

FUJITSU, years of experience

Relays



shaping tomorrow with you

About Fujitsu Components

Fujitsu, years of experience

Over the years Fujitsu Components has made its name in the components and devices market with a complete product line-up of relays, thermal printers, touch panels and wireless modules. All adapted to the requirements of the market.

Supplying high quality and reliable components is only one of Fujitsu's strengths. Another strength is providing a high level of customer support service. 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.

Fujitsu Components product experts have built a wealth of knowledge through their years of experience. They are pleased to share their knowledge with customers and offer technical support.

About Fujitsu Components

Partnering with customers on relay selections as well as the development of features to ensure quality and long operational life, makes Fujitsu one of the leaders in relay design and innovation. For example, Fujitsu seals its relay enclosures to prevent the ingress of dust and fluids, which is particularly important for the automotive market where Fujitsu is a leading relay supplier.

Fujitsu is investing in new, fully automated production lines for the most popular relays and to meet the increasing demand for new, high voltage, high current DC relays that are required for the growing markets of electric and hybrid vehicles as well as for renewable energy infrastructure. Fujitsu is one of the leaders in DC relay design and manufacturing which present new design challenges, such as one way metal transfer between the contacts that does not occur with AC current due to the constantly changing direction of the current. This is just one example of how each switching operation results in wear of the relay, a fact that Fujitsu takes in account when guaranteeing a minimum number of operations; figures that Fujitsu verifies by extensive real life testing.

Fujitsu relays

Quality is the key word describing Fujitsu Components' relays.

The relay product range covers automotive, power, signal and solid state relays.

The relays are available in a wide range of variations such as slim line, ultra quiet and low power consumption.

Through continued research and development Fujitsu keeps expanding its product range.

Visit <http://www.fujitsu.com/components/> to find out more about our business activities.



Contents

Product Line-Up

Automotive Relays

25A	FTR-G1	FTR-P2	FTR-P3	Page 1
25A	FTR-P4	FTR-P5	FTR-P6	Page 2
25A	FTR-P7	FBR-51		Page 3
25A ~ 40A	FBR52 (-WL / -WF)	FBR51L	FBR53	Page 4
25A ~ 40A	FBR53-HW	FBR57	FBR572 / 582	Page 5
45A	FBR59-HW	FTR-V1		Page 6
450VDC	FTR-E1			Page 7

Power Relays

3A ~ 5A	NY	JY	FTR-F3	Page 8
3A ~ 5A	FTR-F4	VE	FTR-MY	Page 9
3A ~ 5A	FTR-F2	FTR-F4G		Page 10
5A ~ 10A	JV	FTR-F1	FTR-F1L	Page 11
5A ~ 10A	FTR-LY	JS	JS-RW	Page 12
5A ~ 10A	JSL	JS-KS	FTR-H2	Page 13
5A ~ 10A	FTR-J2			Page 14
10A ~ 20A	FTR-K1	FTR-K1-RG	FTR-K1-E	Page 15
10A ~ 20A	FTR-K1-KS	FTR-K1-HC	FTR-K1-MA / MB	Page 16
10A ~ 20A	FTR-K1-HT	FTR-K1-KW	FTR-K1-LA / LB	Page 17
10A ~ 20A	FTR-K2	FTR-K2G		Page 18
20A ~ 25A	FTR-K3	FTR-K3L	FTR-K3LV	Page 19
20A ~ 25A	FTR-K3-WG	FTR-K3-WS		Page 20
30A ~ 120A	FTR-K3-PV	FTR-K3-PS	FTR-K2W	Page 21
30A ~ 120A	FTR-K4			Page 22

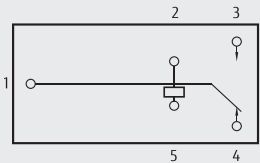
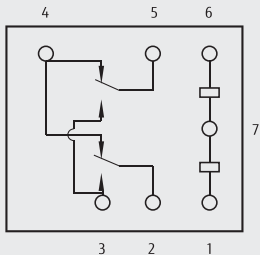
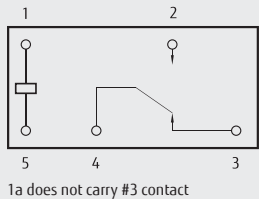
Signal Relays

1A ~ 2A	SY	RY	A	Page 23
1A ~ 2A	NA	FTR-B3	FTR-B4	Page 24
1A ~ 2A	FTR-C1	FTR-C2		Page 25

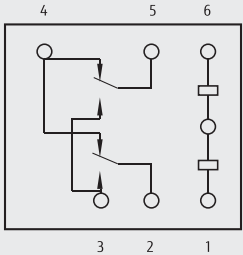
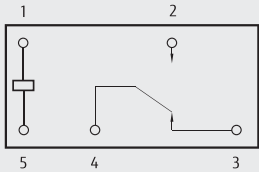
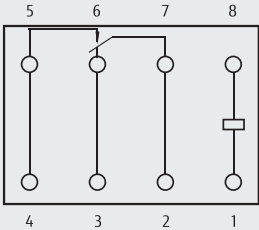
Solid State Relays

1A ~ 3A	FTR-SL	SE		Page 26
1A ~ 3A	SJ	SN		Page 27

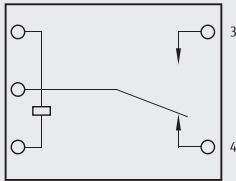
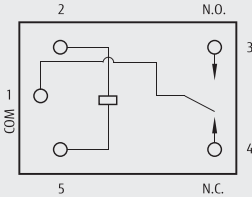
Automotive Relays (25A)

Series Name	FTR-G1	FTR-P2	FTR-P3
			
Description	25A Compact Relay	25A Low Noise H-bridge Relay	25A Compact Relay
Features	0.25mm contact gap - Average acoustic noise level 60db @ 5cm	- Pin compatible with FTR-P4 - Average acoustic noise level 50db @ 5cm	0.25 and 0.6mm contact gap types - THR type available - High temp. types available (125 °C) - Pin compatible with FTR-P5
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 7.2 x 17.4 x 14.1 (THR)
Weight (approx.)	3.5 g	13.0 g	5.0 g
Contact form	1 c	1 c x 2 (H-bridge)	1 c (THR, 1 a, 1 c)
Contact rating	25A, 14VDC, locked motor load	25A, 14VDC, locked motor load	25A, 14VDC, locked motor load
Expected life on load example	14VDC, 25A Window motor load 100x10 ³ ops. 14VDC Door lock motor load 100x10 ³ ops.	14VDC, 25A Locked motor load 100x10 ³ ops.	14VDC, 25A, locked motor load 100x10 ³ ops.
Operating temperature	-40 to 85 °C	-40 to 85 °C	-40 to 85 °C / 125 °C
Coil voltage (DC)	9 to 12 V	9 to 12 V	9 to 12 V
Nominal coil power	0.64 W	0.45 W	0.6 W / 0.8 W
Dielectric strength (1 min.)	Open contacts: 500VAC Coil and contacts: 500VAC	Open contacts: 500VAC Coil and contacts: 500VAC	Open contacts: 500VAC Coil and contacts: 500VAC
Mounting	Through hole	Through hole	Through hole / THR
Terminal layout (bottom view)	Bottom view 	Bottom view 	Bottom view 

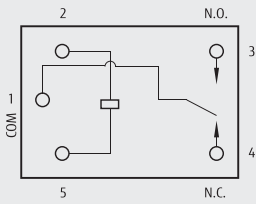
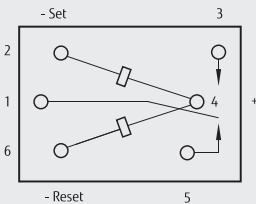
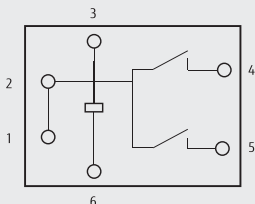
Automotive Relays (25A)

Series Name	FTR-P4	FTR-P5	FTR-P6
  			
Description	25A H-bridge Relay	25A Low Noise Compact Relay	25A Surface Mount Relay
Features	0.25mm contact gap - Pin compatible with FTR-P2	- Pin compatible with FTR-P3 - Average acoustic noise level 50db @ 5cm	0.25mm contact gap - Average acoustic noise level 60db @ 5cm - SMD
Dimensions (W x L x H mm)	14.2 x 17.4 x 13.5	9.7 x 20.4 x 16.7	9.0 x 12.0 x 10.3
Weight (approx.)	10.0 g	7.0 g	3.0 g
Contact form	1 c x 2 (H-bridge)	1 c	1 c
Contact rating	25A, 14VDC, locked motor load	25A, 14VDC, locked motor load	25A, 14VDC
Expected life on load example	14VDC, 25A Locked motor load 100x10 ³ ops.	14VDC, 25A Locked motor load 100x10 ³ ops.	14VDC, 25A Locked motor load 100x10 ³ ops.
Operating temperature	-40 to 85 °C	-40 to 85 °C	-40 to 85 °C
Coil voltage (DC)	9 to 12 V	9 to 12 V	10 to 12 V
Nominal coil power	0.6 W	0.45 W	0.8 W
Dielectric strength (1 min.)	Open contacts: 500VAC Coil and contacts: 500VAC	Open contacts: 500VAC Coil and contacts: 500VAC	Open contacts: 500VAC Coil and contacts: 500VAC
Mounting	Through hole	Through hole	Surface Mount
Terminal layout	Bottom view 	Bottom view 	Top view 

