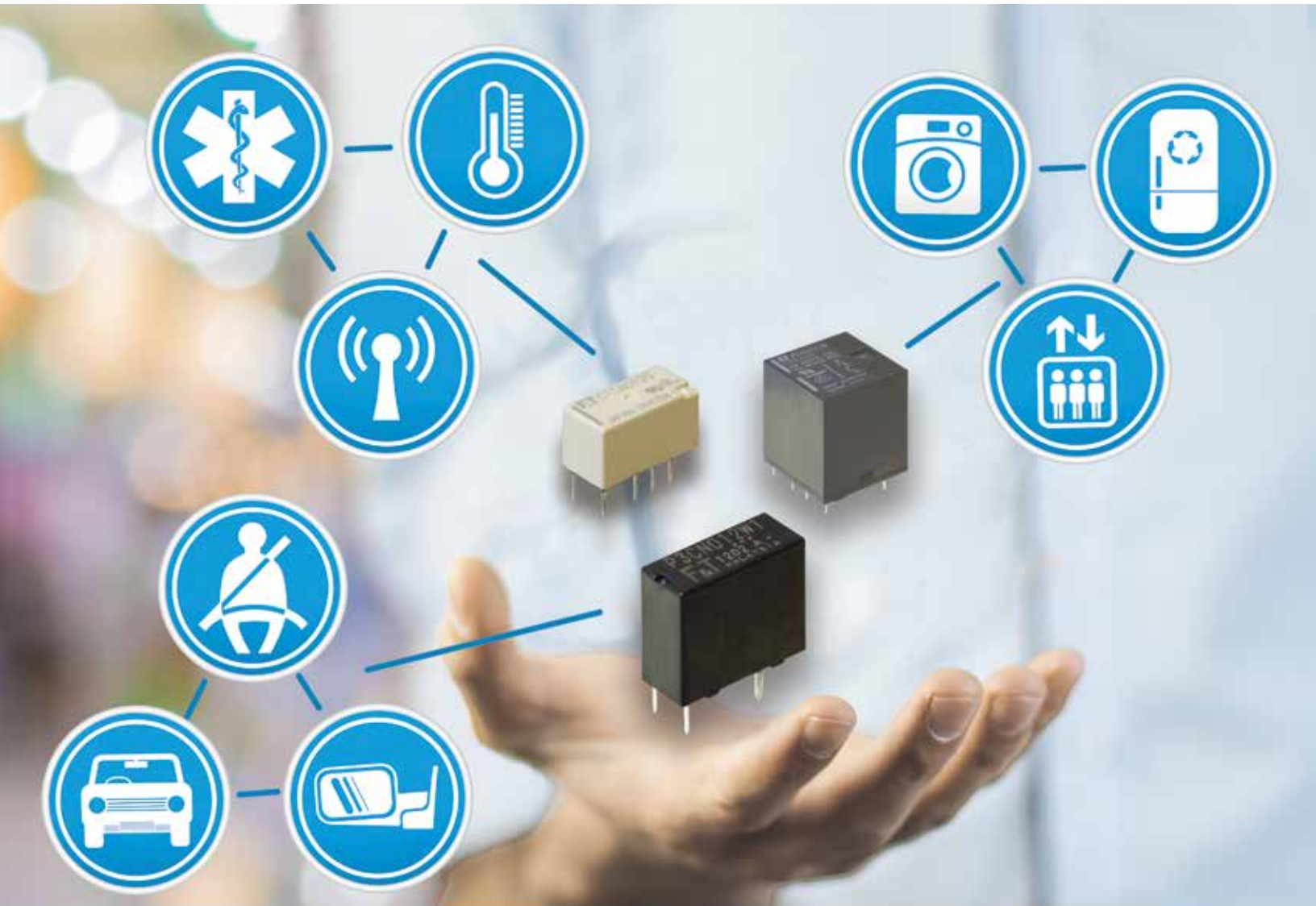


# Fujitsu Relays

Automotive, Power, Signal, Solid State








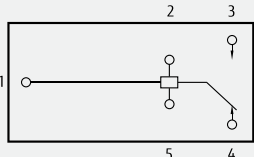
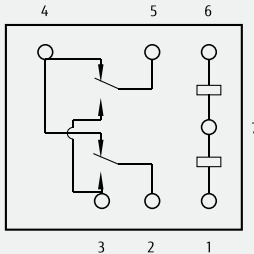
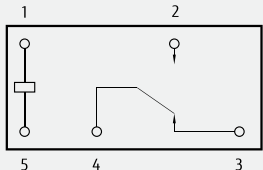
# Content

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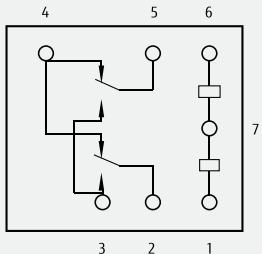
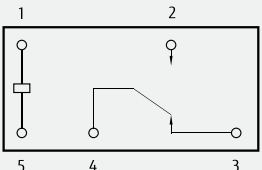
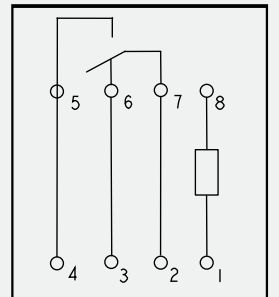
<b>Product Line-Up</b>	
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Power Relays	Page 11
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Solid State Relays	Page 31

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://us.fujitsu.com/relays/>



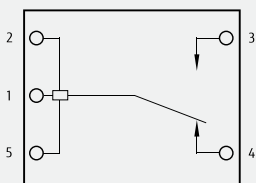
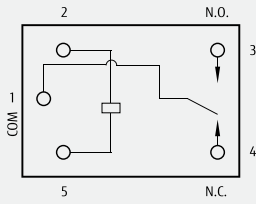
## Automotive relays (25A)

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 60db @ 5cm</li> </ul>	<ul style="list-style-type: none"> <li>Pin compatible with FTR-P4</li> <li>Average acoustic noise level 50db @ 5cm</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	7.2x17.4x13.5, (THR: 7.2x17.4x14.1)
Weight (approx.)	3.5 g	13.0 g	5.0 g
Contact form	1 c	1c x 2 (H-bridge)	1 c, (THR: 1a, 1c)
Contact rating	25A, 14VDC locked motor load	25A, 14VDC, locked motor load	25A, 14VDC, locked motor load
Expected life on load example	<p>14VDC, 25A window motor load 100x10<sup>3</sup> ops.</p> <p>14VDC, 20A, door lock motor load 100x10<sup>3</sup> ops.</p>	14VDC, 25A, locked motor load 100x10 <sup>3</sup> ops.	14VDC, 25A, locked motor load 100x10 <sup>3</sup> 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)			 1a does not carry #3 contact




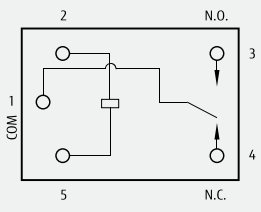
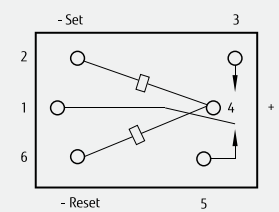
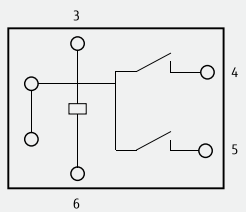
## Automotive relays (25A)

