR-F3	FTR-F4	FTR-F4G	FTR-H1
Dimensions					
W x L x H (mm)		7.0 x 20.3 x 15.0	12.0 x 24.0 x 25.0	12.7 x 28.7 x 25.2	12.8 x 28.0 x 16.5
Weight (Approx.)		4.0 g	12.0 g	1.2 g	12.0 g
Contact Form		1 a, 1 c	2 a	2 a	1 a, 1 c
Contact Rating		(5A Carry)	(5A Carry)		(14A Carry)
Minimum Switching Load (ref.)		 3A 5VDC 10mA 5A 5VDC 10mA	 3A 5VDC 100mA 5A 5VDC 100mA	 5A 5VDC 100mA	 10A 5VDC 10mA
Contact Rating (Resistive Load)		3A 250VAC/30VDC 5A 250VAC/30VDC	5A 277VAC/30VDC	5A 250VAC	10A 250VAC/30VDC
Coil Voltage (DC)		5 to 24 V	5 to 48 V	5 to 48 V	5 to 48 V
Nominal Power (DC)		0.2 W	0.53 W	0.8 W	0.4 to 0.53 W
Dielectric Strength	Open Contacts	750 VAC	1,000 VAC	1,000 VAC	1,000 VAC
	Coil and Contacts	4,000 VAC	4,000 VAC	5,000 VAC	5,000 VAC
Surge Strength (Coil and Contacts)		10,000 V	10,000 V	10,000 V	10,000 V
Expected Life	mechanical	5 x 10 ⁶ ops.	2 x 10 ⁶ ops.	500 x 10 ³ ops.	20 x 10 ⁶ ops.
	Electrical (Rated Load)	200 x 10 ³ ops.	100 x 10 ³ ops.	100 x 10 ³ ops.	100 x 10 ³ ops.
Safety Standards		UL, CSA, VDE, SEMKO, CQC, NEMKO, DEMKO, FIMKO	UL, CSA, VDE, SEMKO, CQC	Pending	UL, CSA, VDE, SEMKO, BSI, CQC, NEMKO, FIMKO, DEMKO
Connection		Through hole	Through hole	Through hole	Through hole
Terminal layout (Bottom View)					FTR-H1A  FTR-H1C 
Remarks		- Right angle versions (1 a) - TV-3, TV-5 rating types available - 1 form c type available	- Flux-free type available - TV-3 rated	- 1.5mm contact gap - TV-3 rated	- Pin compatible with VS series - TV-5 rating available - Clear cover available

2.0 PRODUCT LINE-UP






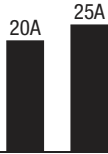


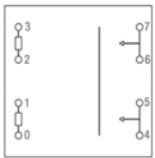
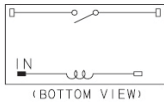

