
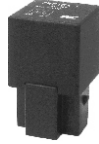
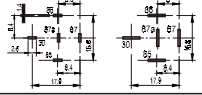
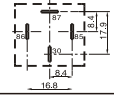






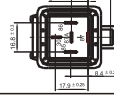
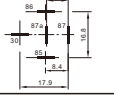





Type	FRA2	FRA3	
Appearance			
Dimensions: L x W x H (mm)	Open : 24 x 19 x 20 With cover: 26.5 x 21.5 x 22.3	Open : 16 x 13.2 x 18 With cover: 17.5 x 15 x 20	
International Security Certificates			
Coil Voltage (V)	DC6, 12, 24	DC3, 5, 6, 9, 12, 18, 24	
Coil Power	1.6W	1.0W	
Contact Material	AgNi, AgSnO ₂	AgNi, AgSnO ₂	
Contact Arrangement	1A, 1B, 1C	1A, 1B, 1C, 1U, 1V, 1W	
Contact transfer current (A)	45A	20A	
Contact rating	1A: 45A 14VDC 1C: 40/30A 14VDC	1A: 20A 14VDC 1C: 15A/10A 14VDC 1U: 2 x 15A 14VDC 1W: 2 x 15A/10A 14VDC	
Max. Switching Power	630W	280W, 2 x 280W	
Max. Switching Voltage	75VDC	75VDC	
Ambient temperature	-40°C ~ +125°C	-40°C ~ +105°C	
Dielectric Strength	Between Contacts	50Hz 500VAC	50Hz 750VAC
	Between Contact and Coil	50Hz 750VAC	50Hz 1,500VAC
Insulation Resistance	100MΩ	100MΩ	
Initial Contact Resistance	≤30mΩ	≤50mΩ	
Electrical Life (Operations)	1 x 10 ⁵	1 x 10 ⁵	
Mechanical Life (Operations)	1 x 10 ⁷	1 x 10 ⁷	
Weight (Approx.)	Open: 17g; Sealed: 21g	Open: 9g; Sealed: 12g	
Mounting Layout (Bottom View) (mm)			
Wiring Diagram (Bottom View)			
Cross Reference	TYCO : V23076 / VKP Omron : G8PE	TYCO : V23072 / VKM	

FRA3D	FRC1	FRC1B
29.6 x 18 x 20	FRC1(B) : 26.5 x 26.5 x 24.5 (+16); FRC1(B)-1: 26.5 x 26.5 x 24.5; FRC1(B)-2: 26.5 x 26.5 x 24.5 (+14)	
DC3, 5, 6, 9, 12, 18, 24		DC6, 12, 24, 48
1.2W		1.6W
AgNi, AgSnO ₂		AgNi, AgSnO ₂
2 x 1A, 2 x 1B, 2 x 1C		1A, 1B, 1C, 1U, 2A(2 x pin#87)
20A	30A	40A
20A 15.2VDC	N.O.: 30A 14VDC N.C.: 20A 14VDC	N.O.: 40A 14VDC N.C.: 30A 14VDC 1U/2A: 2 x 20A 14VDC
280W		630W
75VDC		75VDC
-40°C ~ +105°C		-40°C ~ +125°C
50Hz 750VAC		50Hz 500VAC
50Hz 1,500VAC		50Hz 500VAC
100MΩ		100MΩ
≤50mΩ		≤30mΩ
1 x 10 ⁵		1 x 10 ⁵
1 x 10 ⁷		1 x 10 ⁷
20g		FRC1(B): 36g; FRC1(B)-1: 31g; FRC1(B)-2: 38g
TYCO : V23081	2A(2 x pin 87) 1A 1C 1CJ 1UJ	Matsushita: CB TYCO : VF4 Omron : G8J



