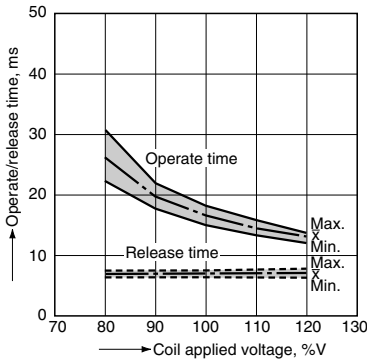


## REFERENCE DATA

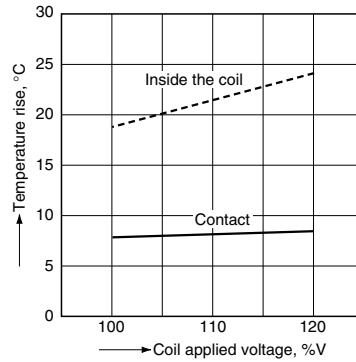
### 1. Operate/release time (without diode)

Tested sample: SF2D-DC24V (2 Form A 2 Form B)  
Quantity: n = 20



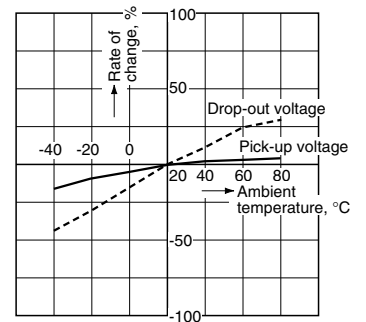
### 2. Temperature rise

Tested sample: SF4D-DC24V (4 Form A 4 Form B)  
Quantity: n = 6  
Coil applied voltage: 100%V, 120%V  
Contact carry current: 6A



### 3. Ambient temperature characteristics

Tested sample: SF4D-DC24V (4 Form A 4 Form B)  
Quantity: n = 6



## DIMENSIONS (mm inch)

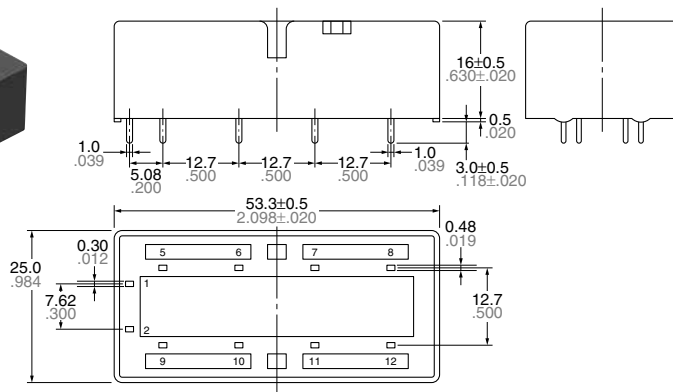
The CAD data of the products with a **CAD Data** mark can be downloaded from: <http://industrial.panasonic.com/ac/e/>