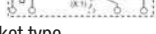

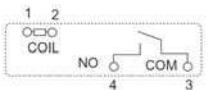
2.2 POWER RELAYS

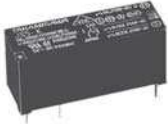






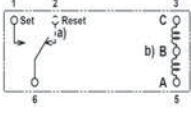
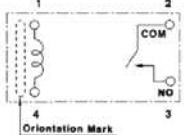
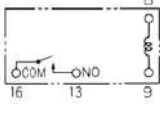
SERIES NAME		FTR-H2	FTR-H3	FTR-JR	FTR-J2
Dimensions					
W x L x H (mm)		11.0 x 24.0 x 25.0	13.7 x 28.8 x 18.8	15.0 x 30.0 x 25.5	23.5 x 24 x 27
Weight (Approx.)		12.0 g	13.0 g	20.0 g	26 g
Contact Form		1 a	1 a	1 a	2x 1 a, 1x 1 a
Contact Rating		(10A Carry) 10A	(14A Carry) 10A	20A	10A
Minimum Switching Load (ref.)		5VDC 100mA	5VDC 10mA	5VDC 100mA	10VDC 100mA
Contact Rating (Resistive Load)		10A 250VAC/30VDC	10A 250VAC/30VDC TV-5/TV-8	16A 277VAC	10A 200VDC x2 10A 450VDC
Coil Voltage (DC)		5 to 48 V	5 to 48 V	12 to 24 V	10 to 110 V
Nominal Power (DC)		0.25 to 0.53 W	0.53 W	0.53 W	0.53 to 1.06 W
Dielectric Strength	Open Contacts	1,000 VAC	1,000 VAC	1,000 VAC	1,000 VAC
	Coil and Contacts	4,000 VAC	5,000 VAC	5,000 VAC	4,000 VAC
Surge Strength (Coil and Contacts)		10,000 V	10,000 V	10,000 V	10,000 V
Expected Life	mechanical	20 x 10 ⁶ ops.	20 x 10 ⁶ ops.	20 x 10 ⁶ ops.	2 x 10 ⁶ ops.
	Electrical (Rated Load)	100 x 10 ³ ops.	100 x 10 ³ ops.	100 x 10 ³ ops.	10 x 10 ³ ops.
Safety Standards		UL, CSA, VDE, SEMKO, NEMKO, DEMKO, FIMKO, CQC	UL, CSA, VDE, CQC	UL, CSA, VDE	VDE
Connection		Through hole	Through hole	Through hole	Through hole
Terminal layout (Bottom View)					
mm					
Remarks		- Flux-free type available - TV-5 rated	- Pin compatible with VS, FTR-H1 series (1 form A) - Low noise level 50dB - TV-8 rating available	- TAB-terminals	- Special arc extinguishing

SERIES NAME		FTR-K1	FTR-K1L	FTR-K2	FTR-K2G
Dimensions					
W x L x H (mm)		12.7 x 29.0 x 15.7	12.7 x 29.0 x 15.7	11.0 x 24.0 x 25.0	16.0 x 35.0 x 28.0
Weight (Approx.)		13.0 g	14 g	13.0 g	33.0 g
Contact Form		1 a, 1 c	1 a, 1 c	1 a	1 a
Contact Rating					
Minimum Switching Load (ref.)		5VDC 10mA	5VDC 10mA	5VDC 100mA	5VDC 100mA
Contact Rating (Resistive Load)		16A 250VAC/24VDC 17A 250VAC/24VDC (TAB-terminals)	16A 250VAC (inrush 80A)	16A 250VAC/(125VAC)/ 30VDC	20A 250VAC
Coil Voltage (DC)		5 to 48 V	5 to 24V	5 to 48 V	5 to 110 V
Nominal Power (DC)		0.4 W	0.4 W	0.53 W	1.1 W
Dielectric Strength	Open Contacts	1,000 VAC	1,000 VAC	1,000 VAC	2,000 VAC
	Coil and Contacts	5,000 VAC	500 VAC	4,000 VAC	5,000 VAC
Surge Strength (Coil and Contacts)		10,000 V	10,000 V	10,000 V	10,000 V
Expected Life	mechanical	20 x 10 ⁶ ops.	3 x 10 ⁶ ops.	20 x 10 ⁶ ops.	10 x 10 ⁶ ops.
	Electrical (Rated Load)	20 x 10 ³ ops. to 150 x 10 ³ ops.	100 x 10 ³ ops. 50 x 10 ³ ops.	100 x 10 ³ ops.	100 x 10 ³ ops.
Safety Standards		UL, CSA, VDE, SEMKO, NEMKO, DEMKO, FIMKO	Pending	UL, CSA, VDE, SEMKO, CQC	UL, CSA, VDE
Connection		Through hole	Through hole	Through hole	Through hole
Terminal layout (Bottom View)					
Remarks		- Pin compatible with VSB series - High sensitive, 105°C type, clear cover, 120A and TAB-terminals available (17A) - Sealed versions available	- 1 and 2 coil versions available - Latching type	- TV-5 and TV-8 rated	- TV-8 rated - 3mm contact gap

2.0 PRODUCT LINE-UP





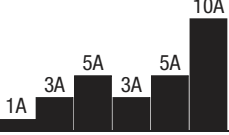
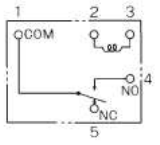
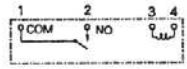
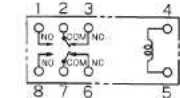
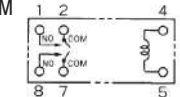
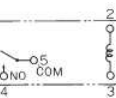
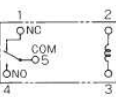
2.2 POWER RELAYS




