

DESCRIPTION

Automotive twin relay EN2 series is Printed Circuit Board mount type and the most suitable for various motor controls in the automobiles which require high-quality and high-performance.

EN2 series has two types for different usage.

One is H bridge type which is designed for forward and reverse control of the motors.

The other is separate type which contains two separated relays in one package.

FEATURES

- Twin relay for motor & solenoid reversible control.
- 30 % less relay space than conventional 2 relays.
- High performance & productivity by unique symmetrical structure.
- Fluxtight housing.

APPLICATIONS

- Power window
- Power antenna
- Central door interlock (Electrical door lock)
- Auto-seat positioning
- Passive seat belts
- Keyless/Remote entry system
- power sunroof



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Date Published August 2002 M
Printed in Japan

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SPECIFICATIONS

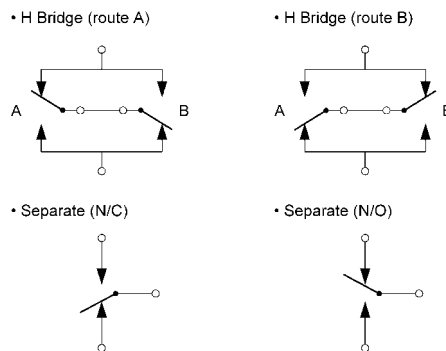
Items	Types(Contact Rating)	EN2- (Standard)	EN2-B (High Current)
Contact Form		1 Form c × 2 (H Bridge Type or Separate Type)	
Contact Material		Silver oxide complex alloy	
Initial Contact Resistance ★ figure 1.		H Bridge (route A) : 8.1 mΩtyp. H Bridge (route B) : 7.8 mΩtyp. Separate (N/C) : 3.9 mΩtyp. Separate (N/O) : 3.9 mΩtyp. (measured by voltage drop at 12 Vdc, 7A)	H Bridge (route A) : 4.9 mΩtyp. H Bridge (route B) : 4.6 mΩtyp. Separate (N/C) : 2.3 mΩtyp. Separate (N/O) : 2.3 mΩtyp. (measured by voltage drop at 12 Vdc, 7A)
Contact Switching Voltage		16 Vdc	
Contact Switching Current		35 A Max. (at 16 Vdc)	
Contact Carrying Current		25 A Max. (1 hour Max.), 30 A Max. (2 minutes Max.) at 12 Vdc	35 A Max. (1 hour Max.), 40 A Max. (2 minutes Max.) at 12 Vdc
Operate Time (Excluding bounce)		Approx. 5 ms (at Nominal Voltage)	
Release Time (Excluding bounce)		Approx. 2 ms (at Nominal Voltage), without diode	
Nominal Operate Power		0.64 W/0.8 W/1.15 W (at 12 Vdc)	
Insulation Resistance		100 MΩ at 500 Vdc, initial	
Withstand Voltage, Breakdown Voltage		500 Vac (for 1 minute), initial	
Shock Resistance		98 m/s ² (misoperating), 980 m/s ² (destructive failure)	
Vibration Resistance		10 to 300 Hz, 43 m/s ² (misoperating) 10 to 500 Hz, 43 m/s ² , 200 hours(destructive failure)	
Ambient Temperature		-40 to +85 °C (-40 to +185 °F)	
Coil Temperature Rise		50 °C / W (122 °F/W)	
Life Expectancy	Mechanical	1 × 10 ⁶ operations	
	Electrical	100 × 10 ³ operations (at 14 Vdc, Motor Load 30A17A)	
Weight		Approx.18 g (0.63oz)	

