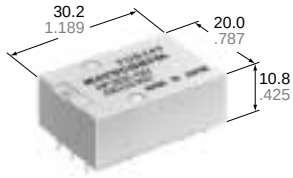
NAiS

FLATPACK RELAY

NF-REL



mm inch

FEATURES

1. Flatpack

2. Long seller

SPECIFICATIONS

Contacts

Arrangement[1]			2 Form C, 4 Form C
Initial contact resistance (By voltage drop 6 V DC 1 A)		Max.	50 mOhm
		Typical	25 mOhm
Contact material	Movable contact		Gold-clad silver
	Stationary contact		Gold-clad silver
Rating, (resistive load)	Max. switching power		60 W 100 VA
	Max. switching voltage		220 V AC, DC
	Max. switching current		2 A
Expected life (min. operations)	Mechanical		10^8
	Electrical (Resistive)	2 A 30 V DC	2×10^5
		1 A 30 V DC	10^6
		0.5 A 30 V DC	10^7

[1] MBB types available: 2MBB & 4MBB
(See next page for contact positions.)

Coil

Nominal operating power, at 25∞C	2C	Approx. 300 mW
	4C	Approx. 480 mW
Max. operating power for continuous duty		Approx. 1 W at 40°C 104°F

Remarks

* Specifications will vary with foreign standards certification ratings.
*1 Measurement at same location as "Initial breakdown voltage" section
*2 Detection current: 10 mA
*3 Excluding contact bounce time
*4 Half-wave pulse of sine wave: 11ms; detection time: 10µs
*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 61).

Characteristics (at 25°C 77°F, 50% R.H. sea

Max. operating speed			
Initial insulation resistance*1			1,00
Electrostatic capacitance	Contact/Contact		
	Contact/Coil		
	Contact/Ground		
Initial breakdown voltage*2	Between open contacts		
	Between contact sets		
	Between live parts and ground		
	Between contacts and coil		
Operate time*3 (at nominal voltage)			Max. 1
Release time (without diode)*3 (at nominal voltage)			Max. 1
Contact bounce			
Shock resistance	Functional*4	In de-energized condition	Mi (In Mi (perp
		In energized condition	Mi
	Destructive*5		Min
Vibration resistance	Functional*6	In de-energized condition	29.4 m at doub (in 98 m/ at doub (perp
		In energized condition	117.6 r at doul
	Destructive		196 m/ at doub
Conditions for operation, transport and storage*7 (Not freezing and condensing at low temperature)		Ambient temp.	– –
		Humidity	
Unit weight		2C	Ap
		4C	App

TYPICAL APPLICATIONS

NF relays are widely acceptable in applications where small size and high sensitivity are required.
Such applications include: Electronic equipment, Household applications, Alarm systems, Office machines, Communication equipment, Measuring equipment, Remote control systems, General control circuits, Machine tools, Industrial machinery, etc.

ORDERING INFORMATION

Ex. NF | 4 | EB | 4M | 48V | 1

Contact arrangement	Type classification	MBB function	Coil voltage (DC)	
2: 2 Form C 4: 4 Form C	EB: Standard	Nil: Form C type 2M: 2MBB (2 Form D) 4M: 4MBB (4 Form D)	5, 6, 12, 24, 48 V	Nil: Gold 1: Gold-c

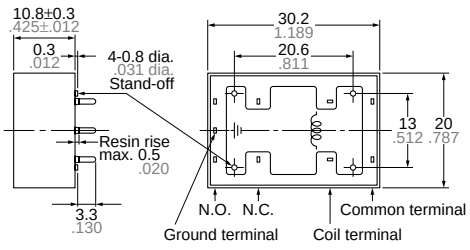
(Notes) 1. For VDE recognized types, add suffix VDE.
2. For UL/CSA recognized type, add suffix-A, as NF2EB-12V-A whose ground terminal is cut off.
3. Standard packing Carton: 20 pcs.; Case: 200 pcs.

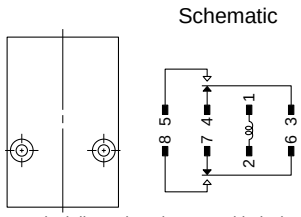
TYPES AND COIL DATA (at 25°C 77°F)

Part No.	Nominal voltage, V DC	Pick-up voltage, V DC (max.)	Drop-out voltage, V DC (min.)	Max. allowable voltage, V DC (at 40°C)	Coil resistance,* Ohm	Nor operatin m
NF2EB-5V	5	4.0	0.5	8.7	90	2
NF2EB-6V	6	4.8	0.6	10.5	137	2
NF2EB-12V	12	9.6	1.2	21	500	2
NF2EB-24V	24	19.2	2.4	42	2,000	2
NF2EB-48V	48	38.4	4.8	84	7,000	3
NF4EB-5V	5	4.0	0.5	7	53	4
NF4EB-6V	6	4.8	0.6	8.5	90	4
NF4EB-12V	12	9.6	1.2	17.0	330	4
NF4EB-24V	24	19.2	2.4	34	1,200	4
NF4EB-48V	48	38.4	4.8	68	4,200	5