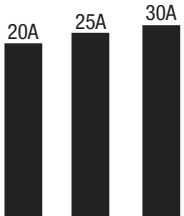
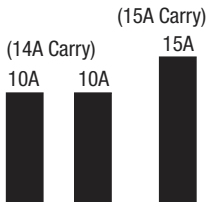

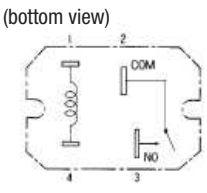
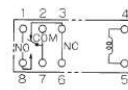
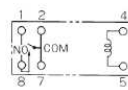
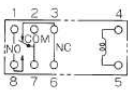
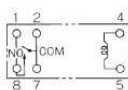
SERIES NAME		FTR-K2W	FTR-K3	FTR-LY	FTR-MY
Dimensions					
W x L x H (mm)		16 x 35 x 28	15.7 x 30.1 x 23.3	5.0 x 28.0 x 15.0	5.0 x 20.0 x 12.0
Weight (Approx.)		70 g	25.0 g	5.0 g	2.5 g
Contact Form		1 a	1 a	1 a, 1 c	1 a
Contact Rating					
Minimum Switching Load (ref.)		5VDC 100mA	5VDC 100mA	5VDC 10mA	5VDC 1mA
Contact Rating (Resistive Load)		30A 60VDC	20A 250VAC	6A 250VAC/30VDC	5A 250VAC/30VDC
Coil Voltage (DC)		6 to 48 V	5 to 24 V	3 to 48 V	4.5 to 24 V
Nominal Power (DC)		2 W	0.78 W	0.17 W / 0.21 W	0.11 W
Dielectric Strength	Open Contacts	2,000 VAC	1,000 VAC	1,000 VAC	750 VAC
	Coil and Contacts	5,000 VAC	5,000 VAC	4,000 VAC	3,000 VAC
Surge Strength (Coil and Contacts)		10,000 V	8,500 V	6,000 V	5,080 V
Expected Life	mechanical	2 x 10 ⁶ ops.	20 x 10 ⁶ ops.	10 x 10 ⁶ ops.	20 x 10 ⁶ ops.
	Electrical (Rated Load)	100 x 10 ³ ops.	100 x 10 ³ ops.	30 x 10 ³ ops. to 60 x 10 ³ ops.	100 x 10 ³ ops.
Safety Standards		Pending	UL, CSA, VDE, CQC	UL, CSA, VDE, SEMKO, NEMKO, DEMKO, FIMKO	UL, CSA, VDE, IEC61010, 61131, CQC
Connection		Through hole	Through hole	Through hole	Through hole
Terminal layout (Bottom View)				Through hole type  Right angle type  Socket type 	
Remarks		- 2 x 3mm contact gap	- TAB-terminals - Flat type available (FTR-K3F series, 25A) - 1.5mm contact gap (FTR-K3-WG series)	- Ultra slim - Socket version available - Right angle type available	- Right angle type available

SERIES NAME		JS	JSL	JV	JY
Dimensions					
W x L x H (mm)		10.0 x 29.0 x 12.5	10.0 x 29.0 x 12.5	10.0 x 17.5 x 12.5	10 x 20.0 x 12.8
Weight (Approx.)		8.0 g	8.0 g	4.3 g	3.7 g
Contact Form		1 a, 1 c	1 a	1 a	1 a
Contact Rating		(10A Carry) 8A	10A	(5A Carry) 5A 10A	(5A Carry) 3A 3A 5A 3A 5A
Minimum Switching Load (ref.)		5VDC 10mA	5VDC 8mA	5VDC 100mA	100mVDC 0.1mA 5VDC 10mA 5VDC 100mA
Contact Rating (Resistive Load)		8A 250VAC/24VDC	8A 250VAC/24VDC	5A 250VAC/30VDC 10A 250VAC/24VDC	3A 250VAC/30VDC 5A 250VAC/30VDC
Coil Voltage (DC)		5 to 60 V	3 to 60 V	3 to 48 V	4.5 to 48 V
Nominal Power (DC)		0.22 to 0.29 W	0.22 to 0.25 W	0.2 W / 0.3 W	0.2 to 0.36 W
Dielectric Strength	Open Contacts	1,000 VAC	1,000 VAC	750 VAC	750 VAC
	Coil and Contacts	5,000 VAC	5,000 VAC	5,000 VAC	2,000 VAC
Surge Strength (Coil and Contacts)		10,000 V	10,000 V	10,000 V	4,000 V
Expected Life	mechanical	20 x 10 ⁶ ops.	20 x 10 ⁶ ops.	5 x 10 ⁶ ops.	10 x 10 ⁶ ops.
	Electrical (Rated Load)	50 x 10 ³ ops. to 100 x 10 ³ ops.	100 x 10 ³ ops.	100 x 10 ³ ops.	100 x 10 ³ ops.
Safety Standards		UL, CSA, VDE, SEV, OVE, BSI SEMKO, FIMKO, CQC, NEMKO, DEMKO	UL, CSA, VDE	UL, CSA, VDE, SEMKO, CQC	UL, CSA, VDE, SEV
Connection		Through hole	Through hole	Through hole	Through hole
Terminal layout (Bottom View)		JS-MK type  JS-K type  JS-M(-)-KT type 			
Remarks		- 1000W lamp load type available (Inrush 64A) (JS-MN(-)-KS)	- 1 and 2 coil versions available - Latching type	- High sensitive type available - 10 A type -JV, -KS	- Socket available

