

# FUJITSU, years of experience

## Relays



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## 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.

### Fujitsu relays

Quality is the key word describing Fujitsu Components' relays.

The relay product range covers automotive, power, signal, high frequency 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/uk/products/devices/components/> to find out more about our business activities.

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### Product Line-Up




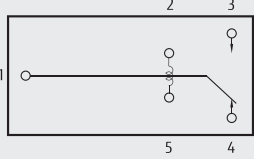
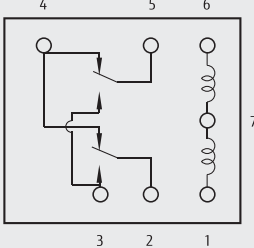
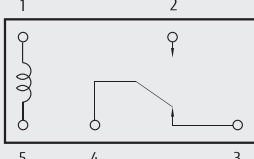
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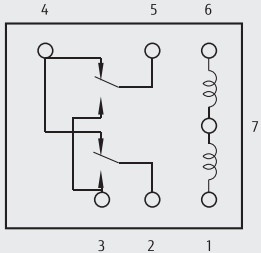
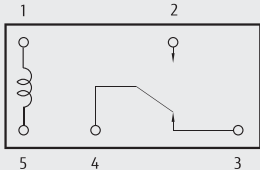
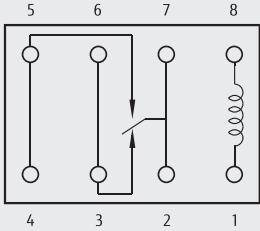
Relays with this logo are available as "Glow Wire" versions. (-GW)  
These relays are IEC60335-1 compliant.

Please refer to your supplier for more information or contact your local Fujitsu Office.  
For contact information, see the last page of this document, or <http://www.fujitsu.com/>



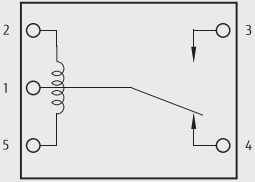
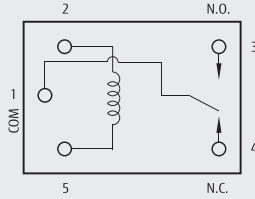
### Automotive Relays (25A)

Series Name	FTR-G1	FTR-P2	FTR-P3
			
Description	25A Compact Relay	25A Low Noise H-bridge Relay	25A Compact Relay
Features	<ul style="list-style-type: none"> <li>■ 0.25mm contact gap</li> <li>■ Average acoustic noise level 57db @ 5cm</li> </ul>	<ul style="list-style-type: none"> <li>■ Pin compatible with FTR-P4</li> <li>■ Average acoustic noise level 50db</li> </ul>	<ul style="list-style-type: none"> <li>■ 0.25 and 0.6mm contact gap types</li> <li>■ THR type available</li> <li>■ High temp. types available (125 °C)</li> <li>■ Pin compatible with FTR-P5</li> </ul>
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
Weight (approx.)	3.5 g	13.0 g	5.0 g
Contact form	1 c	H-bridge	1 c
Contact rating	25A, 14VDC	25A, 14VDC, locked motor load	25A, 14VDC, locked motor load
Expected life on load example	<p>14VDC Inrush 25A window motor 100x10<sup>3</sup> ops.</p> <p>14VDC, locked motor load Inrush 20A, door lock 100x10<sup>3</sup> ops. Inrush 35A, 16VDC</p>	<p>14VDC, free motor load Inrush 17A 300x10<sup>3</sup> ops. 0.25 sec. on 9.75 sec. off</p> <p>14VDC, 25A, locked motor load 100x10<sup>3</sup> ops. 0.25 sec. on 9.75 sec. off</p>	<p>14VDC, free motor load Inrush 17A 300x10<sup>3</sup> ops. 0.25 sec. on 9.75 sec. off</p> <p>14VDC, 25A, locked motor load 100x10<sup>3</sup> ops. 0.25 sec. on 9.75 sec. off</p>
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)			




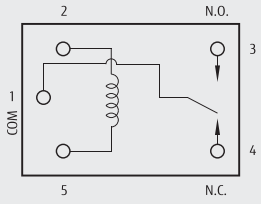
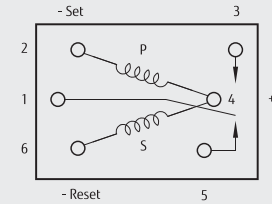
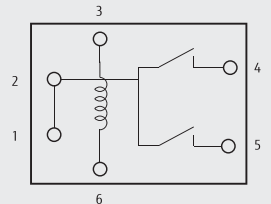
**Automotive Relays (25A)**

Series Name	FTR-P4	FTR-P5	FTR-P6
			
Description	25A H-bridge Relay	25A Low Noise Compact Relay	25A Surface Mount Relay
Features	<ul style="list-style-type: none"> <li>■ 0.25 and 0.6mm contact gap types</li> <li>■ THR type available</li> <li>■ High temp. types available (125 °C)</li> <li>■ Pin compatible with FTR-P2</li> </ul>	<ul style="list-style-type: none"> <li>■ Pin compatible with FTR-P3</li> </ul>	<ul style="list-style-type: none"> <li>■ 0.25mm contact gap</li> <li>■ Average acoustic noise level 60db</li> <li>■ SMD</li> </ul>
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	3.08 g
Contact form	1 cx2 (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	<p>14VDC, 25A, free motor load Inrush 17A 100x10<sup>3</sup> ops. 0.25 sec. on 9.75 sec. off</p> <p>14VDC, 25A, locked motor load 100x10<sup>3</sup> ops. 0.25 sec. on 9.75 sec. off</p>	<p>14VDC, free motor load Inrush 17A 300x10<sup>3</sup> ops. 0.25 sec. on 9.75 sec. off</p> <p>14VDC, 25A, locked motor load 100x10<sup>3</sup> ops. 0.25 sec. on 9.75 sec. off</p>	<p>16VDC, free motor load Inrush 20A 400 x 10<sup>3</sup> ops. 1.5 sec. on 2.0 sec. off</p> <p>16VDC, locked motor load Inrush 25A 100x10<sup>3</sup> ops. 0.5 sec. on 5.5 sec. off</p>
Operating temperature	-40 to 85 °C / 125 °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 / THR	Through hole	Surface Mount
Terminal layout (bottom view)			




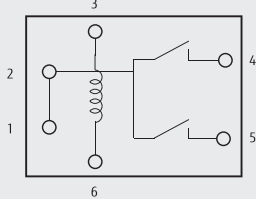
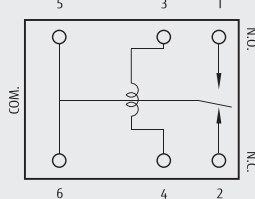
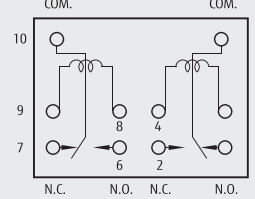
**Automotive Relays (25A)**

Series Name	FTR-P7	FBR51 / 52
		
Description	25A Low Noise Compact Automotive Relay	25 / 30A Compact Automotive Relay
Features	<ul style="list-style-type: none"> <li>■ 0.3 mm contact gap</li> <li>■ Average acoustic noise level 55db</li> </ul>	<ul style="list-style-type: none"> <li>■ 0.3 or 0.6 mm (FBR52)</li> <li>■ THR type available</li> <li>■ High temperature types available 110°C (-HT)</li> <li>■ 60A inrush</li> </ul>
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	1a,1 c
Contact rating	25A, 14VDC	25A, 14VDC, locked motor load
Expected life on load example	14VDC, free motor load inrush 25A 500x10 <sup>3</sup> ops. 0.5 sec. on 3.5 sec. off	14VDC, free motor load Inrush 17A 300x10 <sup>3</sup> ops. 0.25 sec. on 9.75 sec. off  14VDC, 25A, locked motor load 100x10 <sup>3</sup> ops. 0.25 sec. on 9.75 sec. off
Operating temperature	-40 to 85 °C	-40 to 85 °C / 110 °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 / THR
Terminal layout (bottom view)		