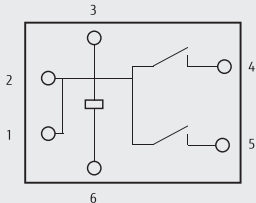
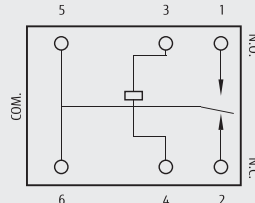
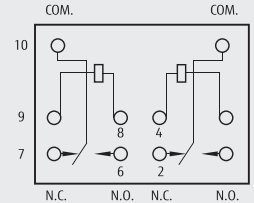
Automotive Relays (25A)

Series Name	FTR-P7	FBR51
		
Description	25A Low Noise Compact Automotive Relay	25A Compact Automotive Relay
Features	0.3 mm contact gap - Average acoustic noise level 45db @ 5cm	0.3 or 0.6 mm (FBR52) 60A inrush
Dimensions (W x L x H mm)	17.0 x 20.8 x 14.0	12.1 x 15.5 x 13.7
Weight (approx.)	7.0 g	6.0 g
Contact form	1 c	1 c
Contact rating	25A, 14VDC, locked motor load	25A, 14VDC, locked motor load
Expected life on load example	14VDC, 25A Locked motor load 100x10 ³ ops.	14VDC, 25A, Locked motor load 200x10 ³ ops.
Operating temperature	-40 to 85 °C	-40 to 85 °C
Coil voltage (DC)	12 V	6 to 12 V
Nominal coil power	0.55 W	0.6 W / 0.8 W
Dielectric strength (1 min.)	Open contacts: 500VAC Coil and contacts: 500VAC	Open contacts: 500VAC Coil and contacts: 500VAC
Mounting	Through hole	Through hole
Terminal layout	Bottom view 	Bottom view 

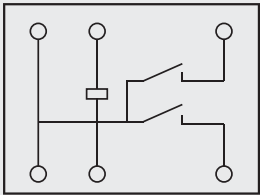
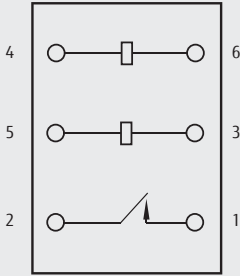
Automotive Relays (25A ~ 40A)

Series Name	FBR52 (-WL / -WF)	FBR51L	FBR53
			
Description	30A Compact Automotive Relay for Special Lamp Loads	25A Dualcoil Latching Compact Automotive Relay	30A Compact Automotive Relay
Features	0.3 mm contact gap	- Dual coil latching - THR type available	0.25mm contact gap - THR type (-RW) available 60A inrush 30A carry current
Dimensions (W x L x H mm)	12.1 x 15.5 x 13.7	12.1 x 15.5 x 13.7	12.3 x 15.7 x 14.0
Weight (approx.)	6.0 g	6.0 g	6.0 g
Contact form	1 a	1 c	1 form U
Contact rating	80 / 120W, 14VDC lamp load	25A, 14VDC, locked motor load	25A, 14VDC, resistive load
Expected life on load example	14VDC, 120W Lamp load 100x10 ³ ops. (-WL) Special type for flasher lamp applications (-WF) 14VDC, 80W Lamp load 250x10 ³ ops. (-WF) Inrush 11A, 14vdc 0.35 sec. on 0.35 sec. off	14VDC, 25A Locked motor load 200x10 ³ ops. (-W1 type) 50x10 ³ ops. (E type)	14VDC, 25A Resistive load 100x10 ³ ops.
Operating temperature	-40 to 85 °C	-40 to 125 °C	-40 to 125 °C
Coil voltage (DC)	6 to 12 V	10 V	9 to 12 V
Nominal coil power	0.6 W	1.1 W	0.6 W
Dielectric strength (1 min.)	Open contacts: 500VAC Coil and contacts: 500VAC	Open contacts: 500VAC Coil and contacts: 500VAC	Open contacts: 500VAC Coil and contacts: 500VAC
Mounting	Through hole / THR	Through hole / THR	Through hole / THR
Terminal layout	Bottom view 	Bottom view 	Bottom view 

Automotive Relays (25A ~ 40A)

Series Name	FBR53-HW	FBR57	FBR572 / 582
			
Description	40A Compact Relay	12A High Power Relay	12/14A High Power Twin Relay
Features	- THR type (-RW) available - High power type 80A inrush	- For 24V battery applications 70A inrush	0.8 / 1.4mm contact gap - For 24V battery applications 60A inrush
Dimensions (W x L x H mm)	12.3 x 15.7 x 14.0	14.4 x 20.0 x 16.2	20.0 x 26.0 x 16.2 (FBR572) 20.0 x 26.0 x 17.0 (FBR582)
Weight (approx.)	6.0 g	9.4 g	18.0 g
Contact form	1 form U	1 c	1 c x2
Contact rating	40A, 14VDC, resistive load	12A, 28VDC, locked motor load, inrush 15A/break 2.5A 28VDC, free motor load	12A, 28VDC, locked motor load, inrush 15A/break 2.5A, 28VDC, free motor load
Expected life on load example	14VDC, 40A Resistive load 100x10 ³ ops.	28VDC, 12A, Locked motor load 100x10 ³ ops. 28VDC, inrush 12A/break 2.5A Free motor load 500x10 ³ ops.	28VDC, 12A Locked motor load 100x10 ³ ops. 28VDC, 2.5A Free motor load 500x10 ³ ops. (FBR572)
Operating temperature	-40 to 125 °C	-40 to 85°C	-40 to 85 °C
Coil voltage (DC)	9 to 12 V	24 V	24 V
Nominal coil power	0.9 W	1.5 W	1.5 / 3.4 W
Dielectric strength (1 min.)	Open contacts: 500VAC Coil and contacts: 500VAC	Open contacts: 500VAC Coil and contacts: 500VAC	Open contacts: 500VAC Coil and contacts: 500VAC
Mounting	Through hole / THR	Through hole	Through hole
Terminal layout	Bottom view 	Bottom view 	Bottom view 

Automotive Relays (45A)

Series Name	FBR59-HW	FTR-V1
		
Description	45A/60A High Power Relay	210A High capacity latching relay
Remarks	- THR type (-RW) available - High power type 220A max. inrush 60A Carry current	210A (@ 85°C) / 120A (@ 125°C) continuous current - Initial contact resistance max. 0.6mOhm
Dimensions (W x L x H mm)	15.0 x 20.0 x 16.8	52.8 x 84.5 x 24.7
Weight (approx.)	13.0 g	120 g
Contact form	1 form U	1 b
Contact rating	45A, 14VDC / 60A, 14VDC resistive	Inrush 230A, 14VDC Break 1A, 14VDC
Expected life on load example	14 VDC, 45A Motor load 100x10 ³ ops. 14 VDC, 60A Resistive load 100x10 ³ ops.	Inrush 230A, 14VDC Break 1A, 14VDC 120x10 ³ ops.
Operating temperature	-40 to 125 °C	-40 to 125 °C
Coil voltage (DC)	9 to 12 V	12 V
Nominal coil power	0.45 W	2.88 W
Dielectric strength (1 min.)	Open contacts: 500VAC Coil and contacts: 500VAC	Open contacts: 500VAC Coil and contacts: 500VAC
Mounting	Through hole / THR	
Terminal layout	Bottom view 	Bottom view 

Automotive Relays (450VDC)

Series Name	FTR-E1
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Description	20A / 30A, 450VDC High Voltage DC Relay
Remarks	- No specific polarity for connection of load terminals - UL / cUL recognized type available

Dimensions (W x L x H mm)	28.3 x 43.6 x 36.8
Weight (approx.)	75.0 g
Contact form	1 a
Contact rating	20A, 450VDC / 30A, 450VDC
Expected life on load example	10A, 450VDC Resistive with varistor 75 x 10³ ops. 20A, 450VDC Resistive with varistor 10 x 10³ ops. 30A, 450VDC Resistive with varistor 5 x 10³ ops. (-HA) 20A, 450VDC inrush only (without break) 100 x 10³ ops.
Operating temperature	-40 to 85 °C
Coil voltage (DC)	12, 24 VDC
Nominal coil power	0.9 W
Dielectric strength (1 min.)	Open contacts: 2500VAC Coil and contacts: 5000VAC
Mounting	Through hole
Terminal layout (bottom view)	Bottom view