2.0 PRODUCT LINE-UP









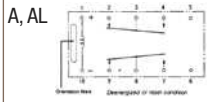
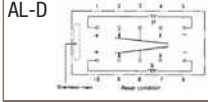




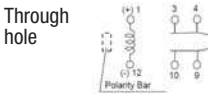
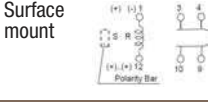
2.2 POWER RELAYS






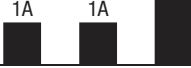

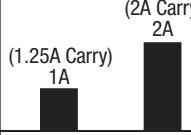

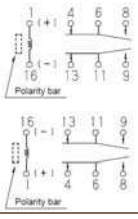
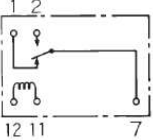
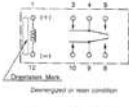
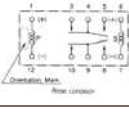
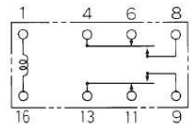
SERIES NAME		LZ	NY	VB	VE
Dimensions					
W x L x H (mm)		16.4 x 21.4 x 14.8	5.0 x 20.1 x 17.5	12.9 x 29.2 x 25.3	10.5 x 20.5 x 20.5
Weight (Approx.)		7.7 g	3.5 g	17.0 g	8.0 g
Contact Form		1 a, 1 c	1 a	2 a, 2 c	1 a, 1 c
Contact Rating			(5A Carry)	(7A Carry)	(7A Carry)
Minimum Switching Load (ref.)		1A 5VDC 100mA 3A 5VDC 10mA 5A 100mVDC 0.1mA	3A 5VDC 1mA	5A 5VDC 10mA 5A 5VDC 100mA	5A (3A*) 5VDC 10mA 5A (3A*) 5VDC 100mA
Contact Rating (Resistive Load)		1A 120VAC/30VDC 3A 120VAC/30VDC 5A 120VAC/24VDC 10A 120VAC/24VDC	3A 250VAC/30VDC	5A 250VAC/24VDC	VE- () H5 5A 250VAC VE- () H 3A/5A 250VAC
Coil Voltage (DC)		1.5 to 24 V (48*, 100*) V	4.5 to 24 V	3 to 100 V	5 to 48 V
Nominal Power (DC)		0.33 W / 0.45 to 0.6 W	0.12 W	0.53 W / 0.75 W	0.25 to 0.36 W
Dielectric Strength	Open Contacts	750 VAC	750 VAC	1,000 VAC	750 VAC (1 c) 1,000 VAC (1 a)
	Coil and Contacts	2,000 VAC	3,000 VAC	5,000 VAC	2,000 VAC
Surge Strength (Coil and Contacts)		4,000 V / 6,000 V	5,080 V	10,000 V	4,000 V / 6,000 V
Expected Life	mechanical	20 x 10 ⁶ ops.	20 x 10 ⁶ ops.	20 x 10 ⁶ ops.	10 x 10 ⁶ ops.
	Electrical (Rated Load)	100 x 10 ³ ops.	100 x 10 ³ ops. (at 3A 250VAC, 30VDC) 50 x 10 ³ ops. (at 5A 250VAC)	100 x 10 ³ ops.	100 x 10 ³ ops. (VE) 50 x 10 ³ ops. (VE-S)
Safety Standards		UL, CSA	UL, CSA, VDE	UL, CSA, VDE, SEV, SEMKO, FIMKO, IMQ	UL, CSA, VDE
Connection		Through hole	Through hole	Through hole	Through hole
Terminal layout (Bottom View)				 	 
Remarks		* Only standard type	- Socket available (-NYP)	- TV-3 rating available - Pin compatible to FTR-F1 series	*N.C. contact