Type	FRC1N	FRC1E	
Appearance			
Dimensions: L x W x H (mm)	FRC1N : 26.5 x 26.5 x 25 (+15.2) FRC1N-1: 26.5 x 26.5 x 25	28 x 28 x 46	
International Security Certificates			
Coil Voltage (V)	DC6, 9, 12, 24, 48	DC6, 12, 24	
Coil Power	1.6W	1.8W	
Contact Material	AgCdO, AgNi, AgSnO ₂	AgSnO ₂	
Contact Arrangement	1A, 1B, 1C, 1U	1A	
Contact transfer current (A)	80A 70A 50A 40A 30A 20A 15A 10A 5A 1A 50A	40A	
Contact rating	N.O.: 50A 14VDC N.C.: 40A 14VDC 1U : 2 x 25A 14VDC	40A 14VDC	
Max. Switching Power	700W	630W	
Max. Switching Voltage	75VDC	75VDC	
Ambient temperature	-40°C ~ +125°C	-40°C ~ +125°C	
Dielectric Strength	Between Contacts	50Hz 500VAC	50Hz 500VAC
	Between Contact and Coil	50Hz 750VAC	50Hz 500VAC
Insulation Resistance	100MΩ	100MΩ	
Initial Contact Resistance	≤30mΩ	≤30mΩ	
Electrical Life (Operations)	1 x 10 ⁵	1 x 10 ⁵	
Mechanical Life (Operations)	1 x 10 ⁷	1 x 10 ⁷	
Weight (Approx.)	FRC1N: 36g; FRC1N-1: 31g	36g	
Mounting Layout (Bottom View) (mm)			
Wiring Diagram (Bottom View)	Please refer to "FRC1"		
Cross Reference			



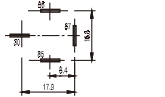

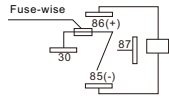
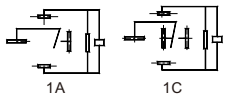
FRC1W	FRC2	FRC2B
		
35.5 x 35.5 x 45 (+23)	FRC2(B) : 29 x 29 x 26.5 (+16.5); FRC2(B)-2: 29 x 29 x 26.5 (+15.2)	FRC2(B)-1: 29 x 29 x 26.5
DC6, 12, 24, 48	DC6, 12, 24, 48	
1.6W	1.8W	
AgNi, AgSnO ₂	AgNi, AgSnO ₂	
1A, 1C	1A, 1C, 1U	
40A	50A	60A
40A 14VDC	N.O.: 50A 14VDC N.C.: 40A 14VDC	N.O.: 60A 14VDC N.C.: 40A 14VDC 1U : 2 x 25A 14VDC
630W	840W	
75VDC	75VDC	
-40°C ~ +125°C	-40°C ~ +125°C	
50Hz 500VAC	50Hz 500VAC	
50Hz 500VAC	50Hz 500VAC	
100MΩ	100MΩ	
≤30mΩ	≤30mΩ	
1 x 10 ⁵	1 x 10 ⁵	
1 x 10 ⁷	1 x 10 ⁷	
48g	38g	
		
		
TYCO: VF4	TYCO: VF4	




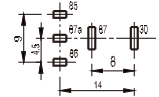
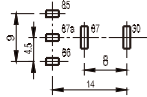
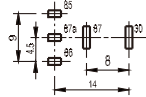
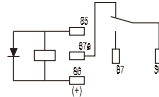
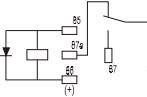
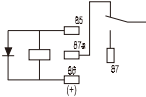


Type	FRC2N	FRC3	
Appearance			
Dimensions: L x W x H (mm)	FRC2N : 26.5 x 26.5 x 23.5 (+16) FRC2N-1: 26.5 x 26.5 x 23.5	FRC3 : 29 x 29 x 26.5 (+16) FRC3-1: 29 x 29 x 26.5	
International Security Certificates			
Coil Voltage (V)	DC6, 9, 12, 24, 48	DC12, 24	
Coil Power	1.8W	1.8W	
Contact Material	AgNi, AgSnO ₂	AgNi, AgSnO ₂	
Contact Arrangement	1A, 1B, 1C	1A, 1C	
Contact transfer current (A)	70A	80A	
Contact rating	N.O.: 70A 14VDC N.C.: 50A 14VDC	N.O.: 80A 14VDC N.C.: 60A 14VDC	
Max. Switching Power	980W	1120W	
Max. Switching Voltage	75VDC	75VDC	
Ambient temperature	-40°C ~ +85°C	-40°C ~ +125°C	
Dielectric Strength	Between Contacts	50Hz 500VAC	50Hz 500VAC
	Between Contact and Coil	50Hz 750VAC	50Hz 500VAC
Insulation Resistance	100MΩ	100MΩ	
Initial Contact Resistance	≤100mΩ	≤30mΩ	
Electrical Life (Operations)	1 x 10 ⁵	1 x 10 ⁵	
Mechanical Life (Operations)	1 x 10 ⁷	1 x 10 ⁷	
Weight (Approx.)	FRC2N: 35g; FRC2N-1: 30g	47g	
Mounting Layout (Bottom View) (mm)			
Wiring Diagram (Bottom View)			
Cross Reference		TYCO: VF7	