### 1. 2 Form A 2 Form B

**CAD Data**

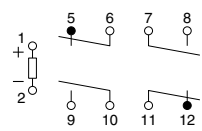


#### External dimensions

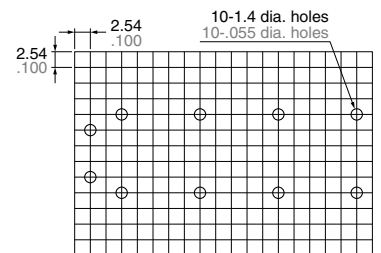


General tolerance:  $\pm 0.3 \pm 0.12$

#### Schematic (Bottom view)



#### PC board pattern (Bottom view)



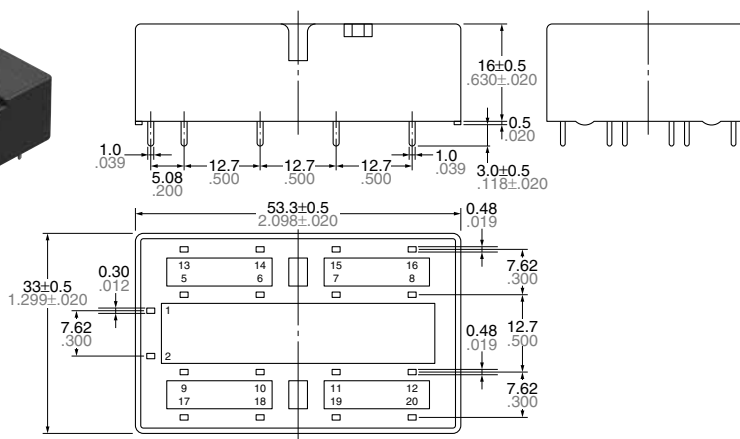
Tolerance:  $\pm 0.1 \pm 0.004$

### 2. 4 Form A 4 Form B

**CAD Data**

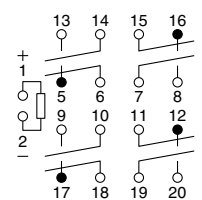


#### External dimensions

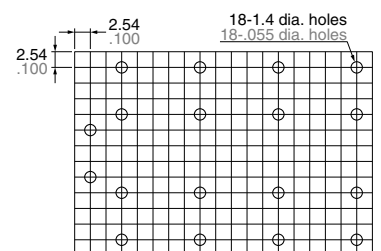


General tolerance:  $\pm 0.3 \pm 0.12$

#### Schematic (Bottom view)



#### PC board pattern (Bottom view)



Tolerance:  $\pm 0.1 \pm 0.004$

# SF Double contact type

## SAFETY STANDARDS

UL/C-UL (Recognized)		TÜV (Certified)		SEV	
File No.	Contact rating	File No.	Rating	File No.	Contact rating
E120782*	6A 250V AC 6A 24V DC	968 EZ 116.03/10 (SF2D) 968 EZ 116.02/09 (SF4D)	3A 24V DC 6A 250V AC	12.0520	6A 24V DC 6A 250V AC

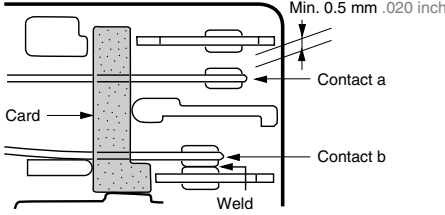
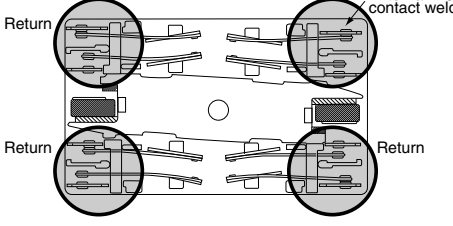
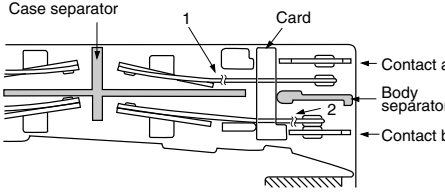
\* CSA standard: Certified by C-UL

## SAFETY STRUCTURE OF SF RELAYS

This SF relay design ensures that subsequent operations shut down and can automatically return to a safe state when the SF relay suffers overloading and other circuit abnormalities

(unforeseen externally caused circuit or device breakdowns, end of life incidents, and noise, surge, and environmental influences) owing to contact welding, spring fusion or, in the worst-case

scenario, relay breakdown (coil rupture, faulty operation, faulty return, and fatigue and breakage of the operating spring and return spring), and even in the event of end of life.

	Structure	Operation
1. Forced operation method (2 Form A 2 Form B, 4 Form A 4 Form B types)	 <p>The two contacts "a" and "b" are coupled with the same card. The operation of each contact is regulated by the movement of the other contact.</p>	<p>Even when one contact is welded closed, the other maintains a gap of greater than 0.5 mm .020 inch.</p> <p>In the diagram on the left, the lower contact "b" have welded but the upper contact "a" maintain a gap of greater than 0.5 mm .020 inch. Subsequent contact movement is suspended and the weld can be detected</p>
2. Independent operation method (4 Form A 4 Form B type)	 <p>None of four contacts are held in position by the armature. Even though one of the external N.O. contacts has welded, the other three contacts have returned owing to the de-energizing of the coil.</p>	<p>Enables design of safety circuits that allow weld detection and return at an early stage.</p> <p>As shown at the top right of the diagram on the left, if the external N.O. contact welds, a 0.5 mm .020 inch gap is maintained. Each of the other contacts returns to N.O. because the coil is no longer energized.</p>
3. Separate chamber method (2 Form A 2 Form B, 4 Form A 4 Form B types)	 <p>In independent chambers, the contacts "a" and "b" are kept apart by a body/case separator or by the card itself.</p>	<p>Prevents shorting and fusing of springs and spring failure owing to short-circuit current.</p> <p>As shown on the diagram on the left, even if the operating springs numbered 1 and 2 there is no shorting between "a" and "b" contacts.</p>
4. 2 Form A 2 Form B contact 4 Form A 4 Form B contact	Structure with independent COM contact of 2 Form A 2 Form B and 4 Form A 4 Form B contacts.	Independent COM enables differing pole circuit configurations. This makes it possible to design various kinds of control circuits and safety circuits.