COIL RATING

Part Number		Nominal Voltage (V.DC)	Coil Resistance (Ω ± 10%)	Must Operate Voltage* (V.DC)	Must Release Voltage* (V.DC)	Nominal Operate Power (W)
H Bridge Type	Separate Type					
EN2-1N1	EN2-1N1T	12	125	6.5	0.6	1.15
EN2-1N2	EN2-1N2T	12	125	7.0	0.6	1.15
EN2-2N3	EN2-2N3T	12	180	7.5	0.6	0.8
EN2-2N4	EN2-2N4T	12	180	8.0	0.6	0.8
EN2-3N4	EN2-3N4T	12	225	8.0	0.9	0.64
EN2-3N5	EN2-3N5T	12	225	8.5	0.9	0.64

* Test by pulse voltage

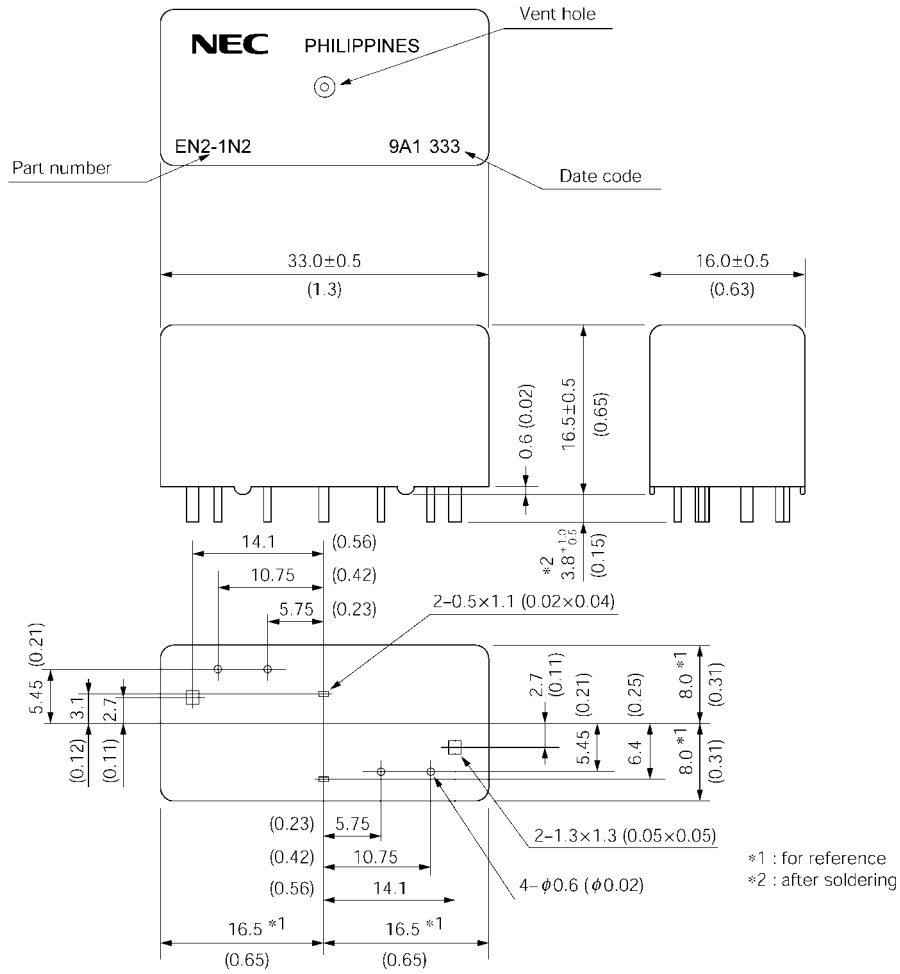
★ CONTACT RESISTANCE (figure 1)



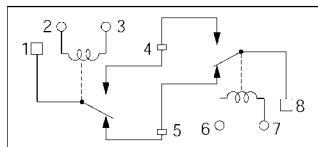
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[H Bridge Type]

DIMENSION mm (inch)



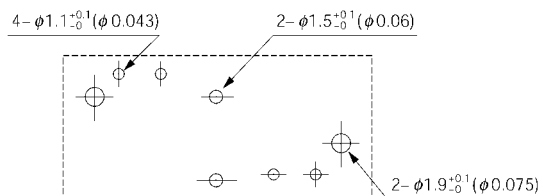
SCHEMATIC (BOTTOM VIEW)