**Automotive Relays (25 ~ 40A)**

Series Name	FBR51 / 52 (-WL / -WF)	FBR51L	FBR53
			
Description	25 / 30A Compact Automotive Relay for Special Lamp Loads	25A Dualcoil Latching Compact Automotive Relay	30A Compact Automotive Relay
Features	<ul style="list-style-type: none"> <li>0.3 mm contact gap</li> </ul>	<ul style="list-style-type: none"> <li>Dual coil latching</li> <li>THR type</li> </ul>	<ul style="list-style-type: none"> <li>0.25mm contact gap</li> <li>THR type (-RW)</li> <li>60A inrush</li> </ul>
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
Weight (approx.)	6.0 g	6.0 g	6.0 g
Contact form	1 a	1 c	1 c
Contact rating	80 / 120W, 14VDC lamp load	25A, 14VDC	25A, 14VDC, 30A carry current
Expected life on load example	14VDC, 120W, lamp load Inrush 80A 100x10 <sup>3</sup> ops. (-WL)  Special type for flasher lamp applications (-WF)  80W, lamp load 250x10 <sup>3</sup> ops. (-WF)	14VDC, 25A, locked motor load 200x10 <sup>3</sup> ops. (-W1 type) 50x10 <sup>3</sup> ops. (E type)	14VDC, 25A, resistive load 100x10 <sup>3</sup> ops.  60A Inrush current 30A Carry current
Operating temperature	-40 to 85 °C	-40 to 125 °C	-40 to 125 °C
Coil voltage (DC)	6 to 12 V	6 to 12 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)			

**Automotive Relays (25A ~ 40A)**

Series Name	FBR53-HW	FBR57	FBR572 / 582
			
Description	40A Compact Relay	30A High Power Relay	12/14A High Power Twin Relay
Features	<ul style="list-style-type: none"> <li>■ THR type (-RW)</li> <li>■ High power type</li> <li>■ 80A inrush</li> </ul>	<ul style="list-style-type: none"> <li>■ 0.8mm contact gap</li> <li>■ For 24V battery applications</li> <li>■ 70A inrush</li> </ul>	<ul style="list-style-type: none"> <li>■ 0.25mm contact gap</li> <li>■ For 24V battery applications</li> <li>■ THR type (-RW)</li> <li>■ 60A inrush</li> </ul>
Dimensions (W x L x H mm)	12.1 x 15.5 x 13.7	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 c	1 c	1 c x2
Contact rating	40A, 14VDC	12A, 28VDC	12A, 28VDC
Expected life on load example	14VDC, 40A, resistive load Inrush 80A 100x10 <sup>3</sup> ops.	28VDC, 12A, locked motor load 100x10 <sup>3</sup> ops.  28VDC, 2.5A, free motor load inrush 15A 500x10 <sup>3</sup> ops.  70A max. inrush	28VDC, 12A, locked motor load 100x10 <sup>3</sup> ops.  28VDC, 2.5A, free motor load inrush 15A 500x10 <sup>3</sup> ops.  60A max. inrush
Operating temperature	-40 to 125 °C	-40 to 85°C	-40 to 85 °C
Coil voltage (DC)	9 to 12 V	6 to 12 V	9 to 12 V
Nominal coil power	0.9 W	1.5 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	Through hole
Terminal layout (bottom view)			

### Automotive Relays (45A)

Series Name	FBR59-HW
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Description	45A/60A High Power Relay
Remarks	<ul style="list-style-type: none"> <li>■ THR type (-RW)</li> <li>■ High power type</li> </ul>

Dimensions (W x L x H mm)	15.0 x 20.0 x 16.8
Weight (approx.)	13.0 g
Contact form	1 u
Contact rating	45A, 14VDC, 220A inrush
Expected life on load example	<p>14 VDC, 45A, resistive load 100x10<sup>3</sup> ops.</p> <p>220A max. inrush 60A Carry current</p>
Operating temperature	-40 to 125 °C
Coil voltage (DC)	6 to 12 V
Nominal coil power	0.45 W
Dielectric strength (1 min.)	<p>Open contacts: 500VAC</p> <p>Coil and contacts: 500VAC</p>
Mounting	Through hole / THR
Terminal layout (bottom view)	



### Automotive Relays (450VDC)

Series Name	FTR-E1
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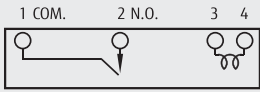

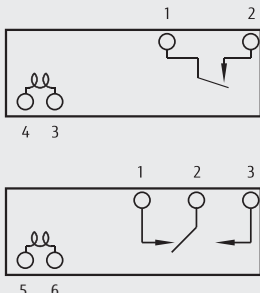


Description	20A, 450VDC High Voltage DC Relay
Remarks	<ul style="list-style-type: none"> <li>■ Contact Fujitsu for details</li> <li>■ PCB, Tab and Plug-in types available</li> </ul>




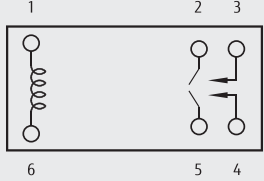
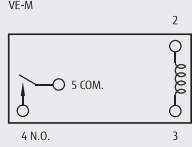
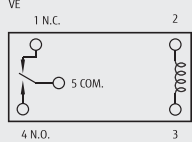
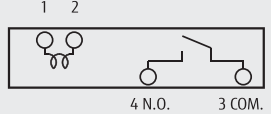
Dimensions (W x L x H mm)	28.0 x 64.5 x 49.5
Weight (approx.)	80.0 g
Contact form	1 a
Contact rating	20A, 450VDC
Expected life on load example	<p>10A, 450VDC 75 x 10<sup>3</sup> ops.</p> <p>20A, 450VDC 25A, 72VDC 30A, 60VDC 10 x 10<sup>3</sup> ops.</p> <p>20A, 450VDC 100 x 10<sup>3</sup> ops. Make only</p> <p>40A / 1hr Carry current</p>
Operating temperature	-40 to 85 °C
Coil voltage (DC)	5 to 48 VDC
Nominal coil power	0.9 W
Dielectric strength (1 min.)	Open contacts: 2500VAC Coil and contacts: 5000VAC
Mounting	PCB-, Tab and plug-in terminals

Terminal layout (bottom view)	
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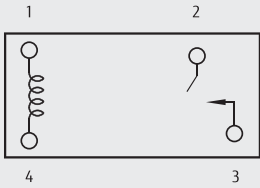
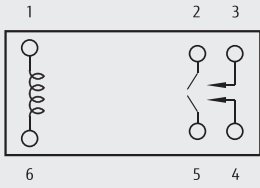
**Power Relays (3 ~ 5A)**

Series Name	NY	JY	FTR-F3
			 
Description	5A Slim Type Relay	3/5A Compact Relay	3/5/10A Slim Type Relay
Remarks	<ul style="list-style-type: none"> <li>■ Socket available (-NYP)</li> <li>■ Compliant to IEC61010-2-201 and 61131</li> </ul>	<ul style="list-style-type: none"> <li>■ Socket available (-P)</li> <li>■ Bifurcated contacts</li> <li>■ AgCd types not for new designs</li> </ul>	<ul style="list-style-type: none"> <li>■ Right angle versions (1 a)</li> <li>■ TV-3, TV-5 rating types available</li> <li>■ 1 form c type available</li> <li>■ Sealed/Flux proof</li> <li>■ IEC60335-1 types (-GW)</li> <li>■ IOA types available</li> <li>■ AgNi contacts</li> </ul>
Dimensions (W x L x H mm)	5.0 x 20.1 x 17.5	10.0 x 20.0 x 12.8	7.0 x 20.3 x 15.0
Weight (approx.)	3.5 g	5.0 g	4.0 g
Contact form	1 a	1 a	1 a, 1 c
Contact rating (Resistive load)	5A, 250VAC/30VDC	3A, 250VAC/30VDC 5A, 250VAC/30VDC	3A, 150VAC/30VDC 5A, 250VAC/30VDC 10A, 250VAC/30VDC
Minimum switching load (ref.)	5VDC, 1mA	100m VDC 0.1mA 5VDC 10mA 5VDC 100mA	5VDC 10mA 5VDC 100mA
Mechanical life	20 x 10 <sup>6</sup> ops.	20 x 10 <sup>6</sup> ops.	5 x 10 <sup>6</sup> ops.
Electrical life (Rated load)	100 x 10 <sup>3</sup> ops. (at 3A, 250VAC, 30VDC) 50 x 10 <sup>3</sup> ops. (at 5A, 250VAC)	100 x 10 <sup>3</sup> ops.	50 x 10 <sup>3</sup> ops. (10A, 250VAC) 100 x 10 <sup>3</sup> ops. (at 5A, 250VAC) 200 x 10 <sup>3</sup> ops. (at 3A, 250VAC)
Operating temperature	-40 to 90 °C	-40 to 90 °C	-40 to 70 °C
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)			