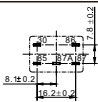
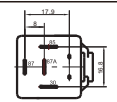
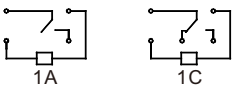
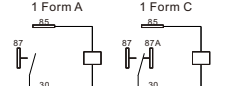
FRC3B	FRC3N	FRC4
FRC3B : 29 x 29 x 26.5 (+16) FRC3B-1: 29 x 29 x 26.5	FRC3N : 26.5 x 26.5 x 23.5 (+16) FRC3B-1: 26.5 x 26.5 x 23.5	26.5 x 26.5 x 25
DC12, 24	DC6, 12, 24, 48	DC6, 12, 24
2.9W	1.8W	1.8W
AgSnO ₂	AgSnO ₂	AgNi, AgSnO ₂
1A, 1C	1A, 1C	1A
100A	90A	30A
N.O.: 100A 14VDC N.C.: 70A 14VDC	N.O.: 90A 14VDC N.C.: 60A 14VDC	30A 14VDC
1,400W	1,260W	420W
75VDC	75VDC	75VDC
-40°C ~ +125°C	-40°C ~ +85°C	-40°C ~ +125°C
50Hz 500VAC	50Hz 500VAC	50Hz 500VAC
50Hz 500VAC	50Hz 750VAC	50Hz 500VAC
100MΩ	100MΩ	100MΩ
≤30mΩ	≤100mΩ	≤50mΩ
1 x 10 ⁵	1 x 10 ⁵	1 x 10 ⁵
1 x 10 ⁷	1 x 10 ⁷	1 x 10 ⁷
47g	38g	30g
TYCO: VF7		

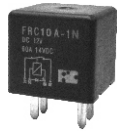


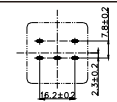
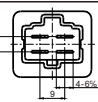
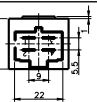
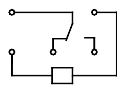




Type	FRC5	FRC6
Appearance		
Dimensions: L x W x H (mm)	33 x 25.2 x 21	35 x 33 x 35
International Security Certificates		
Coil Voltage (V)	DC6, 12, 24	DC12, 24
Coil Power	1.8W	2.9W
Contact Material	AgNi, AgSnO ₂	AgSnO ₂
Contact Arrangement	1A	1A, 1C
Contact transfer current (A)	30A	150A
Contact rating	30A 14VDC	NO: 150A 12VDC NC: 100A 12VDC
Max. Switching Power	420W	1,800W
Max. Switching Voltage	75VDC	75VDC
Ambient temperature	-40°C ~ +105°C	-40°C ~ +125°C
Dielectric Strength	Between Contacts	50Hz 500VAC
	Between Contact and Coil	50Hz 500VAC
Insulation Resistance	100MΩ	100MΩ
Initial Contact Resistance	≤50mΩ	≤30mΩ
Electrical Life (Operations)	1 x 10 ⁵	1 x 10 ⁵
Mechanical Life (Operations)	1 x 10 ⁷	1 x 10 ⁷
Weight (Approx.)	32g	60g
Mounting Layout (Bottom View) (mm)		
Wiring Diagram (Bottom View)		
Cross Reference	TYCO: VFS	



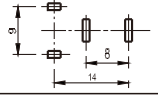
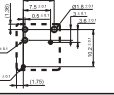
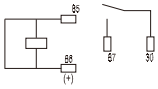
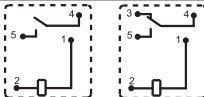
FRC7	FRC7B	FRC7N
		
23 x 15.5 x 26	20.5 x 15.5 x 22.5	20.5 x 15.4 x 22.1
DC6, 12, 24	DC6, 12, 24	DC12, 24
1.2W, 1.5W	1.8W	1.5W, 1.8W
AgNi, AgSnO ₂	AgNi, AgSnO ₂	AgSnO ₂
1A, 1C	1A, 1C	1A, 1C
25A	35A	40A
N.O.: 25A 14VDC N.C.: 20A 14VDC	N.O.: 35A 14VDC N.C.: 25A 14VDC	1A: 40A 14VDC 1C: 35A 14VDC 20A 14VDC
300W	490W	560W
75VDC	75VDC	28VDC
-40°C ~ +125°C	-40°C ~ +85°C	-40°C ~ +125°C
50Hz 500VAC	50Hz 500VAC	50Hz 500VAC
50Hz 500VAC	50Hz 750VAC	50Hz 500VAC
100MΩ	100MΩ	100MΩ
≤50mΩ	≤100mΩ	≤50mΩ
1 x 10 ⁵	1 x 10 ⁵	1 x 10 ⁵
1 x 10 ⁷	1 x 10 ⁷	1 x 10 ⁷
18.5g	20g	18g
		
