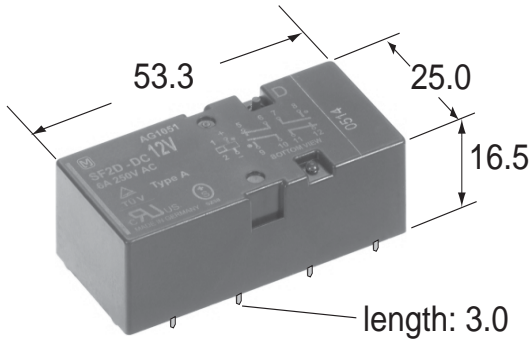


**Panasonic**  
ideas for life

**POLARIZED, MONOSTABLE  
SAFETY RELAY  
WITH FORCIBLY GUIDED  
DOUBLE CONTACTS**

**SF2D  
RELAY**



Tolerance  $\pm 0.3\text{mm}$   
Weight approx. 47g

**Features**

- Relay complies with EN 50205, Type A
- Overvoltage category as per IEC 60664-1 III / 4kV
- Rated voltage as per IEC 60664-1 basic insulation

	Pollution degree		
	2 inside	2 outside	3 inside
Coil-contact	400V	400V	250V
Contact-contact	400V	400V	400V

- Relay complies with IEC/EN 60335-1 (GWT)
- For applications according to EN 50155\*

\*For details, please contact your local Panasonic Electric Works representative.

**SPECIFICATIONS**

**Contact**

Contact configuration (a = normally open / NO, b = normally closed / NC)	2a2b
Contact material	AgSnO <sub>2</sub> , with Au flash
Contact resistance (initial at 6V DC, 1A)	30m $\Omega$
Making and breaking capacities (breathing hole open) <sup>*1</sup>	6A 250V / 3A 24V
Max. switching voltage	400V
Min. switching voltage / min. switching current	10V / 10mA
Pick-up / drop-out / bounce time (approx. values at U <sub>nominal</sub> )	17.5 / 7 / 2ms
Mechanical life	10 <sup>7</sup> ops

**Coil**

Operate / release voltage (% of U <sub>nominal</sub> at 20°C)	75% / 10%
Pick-up/nominal power consumption at 20°C	280 / 500mW

**Remarks**

- \*1 According to EN 60947-5-1: 1997, table 4 AC15 / DC13
- \*2 Contact interruption <10 $\mu$ s
- \*3 Breathing hole open

**Characteristics**

Max. switching frequency (without load)	10Hz
Permissible ambient temperature at nominal power consumption	-40°C to +70°C
Upper temperature limit	105°C
Test voltage: open contact / contact-contact / contact-coil	2500 / 2500 / 2500V <sub>rms</sub>
Insulation resistance at 500V DC (initial)	10 <sup>9</sup> $\Omega$
Shock resistance (11ms) NO/NC <sup>*2</sup>	30G
Vibration resistance 10 – 200 Hz (10 – 55 Hz, amplitude 2 mm) <sup>*2</sup>	10G
Degree of protection	IP67 / IP30 <sup>*3</sup>
Unit weight	37g

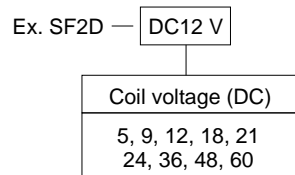
**Important: Relay characteristics may be influenced by:**

- strong external magnetic fields
- magnetic conductive materials near the relay
- narrow top-to-top mounting (printed surface to printed surface)

**Note:**

Suitable for most common washing methods except ultrasonic cleaning.

**ORDERING INFORMATION**



Note: Standard packing; Carton: 20 pcs. Case 200 pcs.

# SF2D

## COIL DATA

Part number	Coil nominal voltage V DC	Operate voltage V DC	Release voltage V DC	Coil resistance $\Omega$ ( $\pm 10\%$ , 20°C)	Coil inductance (mH)
SF2D-DC5V	5	3.75	0.5	50	47
SF2D-DC9V	9	6.75	0.9	162	145
SF2D-DC12V	12	9.00	1.2	288	252
SF2D-DC18V	18	13.50	1.8	648	551
SF2D-DC21V	21	15.75	2.1	882	742
SF2D-DC24V	24	18.00	2.4	1152	959
SF2D-DC36V	36	27.00	3.6	2592	2097
SF2D-DC48V	48	36.00	4.8	4608	3654
SF2D-DC60V	60	45.00	6.0	7200	5612

## ELECTRICAL LIFE

Voltage	Current	Load type	Frequency	Duty cycle	No. of contacts	No. of ops.
230V AC	8A	AC 1	0.25Hz	25%	2 <sup>*2</sup>	85,000 <sup>*5</sup>
250V AC	6A	AC 1	0.33Hz	50%	4 <sup>*2</sup>	100,000 <sup>*5</sup>
230V AC	6A	AC 1	0.33Hz	10%	2 <sup>*3</sup>	200,000 <sup>*4,*5</sup>
230V AC	30 / 3A	AC 15 <sup>*1</sup>	0.33Hz	10%	1 <sup>*3</sup>	150,000 <sup>*4,*5</sup>
24V DC	8A	DC 1	0.33Hz	10%	2 <sup>*3</sup>	200,000 <sup>*4,*5</sup>
24V DC	3A	DC 13 <sup>*1</sup>	0.33Hz	10%	1 <sup>*3</sup>	50,000 <sup>*4,*5</sup>
24V DC	3A	L/R = 40ms	0.33Hz	10%	1 <sup>*3</sup>	100,000 <sup>*4,*5</sup>

