NEC

AUTOMOTIVE RELAYS
EP2F/EP1F SERIES

HIGH HEAT RESISTIVITY

DESCRIPTION

The NEC 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˚C through +125˚C.

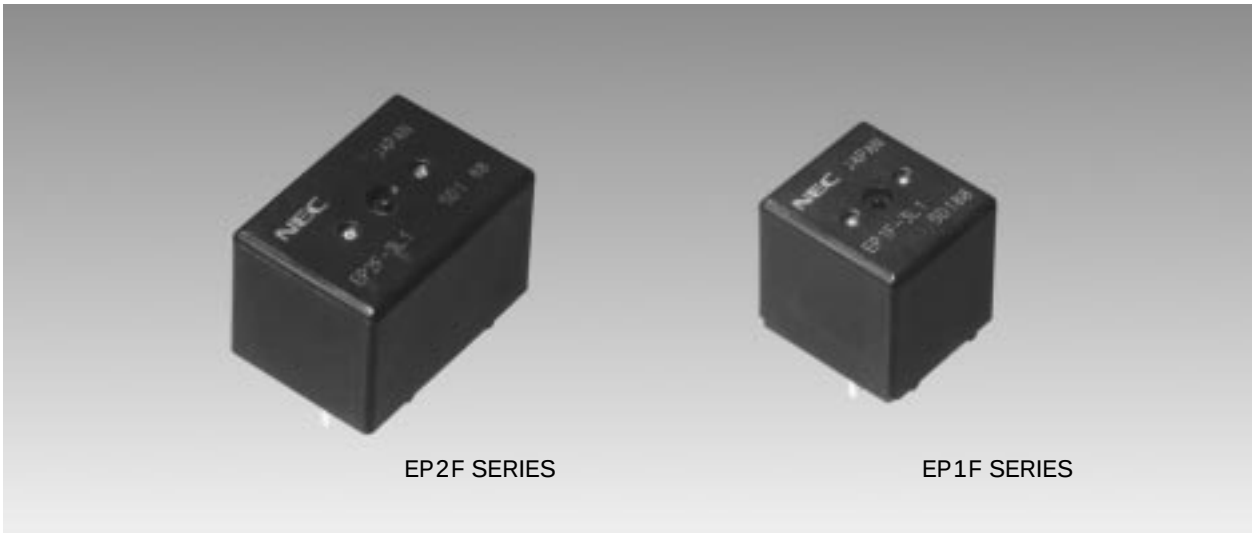
By this high heat resistivity, the contact carrying current of EP2F / EP1F series at 25˚C increases 1.3 or 1.4 times compared with that of EP2 / EP1 series.

FEATURES

- Operating ambient temperature up to +125˚C (EP2 / EP1 : +85˚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



EP2F SERIES

EP1F SERIES

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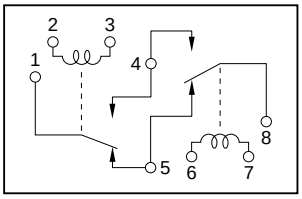
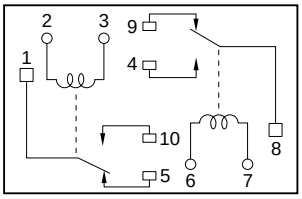
SCHEMATIC (BOTTOM VIEW)

EP2F SERIES



[Unit A] [Unit B]

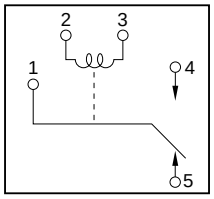
[H Bridge Type]



[Unit A] [Unit B]

[Separate Type]

