

mm inch

FEATURES

- **Compact, high-capacity, and resistant to inductive loads**

It can control an inductive load with inrush current of 80 A and steady state current of 20 A.

- **Excellent contact welding resistance**

High contact pressure, a forced opening mechanism, and a forced wiping mechanism realizes an excellent contact welding resistance.

- **High breakdown voltage and surge resistant relay**

More than 6.4 mm (.252 inch) maintained for the insulation distance between contacts and coil, and the breakdown voltage between contacts and coil is 5,000 V for 1 minute. In addition, the surge resistance between contacts and coil is greater than 10,000 V.

- **Resistant to external force**

An absorber mechanism is used on the load terminals, giving a large improvement in characteristics variations caused by the external force during FASTON placement/removal.

- **Flux resistance mechanism**

The terminal area is plugged with resin to prevent flux seepage during PCB mounting. (TMP type)

- **Conforms to the various safety standards**

UL, CSA, VDE and TÜV available

- **The line up can support economical mounting methods.**

The relay are equipped with a drive terminal (coil terminal) on one side for PCBs, and a load terminal (tab terminal #250) on the reverse side. The line up includes the TM type which can be attached directly to the PCB composing a drive circuit, and the TMP type which supports economical wiring. The TMP type can also be directly attached, and a high capacity load can be wired to the tab terminal.

- **About Cd-free contacts**

We have introduced Cadmium free type products to reduce Environmental Hazardous Substances. (The suffix "F" should be added to the part number)

Please replace parts containing Cadmium with Cadmium-free products and evaluate them with your actual application before use because the life of a relay depends on the contact material and load.

RoHS Directive compatibility information
<http://www.nais-e.com/>

SPECIFICATIONS

Contact

Arrangement		1 Form A	
Initial contact resistance, max. (By voltage drop 6 V DC 1 A)		100 mΩ	
Contact material		AgSnO ₂ type	
Rating (resistive load)	Nominal switching capacity	20 A 250 V AC	
	Max. switching power	5,000 VA	
	Max. switching voltage	250 V AC	
	Max. switching current	20 A	
Min. switching capacity ^{#1} (Reference value)		100 mA, 5 V DC	
Expected life (min. ope.)	Mechanical (at 180 cpm)		10 ⁶
	Electrical Life (at 20 cpm)	Resistive load 20 A, 250 V AC (cosφ = 1)	10 ⁵
		Inrush 70 A, Steady 20 A (250 V AC cosφ = 0.9)	10 ⁵
	Inductive load	Inrush 80 A, Cut-off 80 A (When the motor is locked) (250 V AC cosφ = 0.7)	1.5×10 ³

Coil

Nominal operating power	900 mW
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#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 Measurement at same location as "Initial breakdown voltage" section
- *² Detection current: 10mA
- *³ Wave is standard shock voltage of ±1.2 × 50μs according to JEC-212-1981
- *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

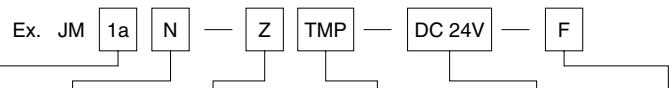
Characteristics

Max. operating speed		20 cpm
Initial insulation resistance* ¹		Min. 100 MΩ (at 500 V DC)
Initial breakdown voltage* ²	Between open contacts	1,000 Vrms for 1 min.
	Between contacts and coil	5,000 Vrms for 1 min.
Surge voltage between contact and coil* ³		10,000 V
Operate time* ⁴ (at nominal voltage)(at 20°C)		Max. 20ms (Approx. 8 ms)
Release time (without diode)* ⁴ (at nominal voltage)(at 20°C)		Max. 10ms (Approx. 3 ms)
Temperature rise (at 60°C)		Max. 55°C (Contact switching current: 20 A/voltage applied to coil: 100%V)
Shock resistance	Functional* ⁵	98 m/s ² {10 G}
	Destructive* ⁶	980 m/s ² {100 G}
Vibration resistance	Functional* ⁷	10 to 55 Hz at double amplitude of 1.6 mm
	Destructive	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 +60°C -40°F to +140°F
	Humidity	5 to 85% R.H.
Unit weight	Slim TMP	Approx. 28 g .99 oz
	Flat TMP	Approx. 32 g 1.13 oz
	Flat TM	Approx. 33 g 1.16 oz

TYPICAL APPLICATIONS

- Compressor and heater control in air conditioners
- Power control in hot air type heaters
- Magnetron control in microwave ovens
- Lamp and motor control in OA equipment such as copiers and facsimiles.

