

**EP2F/EP1F SERIES****HIGH HEAT RESISTIVITY****DESCRIPTION**

The NEC TOKIN EP2F / EP1F series are PC-board mount type automotive relays suitable for various motor controls and other applications that require a high level of quality and performance.

The operate temperature range for EP2F / EP1F series is  $-40^{\circ}\text{C}$  through  $+125^{\circ}\text{C}$ .

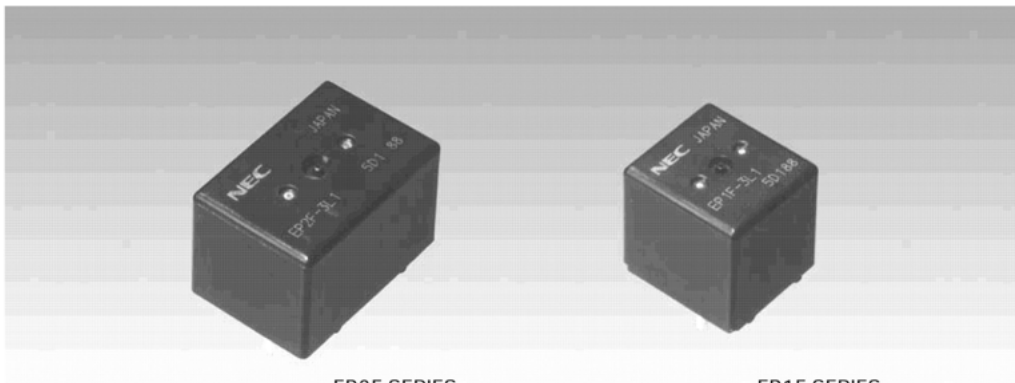
By this high heat resistivity, the contact carrying current of EP2F / EP1F series at  $25^{\circ}\text{C}$  increases 1.3 or 1.4 times compared with that of EP2 / EP1 series.

**FEATURES**

- Operating ambient temperature up to  $+125^{\circ}\text{C}$  (EP2 / EP1 :  $+85^{\circ}\text{C}$ )
- Suitable for motor and solenoid reversible control
- High performance and productivity by unique structure
- Flux tight housing

**APPLICATIONS**

- Power window control
- Power sunroof
- Wiper system



Date Published December 2005 NOHP02  
Printed in Japan

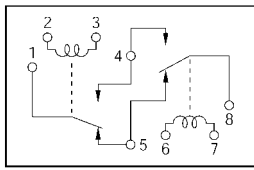
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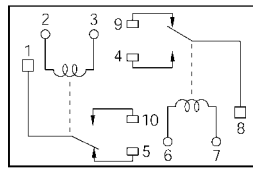
SCHEMATIC (BOTTOM VIEW)

EP2F SERIES

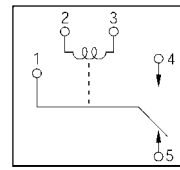


[Unit A] [Unit B]  
[H Bridge Type]

EP1F SERIES



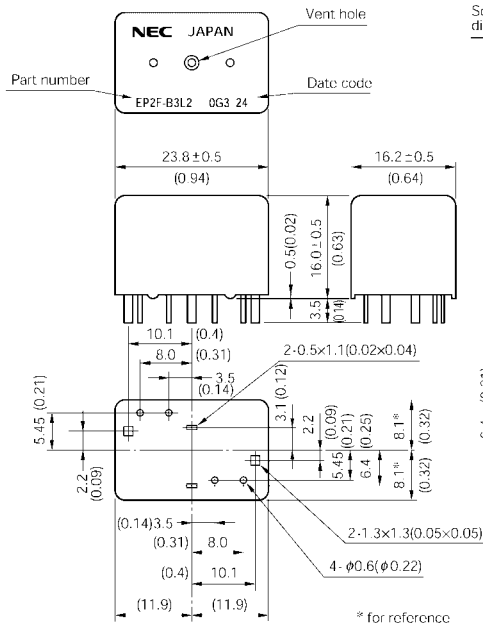
[Unit A] [Unit B]  
[Separate Type]



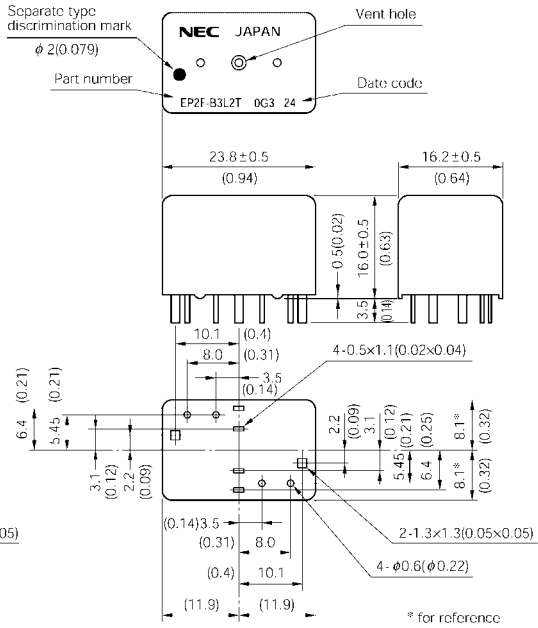
DIMENSIONS mm (inch)