\*1 EN 60947-5-1: 1997; table C.1

\*2 Breathing hole closed

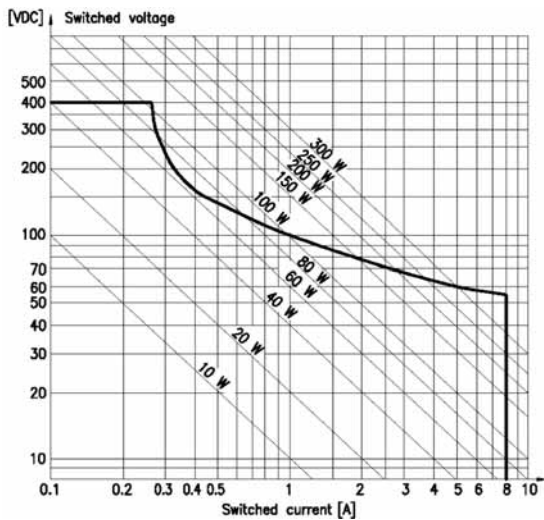
\*3 Breathing hole open

\*4 Ambient temperature +70°C

\*5 Dielectric strength according to EN61810-1:2004.

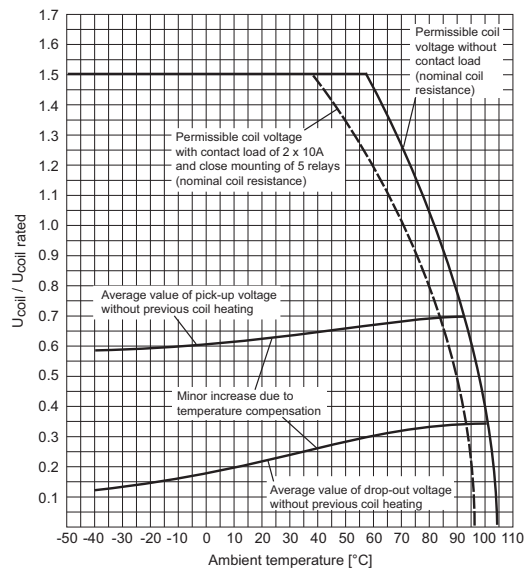
## REFERENCE DATA

Load limit curve



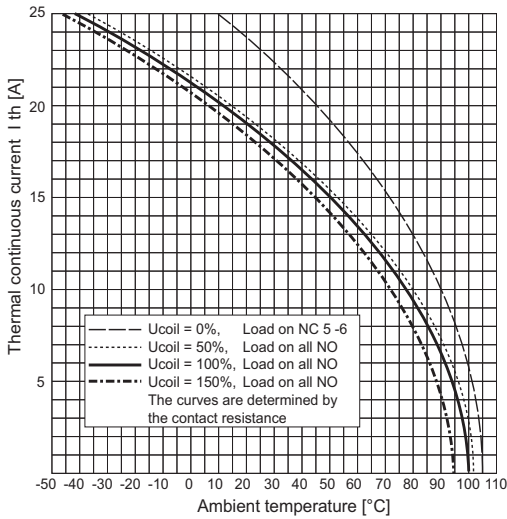
Loads in the range under the curve can be switched safely. The arc will extinguish before the opposite contact makes.

Coil voltage characteristics



Permissible coil voltages and pick-up and drop-out characteristics at various ambient temperatures.

Contact current characteristics



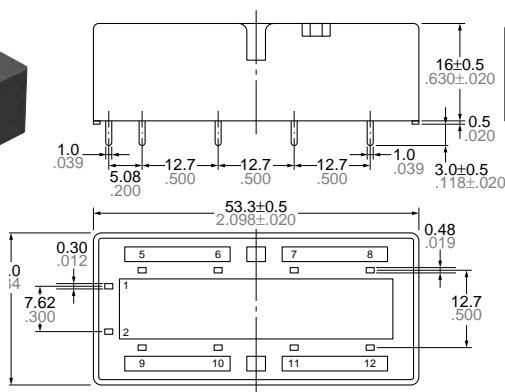
**DIMENSIONS** (mm inch) Interested in CAD data? You can obtain CAD data for all products with a **CAD Data** mark from [your local Panasonic Electric Works representative](#).

2 Form A 2 Form B

**CAD Data**

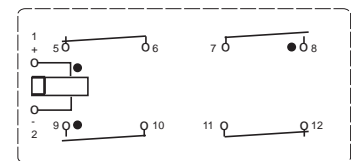


External dimensions



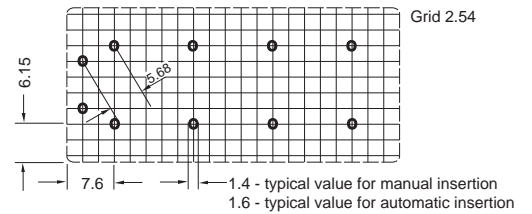
General tolerance:  $\pm 0.3 \pm 0.12$

Schematic (Bottom view)



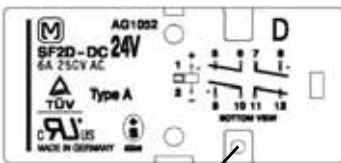
The contacts are shown in the deenergized condition.

PC board pattern (Bottom view)



Tolerance:  $\pm 0.1 \pm 0.04$

APPLICATION NOTES



Nipple

If required a breathing hole can be made in the cover by removing the nipple. However be aware that the degree of protection will be reduced from IP67 to IP30!

For Cautions for Use, see [Relay Technical Information](#).