DIMENSIONS

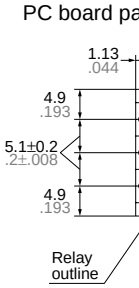
2 Form C



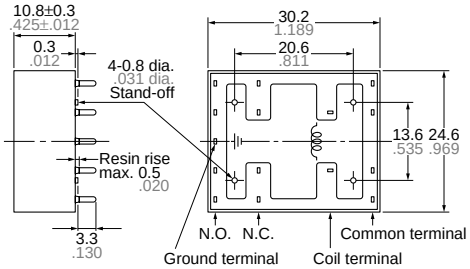


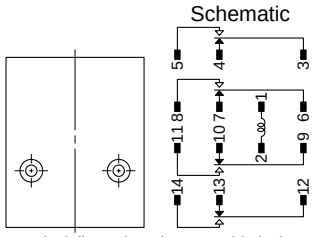
Terminal dimensions (except soldering)
Width: 0.8 .031
Thickness: 0.3 .012

MBB contact position
NF2-2M: terminal 6-7-8, 3-4-5



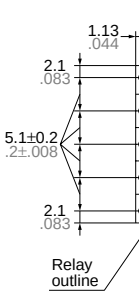
4 Form C





Terminal dimensions (except soldering)
Width: 0.8 .031
Thickness: 0.3 .012

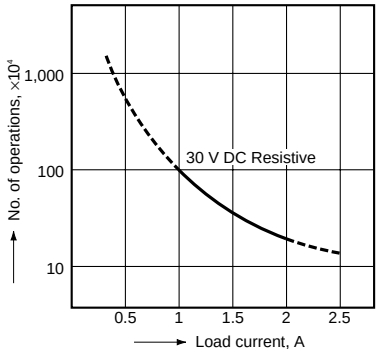
MBB contact position
NF4-2M: terminals 6-7-8, 9-10-11
NF4-2M: terminals 6-7-8, 3-4-5, 12-13-14, 9-10-11



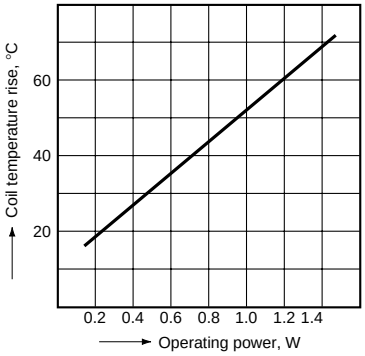
General tolerance: ±0.5 ±.020
(Except for the cover height)

REFERENCE DATA

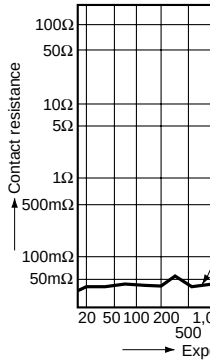
1. Life curve



2. Coil temperature rise (resistance method)



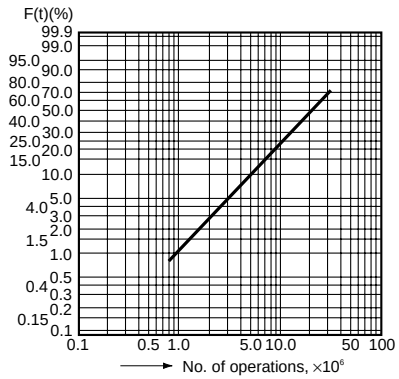
3. H_2S gas test



4. Contact reliability

Test conditions:

1. Contact current/voltage: 10 µA 100 mV 1 kHz
2. Cycle rate 20 cps.
3. Miscontact detection level: 1 mW (= 100 Ohm)
4. Detection method: Observation of all changeover contacts



Test result:

m = 1.5
m = 21.2 x 10^6
95% confidence level = 3.1 x 10^6
17 contacts out of 20 achieved 10 million no miscontact operations.

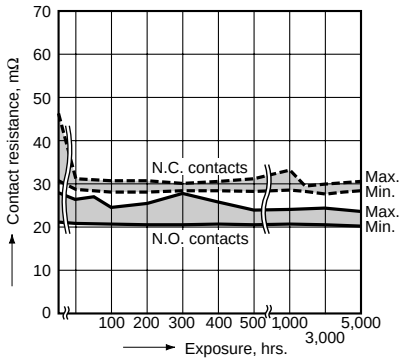
5. High temperature test

Test conditions:

Ambient temperature: 80°C ±2°C

Test method:

1. All contacts were switched for 100 operations on 2 A 30 V DC resistive load.
2. Samples then were exposed to 80°C temperature for 5,000 hours, continuous
3. Contact resistance was measured with Hewlett-Packard testing equipment.



Test result:

Amber relays showed a stable tance within the initially speci hours exposure.

NOTES

1. Prevention of vibration and shock

To reduce the likelihood of vibration and shock, we recommend that you install so that the contact action is not in the direction of gravity.