[Unit A]

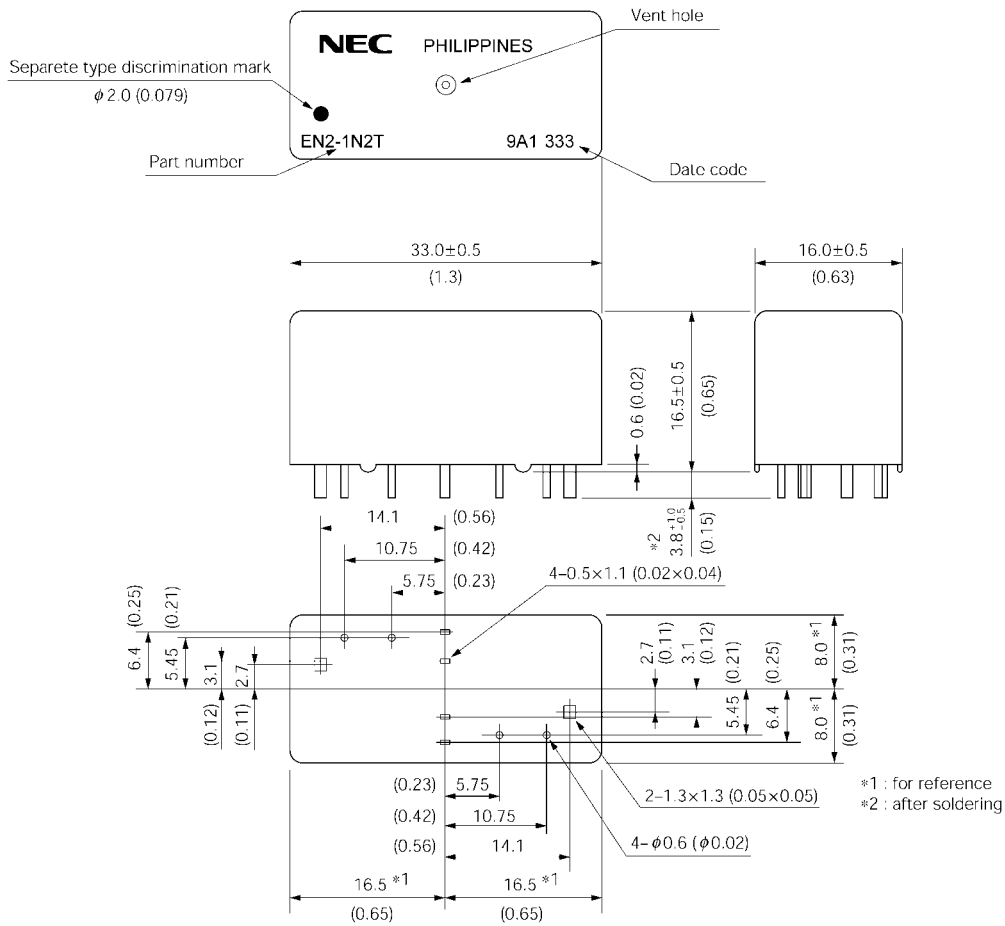
[Unit B]

PCB PAD LAYOUT mm (inch) (BOTTOM VIEW)

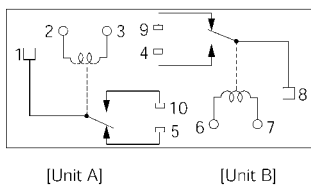


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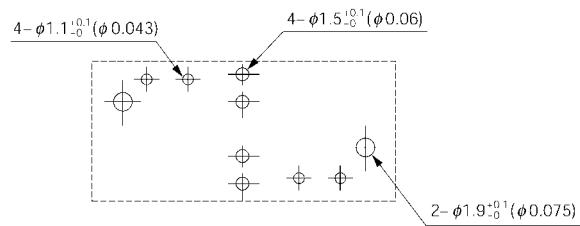
[Separate Type]
DIMENSION mm (inch)