SERIES NAME		VF	VS	VSB
Dimensions				
W x L x H (mm)		32.2 x 50.0 x 24.1	12.9 x 29.2 x 25.3	12.9 x 29.2 x 25.3
Weight (Approx.)		55.0 g	17.0 g	18.0 g
Contact Form		1 a	1 a	1 a, 1 c
Contact Rating				
Minimum Switching Load (ref.)		5VDC 100mA	5VDC 10mA 5VDC 100mA	5VDC 10mA
Contact Rating (Resistive Load)		20A 250VAC 25A 250VAC 30A 250VAC	10A 240VAC/24VDC 15A 120VAC/24VDC	16A 250VAC/30VDC
Coil Voltage (DC)		3 to 60 V	3 to 100 V	3 to 100 V
Nominal Power (DC)		1.2 W	0.53 W / 0.7 to 0.75 W	0.53 W / 0.7 to 0.75 W
Dielectric Strength	Open Contacts	1,200 VAC	1,000 VAC	1,000 VAC
	Coil and Contacts	4,000 VAC	5,000 VAC	5,000 VAC
Surge Strength (Coil and Contacts)		10,000 V	10,000 V	10,000 V
Expected Life	mechanical	5 x 10 ⁶ ops.	20 x 10 ⁶ ops.	20 x 10 ⁶ ops.
	Electrical (Rated Load)	100 x 10 ³ ops. (resistive load) 200 x 10 ³ ops. (motor load)	100 x 10 ³ ops.	100 x 10 ³ ops.
Safety Standards		UL, CSA, VDE, CQC	UL, CSA, VDE, SEV, SEMKO, CQC, NEMKO, DEMKO, FIMKO	UL, CSA, VDE, SEV, FIMKO, SEMKO, IMQ, OVE, BSI
Connection		Through hole	Through hole	Through hole
Terminal layout (Bottom View)			VS  VS-M and VS-MK 	VSB-M and VSB-MC  VSB and VSB-C 
Remarks		- TV-5 rated	- TV-5 and TV-8 rating available - Pin compatible to FTR-H1	- Pin compatible to FTR-K1 series