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 contact gap types</li> <li>■ Pin compatible with FTR-P2</li> </ul>	<ul style="list-style-type: none"> <li>■ Pin compatible with FTR-P3</li> <li>■ Average acoustic noise level 50db @ 5cm</li> </ul>	<ul style="list-style-type: none"> <li>■ 0.25mm contact gap</li> <li>■ Average acoustic noise level 60db @ 5cm</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	3.0 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	14VDC, 25A, locked motor load 100x10 <sup>3</sup> ops.	14VDC, 25A, locked motor load 100x10 <sup>3</sup> ops.	14VDC, 25A, locked motor load 100x10 <sup>3</sup> 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)			




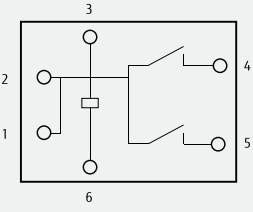
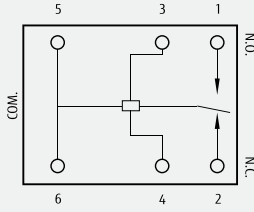
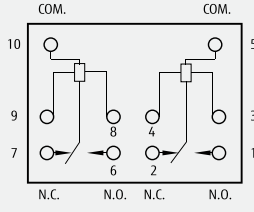
## Automotive relays (25A)

Series Name	FTR-P7	FBR51 / 52
		
<b>Description</b>	25A Low Noise Compact Automotive Relay	25A Compact Automotive Relay
<b>Features</b>	<ul style="list-style-type: none"> <li>■ 0.3 mm contact gap</li> <li>■ Average acoustic noise level 45db @ 5cm</li> </ul>	<ul style="list-style-type: none"> <li>■ 0.3 or 0.6 mm (FBR52)</li> <li>■ 60A inrush</li> </ul>
<b>Dimensions (W x L x H mm)</b>	17.0 x 20.8 x 14.0	12.1 x 15.5 x 13.7
<b>Weight (approx.)</b>	7.0 g	6.0 g
<b>Contact form</b>	1 c	1 c
<b>Contact rating</b>	25A, 14VDC locked motor load	25A, 14VDC, locked motor load
<b>Expected life on load example</b>	14VDC, 25A, locked motor load 100x10 <sup>3</sup> ops.	14VDC, 25A, locked motor load 200x10 <sup>3</sup> ops.
<b>Operating temperature</b>	-40 to +85 °C	-40 to +85 °C
<b>Coil voltage (DC)</b>	12 V	6 to 12 V
<b>Nominal coil power</b>	0.55 W	0.6 W / 0.8 W
<b>Dielectric strength (1 min.)</b>	Open contacts: 500VAC Coil and contacts: 500VAC	Open contacts: 500VAC Coil and contacts: 500VAC
<b>Mounting</b>	Through hole	Through hole
<b>Terminal layout (bottom view)</b>		

## Automotive relays (25A ~ 40A)



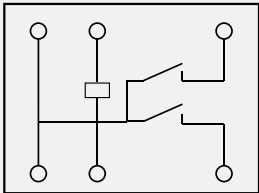
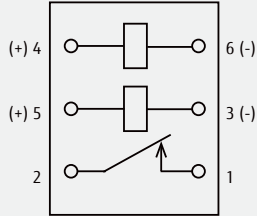
Series Name	FBR51 / 52 (-WL / -WF)	FBR51L	FBR53
			
Description	30A Compact Automotive Relay for Special Lamp Loads	25A Dualcoil Latching Compact Automotive Relay	30A Compact Automotive Relay
Features	<ul style="list-style-type: none"> <li>0.3 mm contact gap</li> </ul>	<ul style="list-style-type: none"> <li>Dual coil latching</li> <li>THR type available</li> </ul>	<ul style="list-style-type: none"> <li>0.25mm contact gap</li> <li>THR type (-RW) available</li> <li>60A inrush</li> <li>30A carry current</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	12.3 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
Expected life on load example	<p>14VDC, 120W, lamp load 100x10<sup>3</sup> ops. (-WL)</p> <p>Special type for flasher lamp applications (-WF)</p> <p>14 VDC, 80W, lamp load 2500x10<sup>3</sup> ops. (-WF) Inrush 11A, 14VDC 0.35 sec. ON/ 0.35 sec. OFF</p>	<p>14VDC, 25A, locked motor load 200x10<sup>3</sup> ops. (-W1 type) 50x10<sup>3</sup> ops. (E type)</p>	<p>14VDC, 25A, resistive load 100x10<sup>3</sup> ops.</p>
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)			

## 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	<ul style="list-style-type: none"> <li>■ THR type (-RW) available</li> <li>■ High power type</li> <li>■ 80A inrush</li> </ul>	<ul style="list-style-type: none"> <li>■ For 24V battery applications</li> <li>■ 70A inrush</li> </ul>	<ul style="list-style-type: none"> <li>■ 0.8/1.4mm contact gap</li> <li>■ For 24V battery applications</li> <li>■ 60A inrush</li> </ul>
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 <sup>3</sup> ops.	28VDC, 12A, locked motor load 100x10 <sup>3</sup> ops.  28VDC, inrush 12A/break 2.5A, free motor load 500x10 <sup>3</sup> ops.	28VDC, 12A, locked motor load 100x10 <sup>3</sup> ops. (FBR572, 582)  28VDC, 2.5A, free motor load 500x10 <sup>3</sup> 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	1.5W / 3.4W
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	FTR-V1
		
Description	45A/60A High Power Relay	210A High Capacity Latching Relay
Remarks	<ul style="list-style-type: none"> <li>■ THR type (-RW)</li> <li>■ High power type</li> <li>■ 220A max. inrush</li> <li>■ 60A carry current</li> </ul>	<ul style="list-style-type: none"> <li>■ 210A (@85°C)/120A( @125°C) continuous current</li> <li>■ Initial contact resistance max. 0.6mΩ</li> </ul>
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	1b
Contact rating	45A, 14VDC motor lock, 60A 14VDC resistive	Inrush 230A, 14VDC Break 1A, 14VDC
Expected life on load example	14 VDC, 45A, motor load 100x10 <sup>3</sup> ops.  14VDC, 60A resistive load 100x10 <sup>3</sup> ops.	Inrush 230A, 14VDC Break 1A, 14VDC 120x10 <sup>3</sup> ops.
Operating temperature	-40 to +125 °C	-40 to +125 °C
Coil voltage (DC)	9 to 12 V	12V
Nominal coil power	0.45 W	2.88W
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)		

## Automotive relays (450VDC)

<b>Series Name</b>	<b>FTR-E1</b>
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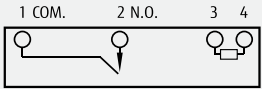
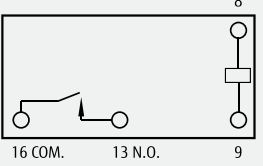
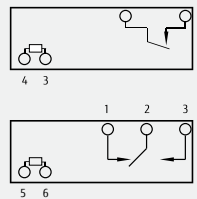


<b>Description</b>	20A/30A, 450VDC High Voltage DC Relay
<b>Remarks</b>	<ul style="list-style-type: none"> <li>■ No specific polarity for connection of load terminals</li> <li>■ UL/cUL recognized type available</li> </ul>