ORDERING INFORMATION



Contact arrangement	Pickup voltage	Classification of type	Mounting classification	Coil voltage	Contact material
1a: 1 Form A	N: 70% of nominal voltage	Nil: Slim type Z: Flat type	TMP: TMP type TM: TM type (Flat type) P: PCB type (Slim type)	DC 5, 6, 9, 12, 24, 48 V	F: AgSnO ₂ type

- (Notes) 1. Standard packing: Carton: 50pcs. Case: 200pcs.
UL/CSA, VDE approved type is standard.
2. Please inquire about the previous products (Cadmium containing parts).

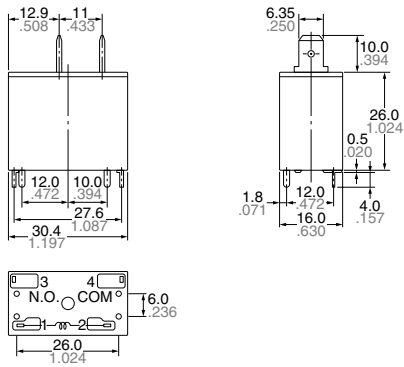
TYPES AND COIL DATA (at 20°C 68°F)

Part No.				Nominal voltage, V DC	Pick-up voltage	Drop-out voltage,	Nominal operating current, mA	Coil resistance, Ω (±10%)	Nominal operating power, mW	Max. allowable voltage, V DC
Slim		Flat								
TMP	PCB	TMP	TM							
JM1aN-TMP-DC5V-F	JM1aN-P-DC5V-F	JM1aN-ZTMP-DC5V-F	JM1aN-ZTM-DC5V-F	5	3.5	0.5	180	27.8	900	5.5
JM1aN-TMP-DC6V-F	JM1aN-P-DC6V-F	JM1aN-ZTMP-DC6V-F	JM1aN-ZTM-DC6V-F	6	4.2	0.6	150	40	900	6.6
JM1aN-TMP-DC9V-F	JM1aN-P-DC9V-F	JM1aN-ZTMP-DC9V-F	JM1aN-ZTM-DC9V-F	9	6.3	0.9	100	90	900	9.9
JM1aN-TMP-DC12V-F	JM1aN-P-DC12V-F	JM1aN-ZTMP-DC12V-F	JM1aN-ZTM-DC12V-F	12	8.4	1.2	75	160	900	13.2
JM1aN-TMP-DC24V-F	JM1aN-P-DC24V-F	JM1aN-ZTMP-DC24V-F	JM1aN-ZTM-DC24V-F	24	16.8	2.4	37.5	640	900	26.4
JM1aN-TMP-DC48V-F	JM1aN-P-DC48V-F	JM1aN-ZTMP-DC48V-F	JM1aN-ZTM-DC48V-F	48	33.6	4.8	18.75	2,560	900	52.8

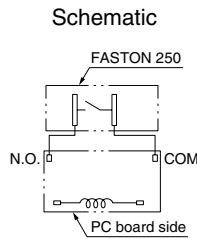
DIMENSIONS

mm inch

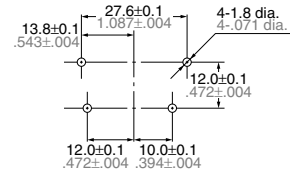
Slim TMP type



General tolerance: $\pm 0.4 \pm 0.016$

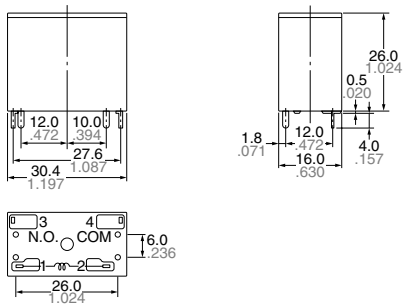


PC board pattern (Copper-side view)