Power Relays (3A ~ 5A)

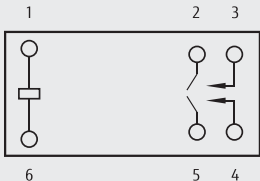
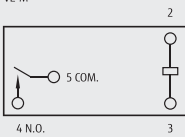
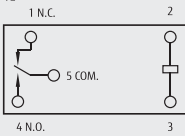
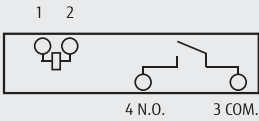
Series Name	NY	JY	FTR-F3
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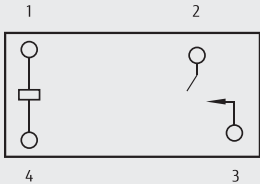
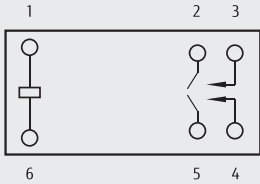
Description	5A Slim Type Relay	3/5A Compact Relay	3/5/10A Slim Type Relay
Remarks	- Socket available (-NYP) - Compatible with SN solid state relay - Creepage, clearance >3.3mm	- Socket available (-P) - Compatible with SJ solid state relay - AgCd types not for new designs	- Right angle versions available (1 a) - TV-3, TV-5 rating types available 1 form c type available - Sealed/Flux proof 10A types available - AgNi contacts

Dimensions (W x L x H mm)	5.0 x 20.1 x 17.5	9.8 x 20.0 x 12.8	7.0 x 23.4 x 15.0 (1c)
Weight (approx.)	3.5 g	5.0 g	4.0 g
Contact form	1 a	1 a	1 a, 1 c (5A type)
Contact rating (Resistive load)	5A, 250VAC/30VDC	3A, 250VAC/30VDC (3A type) 5A, 250VAC/30VDC (5A type)	3A, 125VAC/30VDC (3A type) 5A, 250VAC/30VDC (5A type) 10A, 250VAC (10A type)
Minimum switching load (ref.)	5VDC, 1mA	100m VDC 0.01mA (W) 5VDC 10mA (G, HG) 5VDC 100mA (R, HR)	5VDC 10mA (3 / 5A type) 5VDC 100mA (10A type)
Mechanical life	20 x 10 ⁶ ops.	20 x 10 ⁶ ops.	5 x 10 ⁶ ops. (1a) 2x10 ⁶ ops. (1c)
Electrical life (Rated load)	100 x 10 ³ ops. (at 3A, 250VAC, 30VDC) 50 x 10 ³ ops. (at 5A, 250VAC, 30VDC)	100 x 10 ³ ops.	10 x 10 ³ ops. to 200 x 10 ³ ops. (depending on relay type)
Operating temperature	-40 to 90 °C	-40 to 90 °C	-40 to 70 °C -40 to 85°C (TV-3/TV-5) -40 to 40°C (10A type)
Coil voltage (DC)	4.5 to 24 V	4.5 to 48 V	5 to 24 V
Nominal coil power	0.12 W	0.2 to 0.36 W	0.2W / 0.28 W / 0.36 W
Surge strength	5,080 V	4,000 V	10,000 V
Dielectric strength (1 min.)	Open contacts: 750VAC Coil and contacts: 3000VAC	Open contacts: 750VAC Coil and contacts: 2000VAC	Open contacts: 750VAC Coil and contacts: 4000VAC
Safety standards	UL, CSA	UL, CSA	UL, CSA, VDE, CQC
Mounting / Enclosure	Through hole / RTIII	Through hole / RTIII	Through hole / RTII / RTIII
Terminal layout	Bottom view 	Bottom view 	Bottom view

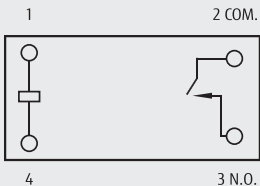
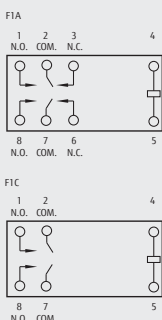
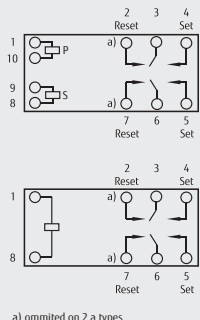
Power Relays (3A ~ 5A)

Series Name	FTR-F4	VE	FTR-MY
			
Description	5A TV-3 Compact Relay	5A Medium Load Relay	5A Slim Type Relay
Remarks	- Flux proof types - TV-3 rated	- High sensitive types - Cd types (not for new designs) - Creepage >3.2mm	- Conform to UL61010-1, UL61010-2-201, IEC/EN61010-1, IEC/EN61010-2-201 (max. 277VAC) - Conform to ANSI/ISA12.12.01 - Creepage, clearance >5.6mm
Dimensions (W x L x H mm)	12.0 x 24.0 x 25.0	10.5 x 20.5 x 20.5	5.0 x 20.0 x 12.0
Weight (approx.)	12.0 g	8.0 g	2.5 g
Contact form	2 a	1 a, 1 c	1 a
Contact rating (Resistive load)	5A, 250VAC/30VDC	5A, 250VAC (HME, HM) 3A (NC)/5A(NO), 250VAC (H, HE)	5A, 250VAC/30VDC
Minimum switching load (ref.)	5VDC, 100mA	5VDC, 10mA (gold plated contacts) 5VDC, 100mA	5VDC 1mA
Mechanical life	2 x 10 ⁶ ops.	10 x 10 ⁶ ops.	20 x 10 ⁶ ops.
Electrical life (Rated load)	100 x 10 ³ ops. 25 x 10 ³ Lamp load(TV-3)	100 x 10 ³ ops. (VE) 50 x 10 ³ ops. (VE-S)	100 x 10 ³ ops. (at 3A 250VAC/30VDC) 5 x 10 ³ ops. (at 5A, 250VAC/30VDC)
Operating temperature	-40 to 70 °C	-40 to 85 °C	-40 to 90 °C
Coil voltage (DC)	5 to 48 V	5 to 48 V	4.5 to 24 V
Nominal coil power	0.53 W	0.25 to 0.36 W	0.11 W
Surge strength	10,000 V	4,000 V / 6,000 V	5,080 V
Dielectric strength (1 min.)	Open contacts: 1000VAC Coil and contacts: 4000VAC	Open contacts: 750VAC (1 c), 1,000 VAC (1 a) Coil and contacts: 2000VAC	Open contacts: 750VAC Coil and contacts: 3000VAC
Safety standards	UL, CSA, VDE, CQC	UL, CSA, VDE, CQC	UL, CSA, VDE, CQC
Mounting / Enclosure	Through hole / RTII	Through hole / RTIII	Through hole / RTIII
Terminal layout	Bottom view 	Bottom view VE-M  VE 	Bottom view 

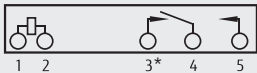
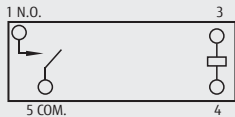
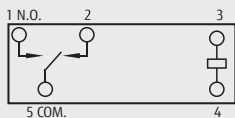
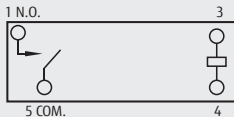
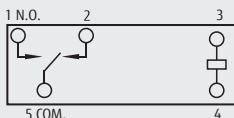
Power Relays (3A ~ 5A)

Series Name	FTR-F2	FTR-F4G
		
Description	5A High profile Relay	5A High Profile Wide Contact Gap Relay
Remarks	■ TV-5 rated ■ TV-8 Version (F2P) ■ High sensitive coil types	■ 1.5mm contact gap ■ TV-3 rated ■ Flux proof and sealed types
Dimensions (W x L x H mm)	11.0 x 24.0 x 25.0	12.7 x 28.7 x 25.2
Weight (approx.)	13.0 g	18.0 g
Contact form	1 a	2 a
Contact rating (Resistive load)	5A, 250VAC/30VDC	5A, 250VAC
Minimum switching load (ref.)	5VDC 100mA	5VDC, 100mA
Mechanical life	2 x 10 ⁶ ops.	500 x 10 ³ ops.
Electrical life (Rated load)	100 x 10 ³ ops.	100 x 10 ³ ops. Flux proof version 20 x 10 ³ ops. Sealed version
Operating temperature	-40 to 70 °C	-40 to 70 °C
Coil voltage (DC)	5 to 48 V 5 to 24 V (F2P)	3 to 60 V
Nominal coil power	0.25 to 0.53 W	0.8 W
Surge strength	10,000 V 12,000 V (F2P)	10,000 V
Dielectric strength (1 min.)	Open contacts: 1000VAC Coil and contacts: 4000VAC	Open contacts: 1500VAC Coil and contacts: 5000VAC
Safety standards	UL, CSA, VDE, CQC UL, CSA (F2P)	cULus, TUV
Mounting / Enclosure	Through hole / RTII	Through hole / RTII / RTIII
Terminal layout	Bottom view 	Bottom view 

