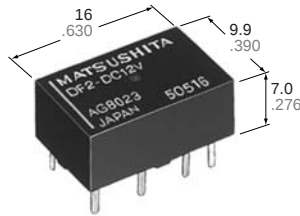


Discontinued

DF

**Panasonic**  
ideas for life

**HIGHLY SENSITIVE DIP  
MINIATURE RELAY**
**DF-RELAYS**


mm inch

UL File No.: E43149

CSA File No.: LR26550

- Smaller than most of 2 Form C relays  
Header area: 80% of DS2 relay  
Cubic measure: 57% of DS2 relay
- High sensitivity — 100 mW nominal power for 1 coil latching type
- DIP - matching 14 pin IC socket

## SPECIFICATIONS

### Contact

|                                                                  |                         |                          |
|------------------------------------------------------------------|-------------------------|--------------------------|
| Arrangement                                                      |                         | 2 Form C                 |
| Initial contact resistance, max.<br>(By voltage drop 6 V DC 1 A) |                         | 50 mΩ                    |
| Contact material                                                 |                         | Gold-clad silver         |
| Nominal switching capacity                                       |                         | 1A 30 VDC<br>0.5A 30 VAC |
| Rating<br>(resistive)                                            | Max. switching power    | 30 W, 30 V A             |
|                                                                  | Max. switching voltage  | 60 V DC, 125 V AC        |
|                                                                  | Max. switching current  | 1 A                      |
|                                                                  | Min. switching capacity | 1 mA 1 V DC              |

|                                       |                            |                             |                                                 |
|---------------------------------------|----------------------------|-----------------------------|-------------------------------------------------|
| UL/CSA rating                         |                            |                             | 1 A 30 V DC<br>0.3 A 125 V AC<br>0.3 A 110 V DC |
| Expected<br>life (min.<br>operations) | Mechanical<br>(at 180 cpm) | Single side stable          | 5×10 <sup>6</sup>                               |
|                                       |                            | 1 coil & 2 coil<br>latching | 10 <sup>6</sup>                                 |
|                                       | Electrical<br>(at 20 cpm)  | 1 A 30 V DC<br>resistive    | 10 <sup>5</sup>                                 |
|                                       |                            | 0.5 A 30 V AC<br>resistive  | 10 <sup>5</sup>                                 |

### Coil (Polarized) (at 25°C 77°F)

|                    | Nominal | Minimum |
|--------------------|---------|---------|
| Single side stable | 200 mW  | 100 mW  |
| 1 coil latching    | 100 mW  | 65 mW   |
| 2 coil latching    | 200 mW  | 130 mW  |