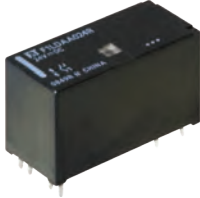


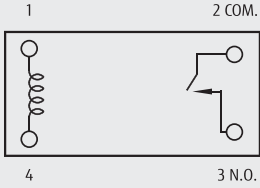
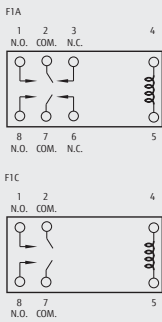
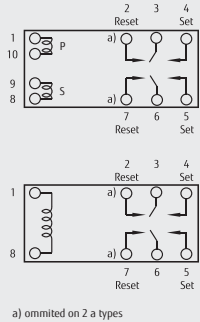
**Power Relays (3 ~ 5A)**

Series Name	FTR-F4	VE	FTR-MY
			
<b>Description</b>	5A TV3 Compact Relay	5A Medium Load Relay	5A Slim Type Relay
<b>Remarks</b>	<ul style="list-style-type: none"> <li>■ Flux proof types</li> <li>■ TV-3 rated</li> <li>■ 8A type (FTR-F4R)</li> <li>■ 1.5mm contactgap types (FTR-F4g)</li> </ul>	<ul style="list-style-type: none"> <li>■ High sensitive types</li> <li>■ Cd types (not for new designs)</li> </ul>	<ul style="list-style-type: none"> <li>■ Gold plated contacts</li> <li>■ AgNi contacts</li> <li>■ Compliant to IEC61010-2-201</li> </ul>
<b>Dimensions (W x L x H mm)</b>	12.0 x 24.0 x 25.0	10.5 x 20.5 x 20.5	5.0 x 20.0 x 12.0
<b>Weight (approx.)</b>	12.0 g	8.0 g	2.5 g
<b>Contact form</b>	2 a	1 a, 1 c	1 a
<b>Contact rating (Resistive load)</b>	5A, 250VAC/30VDC	VE-( ) H5 5A, 250VAC VE-( ) H 3A/5A, 250VAC	5A, 250VAC/30VDC
<b>Minimum switching load (ref.)</b>	5VDC, 100mA	5VDC, 10mA (gold plated contacts) 5VDC, 100mA	5VDC 1mA
<b>Mechanical life</b>	2 x 10 <sup>6</sup> ops.	10 x 10 <sup>6</sup> ops.	20 x 10 <sup>6</sup> ops.
<b>Electrical life (Rated load)</b>	100 x 10 <sup>3</sup> ops. 25.10 <sup>3</sup> (TV3)	100 x 10 <sup>3</sup> ops. (VE) 50 x 10 <sup>3</sup> ops. (VE-S)	100 x 10 <sup>3</sup> ops.
<b>Operating temperature</b>	-40 to 70 °C	-40 to 85 °C	-40 to 90 °C
<b>Coil voltage (DC)</b>	5 to 48 V	5 to 48 V	4.5 to 24 V
<b>Nominal coil power</b>	0.153 W	0.25 to 0.36 W	0.11 W
<b>Surge strength</b>	10,000 V	4,000 V / 6,000 V	5,080 V
<b>Dielectric strength (1 min.)</b>	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: 4000VAC
<b>Safety standards</b>	UL, CSA, VDE, CQC	UL, CSA, VDE, CQC	UL, CSA, VDE, CQC
<b>Mounting / Enclosure</b>	Through hole / RTII	Through hole / RTIII	Through hole / RTIII
<b>Terminal layout (bottom view)</b>		 	

**Power Relays (3 ~ 5A)**






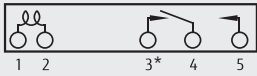
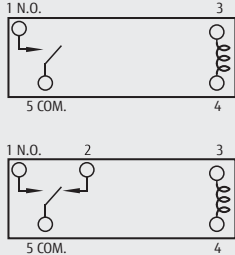
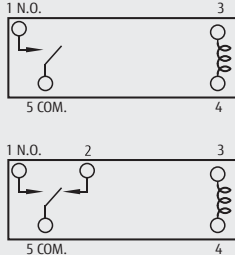
Series Name	FTR-F2	FTR-F4G
		
<b>Description</b>	5A High profile Relay	5A High Profile Wide Contact Gap Relay
<b>Remarks</b>	<ul style="list-style-type: none"> <li>■ TV-5 rated</li> <li>■ TV8 Version (F2P)</li> <li>■ High sensitive coil types</li> </ul>	<ul style="list-style-type: none"> <li>■ 1.5mm contact gap</li> <li>■ TV-3 rated</li> <li>■ Flux proof and sealed types</li> </ul>
<b>Dimensions (W x L x H mm)</b>	11.0 x 24.0 x 25.0	12.7 x 28.7 x 25.2
<b>Weight (approx.)</b>	13.0 g	18.0 g
<b>Contact form</b>	1 a	2 a
<b>Contact rating (Resistive load)</b>	5A, 250VAC/30VDC	5A, 250VAC
<b>Minimum switching load (ref.)</b>	5VDC 100mA	5VDC, 100mA
<b>Mechanical life</b>	20 x 10 <sup>6</sup> ops.	500 x 10 <sup>3</sup> ops.
<b>Electrical life (Rated load)</b>	100 x 10 <sup>3</sup> ops.	100 x 10 <sup>3</sup> ops. 20 x 10 <sup>3</sup> Sealed version
<b>Operating temperature</b>	-40 to 70 °C	-40 to 70 °C
<b>Coil voltage (DC)</b>	5 to 48 V	3 to 48 V
<b>Nominal coil power</b>	0.25 to 0.35 W	0.8 W
<b>Surge strength</b>	10,000 V	10,000 V
<b>Dielectric strength (1 min.)</b>	Open contacts: 1000VAC Coil and contacts: 4000VAC	Open contacts: 1000VAC Coil and contacts: 4000VAC
<b>Safety standards</b>	UL, CSA, VDE, CQC	UL, TUV
<b>Mounting / Enclosure</b>	Through hole / RTII	Through hole / RTII / RTIII
<b>Terminal layout (bottom view)</b>		

**Power Relays (5A ~ 10A)**




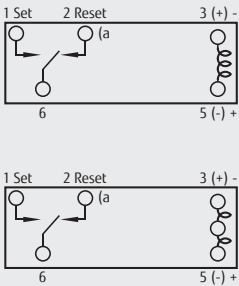
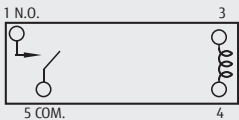
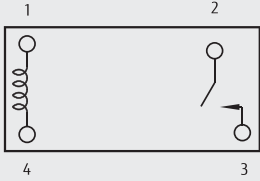
Series Name	JV	FTR-F1	FTR-F1L
			