Power Relays (5A ~ 10A)

Series Name	JV	FTR-F1	FTR-F1L
			
Description	5A/10A Medium Load Relay	5A / 8A Low Profile Relay	8A Low Profile Latching Relay
Remarks	- High sensitive type available 10A type JV-KS (TV 4)	- Pin compatible with VB series - TV-3 rating available (2 a) - Clear cover available (-RG) - Sensitive coil types 8A types FTR-F1R	- Latching relay 1 and 2 coil types
Dimensions (W x L x H mm)	10.0 x 17.5 x 12.5	12.8 x 29.0 x 16.5	12.8 x 29.0 x 16.5
Weight (approx.)	4.3 g	12.0 g	13.0 g
Contact form	1 a	2 a, 2 c	2 a, 2 c
Contact rating (Resistive load)	5A, 250VAC/30VDC (5A type) 10A, 250VAC/24VDC (10A type)	5A, 250VAC/24VDC (5A type) 8A, 250VAC/24VDC (8A type)	8A, 250VAC/24VDC
Minimum switching load (ref.)	5VDC, 10mA (5A type) 5VDC, 100mA (10A type)	5VDC 10mA	5VDC 10mA
Mechanical life	5 x 10 ⁶ ops.	20 x 10 ⁶ ops.	3 x 10 ⁶ ops.
Electrical life (Rated load)	100 x 10 ³ ops. (5A type) 50 x 10 ³ ops (10A type)	100 x 10 ³ ops. 25 x 10 ³ (TV3) 50 x 10 ³ (F1R)	50 x 10 ³ ops.
Operating temperature	-40 to 70 °C (5A type) -40 to 85 °C (10A type)	-40 to 75 °C -40 to 70 °C (Transparent type)	-40 to 85 °C
Coil voltage (DC)	3 V to 24 V 48V (5A standard type)	1.5 to 110 V 1.5 to 48 V (High sensitive)	5 to 24 V
Nominal coil power	0.2 to 0.3 W	0.4 to 0.53 W	0.4 to 0.6 W
Surge strength	10.000 V	10.000 V	10.000 V
Dielectric strength (1 min.)	Open contacts: 750VA Coil and contacts: 5000VAC	Open contacts: 1000VAC Coil and contacts: 5000VAC	Open contacts: 1000VAC Coil and contacts: 5000VAC
Safety standards	UL, CSA, VDE, CQC	UL, CSA, VDE, CQC	UL, CSA, VDE, CQC
Mounting / Enclosure	Through hole / RTIII	Through hole / RTIII	Through hole / RTIII
Terminal layout	Bottom view 	Bottom view 	Bottom view  a) omitted on 2 a types

Power Relays (5A ~ 10A)

Series Name	FTR-LY	JS	JS-RW
			 New Design
Description	6A Slim Type Relay	8A Low Profile Relay	8A Low Profile Relay Reflow Capable
Remarks	- Conform to UL61010-1, UL61010-2-201, IEC/EN61010-1, IEC/EN61010-2-201 (max. 277VAC) - Ultra slim - Socket type available - Right angle type available - Creepage/clearance >8mm	3.2 and 5 mm pitch types 3μAu versions - Creepage/clearance >8mm	- Reflow solderable relay (THR) 3.2 and 5 mm pitch types - Flux proof 1μAu versions - Creepage/clearance >8mm - Contact Fujitsu for details
Dimensions (W x L x H mm)	5.0 x 28.0 x 15.0	10.0 x 29.0 x 12.5	10.0 x 29.0 x 12.5
Weight (approx.)	5.0 g	8.0 g	8.0 g
Contact form	1 a, 1 c	1 a, 1 c	1 a, 1 c
Contact rating (Resistive load)	6A, 250VAC/24VDC	8A, 250VAC/24VDC	8A, 250VAC/24VDC
Minimum switching load (ref.)	5VDC, 10mA (-V type) 5VDC 100mA (-Y, -E type)	5VDC 100mA 5VDC 10mA (3 micron Au)	5VDC 100mA 5VDC 10mA (1 micron Au)
Mechanical life	10 x 10 ⁶ ops.	20 x 10 ⁶ ops.	20 x 10 ⁶ ops.
Electrical life (Rated load)	30 x 10 ³ ops. (NC) to 50 x 10 ³ ops. (NO)	20 x 10 ³ ops. to 50 x 10 ³ ops. (Depends on contact material)	20 x 10 ³ ops. to 50 x 10 ³ ops. (Depends on contact material)
Operating temperature	-40 to 85 °C	-40 to 85 °C	-40 to 85 °C
Coil voltage (DC)	5 to 60 V	5 to 60 V	5 to 60 V
Nominal coil power	0.17 W / 0.217 mW	0.22 to 0.29 W	0.22 to 0.29 W
Surge strength	6.000 V	10.000 V	10.000 V
Dielectric strength (1 min.)	Open contacts: 1000VAC Coil and contacts: 4000VAC	Open contacts: 1000VAC Coil and contacts: 5000VAC	Open contacts: 1000VAC Coil and contacts: 5000VAC
Safety standards	UL, CSA, VDE	UL, CSA, VDE, CQC	Pending
Mounting / Enclosure	Through hole / RTIII	Through hole	Through hole / Reflow (THR) / RTII
Terminal layout	Bottom view  *omitted on 1 form A type	Bottom view  	Bottom view  

Power Relays (5A ~ 10A)

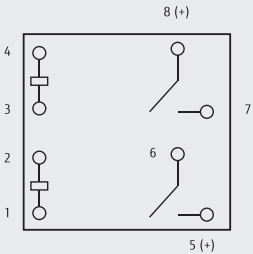
Series Name	JSL	JS-KS	FTR-H2
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Description	8A Low Profile Latching Relay	8A Low Profile High Inrush Relay	10A High Profile Relay
Remarks	- Latching type 1 and 2 coil types available 3.2mm pitch - Creepage/clearance >8mm	1000W lamp load 65A inrush (TV4) 5mm pitch - Creepage/clearance >8mm	- TV-5 rated - High sensitive types - Creepage/clearance >6mm

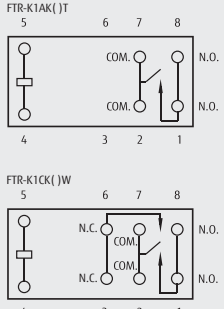
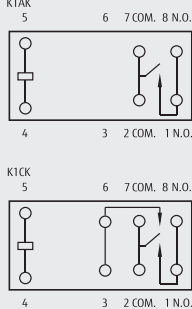
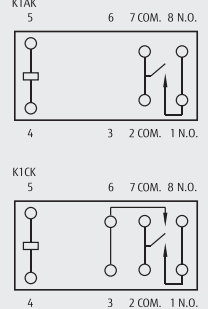
Dimensions (W x L x H mm)	10.0 x 29.0 x 12.5	10.0 x 29.0 x 12.5	11.0 x 24.0 x 25.0
Weight (approx.)	8.0 g	8.0 g	13.0 g
Contact form	1 a, 1 c	1 a	1 a
Contact rating (Resistive load)	8A, 250VAC/24VDC	8A, 250VAC/24VDC	10A, 250VAC/30VDC
Minimum switching load (ref.)	5VDC 100mA	5VDC 100mA	5VDC 100mA
Mechanical life	5 x 10 ⁶ ops.	20 x 10 ⁶ ops.	2 x 10 ⁶ ops.
Electrical life (Rated load)	50 x 10 ³ ops.	100k @ rated load 25k lamp load (TV4)	100 x 10 ³ ops. Rated load 25 x 10 ³ ops. lamp load (TV-5)
Operating temperature	-40 to 85 °C	-40 to 85 °C	-40 to 70 °C
Coil voltage (DC)	3 to 24 V	5 to 60 VDC	5 to 48 V 5 to 24V (High sensitive)
Nominal coil power	0.22 to 0.25 (1coil) 0.48 (2 coils)	0.22 to 290mw	0.25 to 0.53 W
Surge strength	10.000 V	10.000 V	10.000 V
Dielectric strength (1 min.)	Open contacts: 1000VAC Coil and contacts: 5000VAC	Open contacts: 1000VAC Coil and contacts: 5000VAC	Open contacts: 1.000VAC Coil and contacts: 4.000VAC
Safety standards	UL, CSA, VDE	UL, CSA	UL, CSA, VDE, CQC
Mounting / Enclosure	Through hole / RT III	Through hole / RT III	Through hole / RT II / RT III
Terminal layout	Bottom view (a) omitted on 1 a types	Bottom view 	Bottom view

