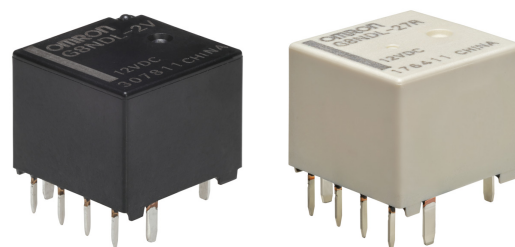


Small Power H-bridge PCB Relay for Automotive and DC 12 V Applications

G8NDL Relay

Low Profile Low Load Relay with H-Bridge Circuit Inside for Motor Control Applications

- Low profile and can switch 14 V 25 A motor load
- H-Bridge circuit inside
- Pin in paste reflow compliant relay
- Temperature range -40°C to +125°C



Model Number Legend

G8NDL-□□□□
1 2 3 4

1. Number of Contact Poles/Structure

2: SPDT x2 (1 Form C x2) H-bridge

2. Protective structure

Blank: Plastic sealed (RT III IEC61810)

7 : Flux tight (Open vent hole) (RT II IEC61810)

3. Characteristics

Blank: Standard

H : Low power consumption

V : Ultralow power consumption

4. Special function

Blank: Standard

R : Pin in paste reflow compliant

Application Examples

- DC motor/resistance application control
- Automotive DC applications (Door lock, Power window, Sunroof, etc.)

Ordering Information (For the shipment time & other information, please inquire the local distributor)

Classification	Contact form	Protective structure	Rated coil		Model	Characteristics	Minimum Packing unit (Tube packing)	
			Voltage (V)	Resistance (Ω)				
Twin	SPDT x2 (1 Form C x2) H-bridge	Plastic sealed (RT III IEC61810)	DC12	95	G8NDL-2 DC12	Standard	40 pcs. / stick 36 sticks / box Total 1,440 pcs.	
				115	G8NDL-2H DC12	Low power consumption		
				135	G8NDL-2V DC12	Ultralow power consumption		
		Flux tight (open vent hole) (RT II IEC61810)		95	G8NDL-27R DC12	Standard		
				115	G8NDL-27HR DC12	Low power consumption		

Note. Above models are not certificated for the safety standards of UL or CSA, etc.

Ratings

●Coil

Rated voltage (V)	Rated current (mA)	Coil resistance (Ω)	Must-operate voltage (V)	Must-release voltage (V)	Permissible voltage Range (V)	Rated Power consumption (mW)	Model	
							Plastic sealed	Flux tight
DC12	126.3	95	5.6 Max.	0.9 Min.	10 to 16	1516	G8NDL-2 DC12	G8NDL-27R DC12
	104.3	115	5.9 Max.			1252	G8NDL-2H DC12	G8NDL-27HR DC12
	88.9	135	6.5 Max.			1067	G8NDL-2V DC12	-

Note 1. The rated current and coil resistance are measured at a coil temperature of 20°C with a tolerance of ±10%.

Note 2. The operating characteristics are measured at a coil temperature of 20°C.

●Contacts

Classification		Standard	Low power consumption		Ultralow power consumption
Item	Model	G8NDL-2 DC12 G8NDL-27R DC12	G8NDL-27HR DC12	G8NDL-2H DC12	G8NDL-2V DC12
Contact material		Silver-alloy			
Max. switching current (N.O.)		30 A			
Max. carrying current *1	at 20°C	5 A DC16V, 1 min	25 A DC12V, 2 mins		
	at 105°C	5 A DC16V, 1 min	10 A DC12V, 2 mins	5 A DC16V, 1 min	
	at 125°C	-	5 A DC12V, 2 mins	-	
Min. switching current		1 A DC12V			

*1. This does not guarantee repeated condition, also depends on the connecting conditions.
Please contact our sales representative if you have specific conditions.

■Characteristics

Item		Standard value
		Twin
Contact resistance (See *1.)		Typ. 5 mΩ Max. 50 mΩ
Operate time		10 ms max. (DC12V not including bounce time)
Release time		5 ms max. (DC12V not including bounce time)
Insulation resistance (See *2.)	Between coil and contacts	100 MΩ min.
	Between contacts of the same polarity	100 MΩ min.
Dielectric strength	Between coil and contacts	AC500V 1 min
	Between contacts of the same polarity	AC500V 1 min
Vibration resistance	Destruction	33 Hz, 45 m/s ²
	Malfunction	10 to 400Hz, 45 m/s ² (detection time: 10 μs)
Shock resistance	Destruction	1,000 m/s ² (Pulse duration time: 6 ms)
	Malfunction	100 m/s ² (detection time: 10 μs, Pulse duration time: 11ms)
Mechanical endurance (See *3.)		1,000,000 ops. min.
Electrical endurance (See *4.)	Motor Load	25 A DC14V, 0.33 mH, 0.25 s ON/9.75 s OFF, 100,000 operations
	Resistive Load	5 A DC14V, 1 s ON/1 s OFF, 100,000 operations
Ambient operating temperature		-40 to 125°C (without freezing or condensation)
Ambient operating humidity		35% to 85% RH
Weight		Approx. 6.0 g

Note. The above values are initial values at an ambient temperature of +20°C unless otherwise specified.