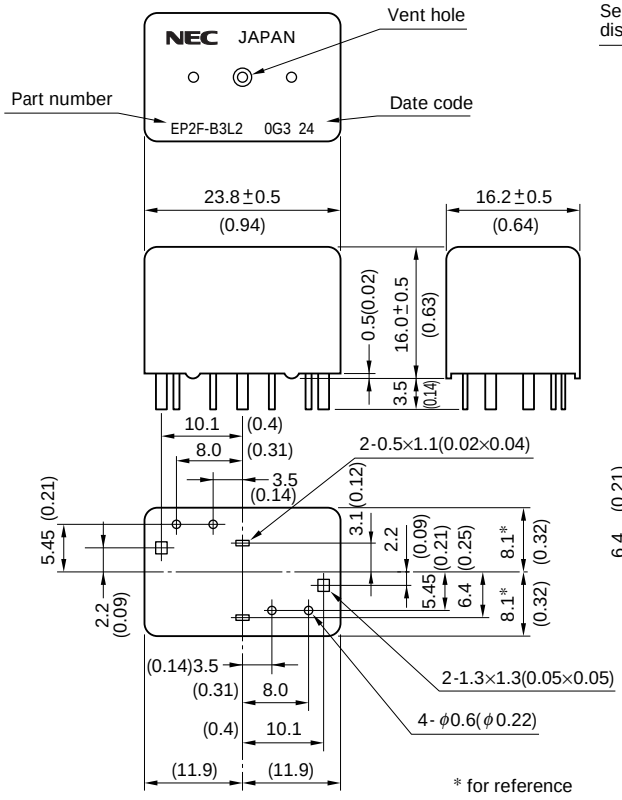
EP1F SERIES



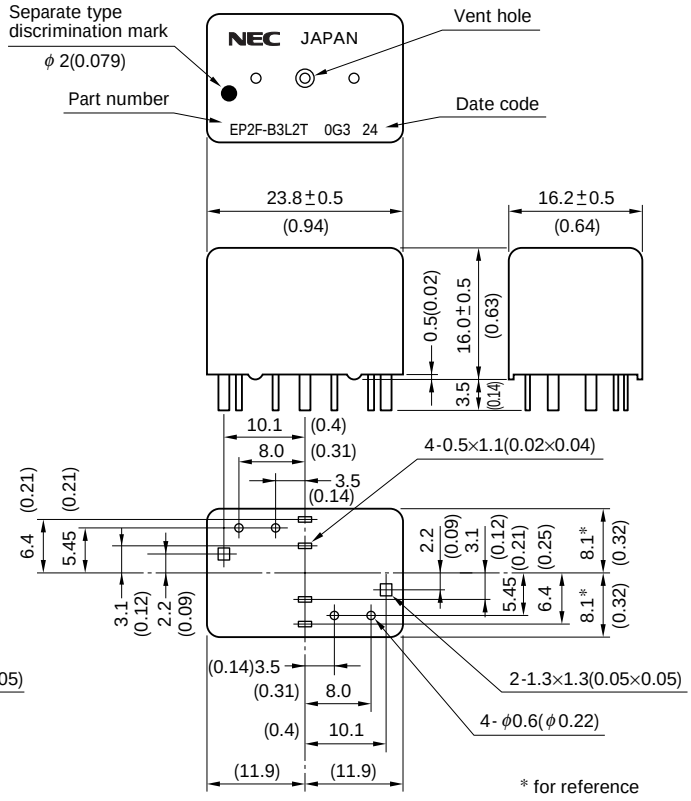
DIMENSIONS mm (inch)