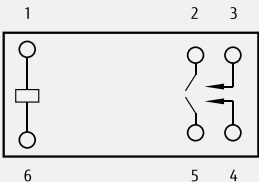
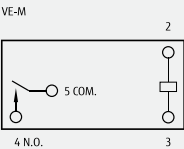
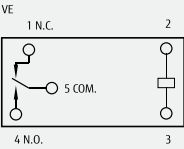
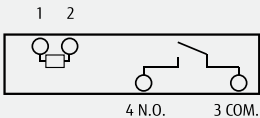
<b>Dimensions (W x L x H mm)</b>	28.3 x 43.6 x 36.8
<b>Weight (approx.)</b>	75.5 g
<b>Contact form</b>	1 a
<b>Contact rating</b>	20A, 450VDC / 30A, 450VDC
<b>Expected life on load example</b>	<p>10A, 450VDC, resistive 75 x 10<sup>3</sup> ops. with varistor</p> <p>20A, 450VDC, resistive 10 x 10<sup>3</sup> ops. with varistor</p> <p>30A, 450VDC, resistive with varistor, 5x10<sup>3</sup> ops. (-HA)</p> <p>20A, 450VDC inrush only (without break), 100x10<sup>3</sup> ops.</p>
<b>Operating temperature</b>	-40 to +85 °C
<b>Coil voltage (DC)</b>	12, 24 VDC
<b>Nominal coil power</b>	0.9 W
<b>Dielectric strength (1 min.)</b>	Open contacts: 2,500VAC Coil and contacts: 5,000VAC
<b>Mounting</b>	Through hole

<b>Terminal layout (bottom view)</b>	
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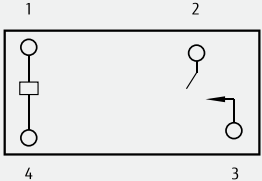
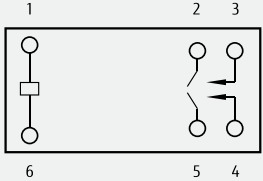
## Power relays (3A ~ 5A)

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 reinforced insulation</li> <li>Compatible with SN solid state relay</li> </ul>	<ul style="list-style-type: none"> <li>Socket available (-P)</li> <li>Compatible with SJ solid state relay</li> <li>AgCd types not for new designs</li> </ul>	<ul style="list-style-type: none"> <li>Right angle versions available (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>10A types available</li> <li>AgNi contacts</li> </ul>
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 20.3 x 15.0 (1c: 7.0 x 23.4 x 15.0)
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/30VDC (10A type)
Minimum switching load (ref.)	5VDC, 1mA	100m VDC 0.1WmA (W) 5VDC 10mA (G, HG) 5VDC 100mA (R, HR)	5VDC 10mA (3/5A type) 5VDC 100mA (10A type)
Mechanical life	20 x 10 <sup>6</sup> ops.	20 x 10 <sup>6</sup> ops.	5 x 10 <sup>6</sup> ops. / 2x10 <sup>6</sup> ops (1c)
Electrical life (Rated load)	100 x 10 <sup>3</sup> ops. (at 3A, 250VAC, 30VDC) 50x10 <sup>3</sup> ops. (at 5A, 250VAC,30VDC)	100 x 10 <sup>3</sup> ops.	10x10 <sup>3</sup> ops (10A plastic sealed type) 50 x 10 <sup>3</sup> ops. (10A flux free type, 1c type, TV-rated type ) 100 x 10 <sup>3</sup> ops. (5A type) 200 x 10 <sup>3</sup> ops. (3A 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: 3,000VAC	Open contacts: 750VAC Coil and contacts: 2,000VAC	Open contacts: 750VAC Coil and contacts: 4,000VAC
Safety standards	UL, CSA	UL, CSA	UL, CSA, VDE, CQC
Mounting / Enclosure	Through hole / RTIII	Through hole / RTIII	Through hole / RTIII / RTIII
Terminal layout (bottom view)			




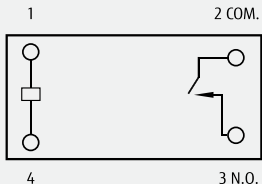
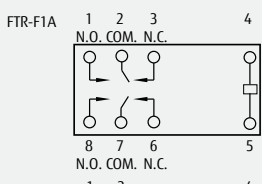
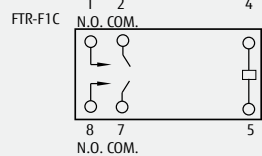
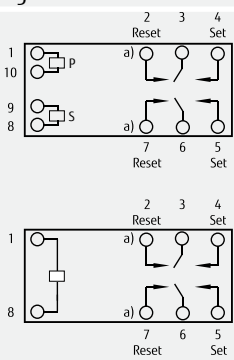
## Power relays (3A ~ 5A)

Series Name	FTR-F4	VE	FTR-MY
			
Description	5A TV-3 Compact Relay	5A Medium Load Relay	5A Slim Type Relay
Remarks	<ul style="list-style-type: none"> <li>■ Flux proof types</li> <li>■ TV-3 rated</li> </ul>	<ul style="list-style-type: none"> <li>■ High sensitive types</li> <li>■ Cd types (not for new designs)</li> <li>■ Creepage &gt;3.2mm</li> </ul>	<ul style="list-style-type: none"> <li>■ Compliant to IEC61010-2-201, 61131-2 reinforced insulation</li> <li>■ Conforms to ANSI/ISA12.12.01</li> <li>■ Creepage, clearance &gt;5.6mm</li> </ul>
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 <sup>6</sup> ops.	10 x 10 <sup>6</sup> ops.	20 x 10 <sup>6</sup> ops.
Electrical life (Rated load)	100 x 10 <sup>3</sup> ops. 25 x 10 <sup>3</sup> (lamp load TV-3)	100 x 10 <sup>3</sup> ops. (VE) 50 x 10 <sup>3</sup> ops. (VE-S)	100 x 10 <sup>3</sup> ops. (at 3A 250VAC/30VDC), 5 x 10 <sup>3</sup> 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: 1,000VAC Coil and contacts: 4,000VAC	Open contacts: 750VAC (1 c), 1,000 VAC (1 a) Coil and contacts: 2,000VAC	Open contacts: 750VAC Coil and contacts: 3,000VAC
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)		 	


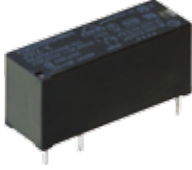

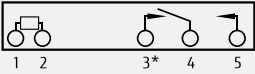
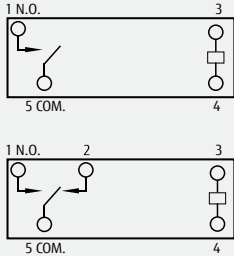
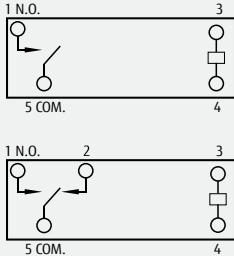
## Power relays (3A ~ 5A)

Series Name	FTR-F2	FTR-F4G
		
Description	5A High profile Relay	5A High Profile Wide Contact Gap Relay
Remarks	<ul style="list-style-type: none"> <li>■ TV-5 rated</li> <li>■ TV-8 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>
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 <sup>6</sup> ops.	500 x 10 <sup>3</sup> ops.
Electrical life (Rated load)	100 x 10 <sup>3</sup> ops.	100 x 10 <sup>3</sup> ops. flux proof version 20 x 10 <sup>3</sup> Sealed version
Operating temperature	-40 to +70 °C	-40 to +70 °C
Coil voltage (DC)	5 to 48 V, (F2P: 5 to 24V)	3 to 60 V
Nominal coil power	0.25 to 0.53 W	0.8 W
Surge strength	10,000 V, (F2P: 12,000V)	10,000 V
Dielectric strength (1 min.)	Open contacts: 1,000VAC Coil and contacts: 4,000VAC	Open contacts: 1,500VAC Coil and contacts: 5,000VAC
Safety standards	UL, CSA, VDE, CQC, (F2P: UL, CSA)	cULus, TUV
Mounting / Enclosure	Through hole / RTII	Through hole / RTII / RTIII
Terminal layout (bottom view)		