			
<b>Description</b>	5A/10A Medium Load Relay	5A / 8A Low Profile Relay	8A Low Profile Latching Relay
<b>Remarks</b>	<ul style="list-style-type: none"> <li>■ High sensitive type available</li> <li>■ 10A type JV-KS (TV 4)</li> <li>■ IEC60335-1 types (-GW)</li> </ul>	<ul style="list-style-type: none"> <li>■ Pin compatible with VB series</li> <li>■ TV-3 rating available (2 a)</li> <li>■ Clear cover available (-RG)</li> <li>■ Sensitive coil types</li> <li>■ 8A types FTR-F1R</li> </ul>	<ul style="list-style-type: none"> <li>■ Latching relay</li> <li>■ 1 and 2 coil types</li> <li>■ 1A, 2A types</li> </ul>
<b>Dimensions (W x L x H mm)</b>	10.0 x 17.5 x 12.5	12.8 x 29.0 x 16.5	12.8 x 29.0 x 16.5
<b>Weight (approx.)</b>	4.3 g	12.0 g	13.0 g
<b>Contact form</b>	1 a	2 a, 2 c	2 a, 2 c
<b>Contact rating (Resistive load)</b>	5A, 250VAC/30VDC 10A, 250VAC/30VDC	5A, 250VAC/24VDC 8A, 250VAC/24VDC	8A, 250VAC/24VDC
<b>Minimum switching load (ref.)</b>	5VDC, 10mA (5A type) 5VDC, 100mA (10A type)	5VDC 10mA	5VDC 10mA
<b>Mechanical life</b>	5 x 10 <sup>6</sup> ops.	20 x 10 <sup>6</sup> ops.	3 x 10 <sup>6</sup> ops.
<b>Electrical life (Rated load)</b>	100 x 10 <sup>3</sup> ops.	100 x 10 <sup>3</sup> ops. 25 x 10 <sup>3</sup> (TV3) 50 x 10 <sup>3</sup> (F1R)	50 x 10 <sup>3</sup> ops.
<b>Operating temperature</b>	-40 to 70 °C / 85 °C	-40 to 75 °C	-40 to 85 °C
<b>Coil voltage (DC)</b>	3 to 48 V	3 to 110 V	5 to 24 V
<b>Nominal coil power</b>	0.2 to 0.3 W	0.4 to 0.53 W	0.4 to 0.6 W (30 to 100 ms)
<b>Surge strength</b>	10.000 V	10.000 V	10.000 V
<b>Dielectric strength (1 min.)</b>	Open contacts: 750VA Coil and contacts: 5000VAC	Open contacts: 1000VAC Coil and contacts: 5000VAC	Open contacts: 1000VAC Coil and contacts: 5000VAC
<b>Safety standards</b>	UL, CSA, VDE, CQC	UL, CSA, VDE, BSI, IMQ	UL, CSA, VDE, CQC
<b>Mounting / Enclosure</b>	Through hole / RTIII	Through hole / RTIII	Through hole / RTIII
<b>Terminal layout (bottom view)</b>		 <p>F1A</p> <p>F1C</p>	

a) omitted on 2 a types



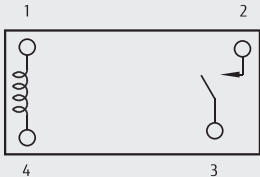
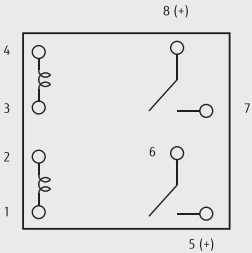
**Power Relays (5A ~ 10A)**

Series Name	FTR-LY	JS	JS-RW
		 	 
Description	6A Slim Type Relay	8A Low Profile Relay	8A Low Profile Relay Reflow Capable
Remarks	<ul style="list-style-type: none"> <li>■ Ultra slim</li> <li>■ Socket type available</li> <li>■ Right angle type available</li> <li>■ Compliant to IEC61010-2-201</li> </ul>	<ul style="list-style-type: none"> <li>■ 3.2 and 5 mm pitch types</li> <li>■ AgCd types (not for new designs)</li> <li>■ IEC60335-1 types (-GW)</li> <li>■ 3μAu versions</li> </ul>	<ul style="list-style-type: none"> <li>■ Reflow solderable relay (RTH)</li> <li>■ 3.2 and 5 mm pitch types</li> <li>■ Flux proof</li> <li>■ Contact Fujitsu for details</li> <li>■ 3μAu versions</li> </ul>
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 10mA	5VDC 100mA
Mechanical life	10 x 10 <sup>6</sup> ops.	20 x 10 <sup>6</sup> ops.	20 x 10 <sup>6</sup> ops.
Electrical life (Rated load)	30 x 10 <sup>3</sup> ops. to 60 x 10 <sup>3</sup> ops.	20 x 10 <sup>3</sup> ops. to 100 x 10 <sup>3</sup> ops. (Depends on contact material)	20 x 10 <sup>3</sup> ops. to 100 x 10 <sup>3</sup> ops.
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, BSI, CQC	Pending
Mounting / Enclosure	Through hole / RTIII	Through hole / RTIII	Through hole / Reflow (THR) / RTII
Terminal layout (bottom view)	 <p>*omitted on 1 form A type</p>		

**Power Relays (5A ~ 10A)**

Series Name	JSL	JS-KS	FTR-H2
			
<b>Description</b>	8A Low Profile Latching Relay	8A Low Profile High Inrush Relay	10A High Profile Relay
<b>Remarks</b>	<ul style="list-style-type: none"> <li>■ Latching type</li> <li>■ 1 and 2 coil types available</li> <li>■ 3.2mm pitch</li> </ul>	<ul style="list-style-type: none"> <li>■ 1000W lamp load</li> <li>■ 65A inrush (TV4)</li> <li>■ 5mm pitch</li> </ul>	<ul style="list-style-type: none"> <li>■ TV-5 rated</li> <li>■ High sensitive types</li> <li>■ 3.5mm pitch</li> </ul>
<b>Dimensions (W x L x H mm)</b>	10.0 x 29.0 x 12.5	10.0 x 29.0 x 12.5	11.0 x 24.0 x 25.0
<b>Weight (approx.)</b>	8.0 g	8.0 g	13.0 g
<b>Contact form</b>	1 a, 1 c	1 a	1 a
<b>Contact rating (Resistive load)</b>	8A, 250VAC/24VDC	8A, 250VAC/24VDC	10A, 250VAC/30VDC
<b>Minimum switching load (ref.)</b>	5VDC 100mA	5VDC 100mA	5VDC 10mA
<b>Mechanical life</b>	5 x 10 <sup>6</sup> ops.	20 x 10 <sup>6</sup> ops.	20 x 10 <sup>6</sup> ops.
<b>Electrical life (Rated load)</b>	50 x 10 <sup>3</sup> ops.	100k @ rated load 25k @ 1000W lamp load (TV4)	100 x 10 <sup>3</sup> ops. to 25 x 10 <sup>3</sup> ops. (TV-5)
<b>Operating temperature</b>	-40 to 85 °C	-40 to 85 °C	-40 to 70 °C
<b>Coil voltage (DC)</b>	3 to 24 V	5 to 60 VDC	5 to 48 V
<b>Nominal coil power</b>	0.22 (20 to 1000ms)	0.22 to 290mw	0.25 to 0.53 W
<b>Surge strength</b>	10.000 V	10.000 V	10.000 V
<b>Dielectric strength (1 min.)</b>	Open contacts: 1000VAC Coil and contacts: 5000VAC	Open contacts: 1000VAC Coil and contacts: 5000VAC	Open contacts: 1.000VAC Coil and contacts: 4.000VAC
<b>Safety standards</b>	UL, CSA, VDE	UL, CSA, VDE	UL, CSA, VDE, CQC
<b>Mounting / Enclosure</b>	Through hole / RT III	Through hole / RT III	Through hole / RT II / RT III
<b>Terminal layout (bottom view)</b>	 <p>(a omitted on 1 a types)</p>		

**Power Relays (5 ~ 10A)**

Series Name	FTR-H3	FTR-J2
		
<b>Description</b>	10A Low Noise, High Inrush, Low Profile Relay	10A, 450VDC Small High Voltage DC Relay
<b>Remarks</b>	<ul style="list-style-type: none"> <li>■ Pin compatible with FTR-H1 series (1 form A)</li> <li>■ Noise level 50dB</li> <li>■ TV-5 and TV-8 rating types</li> </ul>	<ul style="list-style-type: none"> <li>■ Special arc extinguishing provision</li> <li>■ 150A inrush</li> </ul>
<b>Dimensions (W x L x H mm)</b>	13.7 x 28.8 x 18.8	23.5 x 24.0 x 27.0
<b>Weight (approx.)</b>	13.0 g	26.0 g
<b>Contact form</b>	1 a	2 x 1 a, 1 x 1 a
<b>Contact rating (Resistive load)</b>	10A, 250VAC/30VDC	10A, 200VDC x 2 or 10A, 450VDC 600VDC max. switching voltage
<b>Minimum switching load (ref.)</b>	5VDC 100mA	5VDC, 100mA
<b>Mechanical life</b>	20 x 10 <sup>6</sup> ops.	2 x 10 <sup>6</sup> ops.
<b>Electrical life (Rated load)</b>	100 x 10 <sup>3</sup> ops. to 25 x 10 <sup>3</sup> ops. (TV-5, TV-8)	10 x 10 <sup>3</sup> ops.
<b>Operating temperature</b>	-40 to 75 °C	-40 to 85 °C
<b>Coil voltage (DC)</b>	5 to 48 V	5 to 110 V
<b>Nominal coil power</b>	0.53 W	0.53 to 1.06 W
<b>Surge strength</b>	10.000 V	10.000 V
<b>Dielectric strength (1 min.)</b>	Open contacts: 1.000VAC Coil and contacts: 5.000VAC	Open contacts: 1.000VAC Coil and contacts: 4.000VAC
<b>Safety standards</b>	UL, CSA, VDE, CQC	UL, VDE
<b>Mounting / Enclosure</b>	Through hole	Through hole / RT II
<b>Terminal layout (bottom view)</b>		