Power Relays (5 ~ 10A)

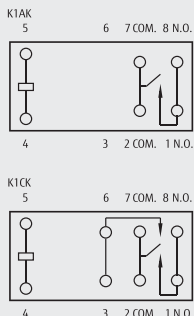
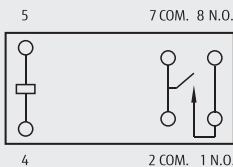
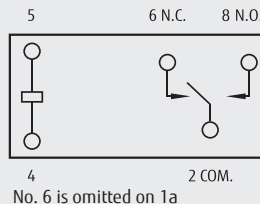
Series Name	FTR-J2
	
Description	10A, 450VDC Small High Voltage DC Relay
Remarks	Special arc extinguishing provision 150A inrush per contact
Dimensions (W x L x H mm)	23.5 x 24.0 x 27.0
Weight (approx.)	26.0 g
Contact form	1 a x 2
Contact rating (Resistive load)	10A, 200VDC x 2 or 10A, 450VDC x 1 600VDC max. switching voltage
Minimum switching load (ref.)	5VDC, 100mA per contact
Mechanical life	2 x 10 ⁶ ops.
Electrical life (Rated load)	10 x 10 ³ ops.
Operating temperature	-40 to 85 °C
Coil voltage (DC)	5 to 110 V
Nominal coil power	0.53W (1 coil) 1.06W (2 coils)
Surge strength	10.000 V (1.2x50µs)
Dielectric strength (1 min.)	Open contacts: 1.000VAC Coil and contacts: 4.000VAC
Safety standards	UL, VDE
Mounting / Enclosure	Through hole / RT II
Terminal layout	Bottom view 

Power Relays (10A ~ 20A)

Series Name	FTR-K1		FTR-K1-RG		FTR-K1-E	
						
Description	Inrush 80A Type		Transparent Cover, Inrush 80A Type		AgNi Contact	
Type	FTR-K1AK() T	FTR-K1CK() W	FTR-K1AK() T-RG	FTR-K1CK() W-RG	FTR-K1AK() E	FTR-K1CK() E
Remarks	- Au plated types (-BG) 5mm pitch - UL TV-5 (N.O.) - Creepage/clearance >10mm		- Cover material PC - Max operating temp. 70°C 10A/12A/16A standard types available 5.0mm pitch - Creepage/clearance >10mm		- Contact material AgNi - Clear cover types (-RG) available 5mm pitch - Creepage/clearance >10mm	

Dimensions (W x L x H mm)	12.7 x 29.0 x 15.7		12.7 x 29.0 x 15.7		12.7 x 29.0 x 15.7	
Weight (approx.)	13.0 g		13.0 g		13.0 g	
Contact form	1 a	1 c	1 a	1 c	1 a	1 c
Contact rating (Resistive load)	16A, 250VAC/24VDC		16A, 250VAC/24VDC		16A, 250VAC/24VDC	
Minimum switching load (ref.)	5VDC 100mA		5VDC 100mA		5VDC 100mA	
Mechanical life	20 x 10 ⁶ ops.		20 x 10 ⁶ ops.		20 x 10 ⁶ ops.	
Electrical life (Rated load)	100 x 10 ³ ops. (AC) 100 x 10 ³ ops. (DC) 25 x 10 ³ ops. (TV-5)	50 x 10 ³ ops. (AC) 30 x 10 ³ ops. (DC) 25 x 10 ³ ops. (TV-5) (N.O.)	100 x 10 ³ ops. (AC) 100 x 10 ³ ops. (DC) 25 x 10 ³ ops. (TV-5)	50 x 10 ³ ops. (AC) 30 x 10 ³ ops. (DC) 25 x 10 ³ ops. (TV-5) (N.O.)	100 x 10 ³ ops. (AC) 100 x 10 ³ ops. (DC)	50 x 10 ³ ops. (AC) 30 x 10 ³ ops. (DC)
Operating temperature	-40 to 85 °C		-40 to 70 °C		-40 to 85 °C	
Coil voltage (DC)	5 to 110 VDC		5 to 110 V		5 to 110 V	
Nominal coil power	0.4 to 0.43 W		0.4 to 0.43 W		0.4 to 0.43 W	
Surge strength	10.000 V		10.000 V		10.000 V	
Dielectric strength (1 min.)	Open contacts: 1.000VAC Coil and contacts: 5.000VAC		Open contacts: 1.000VAC Coil and contacts: 5.000VAC		Open contacts: 1.000VAC Coil and contacts: 5.000VAC	
Safety standards	UL, CSA, VDE, CQC		VDE		UL, CSA, VDE	
Mounting / Enclosure	Through hole, RTII		Through hole, RTII		Through hole, RTII	
Terminal layout	Bottom view 		Bottom view 		Bottom view 	

Power Relays (10A ~ 20A)

Series Name	FTR-K1-KS		FTR-K1-HC	FTR-K1-MA / MB	
			 Under Development		
Description	Inrush 120A Type		High Capacity 20A Type	12A Type	
Type	FTR-K1AK() T-KS	FTR-K1CK() T-KS	FTR-K1AK()T-HC	FTR-K1AK() W-(MA;MB)	FTR-K1CK() W-(MA;MB)
Remarks	5mm pitch - UL TV-8 (N.O.) - Creepage/clearance >10mm		5mm pitch - Creepage/clearance >10mm	- Au plated types (-BG) - Clear cover types (-RG) 3.5mm pitch. MA type 5mm pitch MB type - Creepage/clearance >10mm	
Dimensions (W x L x H mm)	12.7 x 29.0 x 15.7		12.7 x 29.0 x 15.7	12.7 x 29.0 x 15.7	
Weight (approx.)	13.0 g		13.0 g	13.0 g	
Contact form	1 a	1 c	1 a	1 a	1 c
Contact rating (Resistive load)	16A, 250VAC		20A, 250VAC	12A, 250VAC/24VDC	
Minimum switching load (ref.)	5VDC 100mA		5VDC 100mA	5VDC 100mA	
Mechanical life	20 x 10 ⁶ ops.		20 x 10 ⁶ ops.	20 x 10 ⁶ ops.	
Electrical life (Rated load)	100 x 10 ³ ops. (AC) 25 x 10 ³ ops. (TV-8)	30 x 10 ³ ops. (AC) 25 x 10 ³ ops. (TV-8) (N.O.)	100 x 10 ³ ops. (AC)	100 x 10 ³ ops. (AC) 100 x 10 ³ ops. (DC)	
Operating temperature	-40 to 85 °C		-40 to 85 °C	-40 to 85 °C	
Coil voltage (DC)	18 V		18 to 110 V	5 to 110 V	
Nominal coil power	0.4 W to 0.43 W		0.4 W	0.4 W / 0.43 W	
Surge strength	10.000 V		10.000 V	10.000 V	
Dielectric strength (1 min.)	Open contacts: 1.000VAC Coil and contacts: 5.000VAC		Open contacts: 1.000VAC Coil and contacts: 5.000VAC	Open contacts: 1.000VAC Coil and contacts: 5.000VAC	
Safety standards	UL, CSA, VDE,		UL	UL, CSA, VDE,	
Mounting / Enclosure	Through hole, RTII		Through hole, RTII	Through hole, RTII	
Terminal layout	Bottom view 		Bottom view 	Bottom view 	

Power Relays (10A ~ 20A)

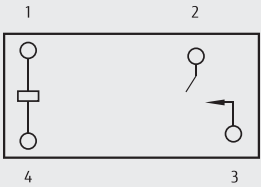
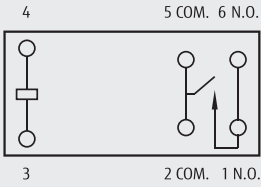
Series Name	FTR-K1-HT	FTR-K1-KW	FTR-K1-LA / LB
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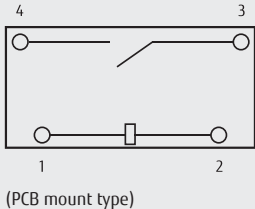
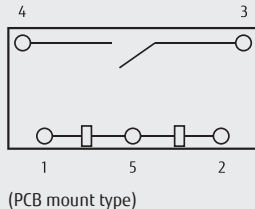
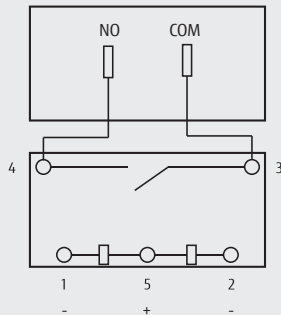
Description	16A High Temperature 105°C Type		16A Plastic Sealed 105°C Type		10A High Sensitive Type	
Type	FTR-K1AK() T-HT	FTR-K1CK() W-HT	FTR-K1AK() W-KW	FTR-K1CK() W-KW	FTR-K1AL() W-(LA, LB)	FTR-K1CL() W-(LA, LB)
Remarks	5mm pitch - Flux free - UL TV-5 (1a) - Creepage/clearance >10mm		5mm pitch - Plastic seal - Creepage/clearance >10mm		- Clear cover types (-RG) - Gold plated contact types (-BG) 3.5mm pitch LA type 5mm pitch LB type - Creepage/clearance >10mm	