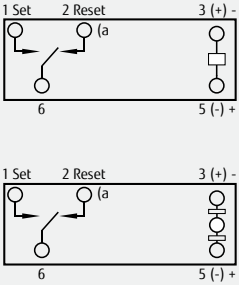
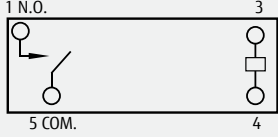
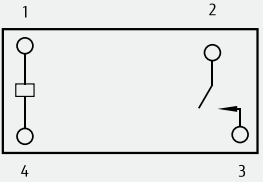
# Power relays (5A ~ 10A)

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) available</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> </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 (5A type) 10A, 250VAC/24VDC (10A type)	5A, 250VAC/24VDC (5A type) 8A, 250VAC/24VDC (8A type)	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. (5A type), 50 x 10 <sup>3</sup> ops (10A type)	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 (5A type) / 85 °C (10A type)	-40 to +75 °C (Transparent type: -40 to 70 °C)	-40 to +85 °C
<b>Coil voltage (DC)</b>	3 to 24 V (48V for 5A standard type)	1.5 to 110 V (High sensitive: 1.5 to 48V)	5 to 24 V
<b>Nominal coil power</b>	0.2 to 0.3 W	0.4 to 0.55 W	0.4 to 0.6 W
<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: 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	UL, CSA, VDE, CQC	UL, CSA, VDE, CQC
<b>Mounting / Enclosure</b>	Through hole / RTIII	Through hole / RTIII	Through hole / RTIII
<b>Terminal layout (bottom view)</b>		<p>FTR-F1A</p>  <p>FTR-F1C</p> 	 <p>a) omitted on 2 a types</p>

## Power relays (5A ~ 10A)

Series Name	FTR-LY	JS	JS-RW
			 <b>New Design</b>
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>■ Creepage/clearance &gt;8mm</li> </ul>	<ul style="list-style-type: none"> <li>■ 3.2 and 5 mm pitch types</li> <li>■ IEC60335-1 types (-GW)</li> <li>■ 3μAu versions</li> <li>■ Creepage/clearance &gt;8mm</li> </ul>	<ul style="list-style-type: none"> <li>■ Reflow solderable relay</li> <li>■ 3.2 and 5 mm pitch types</li> <li>■ Flux proof</li> <li>■ Contact Fujitsu for details</li> <li>■ 1μAu versions</li> <li>■ Creepage/clearance &gt;8mm</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 100mA (-Y, -E type)	5VDC 100mA, 5VDC 10mA (3μAu)	5VDC 100mA, 5VDC 10mA (1μAu)
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. NC 50 x 10 <sup>3</sup> ops. NO	20 x 10 <sup>3</sup> ops. to 50 x 10 <sup>3</sup> ops. (Depends on contact material)	20 x 10 <sup>3</sup> ops. to 50 x 10 <sup>3</sup> 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: 1,000VAC Coil and contacts: 4,000VAC	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, 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
			
Description	8A Low Profile Latching Relay	8A Low Profile High Inrush Relay	10A High Profile Relay
Remarks	<ul style="list-style-type: none"> <li>■ Latching type</li> <li>■ 1 and 2 coil types available</li> <li>■ 3.2mm pitch</li> <li>■ Creepage/clearance &gt;8mm</li> </ul>	<ul style="list-style-type: none"> <li>■ 1000W lamp load</li> <li>■ 65A inrush (TV4)</li> <li>■ 5mm pitch</li> <li>■ Creepage/clearance &gt;8mm</li> </ul>	<ul style="list-style-type: none"> <li>■ TV-5 rated</li> <li>■ High sensitive types</li> <li>■ Creepage/clearance &gt;6mm</li> </ul>
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 <sup>6</sup> ops.	20 x 10 <sup>6</sup> ops.	2 x 10 <sup>6</sup> ops.
Electrical life (Rated load)	50 x 10 <sup>3</sup> ops.	100k @ rated load 25k @ lamp load (TV4)	100 x 10 <sup>3</sup> ops. @ rated load 25 x 10 <sup>3</sup> 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 (High sensitive: 5 to 24V)
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: 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
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)	 <p>(a omitted on 1 a types)</p>		



## Power relays (5A ~ 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

1a 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<sup>6</sup> ops.

Electrical life (Rated load)

10 x 10<sup>3</sup> ops.

Operating temperature

-40 to +85 °C

Coil voltage (DC)

5 to 110 V

Nominal coil power

1 coil: 0.53W, 2 coils: 1.06W

Surge strength

10.000 V (1.2 x 50µs)

Dielectric strength (1 min.)

Open contacts: 1,000VAC  
Coil and contacts: 4,000VAC

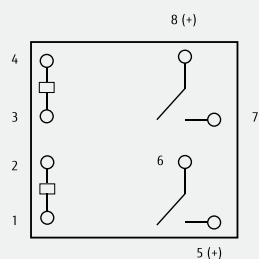
Safety standards

UL, VDE




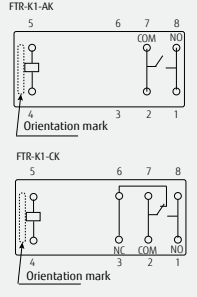
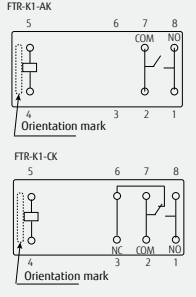
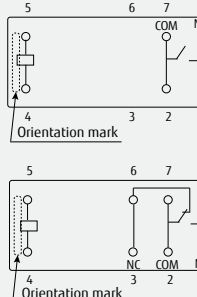
Mounting / Enclosure

Through hole / RT II



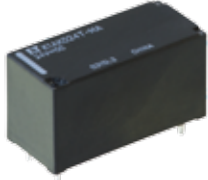
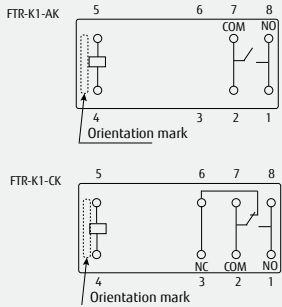
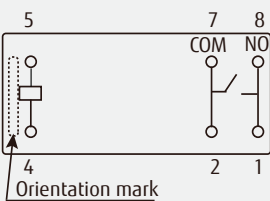
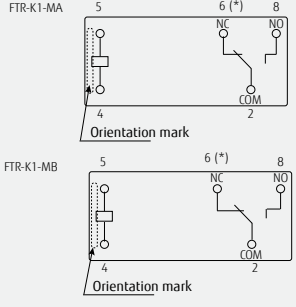
Terminal layout  
(bottom view)






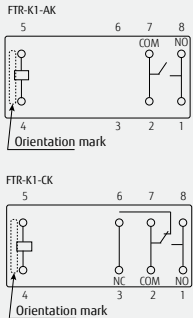
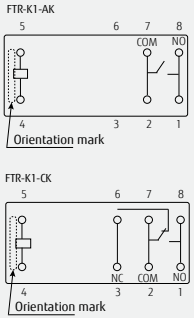
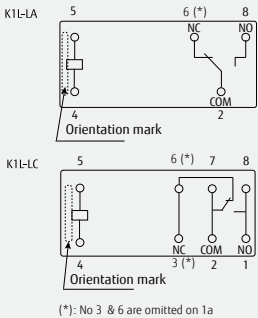
## Power relays (>10A ~ 20A)