**Power Relays (>10A ~ 20A)**

Series Name	FTR-K1	FTR-K1-(RG)	FTR-K1-E
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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	<ul style="list-style-type: none"> <li>■ Au plated types (-BG)</li> <li>■ 5mm pitch</li> </ul>		<ul style="list-style-type: none"> <li>■ Cover material PC</li> <li>■ Max operating temp. 70°C</li> <li>■ 10A / 12A types</li> <li>■ 3.5mm / 5.0mm pitch</li> <li>■ AgNi types</li> </ul>		<ul style="list-style-type: none"> <li>■ Contact material AgNi</li> <li>■ Clear cover types (-RG)</li> <li>■ 5mm pitch</li> </ul>	

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 <sup>6</sup> ops.		20 x 10 <sup>6</sup> ops.		20 x 10 <sup>6</sup> ops.	
Electrical life (Rated load)	100 x 10 <sup>3</sup> ops. (AC)	50 x 10 <sup>3</sup> ops. (AC)	100 x 10 <sup>3</sup> ops. (AC)	50 x 10 <sup>3</sup> ops. (AC)	100 x 10 <sup>3</sup> ops. (AC)	50 x 10 <sup>3</sup> ops. (AC)
	100 x 10 <sup>3</sup> ops. (DC)	30 x 10 <sup>3</sup> ops. (DC)	100 x 10 <sup>3</sup> ops. (DC)	30 x 10 <sup>3</sup> ops. (DC)	100 x 10 <sup>3</sup> ops. (DC)	30 x 10 <sup>3</sup> ops. (DC)
	25 x 10 <sup>3</sup> ops. (TV-5)	25 x 10 <sup>3</sup> ops. (TV-5) (N.O.)	25 x 10 <sup>3</sup> ops. (TV-5)	25 x 10 <sup>3</sup> ops. (TV-5) (N.O.)	25 x 10 <sup>3</sup> ops. (TV-5)	25 x 10 <sup>3</sup> ops. (TV-5) (N.O.)
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 W		0.4 W		0.4 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)	<p>K1AK 5 6 7 COM. 8 N.O. 4 3 2 COM. 1 N.O.</p> <p>K1CK 5 6 7 COM. 8 N.O. 4 3 2 COM. 1 N.O.</p>		<p>K1AK 5 6 7 COM. 8 N.O. 4 3 2 COM. 1 N.O.</p> <p>K1CK 5 6 7 COM. 8 N.O. 4 3 2 COM. 1 N.O.</p>		<p>K1AK 5 6 7 COM. 8 N.O. 4 3 2 COM. 1 N.O.</p> <p>K1CK 5 6 7 COM. 8 N.O. 4 3 2 COM. 1 N.O.</p>	

**Power Relays (>10A ~ 20A)**

Series Name	FTR-K1-KS	FTR-K1-HC	FTR-K1-MA / MB
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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		■ 5mm pitch	■ Au plated types (-BG) ■ Clear cover types (-RG) ■ 3.5mm pitch. MA type ■ 5mm pitch MB type	

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 <sup>6</sup> ops.		20 x 10 <sup>6</sup> ops.	20 x 10 <sup>6</sup> ops.	
Electrical life (Rated load)	100 x 10 <sup>3</sup> ops. (AC) 25 x 10 <sup>3</sup> ops. (TV-8)	30 x 10 <sup>3</sup> ops. (AC) 25 x 10 <sup>3</sup> ops. (TV-8) (N.O.)	100 x 10 <sup>3</sup> ops. (AC) 25 x 10 <sup>3</sup> ops. (TV-5)	100 x 10 <sup>3</sup> ops. (AC) 100 x 10 <sup>3</sup> ops. (DC)	
Operating temperature	-40 to 85 °C		-40 to 85 °C	-40 to 85 °C	
Coil voltage (DC)	5 to 110 V		5 to 110 V	5 to 110 V	
Nominal coil power	0.4 W / 0.43 W		0.4 W / 0.43 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, CSA, VDE,	UL, CSA, VDE,	
Mounting / Enclosure	Through hole, RTII		Through hole, RTII	Through hole, RTII	
Terminal layout (bottom view)	<p>K1AK 5 6 7 COM. 8 N.O. 4 3 2 COM. 1 N.O.</p> <p>K1CK 5 6 7 COM. 8 N.O. 4 3 2 COM. 1 N.O.</p>		<p>K1AK 5 6 7 COM. 8 N.O. 4 3 2 COM. 1 N.O.</p> <p>K1CK 5 6 7 COM. 8 N.O. 4 3 2 COM. 1 N.O.</p>	<p>5 6 N.C. 8 N.O. 4 2 COM.</p>	

**Power Relays (>10A ~ 20A)**




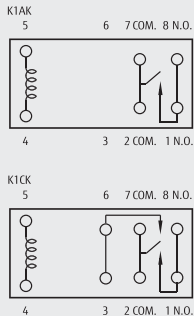
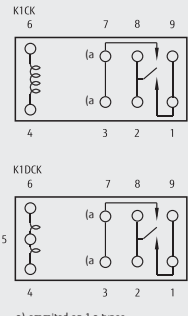
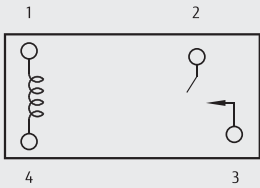
Series Name	FTR-K1-HT	FTR-K1-KW	FTR-K1-LA / LB
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Description	16A High Temperature 105°C Type		16A Plastic Sealed 105°C Type		10A High Sensitive Type	
Type	FTR-K1AK( ) T-HT	FTR-K1CK( ) W-HT	FTR-K1AK( ) W-KW	FTR-K1CK( ) W-KW	FTR-K1AL( ) W-(LA, LB)	FTR-K1CL( ) W-LA
Remarks	■ 5mm pitch		■ 5mm pitch		<ul style="list-style-type: none"> <li>■ Clear cover types (-RG)</li> <li>■ Gold plated contact types (-BG)</li> <li>■ 3.5mm pitch LA type</li> <li>■ 5mm pitch LB type</li> </ul>	

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 <sup>6</sup> ops.		20 x 10 <sup>6</sup> ops.		20 x 10 <sup>6</sup> ops.	
Electrical life (Rated load)	100 x 10 <sup>3</sup> ops. (AC) 100 x 10 <sup>3</sup> ops. (DC) 25 x 10 <sup>3</sup> ops. (TV-5)	50 x 10 <sup>3</sup> ops. (AC) 30 x 10 <sup>3</sup> ops. (DC)	20 x 10 <sup>3</sup> ops. (AC) 10 x 10 <sup>3</sup> ops. (TV-8)	10 x 10 <sup>3</sup> ops. (AC) 10 x 10 <sup>3</sup> ops. (TV-8) (N.O.)	100 x 10 <sup>3</sup> ops. (AC) 100 x 10 <sup>3</sup> ops. (DC) 25 x 10 <sup>3</sup> ops. (TV-5)	50 x 10 <sup>3</sup> ops. (AC) 30 x 10 <sup>3</sup> ops. (DC) 25 x 10 <sup>3</sup> ops. (TV-5) (N.O.)
Operating temperature	-40 to 105 °C		-40 to 105 °C		-40 to 105 °C	
Coil voltage (DC)	5 to 110 VDC		5 to 110 V		5 to 110 V	
Nominal coil power	0.4 W		0.4 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, CSA, VDE		UL, CSA, VDE		UL, CSA, VDE	
Mounting / Enclosure	Through hole / RTII		Through hole / RTIII		Through hole / RTII	
Terminal layout (bottom view)	<p>K1AK 5 6 7 COM. 8 N.O. 4 3 2 COM. 1 N.O.</p> <p>K1CK 5 6 7 COM. 8 N.O. 4 3 2 COM. 1 N.O.</p>	<p>K1AK 5 6 7 COM. 8 N.O. 4 3 2 COM. 1 N.O.</p> <p>K1CK 5 6 7 COM. 8 N.O. 4 3 2 COM. 1 N.O.</p>	<p>K1L-LA 5 6 N.C. 8 N.O. 4 2 COM.</p> <p>K1L-LB 5 7 COM. 8 N.O. 4 2 COM. 1 N.O.</p>			