Dimensions (W x L x H mm)	12.7 x 29.0 x 15.7		12.7 x 29.0 x 15.7		12.7 x 29.0 x 15.7	
Weight (approx.)	13.0 g		13.0 g		13.0 g	
Contact form	1 a	1 c	1 a	1 c	1 a	1 c
Contact rating (Resistive load)	16A, 250VAC/24VDC		16A, 250VAC		10A, 250VAC	
Minimum switching load (ref.)	5VDC 100mA		5VDC 100mA		5VDC 100mA	
Mechanical life	20 x 10 ⁶ ops.		20 x 10 ⁶ ops.		20 x 10 ⁶ ops.	
Electrical life (Rated load)	100 x 10 ³ ops. (AC) 100 x 10 ³ ops. (DC) 25 x 10 ³ ops. (TV-5, 1A)	50 x 10 ³ ops. (AC) 30 x 10 ³ ops. (DC)	20 x 10 ³ ops. (AC)	10 x 10 ³ ops. (AC)	100 x 10 ³ ops. (LA), 150 x 10 ³ ops. (LB)	100x10 ³ ops. (LA, LB)
Operating temperature	-40 to 105 °C		-40 to 105 °C		40 to 85 °C (LA) -40 to 105 °C (LB)	
Coil voltage (DC)	5 to 110 VDC		5 to 110 V		5 to 48 V	
Nominal coil power	0.4 to 0.43 W		0.4 to 0.43 W		0.25 W	
Surge strength	10.000 V		10.000 V		10.000 V	
Dielectric strength (1 min.)	Open contacts: 1.000VAC Coil and contacts: 5.000VAC		Open contacts: 1.000VAC Coil and contacts: 5.000VAC		Open contacts: 1.000VAC Coil and contacts: 5.000VAC	
Safety standards	UL, VDE		UL, CSA, VDE		UL, CSA, VDE	
Mounting / Enclosure	Through hole / RTII		Through hole / RTIII		Through hole / RTII	
Terminal layout	Bottom view 		Bottom view 		Bottom view 	

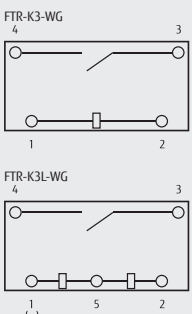
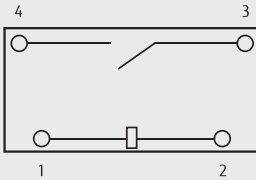
Power Relays (10A ~ 20A)

Series Name	FTR-K2	FTR-K2G
		
Description	16A High Profile Relay	20A 3mm Wide Contact Gap Relay
Type	FTR-K2AK-T	FTR-K2G
Remarks	■ TV-5 rated ■ 1mm contact gap types available (-OK) ■ 3.5mm pitch	■ TV-8 rated ■ 3mm contact gap ■ Reinforced insulation ■ Peak inrush 120A
Dimensions (W x L x H mm)	11.0 x 24.0 x 25.0	16.0 x 35.0 x 28.0
Weight (approx.)	13.0 g	34.0 g
Contact form	1 a	1 a
Contact rating (Resistive load)	16A, 250VAC / 30VDC	20A, 250VAC (120A, 250VAC inrush)
Minimum switching load (ref.)	5VDC 100mA	5VDC 100mA
Mechanical life	2 x 10 ⁶ ops.	1 x 10 ⁶ ops.
Electrical life (Rated load)	100 x 10 ³ ops. 25 x 10 ³ ops. (lamp load TV-5)	100 x 10 ³ ops. 25 x 10 ³ ops. (lamp load TV-8)
Operating temperature	-40 to 70 °C	-40 to 70 °C
Coil voltage (DC)	3 to 48 V	5 to 110 V
Nominal coil power	0.53 W	0.93 W to 1.05 W
Surge strength	10.000 V	10.000 V
Dielectric strength (1 min.)	Open contacts: 1.000VAC Coil and contacts: 4.000VAC	Open contacts: 2.000VAC Coil and contacts: 5.000VAC
Safety standards	UL, CSA, VDE, CQC	UL, VDE
Mounting / Enclosure	Through hole / RTII	Through hole
Terminal layout	Bottom view 	Bottom view 

Power Relays (20A ~ 25A)

Series Name	FTR-K3	FTR-K3L	FTR-K3LV
			
Description	20 - 25A Heavy Load Relay	25A Heavy Load Latching Relay	32A Heavy Load Latching Relay
Type	FTR-K3	FTR-K3L	FTR-K3L
Remarks	■ Tab terminal types (J) ■ Flat types (-F) ■ High insulation type (-LS) ■ High current type (-HC) ■ PCB mount types (A)	■ 2 coil latching type ■ Tab terminal types	■ 2 coil latching type ■ 32A Screw terminal type
Dimensions (W x L x H mm)	15.7 x 30.1 x 23.3 23.3 x 30.9 x 18.2 (-F)	15.7 x 30.1 x 23.3	15.7 x 30.1 x 23.3
Weight (approx.)	25.0 g	25.0 g	27.0 g
Contact form	1 a	1 a	1 a
Contact rating (Resistive load)	20A, 250VAC 25A, 250VAC (-HC, Flat)	25A, 250VAC	32A, 250VAC
Minimum switching load (ref.)	5VDC 100mA	5VDC 100mA	5VDC 100mA
Mechanical life	2 x 10 ⁶ ops.	1 x 10 ⁶ ops.	1 x 10 ⁶ ops.
Electrical life (Rated load)	100 x 10 ³ ops.	100 x 10 ³ ops.	30 x 10 ³ ops.
Operating temperature	-40 to 60 °C	-40 to 85 °C	-40 to 85 °C
Coil voltage (DC)	5 to 48 V	5 to 24 V	5 to 48 V
Nominal coil power	0.78 W	0.9 mW	1.2 W
Surge strength	8.500 V	8.500 V	6.000 V
Dielectric strength (1 min.)	Open contacts: 1.000VAC Coil and contacts: 5.000VAC	Open contacts: 1.000VAC Coil and contacts: 5.000VAC	Open contacts: 2500VAC Coil and contacts: 5.000VAC
Safety standards	UL, CSA, VDE, CQC, TÜV (Flat: UL, CSA, VDE, CQC)	cULus, VDE	
Mounting / Enclosure	Through hole / RTII	Through hole / RTII	Through hole / RTII
Terminal layout	Bottom view  (PCB mount type)	Bottom view  (PCB mount type)	Bottom view 

Power Relays (20A ~ 25A)

Series Name	FTR-K3-WG	FTR-K3-WS
		
Description	25A 1.5mm Contact Gap Relay	25A 1.8mm Contact Gap Relay
Type	FTR-K3-WG	FTR-K3-WS
Remarks	1.5mm contact gap 2 coil latching type available (FTR-K3L-WG)	1.8mm contact gap
Dimensions (W x L x H mm)	15.7 x 30.1 x 23.3	15.7 x 30.1 x 23.3
Weight (approx.)	25.0 g	25.0 g
Contact form	1 a	1 a
Contact rating (Resistive load)	25A, 250VAC	25A, 250VAC
Minimum switching load (ref.)	5VDC 100mA	5VDC 100mA
Mechanical life	2 x 10 ⁶ ops.	100 x 10 ³ ops.
Electrical life (Rated load)	100 x 10 ³ ops.	30 x 10 ³ ops.
Operating temperature	-40 to 60 °C -40 to 85 °C (latch)	-40 to 60 °C
Coil voltage (DC)	5 to 48 V	5 to 48 V
Nominal coil power	0.78 W	1.2 W
Surge strength	8.500 V	8.500 V
Dielectric strength (1 min.)	Open contacts: 2500VAC Coil and contacts: 5.000VAC	Open contacts: 2500VAC Coil and contacts: 5.000VAC
Safety standards	UL, VDE, CQC	UL, VDE
Mounting / Enclosure	Through hole / RTII	Through hole / RTII
Terminal layout	Bottom view 	Bottom view 

Power Relays (30A ~ 120A)