*1. The contact resistance was measured with 1 A at DC5V

*2. The insulation resistance was measured with a DC500V megohmmeter.

*3. The mechanical endurance was measured at a switching frequency of 18,000 operations/hr.

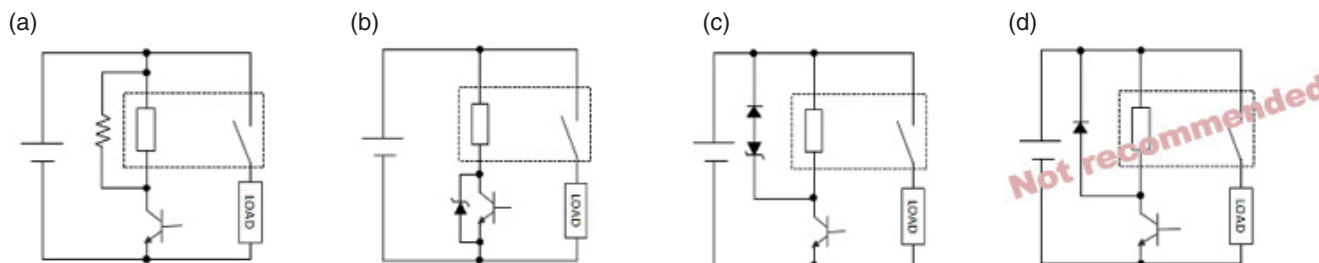
*4. Please connect N.O. terminal to the +BATT side on Electrical use and connect surge suppression element in parallel with between coil based on recommended circuit.

Recommended circuit: (a), (b), (c)

Not-recommended circuit: (d)

Note:

OMRON recommends coil driver circuit (b) and (c) for coil surge suppression. However the circuit (d) is not recommended because it may negatively affect the durability performance.

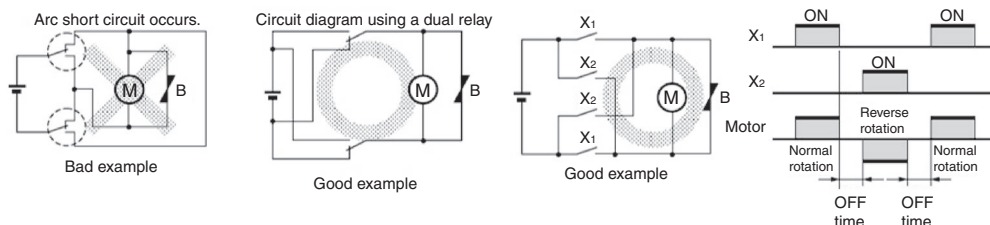


*5. G8NDL-27HR supports the current-carrying under 125°C, other models support until 105°C.

Please refer to the condition of carrying current and derating curve if using under the maximum ambient temperature.

*6. Motor Switching for Forward and Reverse Operation.

In the case of switching a motor for forward and reverse operation, two relays or a twin relay should be used (See the figure below).
The interval between the energization of 2 relays should be 100ms minimum.

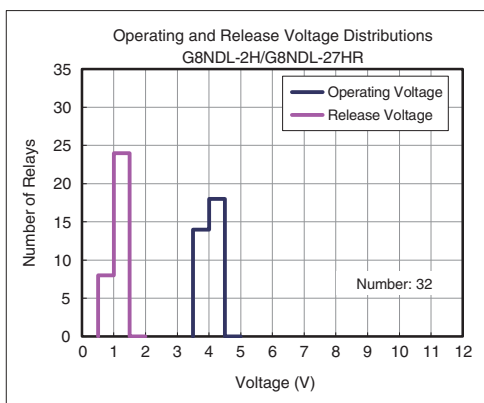


Reference Technical Data

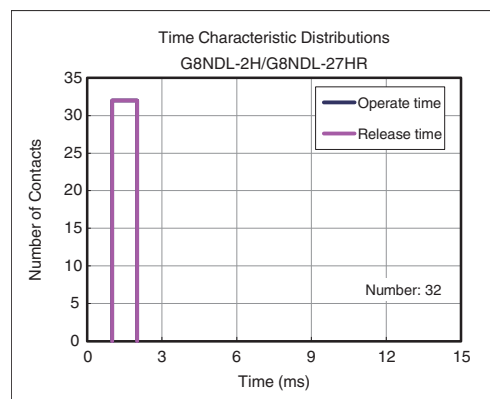
Actual Electrical performance (reference)