		
TYCO: VFM Omron: G8H	TYCO : VFM Omron : G8H Matsushita: CM	TYCO : VFM Omron : G8H Matsushita: CM




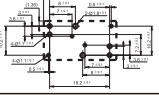
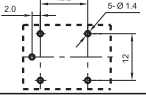
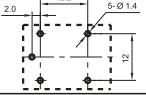
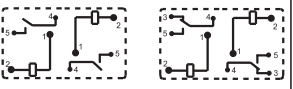
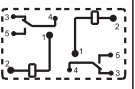
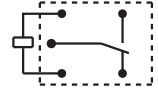


Type	FRC8	FRC9
Appearance		
Dimensions: L x W x H (mm)	23 x 15 x 25.5	28 x 26.2 x 26 (+13.9)
International Security Certificates		
Coil Voltage (V)	DC6, 12, 24	DC12
Coil Power	1.3W	-
Contact Material	AgSnO ₂	AgSnO ₂
Contact Arrangement	1A, 1C	1A, 1C
Contact transfer current (A)	40A	30A
Contact rating	N.O.: 40A 14VDC N.C.: 25A 14VDC	2 x 21W (lamp)
Max. Switching Power	560W	420W
Max. Switching Voltage	75VDC	75VDC
Ambient temperature	-40°C ~ +125°C	-40°C ~ +125°C
Dielectric Strength	Between Contacts	50Hz 500VAC
	Between Contact and Coil	50Hz 500VAC
Insulation Resistance	100MΩ	100MΩ
Initial Contact Resistance	≤100mΩ	≤50mΩ
Electrical Life (Operations)	1 x 10 ⁵	5 x 10 ⁴
Mechanical Life (Operations)	1 x 10 ⁷	10 ⁷
Weight (Approx.)	21g	30g
Mounting Layout (Bottom View) (mm)		
Wiring Diagram (Bottom View)		
Cross Reference	Matsushita: CV TYCO : VJ28	



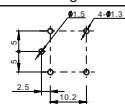
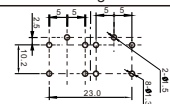
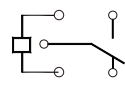
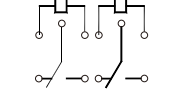
FRC10	FRC11	FRC12
		
28 x 28 x 25.5	FRC11 : 29 x 24 x 30 FRC11-2: 32 x 26 x 30	28.3 x 23 x 30.2 (+20.3)
DC12	DC12, 24	DC6, 12, 24
1.6W	1.5W	1.44W
AgSnO ₂	AgSnO ₂	AgSnO ₂
1A, 1C	1A	1A
60A	40A	30A
NO: 60A 14VDC NC: 50A 14VDC	40A 14VDC	30A 14VDC
700W	560W	420W
75VDC	75VDC	75VDC
-40°C ~ +125°C	-40°C ~ +105°C	-40°C ~ +85°C
50Hz 500VAC	50Hz 500VAC	50Hz 500VAC
50Hz 500VAC	50Hz 500VAC	50Hz 500VAC
100MΩ	100MΩ	100MΩ
≤50mΩ	≤50mΩ	≤50mΩ
1 x 10 ⁵	1 x 10 ⁵	1 x 10 ⁵
1 x 10 ⁷	1 x 10 ⁶	5 x 10 ⁵
34g	FRC11: 35g; FRC11-2: 38g	Plastic cover: 30g; Metal cover: 40g
		
		
Omron: G8W P&B : VF28		Song Chuan: 804



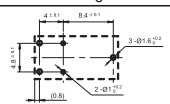
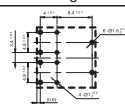
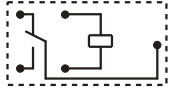
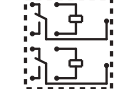


Type	FRC17	FRS3M
Appearance		
Dimensions: L x W x H (mm)	22.5 x 15 x 16.3	12 x 12.9 x 9.9
International Security Certificates		
Coil Voltage (V)	DC12	DC10, 12
Coil Power	1.07W	0.56W
Contact Material	AgSnO ₂	AgNi, AgSnO ₂
Contact Arrangement	1A	1A, 1C
Contact transfer current (A)	25A	30A
Contact rating	25A 14VDC	30A 14VDC
Max. Switching Power	300W	420W
Max. Switching Voltage	75VDC	24VDC
Ambient temperature	-40°C ~ +100°C	-40°C ~ +105°C
Dielectric Strength	Between Contacts	50Hz 500VAC
	Between Contact and Coil	50Hz 500VAC
Insulation Resistance	20MΩ	100MΩ
Initial Contact Resistance	≤50mΩ	≤50mΩ
Electrical Life (Operations)	1 x 10 ⁵	1 x 10 ⁵
Mechanical Life (Operations)	1 x 10 ⁶	1 x 10 ⁷
Weight (Approx.)	14g	4g
Mounting Layout (Bottom View) (mm)		
Wiring Diagram (Bottom View)		
Cross Reference	Matsushita: CV TYCO : G8HL	Matsushita: CP TYCO : 23086

