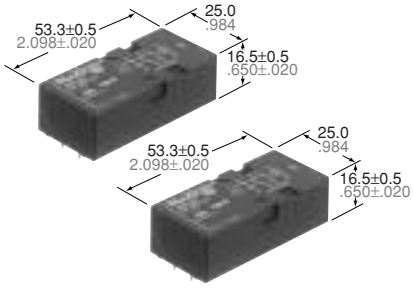
Panasonic
ideas for life

POLARIZED, MONOSTABLE SAFETY RELAY with (mechanical linked) forced contacts operation

SF RELAYS



mm inch

FEATURES

• Forced operation contacts (2 Form A 2 Form B, 3 Form A 1 Form B)
N.O. and N.C. side contacts are connected through a card so that one interacts with the other in movement. In case of a contact welding, the other keeps a min. 0.5mm .020inch contact gap.

• Separated chamber structure (2 Form A 2 Form B, 3 Form A 1 Form B)
N.O. and N.C. side contacts are put in each own space surrounded with a card and a body-separater. That prevents short circuit between contacts, which is caused by their springs welding or damaged.

• UL/CSA, TÜV, SEV approved

SPECIFICATIONS

Contact

Type		SF2	SF3
Arrangement		2 Form A 2 Form B	3 Form A 1 Form B
Initial contact resistance, max. (By voltage drop 6 V DC 1 A)		30 mΩ	
Contact material		Gold-flashed silver alloy	
Rating (resistive)	Nominal switching capacity	6 A 250 V AC, 6 A 30 V DC	
	Max. switching power	1,500 VA, 180 W	
	Max. switching voltage	30 V DC, 440 V AC	
	Max. carrying current	6 A DC, AC	
	Min. switching capacity#1	100 mA, 5 V DC	
Expected life (min. operations)	Mechanical (at 180 cpm) (resistive)	10^7	
	Electrical (at 20 cpm)	3×10^4*1	

Coil (at 25°C 77°F)

Nominal operating power	500 mW

#1 This value can change due to the switching frequency, environmental conditions, and desired reliability level, therefore it is recommended to check this with the actual load.

Remarks

* Specifications will vary with foreign standards certification ratings.
*1 More than 10^5 operations when applying the nominal switching capacity to one side of contact pairs of each Form A contact and Form B contact
*2 Measurement at same location as "Initial breakdown voltage" section
*3 Detection current: 10mA
*4 Excluding contact bounce time
*5 Half-wave pulse of sine wave: 11ms; detection time: 10μs
*6 Half-wave pulse of sine wave: 6ms
*7 Detection time: 10μs
*8 Refer to 6. Conditions for operation, transport and storage mentioned in AMBIENT ENVIRONMENT

Characteristics (at 20°C 68°F, 50% Relative humidity)

		SF2	SF3
Max. operating speed		180 cpm (at nominal voltage)	
Initial insulation resistance*2		Min. 1,000 MΩ at 500 V DC	
Initial breakdown voltage*3	Between contact sets	2,500 Vrms	
	Between open contacts	2,500 Vrms	
	Between contact and coil	2,500 Vrms	
Operate time*4 (at nominal voltage)		Max. 30 ms	
Release time (without diode)*4 (at nominal voltage)		Max. 15 ms	
Temperature rise (at nominal voltage)		Max. 45°C with nominal coil voltage and at 6 A switching current	
Shock resistance	Functional*5	Min. 294 m/s² {30 G}	
	Destructive*5	Min. 980 m/s² {100 G}	
Vibration resistance	Functional*7	117.6 m/s² {12 G}, 10 to 55 Hz at double amplitude of 2 mm	
	Destructive	117.6 m/s² {12 G}, 10 to 55 Hz at double amplitude of 2 mm	
Conditions for operation, transport and storage*8 (Not freezing and condensing at low temperature)	Ambient temp.	–40°C to +70°C –40°F to +158°F	
	Humidity	5 to 85% R.H.	
Unit weight		37 g 1.31 oz	

ORDERING INFORMATION

Ex. SF [2] —— [DC 12 V]

Contact arrangement	Coil voltage
2: 2 Form A 2 Form B 3: 3 Form A 1 Form B	DC 5, 9, 12, 18, 21, 24, 36, 48, 60 V

TYPICAL APPLICATIONS

- **Signal**
- **Escalator**
- **Elevator**
- **Medical Instruments**
- **Factory Automation**

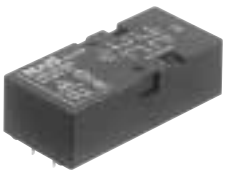
TYPES AND COIL DATA (at 20°C 68°F)