Series Name	FTR-K1		FTR-K1-(RG)		FTR-K1-E	
						
Description	16A Inrush 80A Type		10A Transparent Cover, Inrush 80A Type		16A 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> <li>■ Creepage/clearance &gt;10mm</li> <li>■ UI-TV-5 (N.O.)</li> </ul>		<ul style="list-style-type: none"> <li>■ Cover material PC</li> <li>■ Max operating temp. +70°C</li> <li>■ 10A/12A/16A standard types available</li> <li>■ 5.0mm pitch</li> </ul>		<ul style="list-style-type: none"> <li>■ Contact material AgNi</li> <li>■ Clear cover types (-RG) available</li> <li>■ 5mm pitch</li> <li>■ Creepage/clearance &gt;10mm</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) 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.)	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.)	100 x 10 <sup>3</sup> ops. (AC) 100 x 10 <sup>3</sup> ops. (DC)	50 x 10 <sup>3</sup> ops. (AC) 30 x 10 <sup>3</sup> 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 0.43W		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)						




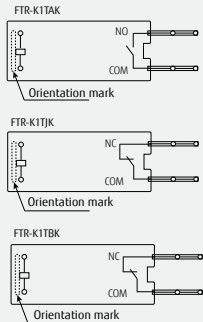
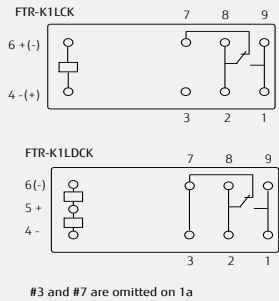
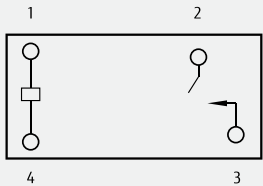
## Power relays (>10A ~ 20A)

Series Name	FTR-K1-KS		FTR-K1-HC	FTR-K1-MA / MB	
					
<b>Description</b>	16A Inrush 120A Type		High Capacity 20A Type	12A Type	
<b>Type</b>	FTR-K1AK( ) T-KS	FTR-K1CK( )T-KS	FTR-K1AK( )T-HC	FTR-K1AK( ) W-(MA;MB)	FTR-K1CK( ) W-(MA;MB)
<b>Remarks</b>	<ul style="list-style-type: none"> <li>■ 5mm pitch</li> <li>■ Creepage/clearance &gt;10mm</li> <li>■ UL TV-8 (N.O.)</li> </ul>		<ul style="list-style-type: none"> <li>■ 5mm pitch</li> <li>■ Creepage/clearance &gt;10mm</li> </ul>	<ul style="list-style-type: none"> <li>■ Au plated types (-BG)</li> <li>■ Clear cover types (-RG)</li> <li>■ 3.5mm pitch. MA type</li> <li>■ 5mm pitch MB type</li> <li>■ Creepage/clearance &gt;10mm</li> </ul>	
<b>Dimensions (W x L x H mm)</b>	12.7 x 29.0 x 15.7		12.7 x 29.0 x 15.7	12.7 x 29.0 x 15.7	
<b>Weight (approx.)</b>	13.0 g		13.0 g	13.0 g	
<b>Contact form</b>	1 a	1 c	1 a	1 a	1 c
<b>Contact rating (Resistive load)</b>	16A, 250VAC		20A, 250VAC	12A, 250VAC/24VDC	
<b>Minimum switching load (ref.)</b>	5VDC 100mA		5VDC 100mA	5VDC 100mA	
<b>Mechanical life</b>	20 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>	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)	100 x 10 <sup>3</sup> ops. (AC) 100 x 10 <sup>3</sup> ops. (DC)	
<b>Operating temperature</b>	-40 to +85 °C		-40 to +85 °C	-40 to +85 °C	
<b>Coil voltage (DC)</b>	18 V		18 V	18 V	
<b>Nominal coil power</b>	0.4 to 0.43 W		0.4 W	0.4 W / 0.43 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: 5,000VAC	
<b>Safety standards</b>	UL, CSA, VDE		UL	UL, CSA, VDE	
<b>Mounting / Enclosure</b>	Through hole, RTII		Through hole, RTII	Through hole, RTII	
<b>Terminal layout (bottom view)</b>					
				(*) : No 6 is omitted on 1a	

## Power relays (>10A ~ 20A)

Series Name	FTR-K1-HT		FTR-K1-KW		FTR-K1-LA / LB	
						
<b>Description</b>	16A High Temperature 105°C Type		16A Plastic Sealed 105°C Type		10A High Sensitive Type	
<b>Type</b>	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)
<b>Remarks</b>	<ul style="list-style-type: none"> <li>■ 5mm pitch</li> <li>■ Creepage/clearance &gt;10mm\</li> <li>■ Flux free</li> <li>■ UL TV-5 (1a)</li> </ul>		<ul style="list-style-type: none"> <li>■ 5mm pitch</li> <li>■ Creepage/clearance &gt;10mm</li> <li>■ Plastic seal</li> </ul>		<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> <li>■ Creepage/clearance &gt;10mm</li> </ul>	
<b>Dimensions (W x L x H mm)</b>	12.7 x 29.0 x 15.7		12.7 x 29.0 x 15.7		12.7 x 29.0 x 15.7	
<b>Weight (approx.)</b>	13.0 g		13.0 g		13.0 g	
<b>Contact form</b>	1 a	1 c	1 a	1 c	1 a	1 c
<b>Contact rating (Resistive load)</b>	16A, 250VAC/24VDC		16A, 250VAC		10A, 250VAC	
<b>Minimum switching load (ref.)</b>	5VDC 100mA		5VDC 100mA		5VDC 100mA	
<b>Mechanical life</b>	20 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>	100x10 <sup>3</sup> ops. (AC) 100x10 <sup>3</sup> ops.(DC) 25 x 10 <sup>3</sup> ops. (1a / 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. (AC)	100 x 10 <sup>3</sup> ops. (LA), 150 x 10 <sup>3</sup> ops. (LB)	100 x 10 <sup>3</sup> ops. (LA, LB)
<b>Operating temperature</b>	-40 to +105 °C		-40 to +105 °C		-40 to +85 °C (LA) / -40 to +105 °C (LB)	
<b>Coil voltage (DC)</b>	5 to 110 VDC		5 to 110 V		5 to 48 V	
<b>Nominal coil power</b>	0.4 to 0.43W		0.4 to 0.43W		0.25 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: 5,000VAC	
<b>Safety standards</b>	UL, VDE		UL, VDE		UL, CSA, VDE	
<b>Mounting / Enclosure</b>	Through hole / RTII		Through hole / RTIII		Through hole / RTII	
<b>Terminal layout (bottom view)</b>						