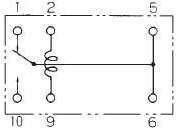
2.0 PRODUCT LINE-UP

2.3 SIGNAL RELAYS

SERIES NAME	A	FTR-B3	FTR-B4	FTR-C1
Dimensions				
W x L x H (mm)	9.4 x 14.0 x 5.0	7.2 x 10.6 x 5.45*	5.7 x 10.6 x 9.0	7.5 x 15.0 x 9.3
Weight (Approx.)	1.2 g	0.85 g	1.0 g	2.0 g
Contact Form	2 c	2 c	2 c	2 c
Contact Rating	(2A Carry) 	(2A Carry) 	(2A Carry) 	(2A Carry) 
Minimum Switching Load (ref.)	10mVDC 0.01mA	10mVDC 0.01mA	10mVDC 0.01mA	10mVDC 0.01mA
Contact Rating (Resistive Load)	0.5A 125VAC 1A 30VDC	0.3A 125VAC 1A 30VDC	0.3A 125VAC 1A 30VDC	0.3A 125VAC 1A 30VDC
Coil Voltage (DC)	1.5 to 24 (48*) V	1.5 to 24 V	1.5 to 24 V	3 to 24 V
Nominal Power (DC)	0.2 to 0.3 W	0.1 to 0.23 W	0.1 to 0.23 W	0.14 to 0.3 W
Dielectric Strength	1,000 VAC	1,000 VAC	1,000 VAC	1,500 VAC
Surge Strength (Coil and Contacts)	1,500 V	2,500 V	2,500 V	5,000 V
Expected Life	100 x 10 ⁶ ops. (A) 100 x 10 ⁵ ops. (AL, AL-D)	50 x 10 ⁶ ops. (FTR-B3...A) 20 x 10 ⁶ ops. (FTR-B3...B)	50 x 10 ⁶ ops. 20 x 10 ⁶ ops. (latching)	10 x 10 ⁶ ops.
Safety Standards	UL, CSA, FCC68	UL, CSA, BSI, FCC68, Telcordia, IEC60950-1	UL, CSA, FCC68, Telcordia, IEC60950-1	UL, CSA, BSI Telcordia
Connection	Through hole	Through hole / Surface mount	Through hole / Surface mount	Through hole / Surface mount
Terminal layout (Bottom View)	A, AL  AL-D 	FTR-B3C  FTR-B3G, FTR-B3S 	Throughhole  Surface mount 	Through hole  Surface mount 
Remarks	- 1 and 2 coil versions available - Latching type available * Only standard type	- Latching type available * Through hole 7.2 x 10.6 x 5.2	- Latching type available	- Latching type available - Contact gap 0.6 mm



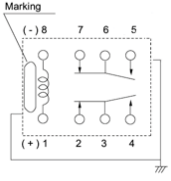
SERIES NAME		FTR-C2	MZ	NA	RY
Dimensions					
W x L x H (mm)		9.85 x 20.05 x 11.4	11.4 x 15.4 x 11.0	7.4 x 14.9 x 9.7	9.8 x 20.2 x 12.5
Weight (Approx.)		3.7 g	3.5 g	1.6 g	5.0 g
Contact Form		2 c	1 c	2 c	2 c
Contact Rating		(2A Carry) 	(2A Carry) 	(2A Carry) 	(2A Carry) 
Minimum Switching Load (ref.)		10mVDC 0.01mA	100mVDC 0.01mA 1VDC 1mA	10mVDC 0.01mA	10mVDC 0.01mA
Contact Rating (Resistive Load)		0.3A 125VAC 1A 30VDC	0.5A 120 VAC (MZ-W) 1A 24VDC (MZ) 1A 120VAC (MZ-D) 2A 24VDC (MZ-D)	0.5A 125VAC 1A 30VDC	0.5A 120 VAC (RY-W, 1A 24VDC WZ) 0.25A 120VAC (RY-WF) 1A 24VDC 0.5A 125VAC (RY-WFZ) 2A 30VDC
Coil Voltage (DC)		3 to 12 V	1.5 to 48 V	1.5 to 24 V (* 48 V)	4.5 to 48 V
Nominal Power (DC)		0.3 W	0.19 to 0.27 W / 0.45 to 0.50 W	0.1 to 0.3 W	0.15 to 0.58 W
Dielectric Strength	Open Contacts	1,500 VAC	500 VAC	1,000 VAC	500 VAC (W, WZ, WFZ) 1,000 VAC (WF)
	Coil and Contacts	2,000 VAC	500 VAC / 1,000 VAC (MZ-F)	1,500 VAC (NA, NAL) 1,000 VAC (NAL-D)	1,000 VAC
Surge Strength (Coil and Contacts)		2,500 V	1,500 V	2,500 V (NA, NAL) 1,500 V (NAL-D)	1,500 V
Expected Life	mechanical	10 x 10 ⁶ ops.	20 x 10 ⁶ ops.	100 x 10 ⁶ ops. (NA) 10 x 10 ⁶ ops. (NAL, NAL-D)	20 x 10 ⁶ ops. (W) 10 x 10 ⁶ ops. (WF, WZ, WFZ)
	Electrical (Rated Load)	100 x 10 ³ ops. (DC) 100 X 10 ³ ops. (AC)	200 x 10 ³ ops. (DC) 500 x 10 ³ ops. (AC)	500 x 10 ³ ops. (DC) 200 x 10 ³ ops. (AC)	100x10 ³ ops. (DC 30V 2A) ¹ 200x10 ³ ops. (AC120V 0.5A) ² 500x10 ³ ops. (DC24V 1A, AC 120V 0.25A)
Safety Standards		UL, CSA, BSI, Telcordia, IEC60950-1	UL, CSA, FCC68	UL, CSA, BSI, FCC68, Telcordia, IEC60950-1	UL, CSA, FCC68
Connection		Through hole / Surface mount	Through hole	Through hole	Through hole
Terminal layout (Bottom View)		Through hole  Surface mount 		NA, NAL  NAL-D 	
Remarks		- 2mm Contact gap	-	- Latching type available * Only standard type	