### Remarks

\*1 Measurement at same location as "Initial breakdown voltage" section

\*2 Detection current: 10mA

\*3 Excluding contact bounce time

\*4 Half-wave pulse of sine wave: 6ms; detection time: 10μs

### Characteristics

|                                                                                                               |                           |                                                                              |
|---------------------------------------------------------------------------------------------------------------|---------------------------|------------------------------------------------------------------------------|
| Max. operating speed                                                                                          |                           | 60 cpm                                                                       |
| Initial insulation resistance*1                                                                               |                           | Min. 1,000 MΩ (at 500 V DC)                                                  |
| Initial<br>breakdown<br>voltage*2                                                                             | Between open contacts     | 500 Vrms for 1 min.                                                          |
|                                                                                                               | Between contact sets      | 500 Vrms for 1 min.                                                          |
| Operate time*3<br>(at nominal voltage)                                                                        | Between contacts and coil | 1,000 Vrms for 1 min.                                                        |
|                                                                                                               |                           | Max. 5 ms<br>(Approx. 2.5 ms)                                                |
| Release time(without diode)*3<br>(at nominal voltage)                                                         |                           | Max. 3 ms<br>(Approx. 1 ms)                                                  |
| Set time*3 (latching)<br>(at nominal voltage)                                                                 |                           | Max. 5 ms<br>(Approx. 2.5 ms)                                                |
| Reset time*3 (latching)<br>(at nominal voltage)                                                               |                           | Max. 3 ms<br>(Approx. 2.5 ms)                                                |
| Temperature rise (at 20°C)                                                                                    |                           | Max. 65°C with nominal voltage across coil and at nominal switching capacity |
| Shock resistance                                                                                              | Functional*4              | Min. 294 m/s <sup>2</sup> {30 G}                                             |
|                                                                                                               | Destructive*5             | Min. 980 m/s <sup>2</sup> {100 G}                                            |
| Vibration resistance                                                                                          | Functional*6              | 89.6 m/s <sup>2</sup> {9 G}, 10 to 55 Hz<br>at double amplitude of 1.5 mm    |
|                                                                                                               | Destructive               | 89.6 m/s <sup>2</sup> {9 G}, 10 to 55 Hz<br>at double amplitude of 1.5 mm    |
| Conditions for operation,<br>transport and storage*7<br>(Not freezing and condens-<br>ing at low temperature) | Ambient<br>temperature    | −40°C to +70°C<br>−40°F to +158°F                                            |
|                                                                                                               | Humidity                  | 5 to 85%R.H.                                                                 |
| Unit weight                                                                                                   |                           | Approx. 2.4 g .085 oz                                                        |

\*5 Half-wave pulse of sine wave: 6ms

\*6 Detection time: 10μs

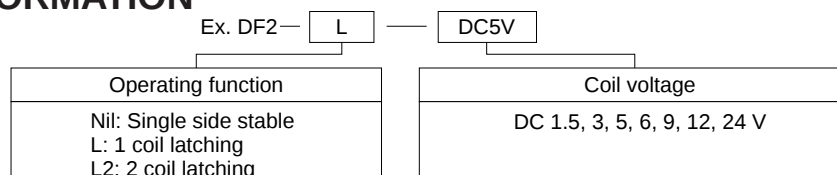
\*7 Refer to 5. CONDITIONS for operation, transport and storage mentioned in AMBIENT ENVIRONMENT (Page 49)

## TYPICAL APPLICATIONS

Signal transmission application requiring high sensitivity and low profile miniature size

- Audio visual equipment
- Telecommunication equipment
- Computer peripherals

## ORDERING INFORMATION



(Notes) 1. For UL/CSA recognized type, add suffix UL/CSA.

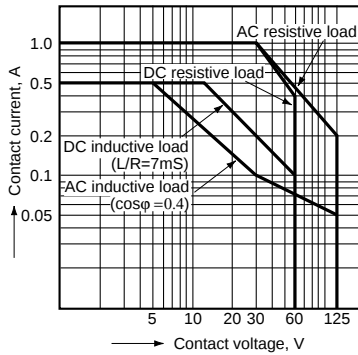
2. Standard packing: Carton: 50 pcs. Case: 500 pcs.



## REFERENCE DATA

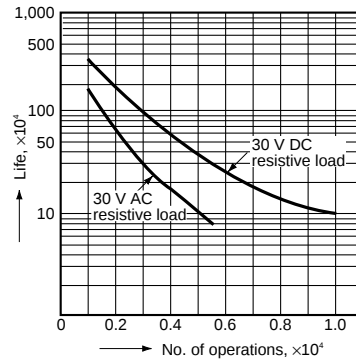
### 1. Maximum switching power

Tested sample: DF2-DC12V



### 2. Life curve

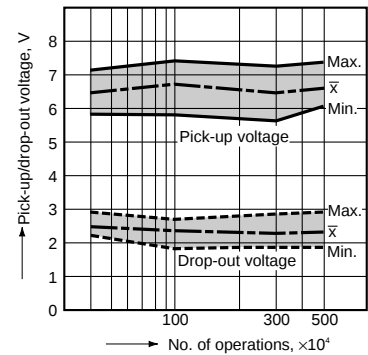
Tested sample: DF2-DC12V



### 3. Mechanical life

Tested sample: DF2-DC12V, 12 pcs.