EP2F SERIES

H Bridge Type



Separate Type



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## SPECIFICATIONS

at 25 °C (77 °F)

Items	EP2F	EP1F	
Contact Form	1 Form c × 2 (H bridge type and separate type)	1 Form c	
Contact Material	Silver oxide complex alloy		
Contact Resistance	50 mΩ max. (measured at 7 A) initial		
Contact Switching Voltage	16 Vdc max.		
Contact Switching Current	25 A Max.		
Contact Carrying Current	35 A (2 minutes max. 12 Vdc at 25°C) 30 A (2 minutes max. 12 Vdc at 85°C) 25 A (2 minutes max. 12 Vdc at 125°C)	40 A (2 minutes max. 12 Vdc at 25°C) 35 A (2 minutes max. 12 Vdc at 85°C) 30 A (2 minutes max. 12 Vdc at 125°C)	
Operate Time	Approx. 5 ms (at 12 Vdc excluding bounce) initial		
Release Time	Approx. 2 ms (at 12 Vdc excluding bounce) initial		
Normal Operate Power	0.64 W (at 12 Vdc)		
Insulation Resistance	100 MΩ min. (at 500 Vdc) initial		
Breakdown Voltage	500 Vdc min. (for 1 minute) initial		
Shock Resistance	98 m / s <sup>2</sup> [Approx. 10 G] min. (misoperating)		
Vibration Resistance	10 to 300 Hz, 43 m/s <sup>2</sup> [Approx. 4.4 G] min. (misoperating)		
Ambient Temperature	-40 °C to +125 °C (-40 °F to +257 °F)		
Coil Temperature Rise	50 °C / W (without contact carrying current)		
Life Expectancy	Mechanical	1 × 10 <sup>6</sup> operations	
	Electrical	Contact G	1 × 10 <sup>5</sup> operations (at 14 Vdc, Motor Load 25 A / 7 A) at 25 °C 1 × 10 <sup>5</sup> operations (at 14 Vdc, Motor Load 18 A / 5 A) at 125 °C
		Contact L or N	1 × 10 <sup>5</sup> operations (at 14 Vdc, Motor Load 20 A / 3 A) at 25 °C 1 × 10 <sup>5</sup> operations (at 14 Vdc, Motor Load 12 A / 2 A) at 125 °C
Weight	Approx. 15 gr	Approx. 8 gr	

## COIL RATING

## EP2F SERIES

at 25 °C (77 °F)

	Part Number		Nominal Voltage (Vdc)	Coil Resistance (Ω ± 10%)	Must Operate Voltage (Vdc max.)	Must Release Voltage (Vdc min.)	Nominal Operate Power (W)
	H Bridge Type	Separate Type					
Contact G	EP2F-B3G1	EP2F-B3G1T	12	225	6.5	0.9	0.64
	EP2F-B3G2	EP2F-B3G2T	12	225	7.0	0.9	0.64
	EP2F-B3G3	EP2F-B3G3T	12	225	7.5	0.9	0.64
Contact L or N	EP2F-B3L1	EP2F-B3L1T	12	225	6.5	0.9	0.64
	EP2F-B3L2	EP2F-B3L2T	12	225	7.0	0.9	0.64
	EP2F-B3L3	EP2F-B3L3T	12	225	7.5	0.9	0.64

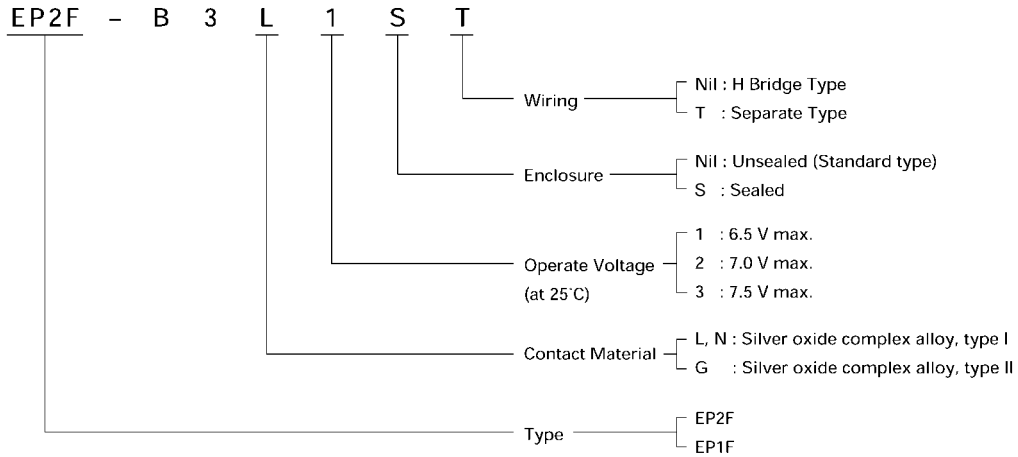
## EP1F SERIES

	Part Number	Nominal Voltage (Vdc)	Coil Resistance (Ω ± 10%)	Must Operate Voltage (Vdc max.)	Must Release Voltage (Vdc min.)	Nominal Operate Power (W)
Contact G	EP1F-B3G1	12	225	6.5	0.9	0.64
	EP1F-B3G2	12	225	7.0	0.9	0.64
	EP1F-B3G3	12	225	7.5	0.9	0.64
Contact L or N	EP1F-B3L1	12	225	6.5	0.9	0.64
	EP1F-B3L2	12	225	7.0	0.9	0.64
	EP1F-B3L3	12	225	7.5	0.9	0.64