2.0 PRODUCT LINE-UP
2.3 SIGNAL RELAYS

SERIES NAME		SY				
Dimensions						
W x L x H (mm)		7.4 x 12.5 x 9.5				
Weight (Approx.)		1.7 g				
Contact Form		1 c				
Contact Rating		(2A Carry)				
Minimum Switching Load (ref.)		<table border="0"> <tr> <td style="text-align: center;">1A</td> <td style="text-align: center;">1A</td> </tr> <tr> <td style="text-align: center;">100mVDC 0.1mA</td> <td style="text-align: center;">1VDC 1mA</td> </tr> </table>	1A	1A	100mVDC 0.1mA	1VDC 1mA
1A	1A					
100mVDC 0.1mA	1VDC 1mA					
Contact Rating (Resistive Load)		0.5A 120VAC (SY) 1A 24VDC 0.5A 60VAC (SY-W) 1A 24VDC				
Coil Voltage (DC)		1.5 to 24 V				
Nominal Power (DC)		0.15 to 0.175 W				
Dielectric Strength	Open Contacts	300 VAC 400 VAC				
	Coil and Contacts	1,000 VAC				
Surge Strength (Coil and Contacts)		1,500 V				
Expected Life	mechanical	5 x 10 ⁶ ops.				
	Electrical (Rated Load)	100 x 10 ³ ops.				
Safety Standards		UL, CSA, FCC68				
Connection		Through hole				
Terminal layout (Bottom View)						
Remarks						





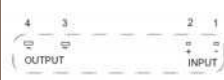
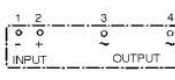
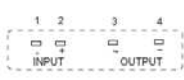
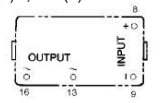
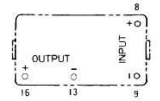
2.0 PRODUCT LINE-UP




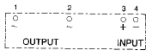

2.4 HIGH FREQUENCY RELAYS

SERIES NAME		FTR-B3RF
Dimensions		
W x L x H (mm)		7.7 x 13.6 x 5.45
Weight (Approx.)		1.3 g
Contact Form		2 c
Contact Rating		1A/ 30 VDC 0.3A/ 125 VAC
Minimum Switching Load (ref.)		
Contact Rating (Resistive Load)		3W @ 1GHz-switching 1W @ 1GHz-carry
Coil Voltage (DC)		1.5 to 24 V
Nominal Power (DC)		0.1 W
Dielectric Strength	Open Contacts	750 VAC
	Coil and Contacts	750 VAC
Surge Strength (Coil and Contacts)		1,500 V
Expected Life	mechanical	50 x 10 ⁶ ops.
	Electrical (Rated Load)	100 x 10 ³ ops.
Safety Standards		-
Connection		Surface mount
Terminal layout (Bottom View)		
Remarks		Latching type available