Series Name	FTR-K3-PV	FTR-K3-PS	FTR-K2W
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Description	32A 1.5mm Contact Gap Relay	32A 1.8mm Contact Gap Relay	30A 60VDC / 25A 72VDC 6mm Contact Gap Relay
Type	FTR-K3-PV	FTR-K3-PS	FTR-K2W
Remarks	- High capacity 32A 1.5mm contact gap 2 coil latching type available (FTR-K3L-PV)	- High capacity 32A 1.8mm contact gap	DC high capacity

Dimensions (W x L x H mm)	15.7 x 30.1 x 23.3	15.7 x 30.1 x 23.3	34.9 x 36.5 x 30.2
Weight (approx.)	25.0 g	25.0 g	74.0 g
Contact form	1 a	1 a	1 a
Contact rating (Resistive load)	32A, 250VAC	32A, 250VAC	30A, 60VDC 25A, 72VDC
Minimum switching load (ref.)	5VDC 100mA	5VDC 100mA	5VDC 100mA
Mechanical life	1 x 10 ⁶ ops.	100 x 10 ³ ops.	1 x 10 ⁶ ops.
Electrical life (Rated load)	30 x 10 ³ ops.	30 x 10 ³ ops.	10 x 10 ³ ops.
Operating temperature	-40 to 60 °C -40 to 85 °C (latch)	-40 to 60 °C	-40 to 70 °C
Coil voltage (DC)	5 to 48 V	5 to 48 V	5 to 48 V
Nominal coil power	1.2 W	1.4 W	2 W
Surge strength	6.000 V	6.000 V	10.000 V (1.2 X 50μs)
Dielectric strength (1 min.)	Open contacts: 2.500VAC Coil and contacts: 4.000VAC	Open contacts: 2.500VAC Coil and contacts: 4.000VAC	Open contacts: 2.000VAC Coil and contacts: 5.000VAC
Safety standards	UL, VDE	UL, VDE	cULus, TÜV
Mounting / Enclosure	Through hole / RTII	Through hole / RTII	Through hole / RTII
Terminal layout (bottom view)	Bottom view The diagram shows two terminal layouts. The top one is for FTR-K3-PV with terminals 1, 2, 3, and 4. The bottom one is for FTR-K3L-PV with terminals 1, 5, 2, 3, and 4.	Bottom view The diagram shows a terminal layout with terminals 1, 2, 3, and 4.	Bottom view The diagram shows a terminal layout with terminals 1, 2, 3, 4, 5, 6, 7, and 8.

Power Relays (30A ~ 120A)

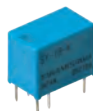
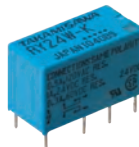
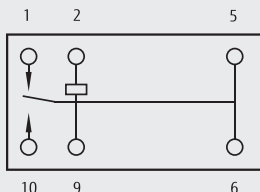
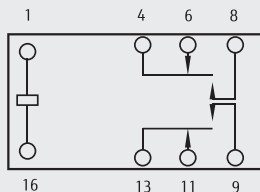
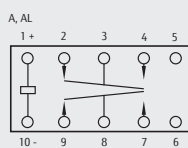
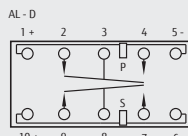
Series Name	FTR-K4
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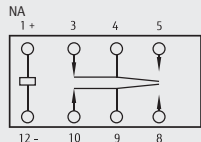
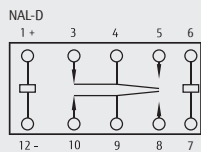
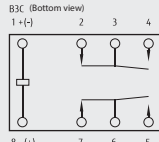
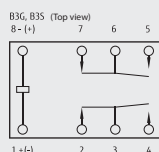
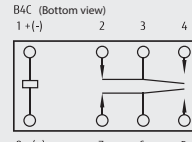
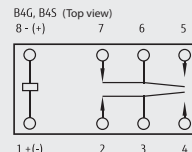
Description	120A High Power Latching Relay
Remarks	■ 2 coil latching type available ■ Meets IEC62055-31 UC 3 category ■ Contact resistance max. 0.5 mΩ (initial)

Dimensions (W x L x H mm)	37.0 x 43.0 x 22.0
Weight (approx.)	70 g
Contact form	1 a
Contact rating (Resistive load)	120A, 277VAC
Minimum switching load (ref.)	50mA, 100VAC
Mechanical life	1 x 10 ⁶ ops.
Electrical life (Rated load)	10 x 10 ³ ops.
Operating temperature	-40 to 85 °C
Coil voltage	100VAC (1 coil latching)
Nominal coil power	18 VA
Surge strength	12.000 V (1.2x50 μs)
Dielectric strength (1 min.)	Open contacts: 2.000VAC Coil and contacts: 4.000VAC
Safety standards	
Mounting / Enclosure	Coil: Through hole, Load: Screw
Terminal layout (bottom view)	Bottom view Reset (contact: OFF) pin No.3(+)/pin No.2(-) Set (contact: ON) pin No.2(+)/pin No.3(-)

Signal Relays (1A ~ 2A)

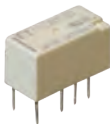
Series Name	SY	RY	A
			
Description	1A to 2A Slim Type Relay	1A to 2A Signal Relay	1A to 2A Low Profile Relay
Remarks	■ DIL pitch terminals ■ Single or bifurcated contact types	■ High dielectric strength types ■ MBB contact available	■ 1 and 2 coil latching versions available ■ DIL pitch terminals
Dimensions (W x L x H mm)	7.4 x 12.5 x 9.5	9.8 x 20.2 x 12.5	9.4 x 14.0 x 5.0
Weight (approx.)	1.7 g	5.0 g	1.2 g
Contact form	1 c	2 c / 2 d	2 c
Contact rating (Resistive load)	0.5A 120VAC, 1A 24VDC	0.5 120VAC, 1A 24VDC (RY-W, WZ) 0.25A 120VAC, 1A 24VDC (RY-WF) 0.4A 100VAC, 2A 30VDC (RY-WFZ)	0.5A 125VAC 1A, 30VDC
Minimum switching load (ref.)	0.1VDC, 0.1mA (SY-W) 1VDC 1mA (SY)	10mVDC 0.01A	10mVDC 0.01mA
Mechanical life	5 x 10 ⁶ ops.	20 x 10 ⁶ ops. (W) 10 x 10 ⁶ ops. (WF, WZ, WFZ)	100 x 10 ⁶ ops. 10 x 10 ⁶ ops. (latching)
Electrical life (Rated load)	100 x 10 ³ ops.	100 x 10 ³ ops. (WFZ) 200 x 10 ³ ops. (W, WZ) (AC) 500 x 10 ³ ops. (W, WZ, WF) (DC)	500 x 10 ³ ops. (DC) 200 x 10 ³ ops. (AC)
Coil voltage (DC)	1.5 to 24 V	3 to 48 V	1.5 to 24 V (48 V Only standard type)
Nominal coil power	0.15 to 0.175 W	0.15 to 0.58 W	0.1 to 0.3 W
Surge strength	1.500 V	1.500 V	1.500 V
Dielectric strength (1 min.)	Open contacts: 300/400VAC Coil and contacts: 1.000VAC	Open contacts: 500VAC (W, WZ, WFZ) 1.000VAC (WF) Coil and contacts: 1.000VAC	Open contacts: 1.000VAC Coil and contacts: 1.000VAC
Safety standards	UL, CSA, FCC68	UL, CSA, FCC68	UL, CSA, FCC68
Mounting / Enclosure	Through hole / RTIII	Through hole / RTIII	Through hole / RTIII
Terminal layout	Bottom view 	Bottom view 	Bottom view  

Signal Relays (1A ~ 2A)