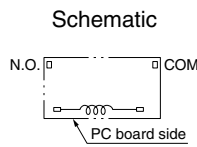


Tolerance: $\pm 0.1 \pm 0.004$

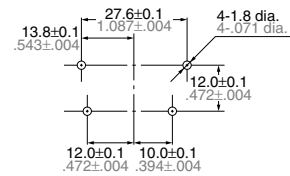
Slim PCB type



General tolerance: $\pm 0.4 \pm 0.016$

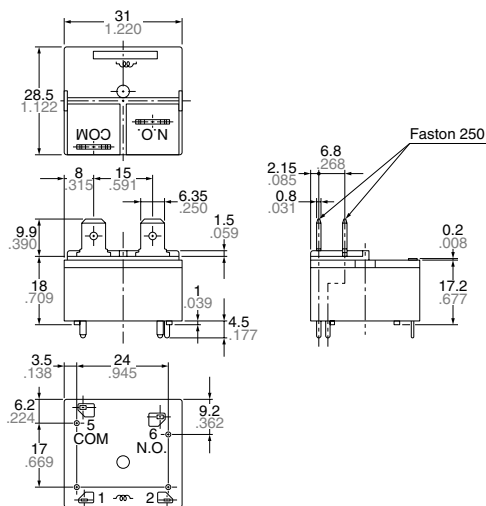


PC board pattern (Copper-side view)

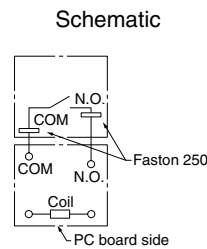


Tolerance: $\pm 0.1 \pm 0.004$

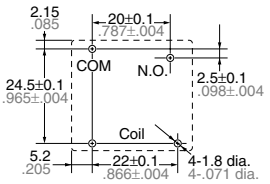
Flat TMP type



General tolerance: $\pm 0.4 \pm 0.016$



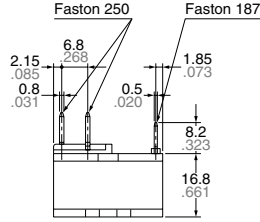
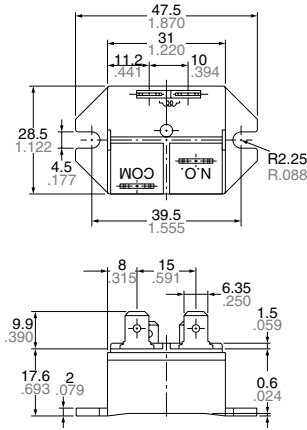
PC board pattern (Bottom view)



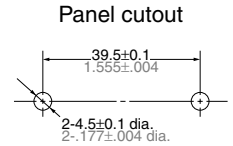
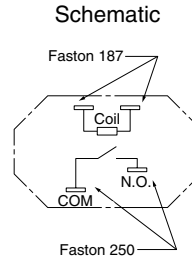
Tolerance: $\pm 0.1 \pm 0.004$

Flat TM type

mm inch



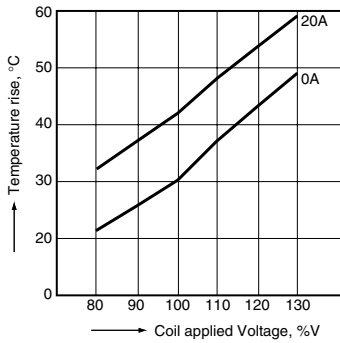
General tolerance: $\pm 0.4 \pm 0.16$



REFERENCE DATA

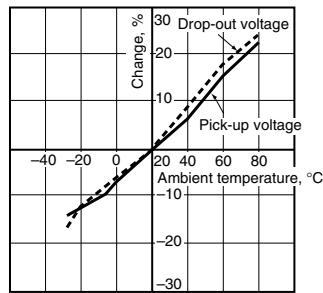
1. Coil temperature rise

Place to be measured: Inside of coil
Ambient temperature: 25°C 77°F



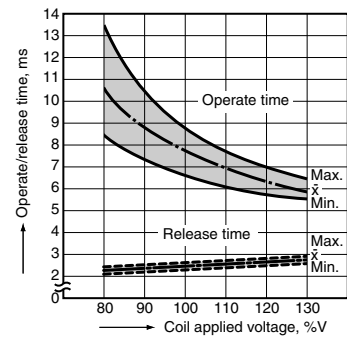
2. Ambient temperature characteristics

Sample: JM1aN-TMP-DC24V-F, 5 pcs.

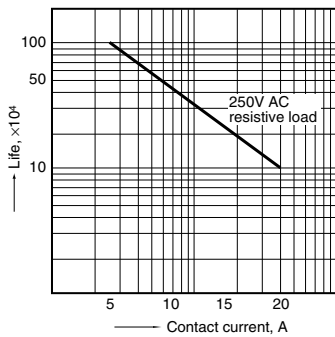


3. Operate/release time

Sample: JM1aN-TMP-DC24V-F, 5 pcs.



4. Life curve



For Cautions for Use, see Relay Technical Information