2.0 PRODUCT LINE-UP

2.5 SOLID STATE RELAYS

SERIES NAME			FTR-SL	SE	SG	SJ	
Dimensions							
W x L x H (mm)			5.0 x 28.0 x 15.0	5.0 x 20.0 x 17.0	9.0 x 40.0 x 20.0	10.0 x 20.0 x 12.8	
Weight (Approx.)			4.0 g	4.0 g	13.0 g	5.5 g	
Type			-	-	-	-	
Voltage Type			AC	AC	AC	AC DC	
Current			1.0 A	1.5 A	3.0 A	1 A	
Nominal Voltage			5, 12, 24, 60 VDC	3, 5, 12, 24 VDC	3, 5, 12, 24 VDC	3, 5, 12, 24 VDC 5, 12, 24 VDC	
Input Side	Impedance	3 V	5 V: 560 Ω	180 Ω	130 Ω	120 Ω	-
		5 V	12V: 1.3k Ω	470 Ω	330 Ω	360 Ω	430 Ω
		12 V	24V: 2.4k Ω	1.5k Ω	1.0k Ω	1.0k Ω	1.2k Ω
		24 V	60V: 10k Ω	3.0k Ω	2.2k Ω	2.0k Ω	2.4k Ω
Output Side	Load Voltage Range		AC 24 to 250 VAC rms	15 to 265 V rms	AC 75 to 265 V rms	24 to 265 V rms	3 to 30 VDC
	Max. Load Current		1.0 A rms	1.5 A rms	3.0 A rms	1.0 A rms	1.0 A
	Min. Load Current		1mA rms	10mA rms	10 mA rms	10 mA rms	1 mA
	1 Cycle Surge Current		50 A	50 A	132 A	50 A rms	3.0 A (10 ms)
	Max. Off-state Leakage Current		1 mA	0.5/1.0 mA	2.5 mA at 100 rms 5 mA at 200 rms	0.75/1.5 mA rms	0.1 mA
	Max. Off-state Leakage Current		1.3 V rms	1.2 V rms	1.5 V rms	1.2 V rms	1.2 V
Max. Operate Time			1/2 cycle + 1 ms	1 ms	1 ms	1 ms	
Max. Release Time			1/2 cycle + 1 ms	1/2 cycle + 1 ms	1/2 cycle + 1 ms	1/2 cycle + 1 ms 1 ms	
Dielectric Strength (Input-Output)			2,500 V rms	2,500 V rms	2,500 V rms	2,500 V rms	
Operating Temperature			-30°C to +85°C	-30°C to +85°C	-30°C to +85°C	-30°C to +85°C	
Storage Temperature			-40°C to +100°C	-40°C to +100°C	-40°C to +100°C	-40°C to +100°C	
Safety Standard			-	UL, CSA	UL, CSA	UL, CSA	
Connection			Through hole	Through hole	Through hole	Through hole	
Terminal layout (Bottom View)						SJ-()A, SJ-()AN  SJ-()D, SJ-()DN 	
Remarks			<ul style="list-style-type: none"> - Pin compatible with FTR-LY - Internal zero cross circuit available - Internal varistor and snubber circuit 	<ul style="list-style-type: none"> - Internal zero cross circuit available 	<ul style="list-style-type: none"> - Internal zero cross circuit available - Internal output surge absorber (varistor) type available 	<ul style="list-style-type: none"> - Pin compatible with JY - Internal surge absorber - Socket available 	

SERIES NAME			SN			
Dimensions			 5.0 x 20.0 x 17.0			
Weight (Approx.)						
Type			Input Module		Output Module	
Voltage Type			AC	DC	AC	DC
Current			-	-	1 A	
Nominal Voltage			100 VAC	12, 24 VDC	3, 5, 12, 24 VDC	5, 12, 24 VDC
Input Side	Impedance	3 V	-	-	130/180 Ω	-
		5 V	-	-	330/470 Ω	390 Ω
		12 V	-	-	1.0k/1.5k Ω	1.2k Ω
		24 V	-	-	2.2k/3.8k Ω	2.4k Ω
Output Side	Load Voltage Range		4 to 6 VDC		24 to 265 Vrms	3 to 30 VDC
	Max. Load Current		±4mA(VDD=5V)	±0.4mA(VDD=5V)	1.0 A rms	1.0 A
	Min. Load Current		-	-	10 mA rms	1 mA
	1 Cycle Surge Current		-	-	50 A	3 A (10ms)
	Max. Off-state Leakage Current		-	-	1.5/3.0 mA rms	0.1 mA
	Max. Off-state Leakage Current		-	-	1.2 Vrms	1.2 V
Max. Operate Time			25 ms	10 ms	1 ms	
Max. Release Time			30 ms	10 ms	1/2 cycle + 1 ms	1 ms
Dielectric Strength (Input-Output)			2,500 V rms			
Operating Temperature			-30°C to +85°C			
Storage Temperature			-40°C to + 100°C			
Safety Standards			-			
Connection			Through hole			
Terminal layout (Bottom View)			SN-A (input module)			
			SN-D (input module)			
			SN-A (output module)			
			SN-D (output module)			
Remarks			<ul style="list-style-type: none"> - Compatible with NY - Internal surge absorber - Socket available 			