## Power relays (>10A ~ 20A)

Series Name	FTR-K1T		FTR-K1L		FTR-K2
					
<b>Description</b>	17A Tab Terminal Type		16A Latching Type Inrush 80A		16A High Profile Relay
<b>Type</b>	FTR-K1TAK, FTR-K1TJK	FTR-K1TBK	FTR-K1L(D) AK( )T	FTR-K1L(D)CK( )W AK( )T	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 (1a)</li> <li>■ Creepage/clearance &gt;10mm</li> </ul>		<ul style="list-style-type: none"> <li>■ 1 and 2 coil types</li> <li>■ TV-5 rated (N.O.)</li> <li>■ Creepage/clearance &gt;10mm</li> </ul>		<ul style="list-style-type: none"> <li>■ TV-5 rated</li> <li>■ 1mm contact gap types available</li> <li>■ 3.5mm pitch</li> </ul>
<b>Dimensions (W x L x H mm)</b> Note: * except tab terminals	12.7 x 29.0 x 15.7*	12.7 x 29.0 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		16A, 250VAC / 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.		2 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) 25 x 10 <sup>3</sup> ops. (TV-5)	50 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. (lamp load TV-5)
<b>Operating temperature</b>	-40 to +105 °C		-40 to +85 °C		-40 to +70 °C
<b>Coil voltage (DC)</b>	5 to 110 VDC		5, 12, 24 V		3 to 48 V
<b>Nominal coil power</b>	0.4 to 0.43W		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>	UL, 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>#3 and #7 are omitted on 1a</p>		

## Power relays (>10A ~ 20A)

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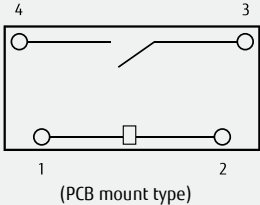
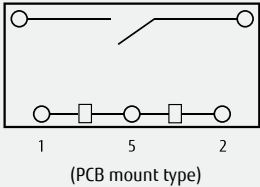
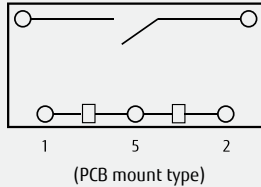


<b>Description</b>	20A 3mm Wide Contact Gap Relay
<b>Type</b>	FTR-K2G
<b>Remarks</b>	<ul style="list-style-type: none"> <li>■ TV-8 rated</li> <li>■ 3mm contact gap</li> <li>■ Reinforced insulation</li> <li>■ Peak inrush 120A</li> </ul>

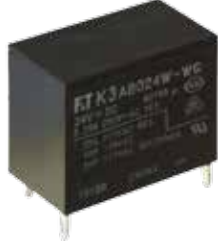

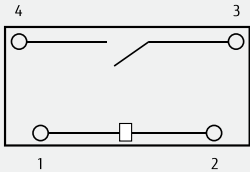
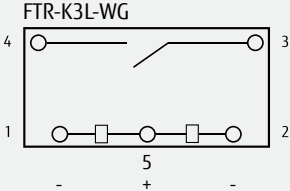
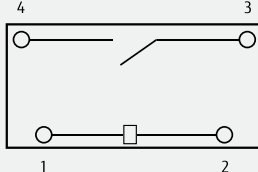
<b>Dimensions (W x L x H mm)</b>	16.0 x 35.0 x 28.0
<b>Weight (approx.)</b>	34.0 g
<b>Contact form</b>	1 a
<b>Contact rating (Resistive load)</b>	20A, 250VAC (120A, 250VAC inrush)
<b>Minimum switching load (ref.)</b>	5VDC 100mA
<b>Mechanical life</b>	1 x 10 <sup>6</sup> ops.
<b>Electrical life (Rated load)</b>	100 x 10 <sup>3</sup> ops. 25 x 10 <sup>3</sup> ops. (lamp load 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 to 1.05 W
<b>Surge strength</b>	10.000 V
<b>Dielectric strength (1 min.)</b>	Open contacts: 2,000VAC Coil and contacts: 5,000VAC
<b>Safety standards</b>	UL, VDE
<b>Mounting / Enclosure</b>	Through hole

<b>Terminal layout (bottom view)</b>	<p>Orientation mark</p>
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## Power relays (20A ~ 25A)




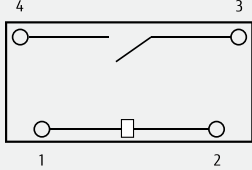
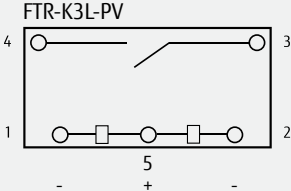
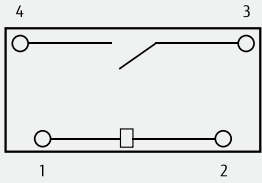
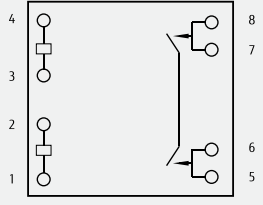
Series Name	FTR-K3	FTR-K3L	FTR-K3LV
			
<b>Description</b>	20 - 25A Heavy Load Relay	25A Heavy Load Latching Relay	32A Heavy Load Latching Relay
<b>Type</b>	FTR-K3	FTR-K3L	FTR-K3L
<b>Remarks</b>	<ul style="list-style-type: none"> <li>■ Tab terminal types (J)</li> <li>■ Flat types (-F)</li> <li>■ High insulation type (-LS)</li> <li>■ High current type (-HC)</li> <li>■ PCB mount types (A)</li> </ul>	<ul style="list-style-type: none"> <li>■ 2 coil latching type</li> <li>■ Tab terminal types (J) and PCB mount types (A)</li> </ul>	<ul style="list-style-type: none"> <li>■ 2 coil latching type</li> <li>■ 32A screw terminal type</li> </ul>
<b>Dimensions (W x L x H mm)</b>	15.7 x 30.1 x 23.3 (Flat: 23.3 x 30.9 x 18.2)	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	27.0g
<b>Contact form</b>	1 a	1 a	1 a
<b>Contact rating (Resistive load)</b>	20A, 250VAC 25A, 250VAC(-HC, Flat)	25A, 250VAC	32A 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.	1 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.	30x10 <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 48V
<b>Nominal coil power</b>	0.78 W	0.9mW	1.2W
<b>Surge strength</b>	8,500 V	8,500 V	6,000V
<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: 2,500VAC Coil and contacts: 5,000VAC
<b>Safety standards</b>	UL, CSA, VDE, CQC, TÜV, (Flat: UL, CSA, VDE, CQC)	cULus, VDE	No safety standard
<b>Mounting / Enclosure</b>	Through hole / RTII	Through hole / RTII	Through hole / RTII
<b>Terminal layout (bottom view)</b>	 <p>(PCB mount type)</p>	 <p>(PCB mount type)</p>	 <p>(PCB mount type)</p>

## Power relays (20A ~ 25A)

Series Name	FTR-K3-WG	FTR-K3-WS
		
<b>Description</b>	25A 1.5mm Contact Gap Relay	25A 1.8mm Contact Gap Relay
<b>Type</b>	FTR-K3-WG	FTR-K3-WS
<b>Remarks</b>	<ul style="list-style-type: none"> <li>■ 1.5mm contact gap</li> <li>■ 2 coil latching type available (FTR-K3L-WG)</li> </ul>	<ul style="list-style-type: none"> <li>■ 1.8mm contact gap</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
<b>Weight (approx.)</b>	25.0 g	25.0 g
<b>Contact form</b>	1 a	1 a
<b>Contact rating (Resistive load)</b>	25A, 250VAC	25A, 250VAC
<b>Minimum switching load (ref.)</b>	5VDC 100mA	5VDC 100mA
<b>Mechanical life</b>	2 x 10 <sup>6</sup> ops.	100 x 10 <sup>3</sup> ops.
<b>Electrical life (Rated load)</b>	100 x 10 <sup>3</sup> ops.	30 x 10 <sup>3</sup> ops.
<b>Operating temperature</b>	-40 to +60 °C, (latch: -40 to 85 °C)	-40 to +60 °C
<b>Coil voltage (DC)</b>	5 to 48 V	5 to 48 V
<b>Nominal coil power</b>	0.78 W	1.2 W
<b>Surge strength</b>	8.500 V	8.500 V
<b>Dielectric strength (1 min.)</b>	Open contacts: 2,500VAC Coil and contacts: 5,000VAC	Open contacts: 2,500VAC Coil and contacts: 5,000VAC
<b>Safety standards</b>	UL, VDE, CQC	UL, VDE
<b>Mounting / Enclosure</b>	Through hole / RTII	Through hole / RTII
<b>Terminal layout (bottom view)</b>	<p>FTR-K3-WG</p>  <p>FTR-K3L-WG</p> 	