**Power Relays (>10A ~ 20A)**

Series Name	FTR-K1T		FTR-K1L		FTR-K2
					
<b>Description</b>	17A Tab Terminal Type		16A Latching Type		16A High Profile Relay
<b>Type</b>	FTR-K1TAK	FTR-K1TBK	FTR-K1L(D) AK( )T	FTR-K1L(D) CK( )W	FTR-K2AK-T
<b>Remarks</b>	<ul style="list-style-type: none"> <li>■ Au plated contacts (-BG)</li> <li>■ Horizontal / vertical tabs</li> <li>■ TV-5 rated</li> </ul>		<ul style="list-style-type: none"> <li>■ 1 and 2 coil types</li> <li>■ TV-5 rated</li> </ul>		<ul style="list-style-type: none"> <li>■ TV-5 rated</li> <li>■ 1mm contact gap types</li> <li>■ 3.5mm pitch</li> </ul>
<b>Dimensions (W x L x H mm)</b>	12.7 x 44.5 x 15.7	12.7 x 40.5 x 15.7	12.7 x 29.0 x 15.7		11.0 x 24.0 x 25.0
<b>Weight (approx.)</b>	14.8 g		13.0 g		13.0 g
<b>Contact form</b>	1 a	1 b	1 a	1 c	1 a
<b>Contact rating (Resistive load)</b>	17A, 250VAC		16A, 250VAC/24VDC		16A, 250VAC / (125VAC) / 30VDC
<b>Minimum switching load (ref.)</b>	5VDC 100mA		5VDC 100mA		5VDC 100mA
<b>Mechanical life</b>	20 x 10 <sup>6</sup> ops.		3 x 10 <sup>6</sup> ops.		1 x 10 <sup>6</sup> ops.
<b>Electrical life (Rated load)</b>	100 x 10 <sup>3</sup> ops. (AC) 25 x 10 <sup>3</sup> ops. (TV-5)	50 x 10 <sup>3</sup> ops. (AC)	100 x 10 <sup>3</sup> ops. (AC) 100 x 10 <sup>3</sup> ops. (DC) 25 x 10 <sup>3</sup> ops. (TV-5)	50 x 10 <sup>3</sup> ops. (AC) 30 x 10 <sup>3</sup> ops. (AC) 25 x 10 <sup>3</sup> ops. (TV-5) (N.O.)	100 x 10 <sup>3</sup> ops. 25 x 10 <sup>3</sup> ops. (TV-8)
<b>Operating temperature</b>	-40 to 105 °C		-40 to 105 °C		-40 to 70 °C
<b>Coil voltage (DC)</b>	5 to 110 VDC		5, 12, 24 V		5 to 110 V
<b>Nominal coil power</b>	0.4 W		1 Coil 0.4 W, 2 Coil 0.6 W		0.53 W
<b>Surge strength</b>	10.000 V		10.000 V		10.000 V
<b>Dielectric strength (1 min.)</b>	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: 4.000VAC
<b>Safety standards</b>	CSA, VDE		VDE, cULus		UL, CSA, VDE, CQC
<b>Mounting / Enclosure</b>	Through hole / RTII		Through hole / RTII		Through hole / RTII
<b>Terminal layout (bottom view)</b>			 <p>a) omitted on 1 a types</p>		

**Power Relays (>10A ~ 20A)**

<b>Series Name</b>	<b>FTR-K2G</b>
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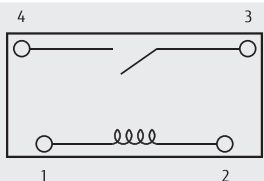
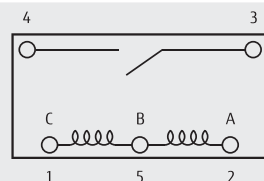
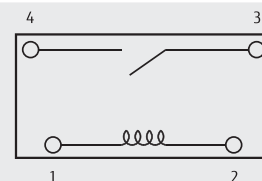


<b>Description</b>	<b>20A 3mm Wide Contact Gap Relay</b>
<b>Type</b>	FTR-K2G
<b>Remarks</b>	<ul style="list-style-type: none"> <li>■ TV-8 rated</li> <li>■ 3mm contact gap</li> <li>■ Reinforced insulation</li> <li>■ Full disconnection</li> </ul>

<b>Dimensions (W x L x H mm)</b>	16.0 x 35.0 x 28.0
<b>Weight (approx.)</b>	34.0 g
<b>Contact form</b>	1 a
<b>Contact rating (Resistive load)</b>	20A, 250VAC (120A TV-8 inrush)
<b>Minimum switching load (ref.)</b>	5VDC 100mA
<b>Mechanical life</b>	1 x 10 <sup>6</sup> ops.
<b>Electrical life (Rated load)</b>	100 x 10 <sup>3</sup> ops. 25 x 10 <sup>3</sup> ops. (TV-8)
<b>Operating temperature</b>	-40 to 70 °C
<b>Coil voltage (DC)</b>	5 to 110 V
<b>Nominal coil power</b>	0.93 W / 1.05 W
<b>Surge strength</b>	10.000 V
<b>Dielectric strength (1 min.)</b>	Open contacts: 1.000VAC Coil and contacts: 5.000VAC
<b>Safety standards</b>	UL, VDE
<b>Mounting / Enclosure</b>	Through hole

<b>Terminal layout (bottom view)</b>	<p>4                      5 COM. 6 N.O.</p> <p>3                      2 COM. 1 N.O.</p>
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**Power Relays (20A ~ 25A)**

Series Name	FTR-K3	FTR-K3L	FTR-K3-WG
			
<b>Description</b>	20 - 25A Heavy Load Relay	25 - 32A Heavy Load Latching Relay	25A 1.5mm Contact Gap Relay
<b>Type</b>	FTR-K3	FTR-K3L	FTR-K3-WG
<b>Remarks</b>	<ul style="list-style-type: none"> <li>■ Tab terminal types (J)</li> <li>■ Flat types (-F)</li> <li>■ High insulation type (-LS)</li> <li>■ High current type (-HC)</li> <li>■ PCB tab types (A)</li> </ul>	<ul style="list-style-type: none"> <li>■ 2 coil latching type</li> <li>■ Screw terminal type (-LV)</li> <li>■ Tab terminal types</li> </ul>	<ul style="list-style-type: none"> <li>■ 1.5mm contact gap</li> <li>■ 2 coil latching type available (FTR-K3L-WG)</li> </ul>
<b>Dimensions (W x L x H mm)</b>	15.7 x 30.1 x 23.3	15.7 x 30.1 x 23.3	15.7 x 30.1 x 23.3
<b>Weight (approx.)</b>	25.0 g	25.0 g	25.0 g
<b>Contact form</b>	1 a	1 a	1 a
<b>Contact rating (Resistive load)</b>	20A, 250VAC 25A, 250VAC	25A, 250VAC	25A, 250VAC
<b>Minimum switching load (ref.)</b>	5VDC 100mA	5VDC 100mA	5VDC 100mA
<b>Mechanical life</b>	2 x 10 <sup>6</sup> ops.	1 x 10 <sup>6</sup> ops.	2 x 10 <sup>6</sup> ops.
<b>Electrical life (Rated load)</b>	100 x 10 <sup>3</sup> ops.	100 x 10 <sup>3</sup> ops.	30 - 100 x 10 <sup>3</sup> ops.
<b>Operating temperature</b>	-40 to 60 °C	-40 to 85 °C	-40 to 85 °C
<b>Coil voltage (DC)</b>	5 to 48 V	5 to 24 V	5 to 48 V
<b>Nominal coil power</b>	0.78 W	30-1000 msec	0.78 W
<b>Surge strength</b>	8.500 V	8.500 V	8.500 V
<b>Dielectric strength (1 min.)</b>	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
<b>Safety standards</b>	UL, CSA, VDE, CQC, TÜV	UL, VDE	UL, VDE, CQC
<b>Mounting / Enclosure</b>	Through hole / RTII	Through hole / RTII	Through hole / RTII
<b>Terminal layout (bottom view)</b>			