SCHEMATIC (BOTTOM VIEW)

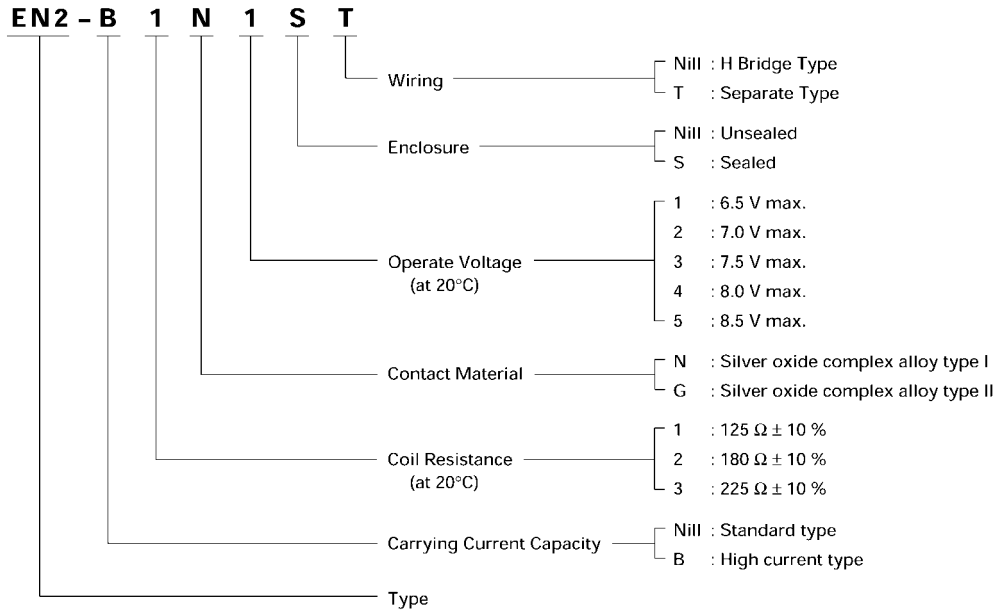


PCB PAD LAYOUT mm (inch) (BOTTOM VIEW)

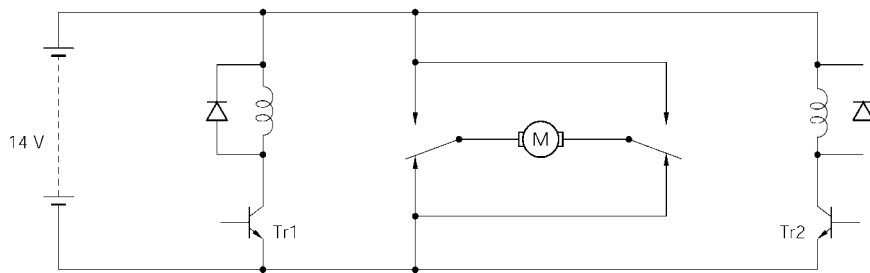


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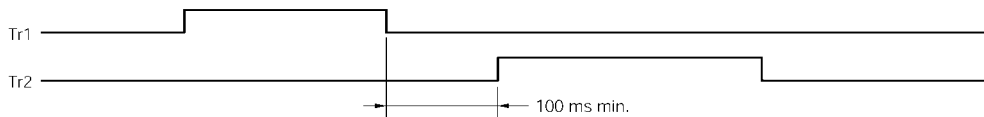
NUMBERING SYSTEM



TYPICAL APPLICATION (H Bridge Type)



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



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Standard: Computers, office equipment, communications equipment, test and measurement equipment, audio and visual equipment, home electronic appliances, machine tools, personal electronic equipment and industrial robots

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)

- (1) "NEC/TOKIN" as used in this statement means NEC/TOKIN Corporation and also includes its majorityowned subsidiaries.
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DE0202

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