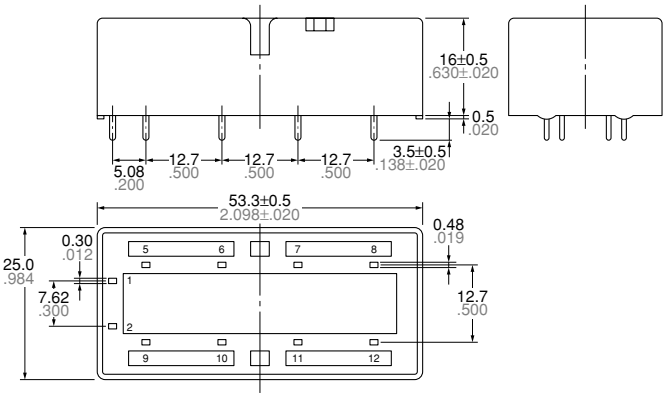
Contact arrangement	Part No.	Nominal voltage, V DC	Pick-up voltage, VDC (max.)	Drop-out voltage, V DC (min.)	Coil resistance Ω (±10%)	Nominal operating current, mA (±10%)	Nominal operating power, mW	Max. allowable voltage, V DC
SF2	SF2-DC5V	5	3.75	0.5	50	100	500	6
	SF2-DC9V	9	6.75	0.9	162	55.6	500	10.8
	SF2-DC12V	12	9	1.2	288	41.7	500	14.4
	SF2-DC18V	18	13.5	1.8	648	27.8	500	21.6
	SF2-DC21V	21	15.75	2.1	882	23.8	500	25.2
	SF2-DC24V	24	14.4	2.4	1,152	20.8	500	28.8
	SF2-DC36V	36	27	3.6	2,592	13.9	500	43.2
	SF2-DC48V	48	36	4.8	4,608	10.4	500	57.6
	SF2-DC60V	60	45	6.0	7,200	8.3	500	72
SF3	SF3-DC5V	5	3.75	0.5	50	100	500	6
	SF3-DC9V	9	6.75	0.9	162	55.6	500	10.8
	SF3-DC12V	12	9	1.2	288	41.7	500	14.4
	SF3-DC18V	18	13.5	1.8	648	27.8	500	21.6
	SF3-DC21V	21	15.75	2.1	882	23.8	500	25.2
	SF3-DC24V	24	14.4	2.4	1,152	20.8	500	28.8
	SF3-DC36V	36	27	3.6	2,592	13.9	500	43.2
	SF3-DC48V	48	36	4.8	4,608	10.4	500	57.6
	SF3-DC60V	60	45	6.0	7,200	8.3	500	72

DIMENSIONS

mm inch

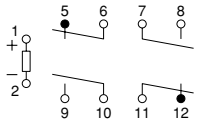
1) SF2



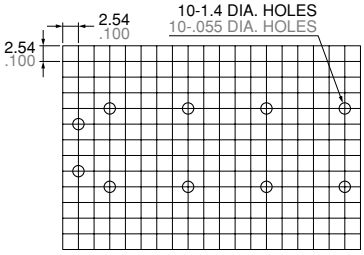


General tolerance: ±0.3 ±.012

Schematic (Bottom view)

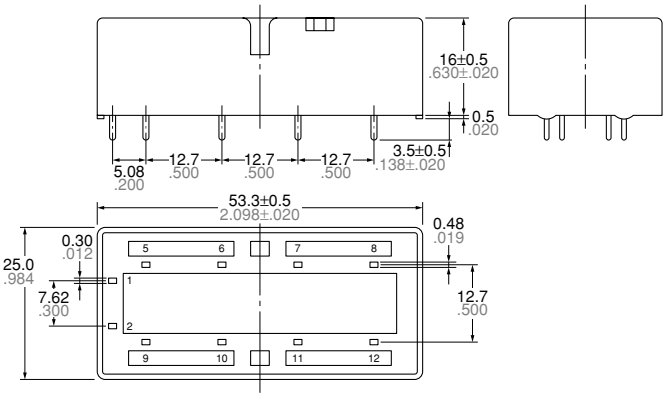


PC board pattern (Bottom view)



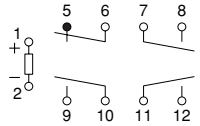
Tolerance: ±0.1 ±.004

1) SF3

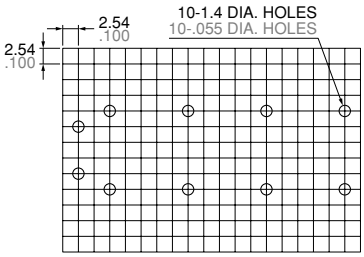


General tolerance: ±0.3 ±.012

Schematic (Bottom view)



PC board pattern (Bottom view)



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