## 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 /25A 72VDC 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>■ DC high capacity</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	25.0 g	74.0 g
<b>Contact form</b>	1 a	1 a	1 a
<b>Contact rating (Resistive load)</b>	32A, 250VAC	32A, 250VAC	30A 60VDC/25A 72VDC
<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 +60 °C, (latch: -40 to 85°C)	-40 to +60 °C	-40 to +70 °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 (1.2X50μs)
<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	cULus, TÜV
<b>Mounting / Enclosure</b>	Through hole / RTII	Through hole / RTII	Through hole / RTII
<b>Terminal layout (bottom view)</b>	<p>FTR-K3-PV</p>  <p>FTR-K3L-PV</p> 		

## Power relays (30A ~ 120A)

<b>Series Name</b>	<b>FTR-K4</b>
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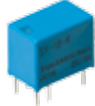


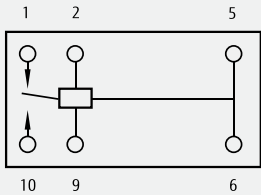
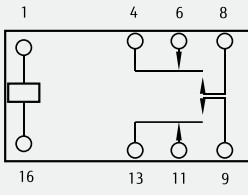
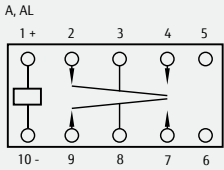
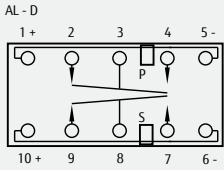


<b>Description</b>	<b>120A High Power Latching Relay</b>
<b>Remarks</b>	<ul style="list-style-type: none"> <li>■ 2 coil latching type available</li> <li>■ Meets IEC62055-31 UC 3 category</li> <li>■ Contact resistance max. 0.5Ω (initial)</li> </ul>




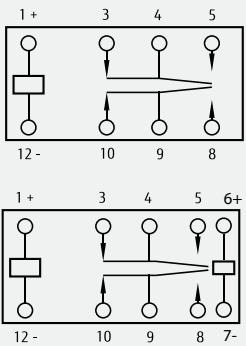
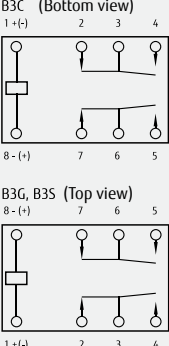
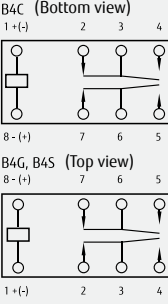
<b>Dimensions (W x L x H mm)</b>	37.0 x 43.0 x 22.0
<b>Weight (approx.)</b>	70 g
<b>Contact form</b>	1 a
<b>Contact rating (Resistive load)</b>	120A, 277VAC
<b>Minimum switching load (ref.)</b>	50mA, 100VAC
<b>Mechanical life</b>	1 x 10 <sup>6</sup> ops.
<b>Electrical life (Rated load)</b>	10 x 10 <sup>3</sup> ops.
<b>Operating temperature</b>	-40 to 85 °C
<b>Coil voltage</b>	100VAC (1 coil latching)
<b>Nominal coil power</b>	18VA
<b>Surge strength</b>	12,000 V (1.2 x50μs)
<b>Dielectric strength (1 min.)</b>	Open contacts: 2,000VAC Coil and contacts: 4,000VAC
<b>Safety standards</b>	-
<b>Mounting / Enclosure</b>	Coil: thru hole / Load: screws

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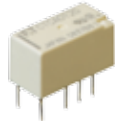

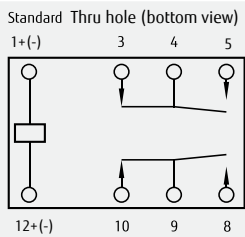
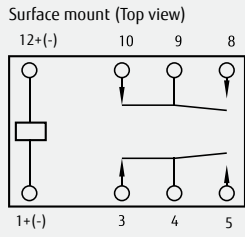
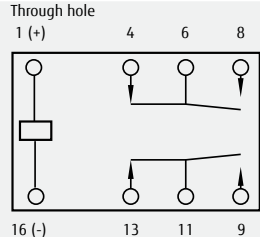
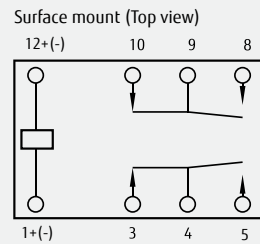
# Signal relays (1A ~ 2A)

Series Name	SY	RY	A
			
Description	1 to 2A Slim Type Relay	1 to 2A Signal Relay	1 to 2A Low Profile Relay
Remarks	<ul style="list-style-type: none"> <li>■ DIL pitch terminals</li> <li>■ Single or bifurcated contact types</li> </ul>	<ul style="list-style-type: none"> <li>■ High dielectric strength types</li> <li>■ MBB contact available</li> </ul>	<ul style="list-style-type: none"> <li>■ 1 and 2 coil latching versions available</li> <li>■ DIL pitch terminals</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)	0.5A 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 <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. 10 x 10 <sup>6</sup> ops. (latching)
Electrical life (Rated load)	100 x 10 <sup>3</sup> ops.	100 x 10 <sup>3</sup> ops. (WFZ) 200 x 10 <sup>3</sup> ops. (W, WZ) (AC) 500 x 10 <sup>3</sup> ops. (W, WZ, WF) (DC)	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)			<p>A, AL</p>  <p>AL-D</p> 

# Signal relays (1A ~ 2A)

Series Name	NA	FTR-B3	FTR-B4
			
<b>Description</b>	1 to 2A Slim Type Relay	2A Low Profile Relay	2A 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 available</li> <li>■ THT and SMT versions</li> </ul>	<ul style="list-style-type: none"> <li>■ Latching type available</li> <li>■ Space saver versions available</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. 10 x 10 <sup>6</sup> ops. (latching)	50 x 10 <sup>6</sup> ops. 20 x 10 <sup>6</sup> ops. (latching)	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.	100 x 10 <sup>3</sup> ops.
<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	0.1 to 0.23 W	0.1 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: 1,000VAC 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
<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 (1A ~ 2A)