## Power Relays (20A ~ 25A)

<b>Series Name</b>	<b>FTR-K3-WS</b>
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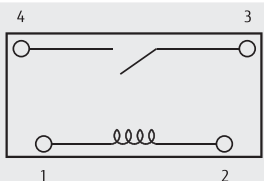
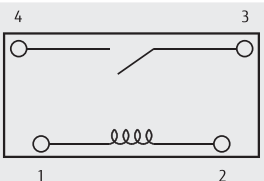
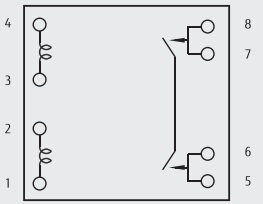


<b>Description</b>	25A 1.8mm Contact Gap Relay
<b>Type</b>	FTR-K3-WS
<b>Remarks</b>	■ 1.8mm contact gap

<b>Dimensions (W x L x H mm)</b>	15.7 x 30.1 x 23.3
<b>Weight (approx.)</b>	26.0 g
<b>Contact form</b>	1 a
<b>Contact rating (Resistive load)</b>	25A, 250VAC
<b>Minimum switching load (ref.)</b>	5VDC 100mA
<b>Mechanical life</b>	100 x 10 <sup>3</sup> ops.
<b>Electrical life (Rated load)</b>	30 x 10 <sup>3</sup> ops.
<b>Operating temperature</b>	-40 to 85 °C
<b>Coil voltage (DC)</b>	5 to 48 V
<b>Nominal coil power</b>	1.2 W
<b>Surge strength</b>	8.500 V
<b>Dielectric strength (1 min.)</b>	Open contacts: 1.000VAC Coil and contacts: 5.000VAC
<b>Safety standards</b>	UL, VDE
<b>Mounting / Enclosure</b>	Through hole / RTII

<b>Terminal layout (bottom view)</b>	<p>The diagram shows a rectangular terminal layout with four terminals labeled 1, 2, 3, and 4. Terminals 1 and 2 are at the bottom, and terminals 3 and 4 are at the top. A coil is connected between terminals 1 and 2. A switch is connected between terminals 3 and 4, with the switch being normally open.</p>
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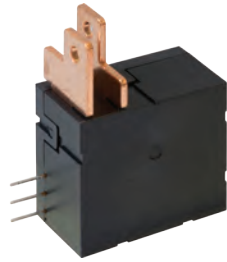
**Power Relays (30A ~ 120A)**

Series Name	FTR-K3-PV	FTR-K3-PS	FTR-K2W
			
<b>Description</b>	32A 1.5mm Contact Gap Relay	32A 1.8mm Contact Gap Relay	30A 60VDC 6mm Contact Gap Relay
<b>Type</b>	FTR-K3-PV	FTR-K3-PS	FTR-K2W
<b>Remarks</b>	<ul style="list-style-type: none"> <li>■ High capacity 32A</li> <li>■ 1.5mm contact gap</li> <li>■ 2 coil latching type available (FTR-K3L-PV)</li> </ul>	<ul style="list-style-type: none"> <li>■ High capacity 32A</li> <li>■ 1.8mm contact gap</li> </ul>	<ul style="list-style-type: none"> <li>■ 2 x 3mm contact gap total 6mm</li> </ul>
<b>Dimensions (W x L x H mm)</b>	15.7 x 30.1 x 23.3	15.7 x 30.1 x 23.3	34.9 x 36.5 x 30.2
<b>Weight (approx.)</b>	25.0 g	26.0 g	74.0 g
<b>Contact form</b>	1 a	1 a	1 x
<b>Contact rating (Resistive load)</b>	32A, 250VAC	32A, 250VAC	30A, 250VAC
<b>Minimum switching load (ref.)</b>	5VDC 100mA	5VDC 100mA	5VDC 100mA
<b>Mechanical life</b>	1 x 10 <sup>6</sup> ops.	100 x 10 <sup>3</sup> ops.	1 x 10 <sup>6</sup> ops.
<b>Electrical life (Rated load)</b>	30 x 10 <sup>3</sup> ops.	30 x 10 <sup>3</sup> ops.	10 x 10 <sup>3</sup> ops.
<b>Operating temperature</b>	-40 to 85 °C	-40 to 85 °C	-40 to 85 °C
<b>Coil voltage (DC)</b>	5 to 48 V	5 to 48 V	5 to 48 V
<b>Nominal coil power</b>	1.2 W	1.4 W	2 W
<b>Surge strength</b>	6.000 V	6.000 V	10.000 V
<b>Dielectric strength (1 min.)</b>	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
<b>Safety standards</b>	UL, VDE	UL, VDE	UL, TÜV
<b>Mounting / Enclosure</b>	Through hole / RTII	Through hole / RTII	Through hole / RTII
<b>Terminal layout (bottom view)</b>			



### Power Relays (30A ~ 120A)

<b>Series Name</b>	<b>FTR-K4</b>
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<b>Description</b>	<b>120A High Power Latching Relay</b>
<b>Remarks</b>	<ul style="list-style-type: none"> <li>■ 2 coil latching type available</li> <li>■ Meets IEC62055-31 UC 3 category</li> <li>■ 3000A inrush</li> </ul>

<b>Dimensions (W x L x H mm)</b>	37.0 x 43.0 x 22.0
<b>Weight (approx.)</b>	170 g
<b>Contact form</b>	1 a
<b>Contact rating (Resistive load)</b>	120A, 277VAC
<b>Minimum switching load (ref.)</b>	5VDC 100mA
<b>Mechanical life</b>	1 x 10 <sup>6</sup> ops.
<b>Electrical life (Rated load)</b>	10 x 10 <sup>3</sup> ops.
<b>Operating temperature</b>	-40 to 85 °C
<b>Coil voltage (DC)</b>	12, 24, 48 V
<b>Nominal coil power</b>	2.4 / 4.8 W
<b>Surge strength</b>	12.500 V
<b>Dielectric strength (1 min.)</b>	Open contacts: 2.000VAC Coil and contacts: 4.000VAC
<b>Safety standards</b>	UL, TÜV
<b>Mounting / Enclosure</b>	Through hole / Screws / RTII

<b>Terminal layout (bottom view)</b>	

Signal Relays (1A ~ 2A)




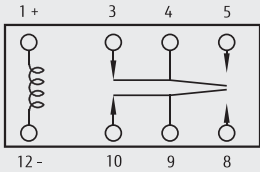
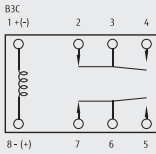
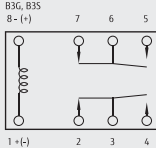
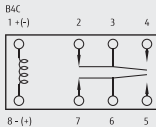
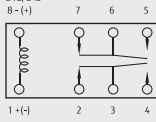
Series Name	SY	RY	A
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Description	1A Slim Type Relay	1/2A Signal Relay	1/2A Low Profile Relay
Remarks	<ul style="list-style-type: none"> <li>■ DIL pitch terminals</li> <li>■ Single bifurcated contact types</li> </ul>	<ul style="list-style-type: none"> <li>■ 2nd generation</li> <li>■ Dual inline pins</li> <li>■ High dielectric strength types</li> </ul>	<ul style="list-style-type: none"> <li>■ 1 and 2 coil versions available</li> <li>■ Latching type available</li> </ul>