Ambient temperature: 15°C to 25°C 59°F to 77°F



### 4. Electrical life

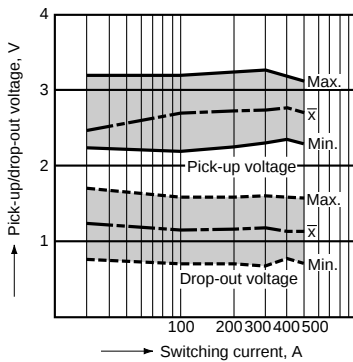
Change of pick-up and drop-out voltage

Tested sample: DF2-DC5V, 8 pcs.

Condition: 1 mA 1 V DC resistive load

Switching frequency: 10 Hz

Ambient temperature: 20°C to 25°C 68°F to 77°F



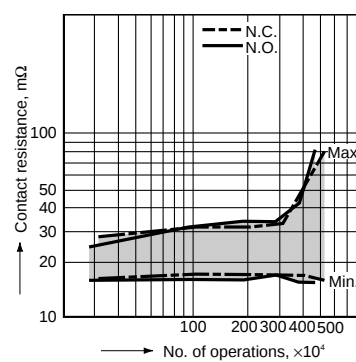
Change of contact resistance

Tested sample: DF2-DC5V, 8 pcs.

Condition: 1 mA 1 V DC resistive load

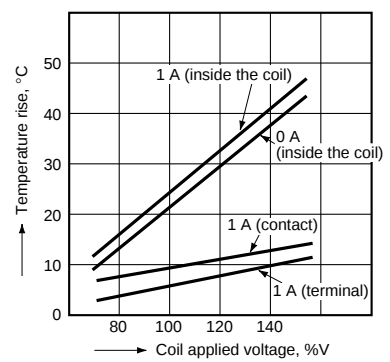
Switching frequency: 10 Hz

Ambient temperature: 20°C to 25°C 68°F to 77°F



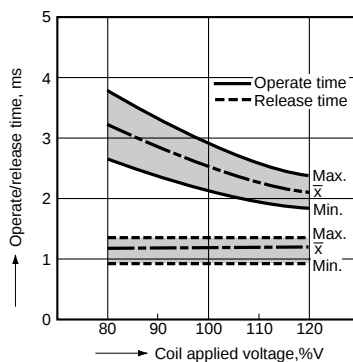
### 5. Coil temperature rise

Tested sample: DF2-DC12V, 5 pcs.



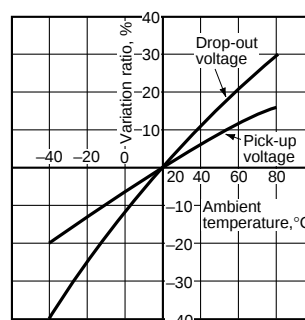
### 6. Operate/release time characteristics

Tested sample: DF2-DC12V



### 7. Ambient temperature characteristics

Tested sample: DF2-DC12V

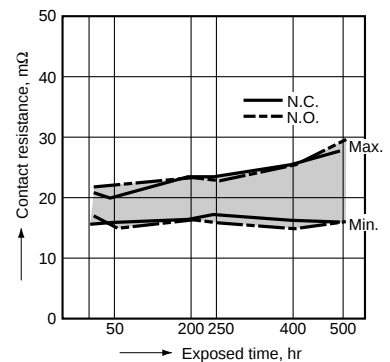


### 8. H<sub>2</sub>S gas test

Gas density: 2 to 5 p.p.m.

Ambient temperature: 20°C to 26°C 68°F to 79°F

Humidity: 35 to 85% R.H.



## NOTE

### Soldering

When soldering through hole terminals, soldering should be done at 245°C 473°F within 10 s.