EP2F SERIES

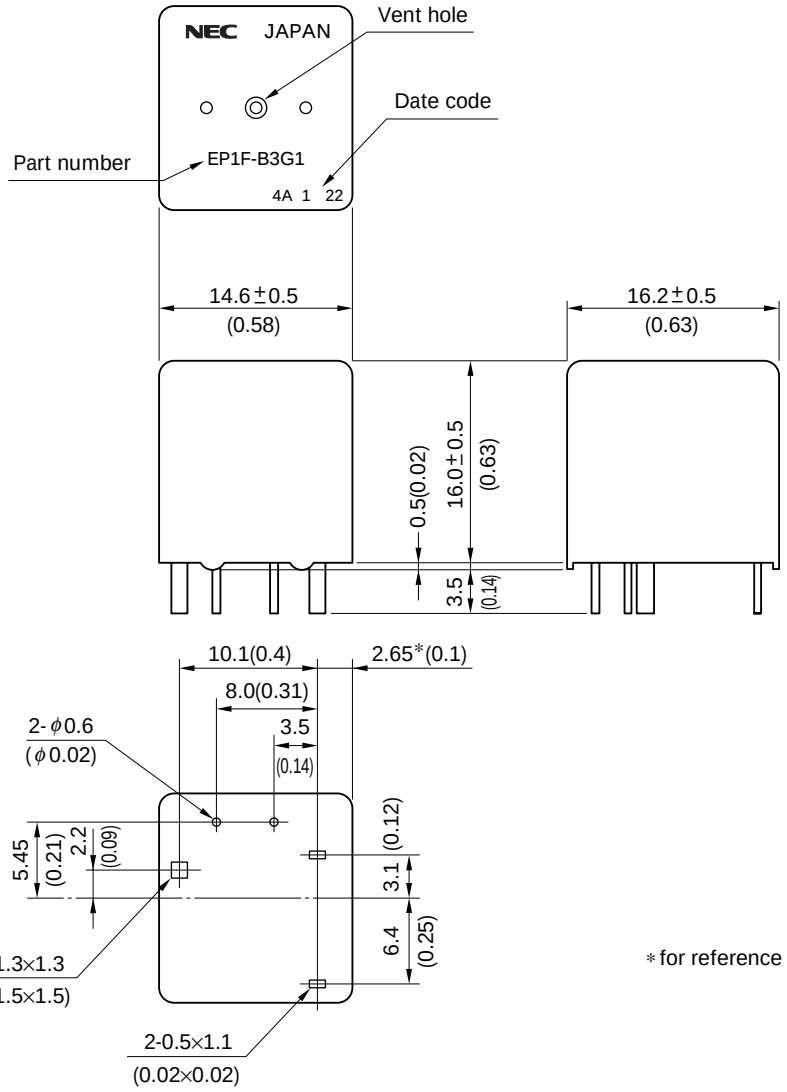
H Bridge Type



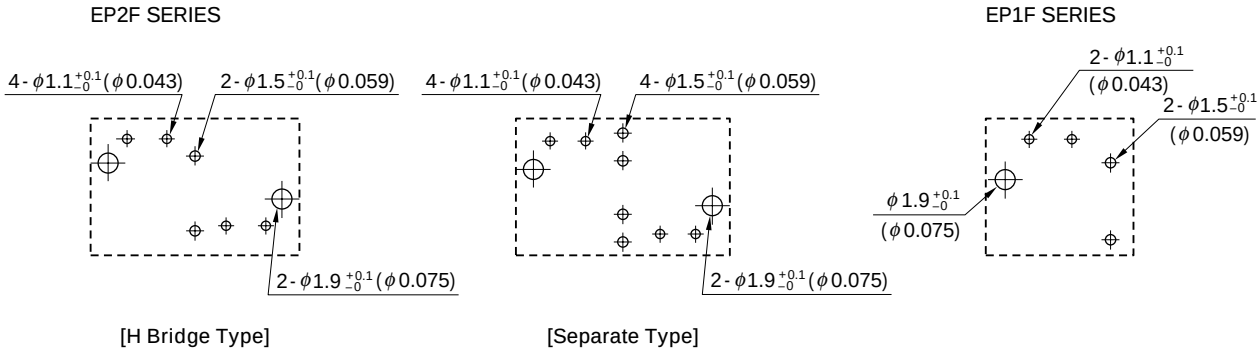
Separate Type



EP1F SERIES



PCB PAD LAYOUT mm (inch) (BOTTOM VIEW)



SPECIFICATIONS

at 25 ˚C (77 ˚F)

Items			EP2F	EP1F
Contact Form			1 form C×2 (H bridg 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^2 [Approx. 10 G] min. (misoperating)	
Vibration Resistance			10 to 300 Hz, 43 m / s^2 [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		1×10^6 operations	
	Electrical	Contact G	1×10^5 operations (at 14 Vdc, Motor Load 25 A / 7 A) at 25 ˚C 1×10^5 operations (at 14 Vdc, Motor Load 18 A / 5 A) at 125 ˚C	
		Contact L or N	1×10^5 operations (at 14 Vdc, Motor Load 20 A / 3 A) at 25 ˚C 1×10^5 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	605	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

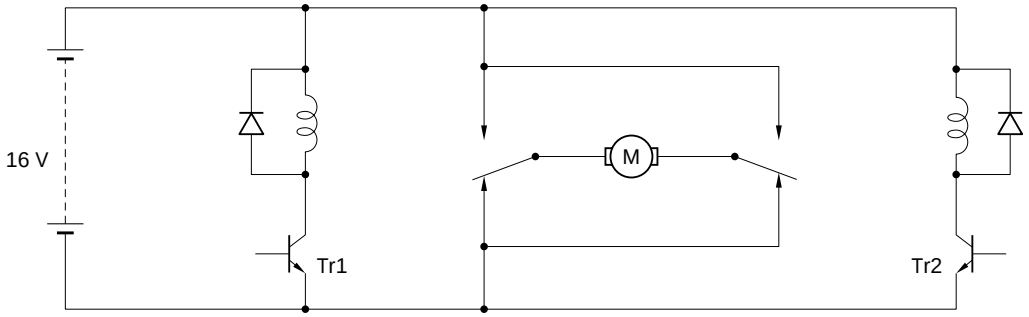
	Part Number	Nominal Voltage (Vdc)	Coil Resistance (Ω ±10 %)	Must Operate Voltage (Vdc max.)	Must Release Voltage (Vdc min.)	Nominal Operate Power (W)
Contact G	EP1F-B3G1	12	225	6.5	0.9	0.64
	EP1F-B3G2	12	225	7.0	0.9	0.64
	EP1F-B3G3	12	225	7.5	0.9	0.64
Contact L or N	EP1F-B3L1	12	225	6.5	0.9	0.64
	EP1F-B3L2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