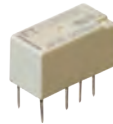
Dimensions (W x L x H mm)	7.4 x 12.5 x 9.5	9.8 x 20.2 x 12.5	9.4 x 14.0 x 5.0
Weight (approx.)	1.7 g	5.0 g	1.2 g
Contact form	1 c	2 c / 2 d	2 c
Contact rating (Resistive load)	0.5 120VAC (SY), 1A 24VDC 0.5A, 60VAC (SY-W), 1A 24VDC	0.5 120VAC (RY-W, WZ), 1A 24VDC 0.25A 120VAC (RY-WF), 1A 24VDC 0.5A 125VAC (RY-WFZ), 2A 30VDC	0.5A 125VAC 1A, 30VDC
Minimum switching load (ref.)	0.1VDC 0.1A 1VDC 1mA	10mVDC 0.01A	10mVDC 0.01mA
Mechanical life	5 x 10 <sup>6</sup> ops.	20 x 10 <sup>6</sup> ops. (W) 10 x 10 <sup>6</sup> ops. (WF, WZ, WFZ)	100 x 10 <sup>6</sup> ops. (A) 10 x 10 <sup>6</sup> ops. (AL, AL-D)
Electrical life (Rated load)	100 x 10 <sup>3</sup> ops.	100 x 10 <sup>3</sup> ops. (DC 30V, 2A) (2 Amp type) 200 x 10 <sup>3</sup> ops. (AC 120V, 0.5A) (1 Amp type) 500 x 10 <sup>3</sup> ops. (DC 24V, 1A / AC 120V, 0.25A)	500 x 10 <sup>3</sup> ops. (DC) 200 x 10 <sup>3</sup> 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)			

### Signal Relays (1 ~ 2A)

Series Name	NA	FTR-B3	FTR-B4
			
<b>Description</b>	1/2A Slim Type Relay	Low Profile Relay	Slim Type Relay
<b>Remarks</b>	<ul style="list-style-type: none"> <li>■ Latching type available</li> </ul>	<ul style="list-style-type: none"> <li>■ Latching type available</li> <li>■ Space saver versions</li> <li>■ THT and SMT versions</li> </ul>	<ul style="list-style-type: none"> <li>■ Latching type available</li> <li>■ Space saver versions</li> <li>■ THT and SMT versions</li> </ul>
<b>Dimensions (W x L x H mm)</b>	7.4 x 14.9 x 9.7	7.2 x 10.6 x 5.45	5.7 x 10.6 x 9.0
<b>Weight (approx.)</b>	1.6 g	0.85 g	1.0 g
<b>Contact form</b>	2 c	2 c	2 c
<b>Contact rating (Resistive load)</b>	0.5A 125VAC 1A 30VDC	0.3A 125VAC 1A 30VDC	0.3A 125VAC 1A 30VDC
<b>Minimum switching load (ref.)</b>	10mVDC 0.01mA	10mVDC 0.01mA	10mVDC 0.01mA
<b>Mechanical life</b>	100 x 10 <sup>6</sup> ops. (NA, NAL) 10 x 10 <sup>6</sup> ops. (NAL-D)	50 x 10 <sup>6</sup> ops. (FTR-B3...A) 20 x 10 <sup>6</sup> ops. (FTR-B3...B)	50 x 10 <sup>6</sup> ops. 20 x 10 <sup>6</sup> ops. (latching)
<b>Electrical life (Rated load)</b>	500 x 10 <sup>3</sup> ops. (DC) 200 x 10 <sup>3</sup> ops. (AC)	100 x 10 <sup>3</sup> ops. (DC)	100 x 10 <sup>3</sup> ops. BSI
<b>Coil voltage (DC)</b>	1.5 to 24 V (48V Only standard type)	1.5 to 24 V	1.5 to 24 V
<b>Nominal coil power</b>	0.1 to 0.3 W	0.14 to 0.23 W	0.14 to 0.23 W
<b>Surge strength</b>	2.500 V (NA, NAL) 1.500 V (NAL-D)	2.500 V	2.500 V
<b>Dielectric strength (1 min.)</b>	Open contacts: 1.00VAC 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
<b>Safety standards</b>	UL, CSA, FCC68, Telcordia, IEC60950-1	UL, CSA, BSI, FCC68, Telcordia, IEC60950-1	UL, CSA, FCC68, Telcordia, IEC60950-1
<b>Mounting / Enclosure</b>	Through hole / RTIII	Through hole / Surface mount / RTIII	Through hole / Surface mount / RTIII
<b>Terminal layout (bottom view)</b>		 	 

### Signal Relays (1 ~ 2A)

Series Name	FTR-C1	FTR-C2
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Description	1A Miniature Relay	1A Miniature Relay
Remarks	<ul style="list-style-type: none"> <li>■ Latching type available</li> <li>■ Contact gap 0.6mm</li> <li>■ Bifurcated contacts</li> <li>■ High surge strength</li> </ul>	<ul style="list-style-type: none"> <li>■ Contact gap 2mm</li> <li>■ Creepage clearance 2mm</li> <li>■ THT and SMT versions</li> </ul>

Dimensions (W x L x H mm)	7.5 x 15.0 x 9.3	9.8 x 20.5 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 <sup>6</sup> ops.	10 x 10 <sup>6</sup> ops.
Electrical life (Rated load)	100 x 10 <sup>3</sup> ops.	100 x 10 <sup>3</sup> 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 (bottom view)	Standard	Through hole / Surface mount
	<p>Standard 1 (+) 2 3 4 12 (-) 10 9 8</p>	<p>Through hole / Surface mount 1 (+) 4 6 8 16 (-) 13 11 9</p>
	<p>Latching (+) (-) 1 2 3 4 (+) (-) 12 10 9 8</p>	

## High Frequency Relays

<b>Series Name</b>	<b>FTR-B3-RF</b>
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<b>Description</b>	<b>1 GHz RF Relay</b>
<b>Remarks</b>	<ul style="list-style-type: none"> <li>■ Latching type available</li> <li>■ S.M. space saver versions</li> </ul>

<b>Dimensions (W x L x H mm)</b>	7.7 x 13.6 x 5.45
<b>Weight (approx.)</b>	1.3 g
<b>Contact form</b>	2 c
<b>Contact rating (Resistive load)</b>	0.3A 125VAC 1A 30VDC
<b>Minimum switching load (ref.)</b>	10mVDC 0.01mA
<b>RF characteristics (@ 50 Ω)</b>	3W @ 1GHz-switching 1W @ 1GHz-carry Isolation > 30dB @ 1GHz Insertion loss < 0.2dB @ 1GHz V.S.W.R. < 1.2 @ 1GHz
<b>Mechanical life</b>	50 x 10 <sup>6</sup> ops.
<b>Electrical life (Rated load)</b>	100 x 10 <sup>3</sup> ops.
<b>Coil voltage (DC)</b>	1.5 to 24 V
<b>Nominal coil power</b>	0.1 to 0.23 W
<b>Surge strength</b>	1.500 V
<b>Dielectric strength (1 min.)</b>	Open contacts: 750VAC Coil and contacts: 750VAC
<b>Safety standards</b>	
<b>Mounting / Enclosure</b>	Surface mount / RTIII

<b>Terminal layout (bottom view)</b>	
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### Solid State Relays (1A ~ 3A)

Series Name	FTR-SL	SE
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Description	1.5A AC SSR	1/2A AC SSR	
Type		1.5 A type	2 A type
Remarks	<ul style="list-style-type: none"> <li>■ Pin compatible with FTR-LY</li> <li>■ Internal zero cross circuit available</li> <li>■ Internal varistor and snubber circuit</li> </ul>	<ul style="list-style-type: none"> <li>■ Internal zero cross circuit available</li> </ul>	

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
		12 V	1.3k Ω	5 V	330 Ω
		24 V	2.4k Ω	12 V	1.0k Ω
		60 V	10k 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	1 mA rms			
	1 cycle surge current	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	
Max. release time		1/2 cycle + 1 ms		1/2 cycle + 1 ms	
Operating temperature		-30°C to 85°C			
Storage temperature		-40°C to 100°C			
Dielectric strength (I/O)		2.500 V rms			
Safety standards		-		UL, CSA	
Mounting		Through hole		Through hole	
Terminal layout (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	<ul style="list-style-type: none"> <li>■ Pin compatible with JY</li> <li>■ Internal surge absorber</li> <li>■ Socket available</li> </ul>	<ul style="list-style-type: none"> <li>■ Compatible with NY</li> <li>■ Internal surge absorber</li> <li>■ Socket available</li> </ul>

Dimensions (W x L x H mm)		10.0 x 20.0 x 12.8				5.0 x 20.0 x 17.0					
Weight (approx.)		5.5 g				2.9g	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	1.0k Ω	12 V	1.2k Ω	-	-	12 V	1.0/1.5k Ω	12 V	1.2k Ω
		24 V	2.0k Ω	24 V	2.4k Ω	-	-	24 V	2.2k/3.0k Ω	24 V	2.4k Ω
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)	±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 rms		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				UL, CSA					
Mounting		Through hole				Through hole					
Terminal layout (bottom view)											

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