Series Name	FTR-C1	FTR-C2
		
<b>Description</b>	2A Miniature Relay	2A Miniature Relay
<b>Remarks</b>	<ul style="list-style-type: none"> <li>■ Latching type available</li> <li>■ Contact gap 0.6mm</li> <li>■ Creepage&gt;2.5mm, clearance &gt;2.0mm</li> <li>■ High surge strength</li> </ul>	<ul style="list-style-type: none"> <li>■ Contact gap 2mm</li> <li>■ Creepage 2.5mm, clearance 2mm</li> <li>■ THT and SMT versions</li> </ul>
<b>Dimensions (W x L x H mm)</b>	7.5 x 15.0 x 9.3	9.85 x 20.05 x 11.4
<b>Weight (approx.)</b>	2.0 g	3.7 g
<b>Contact form</b>	2 c	2 c
<b>Contact rating (Resistive load)</b>	0.3A 125VAC 1A 30VDC	0.3A 125VAC 1A 30VDC
<b>Minimum switching load (ref.)</b>	10mVDC 0.01mA	10mVDC 0.01mA
<b>Mechanical life</b>	10 x 10 <sup>6</sup> ops.	10 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.
<b>Coil voltage (DC)</b>	3 to 24 V	3 to 24 V
<b>Nominal coil power</b>	0.14 to 0.3 W	0.15 to 0.3 W
<b>Surge strength</b>	5,000 V	2,500 V
<b>Dielectric strength (1 min.)</b>	Open contacts: 1,500VAC Coil and contacts: 3,000VAC	Open contacts: 1,500VAC Coil and contacts: 2,000VAC
<b>Safety standards</b>	UL, CSA, BSI, Telcordia	UL, CSA, BSI, Telcordia, IEC60950-1
<b>Mounting / Enclosure</b>	Through hole / Surface mount / RTIII	Through hole / Surface mount / RTIII
<b>Terminal layout (bottom view)</b>	<p>Standard Thru hole (bottom view)</p>  <p>Surface mount (Top view)</p> 	<p>Through hole</p>  <p>Surface mount (Top view)</p> 

# High Frequency relays

<b>Series Name</b>	<b>FTR-B3-RF</b>
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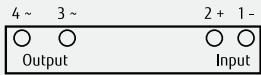
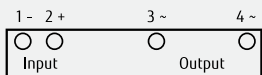


<b>Description</b>	2A GHz RF Relay
<b>Remarks</b>	<ul style="list-style-type: none"> <li>■ Latching type available</li> <li>■ S.M. space saver versions</li> </ul>

<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, 1W (@1GHz)
<b>Minimum switching load (ref.)</b>	10mVDC 0.01mA
<b>RF characteristics (@ 75 Ω)</b>	3W @ 1GHz-switching 1W @ 1GHz-carry Isolation > 30dB @ 1GHz Insertion loss < 0.2dB @ 1Hz V.S.W.R. < 1.2 @ 1Hz
<b>Mechanical life</b>	50 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.
<b>Coil voltage (DC)</b>	1.5 to 24 V
<b>Nominal coil power</b>	0.1 to 0.23 W
<b>Dielectric strength (1 min.)</b>	Open contacts: 750VAC Coil and contacts: 750VAC
<b>Safety standards</b>	-
<b>Mounting / Enclosure</b>	Surface mount / RTIII

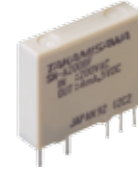
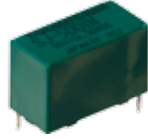
<b>Terminal layout (bottom view)</b>	
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# Solid State relays (1A ~ 3A)

Series Name		FTR-SL		SE			
							
Description		1A AC SSR		1.5A / 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	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)							

# 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)		10.0x20.0x12.8				5.0x20.0x17.0							
Module		-				Input (AC)	Input (DC)	Output (AC)		Output (DC)			
Weight (approx.)		5.5 g				20g	3.3 g	3.5 g		2.9 g			
Current		1.0A				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	1.0A rms		1.0A		±4 mA (VDD=5 V)	±0.4 mA (VDD=5 V)	1.0A rms		1.0A			
	Min. load current	10 mA rms		1 mA		-	-	10 mA rms		1 mA			
	1 cycle surge current	50 A		3.0A (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	1.2V rms		1.2V		-	-	1.2V rms		1.2V			
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)													



## Reference

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### Contact forms

#### Pole and throw

Since relays are switches, the terminology applied to switches is also applied to relays; a relay switches one or more poles, each of whose contacts can be thrown by energizing the coil in one of three ways:

#### Normally-open (NO)

Normally-open (NO) contacts connect the circuit when the relay is activated; the circuit is disconnected when the relay is inactive. It is also called a Form A contact or "make" contact. NO contacts may also be distinguished as "early-make" or NOEM, which means that the contacts close before the button or switch is fully engaged.

#### Normally-closed (NC)

Normally-closed (NC) contacts disconnect the circuit when the relay is activated; the circuit is connected when the relay is inactive. It is also called a Form B contact or "break" contact. NC contacts may also be distinguished as "late-break" or NCLB, which means that the contacts stay closed until the button or switch is fully disengaged.

#### Change-over (CO), or double-throw (DT)

Change-over (CO), or double-throw (DT), contacts control two circuits: one normally-open contact and one normally-closed contact with a common terminal. It is also called a Form C contact or "transfer" contact ("break before make"). If this type of contact utilizes a "make before break" functionality, then it is called a Form D contact.

### Designations

#### SPST – Single Pole Single Throw

These have two terminals which can be connected or disconnected. Including two for the coil, such a relay has four terminals in total. It is ambiguous whether the pole is normally open or normally closed. The terminology "SPNO" and "SPNC" is sometimes used to resolve the ambiguity.

#### SPDT – Single Pole Double Throw

A common terminal connects to either of two others. Including two for the coil, such a relay has five terminals in total.

#### DPST – Double Pole Single Throw

These have two pairs of terminals. Equivalent to two SPST switches or relays actuated by a single coil. Including two for the coil, such a relay has six terminals in total. The poles may be Form A or Form B (or one of each).

#### DPDT – Double Pole Double Throw

These have two rows of change-over terminals. Equivalent to two SPDT switches or relays actuated by a single coil. Such a relay has eight terminals, including the coil.

### Contacts

#### Contact Resistance

Statistical value. Specifies the total resistance of the closed contacts, terminals and contact springs, in milli-Ohms (or max Voltage drop) Not reproducible value. Sometimes the measuring condition is specified e.g. 6V/1A.

#### Contact Rating

The resistive Voltage and Ampere rating of a contact.

#### Max Switching Voltage

The max open circuit voltage that can be safely switched by the contacts to reach the limiting switching cycles. AC and DC voltages may differ.

#### Max Switching current

The max inrush current that can be safely switched by the contacts. <0.5sec. Meeting the specified number of making cycles. AC and DC currents may differ.

#### Max carry current

The current that can safely be carried by the contacts without causing damage due to overheating.

#### Max Switching Power

The max power in Watts or VA that can be safely switched by the contacts.

### Coil Values

#### Coil Voltage

Nominal voltage to be applied to the coil terminals, to assure reliable operation, maintaining all specifications

#### Coil Resistance

Nominal resistance measured in Ohms @ 20C or 23C. In most cases tolerance is +/- 10%.

#### Coil Power

The Voltage-current product of the coil indicating the dissipation (Heat) of the coil in Watts @ nominal coil voltage at 20C. (Short time value)

#### Coil Inductance

Inductance of the relay coil in [H or mH]. Normally not mentioned in the specifications, but can be important for designers.

#### Coil operating temperature

Indicating temp. Operating range of the coil. Is depending on the used coil wire temperature class and used relay materials. Coil temperature is an important parameter to calculate the actual operating voltage of the relay. (See operating range graphs in the relay specifications)





# About Fujitsu Components

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Fujitsu Components America, Inc. is responsible for managing the sales, marketing and distribution of electronic and system components and sub-systems throughout North and South America. Products include relays, connectors, input and pointing devices, touch panels, thermal printers, and wireless modules.

Primary customers include large original equipment manufacturers and resellers of a broad range of electronic equipment for various industries.

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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.

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