NUMBERING SYSTEM

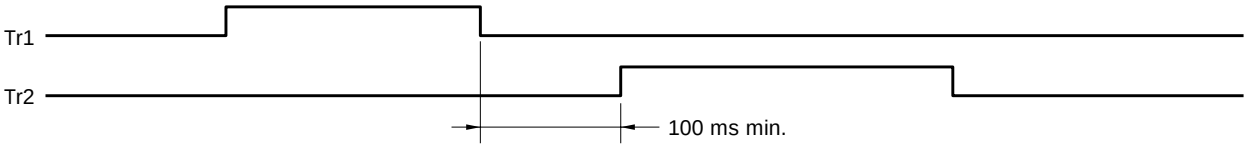
EP2F – B 3 L 1 S T

- Wiring: Nil : H Bridge Type; T : Separate Type
- Enclosure: Nil : Unsealed (Standard type); T : Sealed
- Operate Voltage (at 25°C): 1 : 6.5 V max.; 2 : 7.0 V max.; 3 : 7.5 V max.
- Contact Material: L, N : Silver oxide complex alloy, type I; G : Silver oxide complex alloy, type II
- Type: EP2F; EP1F

TYPICAL APPLICATION (H Bridge Type)



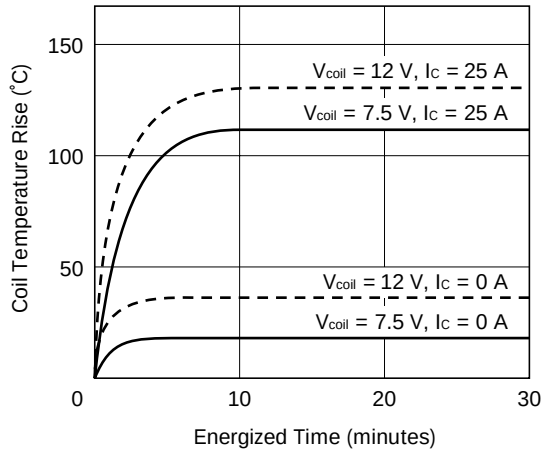
MOTOR	Tr1	Tr2
STOP	off	off
FORWARD	on	off
REVERSE	off	on

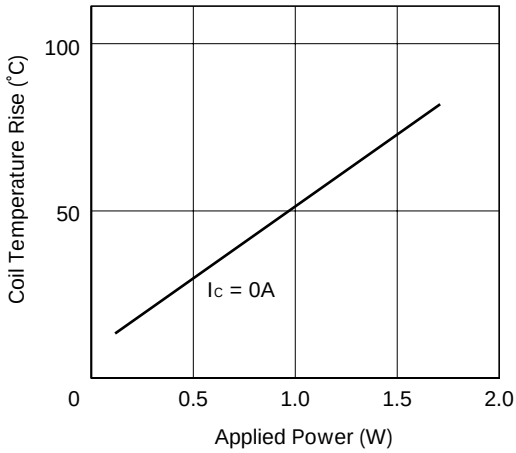


It is necessary to take more than 100 msec intervals for on / off timing between driving Tr1 and Tr2. If the interval is less than 100 msec, an excessive current happen to flow to the relay contacts.

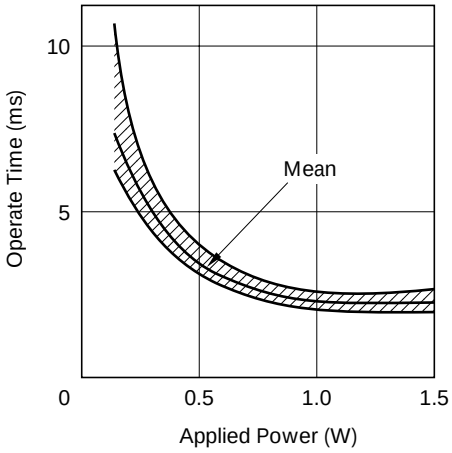
TECHNICAL DATA

Coil Temperature (EP2F-B3L1)





Operate Time (EP2F-B3L1)



Release time (EP2F-B3L1)