FRS3MD	FRS7M	FRS10M
		
23.5 x 12.9 x 9.9	14.4 x 12.4 x 15	19 x 15.6 x 15.3
DC10, 12	DC12	DC6, 12, 24
0.56W	0.64W	0.64W, 0.8W
AgNi, AgSnO ₂	AgSnO ₂	AgSnO ₂
2 x 1A, 2 x 1C	1U	1A, 1B, 1C
30A	20A	20A
30A 14VDC	2 x 20A 14VDC	20A 16VDC
420W	560W	280W
24VDC	75VDC	75VDC
-40°C ~ +105°C	-40°C ~ +125°C	-40°C ~ +105°C
50Hz 500VAC	50Hz 500VAC	50Hz 500VAC
50Hz 500VAC	50Hz 500VAC	50Hz 500VAC
100MΩ	100MΩ	250MΩ
≤50mΩ	≤20mΩ	≤50mΩ
1 x 10 ⁵	1 x 10 ⁵	1 x 10 ⁵
1 x 10 ⁷	1 x 10 ⁶	1 x 10 ⁷
9g	8g	10g
		
		
Matsushita: CP TYCO : 23086	NEC: EM1	Matsushita: JSM Omron : G8U TYCO : T72M



Type	FRS12M	FRS12MD	
Appearance			
Dimensions: L x W x H (mm)	FRS12M: 15.7 x 12.3 x 14	FRS12MD: 25.5 x 16 x 14.4	
International Security Certificates			
Coil Voltage (V)	DC5, 6, 9, 12, 24	DC5, 6, 9, 12, 24	
Coil Power	0.6W, 0.8W	0.6W, 0.8W	
Contact Material	AgNi, AgSnO ₂	AgNi, AgSnO ₂	
Contact Arrangement	1A, 1C, 1U	2 x 1A, 2 x 1C, 2 x 1U	
Contact transfer current (A)	20A	20A	
Contact rating	1C: 20A 14VDC 1U: 2 x 10A 14VDC	2 x 20A 14VDC	
Max. Switching Power	280W	280W	
Max. Switching Voltage	75VDC	75VDC	
Ambient temperature	-40°C ~ +85°C	-40°C ~ +85°C	
Dielectric Strength	Between Contacts	50Hz 500VAC	50Hz 500VAC
	Between Contact and Coil	50Hz 500VAC	50Hz 500VAC
Insulation Resistance	100MΩ	100MΩ	
Initial Contact Resistance	≤50mΩ	≤50mΩ	
Electrical Life (Operations)	1 x 10 ⁵	1 x 10 ⁵	
Mechanical Life (Operations)	1 x 10 ⁷	1 x 10 ⁷	
Weight (Approx.)	6g	12g	
Mounting Layout (Bottom View) (mm)			
Wiring Diagram (Bottom View)			
Cross Reference	Matsushita: JJM/CQ Omron : G8QN	Matsushita: JJM/CQ Omron : G8QN	

FRS13M	FRS13MD	
		
14.3 x 7.5 x 13.8	14.3 x 15.7 x 13.8	
DC12	DC12	
0.64W, 0.8W	0.64W, 0.8W	
AgNi, AgSnO ₂	AgNi, AgSnO ₂	
1A, 1C	2 x 1A, 2 x 1C	
25A	25A	
25A 14VDC (Motor load)	25A 14VDC (Motor load)	
480W	480W	
16VDC	16VDC	
-40°C ~ +105°C	-40°C ~ +105°C	
50Hz 500VAC	50Hz 500VAC	
50Hz 500VAC	50Hz 500VAC	
100MΩ	100MΩ	
≤100mΩ	≤100mΩ	
1 x 10 ⁵	1 x 10 ⁵	
1 x 10 ⁶	1 x 10 ⁶	
4.1g	8g	
		
		
Matsushita: CJ Omron : G8N	Matsushita: CJ Omron : G8NW	