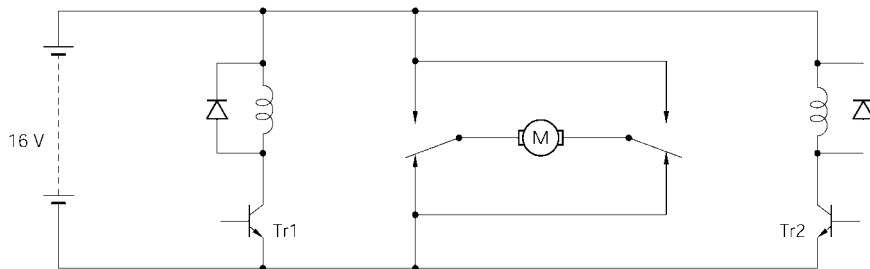


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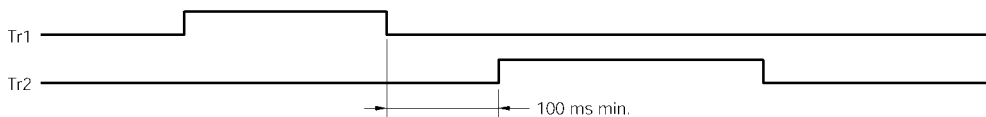
NUMBERING SYSTEM



TYPICAL APPLICATION (H Bridge Type)



MOTOR	Tr1	Tr2
STOP	off	off
FORWARD	on	off
REVERSE	off	on



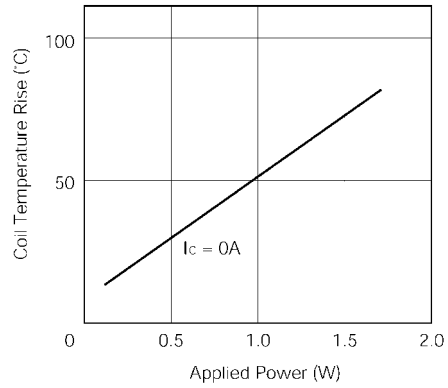
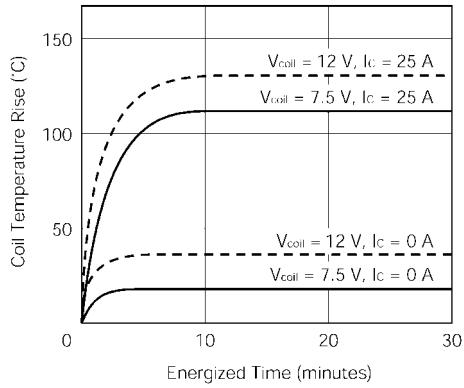
It is necessary to take more than 100 msec intervals for on / off timing between driving Tr1 and Tr2. If the interval is less than 100 msec, an excessive current happens to flow to the relay contacts.



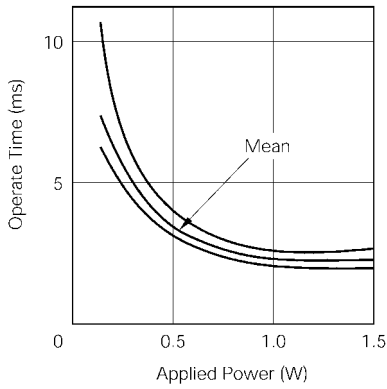
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TECHNICAL DATA

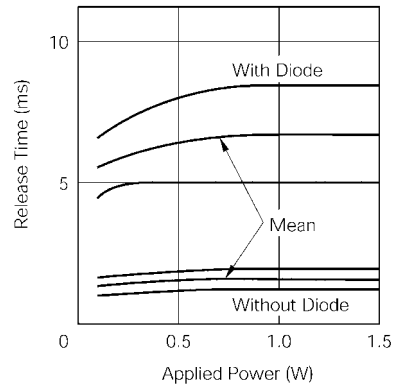
Coil Temperature (EP2F-B3L1)



Operate Time (EP2F-B3L1)



Release time (EP2F-B3L1)



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**Special:** Transportation equipment (automobiles, trains, ships, etc.), traffic control systems, anti-disaster systems, anti-crime systems, safety equipment and medical equipment (not specifically designed for life support)

**Specific:** Aircrafts, aerospace equipment, submersible repeaters, nuclear reactor control systems, life support systems or medical equipment for life support, etc.

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(Note)

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DE0202

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