Series Name	NA	FTR-B3	FTR-B4
			
Description	1A to 2A Slim Type Relay	1A to 2A Low Profile Relay	1A to 2A Slim Type Relay
Remarks	Latching type available	- Latching type available - Space saver versions available - THT and SMT versions	- Latching type available - Space saver versions available - THT and SMT versions
Dimensions (W x L x H mm)	7.4 x 14.9 x 9.7	7.2 x 10.6 x 5.45	5.7 x 10.6 x 9.0
Weight (approx.)	1.6 g	0.85 g	1.0 g
Contact form	2 c	2 c	2 c
Contact rating (Resistive load)	0.5A 125VAC 1A 30VDC	0.3A 125VAC 1A 30VDC	0.3A 125VAC 1A 30VDC
Minimum switching load (ref.)	10mVDC 0.01mA	10mVDC 0.01mA	10mVDC 0.01mA
Mechanical life	100 x 10 ⁶ ops. 10 x 10 ⁶ ops. (latching)	50 x 10 ⁶ ops. 20 x 10 ⁶ ops. (latching)	50 x 10 ⁶ ops. 20 x 10 ⁶ ops. (latching)
Electrical life (Rated load)	500 x 10 ³ ops. (DC) 200 x 10 ³ ops. (AC)	100 x 10 ³ ops.	100 x 10 ³ ops.
Coil voltage (DC)	1.5 to 24 V (48V Only standard type)	1.5 to 24 V	1.5 to 24 V
Nominal coil power	0.1 to 0.3 W	0.1 to 0.23 W	0.1 to 0.23 W
Surge strength	2.500 V (NA, NAL) 1.500 V (NAL-D)	2.500 V	2.500 V
Dielectric strength (1 min.)	Open contacts: 1.000VAC Coil and contacts: 1.500VAC (NA, NAL) 1.000VAC (NAL-D)	Open contacts: 1.000VAC Coil and contacts: 1.500VAC	Open contacts: 1.000VAC Coil and contacts: 1.500VAC
Safety standards	UL, CSA, FCC68, Telcordia, IEC60950-1	UL, CSA, BSI, FCC68, Telcordia, IEC60950-1	UL, CSA, FCC68, Telcordia, IEC60950-1
Mounting / Enclosure	Through hole / RTIII	Through hole / Surface mount / RTIII	Through hole / Surface mount / RTIII
Terminal layout	Bottom view  NA 1 + 3 4 5 12 - 10 9 8 NAL-D  1 + 3 4 5 6 12 - 10 9 8 7	Bottom view / Top view  B3C (Bottom view) 1 + (-) 2 3 4 8 - (+) 7 6 5  B3G, B3S (Top view) 8 - (+) 7 6 5 1 + (-) 2 3 4	Bottom view / Top view  B4C (Bottom view) 1 + (-) 2 3 4 8 - (+) 7 6 5  B4G, B4S (Top view) 8 - (+) 7 6 5 1 + (-) 2 3 4

Signal Relays (1A ~ 2A)

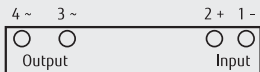
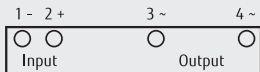
Series Name	FTR-C1	FTR-C2
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Description	1A to 2A Miniature Relay	1A to 2A Miniature Relay
Remarks	■ Latching type available ■ Contact gap 0.6mm ■ Creepage >2.5mm clearance >2mm ■ High surge strength	■ Contact gap 2mm ■ Creepage >2.5mm clearance >2mm ■ THT and SMT versions

Dimensions (W x L x H mm)	7.5 x 15.0 x 9.3	9.85 x 20.05 x 11.4
Weight (approx.)	2.0 g	3.7 g
Contact form	2 c	2 c
Contact rating (Resistive load)	0.3A 125VAC 1A 30VDC	0.3A 125VAC 1A 30VDC
Minimum switching load (ref.)	10mVDC 0.01mA	10mVDC 0.01mA
Mechanical life	10 x 10 ⁶ ops.	10 x 10 ⁶ ops.
Electrical life (Rated load)	100 x 10 ³ ops.	100 x 10 ³ ops.
Coil voltage (DC)	3 to 24 V	3 to 24 V
Nominal coil power	0.14 to 0.3 W	0.15 to 0.3 W
Surge strength	5.000 V	2.500 V
Dielectric strength (1 min.)	Open contacts: 1.500VAC Coil and contacts: 3.000VAC	Open contacts: 1.500VAC Coil and contacts: 2.000VAC
Safety standards	UL, CSA, BSI, Telcordia	UL, CSA, BSI, Telcordia, IEC60950-1
Mounting / Enclosure	Through hole / Surface mount / RTIII	Through hole / Surface mount / RTIII
Terminal layout	Through hole: Bottom view / Surface mount: Top view Through hole (Bottom view) 1+(-) 3 4 5 12+(-) 10 9 8 Surface mount (Top view) 12+(-) 10 9 8 1+(-) 3 4 5	Through hole: Bottom view / Surface mount: Top view Through hole (Bottom view) 1+(-) 4 6 8 16+(-) 13 11 9 Surface mount (Top view) 16+(-) 13 11 9 1+(-) 4 6 8

Solid State Relays (1A ~ 3A)

Series Name		FTR-SL		SE			
							
Description		1A AC SSR		1.5 / 2A AC SSR			
Type				1.5 A type		2 A type	
Remarks		Pin compatible with FTR-LY Internal zero cross circuit available Internal varistor and snubber circuit		Internal zero cross circuit available			
Dimensions (W x L x H mm)		5.0 x 28.0 x 15.0		5.0 x 20.0 x 17.0		5.0 x 20.0 x 20.0	
Weight (approx.)		4.0 g		4.0 g		5.1 g	
Current		1.0 A		1.5 A		2 A	
Voltage type		AC		AC			
Nominal Voltage		5, 12, 24, 60 VDC		3, 5, 12, 24 VDC			
Input side	Impedance	5 V	560 Ω	3 V	130 Ω	3 V	130 Ω
		12 V	1.3k Ω	5 V	330 Ω	5 V	330 Ω
		24 V	2.4k Ω	12 V	1.0k Ω	12 V	1.0k Ω
		60 V	10k Ω	24 V	2.2k Ω	24 V	2.2k Ω
Output side	Load voltage range	AC 24 to 250 VAC rms		24 to 265 V rms			
	Max. load current	1.0 A rms		1.5 A rms		2 A rms	
	Min. load current	0.01 mA rms		10 mA rms			
	1 cycle surge current	50 A		50 A			
	Max. off-state leakage current	1 mA rms		0.5 / 1.0 mA rms		1.0 / 2.0 mA rms	
	Max. on-state voltage drop	1.3 V rms		1.2 V rms		1.3 V rms	
Max. operating time		1/2 cycle + 1 ms		1 ms (without zero cross), 1/2 cycle + 1ms (with zero cross)			
Max. release time		1/2 cycle + 1 ms		1/2 cycle + 1 ms			
Operating temperature		-30°C to 85°C		-30°C to 85°C			
Storage temperature		-40°C to 100°C		-40°C to 100°C			
Dielectric strength (I/O)		2.500 V rms		2.500 V rms			
Safety standards							
Mounting		Through hole		Through hole			
Terminal layout		Bottom view 		Bottom view 			

Solid State Relays (1A ~ 3A)

Series Name	SJ	SN
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Description	1A AC/DC SSR	1A AC/DC SSR
Remarks	- Pin compatible with JY - Internal surge absorber - Socket available	- Compatible with NY - Internal surge absorber - Socket available

Dimensions (W x L x H mm)		10.0 x 20.0 x 12.8				5.0 x 20.0 x 17.0							
						Input module		Output module					
Weight (approx.)		5.5 g				2.0g	3.3 g	3.5 g	2.9 g				
Current		1.0 A						1A					
Voltage type		AC		DC		AC	DC	AC		DC			
Nominal Voltage		3, 5, 12, 24 VDC		5, 12, 24 VDC		100 VAC	12, 24 VDC	3, 5, 12, 24 VDC		5, 12, 24 VDC			
Input side	Impedance	3 V	120 Ω	-	-	-	-	3 V	130/180 Ω	-	-		
		5 V	360 Ω	5 V	430 Ω	-	-	5 V	330/470 Ω	5 V	390 Ω		
		12 V	1.0kΩ	12 V	1.2kΩ	-	-	12 V	1.0/1.5k Ω	12 V	1.2kΩ		
		24 V	2.0kΩ	24 V	2.4kΩ	-	-	24 V	2.2k/3.0kΩ	24 V	2.4kΩ		
Output side	Load voltage range	24 to 265 V rms		3 to 30 VDC		4 to 6 VDC		24 to 265 V rms		3 to 30 VDC			
	Max. load current	1.0 A rms		1.0 A		±4 mA (VDD=5 V)	±0.4 mA (VDD=5 V)	1.0 A rms		1.0 A			
	Min. load current	10 mA rms		1 mA		-	-	10 mA rms		1 mA			
	1 cycle surge current	50 A		3.0 A (10ms)		-	-	50 A		3 A (10ms)			
	Max. off-state leakage current	0.75 / 1.5 mA rms		0.1 mA		-	-	1.5/3.0 mA rms		0.1 mA			
	Max. on-state voltage drop	1.2 V rms		1.2 V		-	-	1.2 V rms		1.2 V			
Max. operating time		1 ms				25 ms	10 ms	1 ms					
Max. release time		1/2 cycle + 1 ms		1 ms		30 ms	10 ms	1/2 cycle + 1 ms		1 ms			
Operating temperature		-30°C to 85°C				-30°C to 85°C							
Storage temperature		-40°C to 100°C				-40°C to 100°C							
Dielectric strength (I/O)		2.500 V rms				2.500 V rms							
Safety standards		UL, CSA											
Mounting		Through hole				Through hole							
Terminal layout		Bottom view				Bottom view							
		SJ - () A SJ - () AN SJ - () D SJ - () DN				SNA 1 ~ 2 ~ 3 4 5 SNC 1 ~ 2 ~ 3 + 4 - SNB 1 +/- 2 +/- 3 4 5 SND 1 + 2 - 3 + 4 -							

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