Model	Application	Load voltage	Inrush	Switching off	Inductance	Ambient temperature	Switching frequency		Required cycles (Min.)
		(V)	(A)	(A)	(mH)	(°C)	ON (s)	OFF (s)	Total
G8NDL-27R DC12	Motor Lock	13.5	8	20	0.33	-40 to 85	4	15	100,000
G8NDL-27R DC12	Power Window Motor Lock	14	25	25	0.33	25	0.2	4.9	100,000
G8NDL-27R DC12	Seat adjustment	14	25	10	0.85	-40 to 85	0.1	3	200,000
G8NDL-27R DC12	Electronic Parking Break	12	38			-40 to 105	1.7	23.3	180,000
G8NDL-27HR DC12	Power Window Motor Lock	14	25	25	0.33	25	0.2	4.9	100,000

Operating Voltage and Release Voltage Distributions (Number of Relays × Percentage of Rated Voltage)

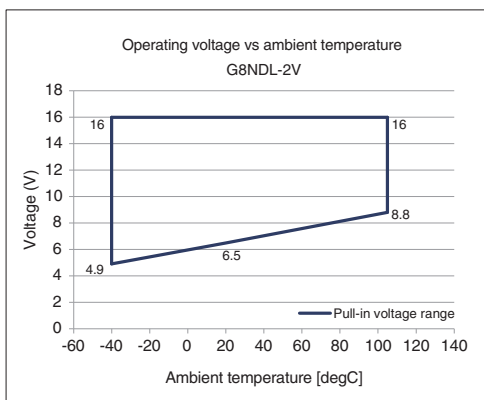
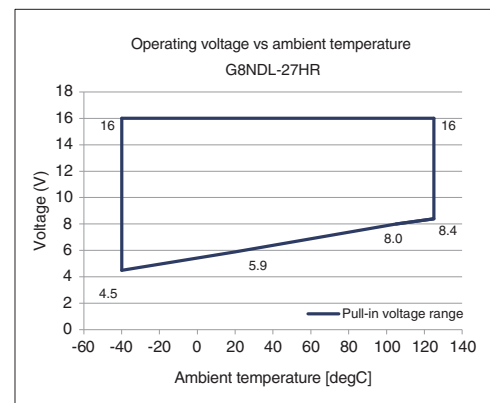
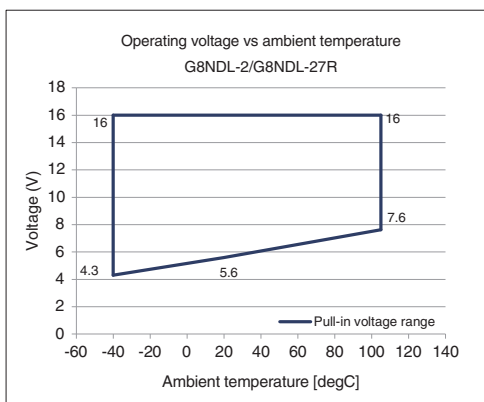


Time Characteristic Distributions (Number of Contacts × Time (ms))



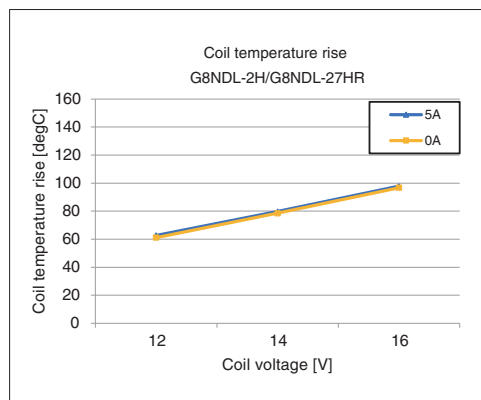
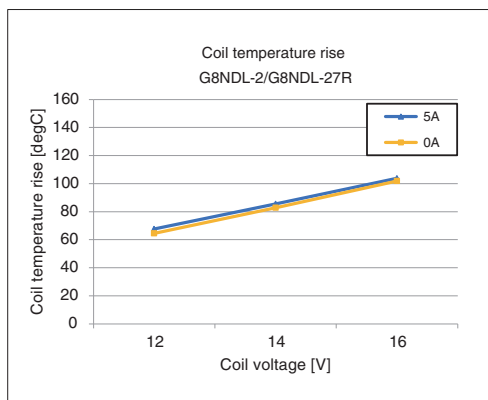
(* The data of operate time & release time overlap due to the close distributions)

Operating voltage vs ambient temperature (Cold start)

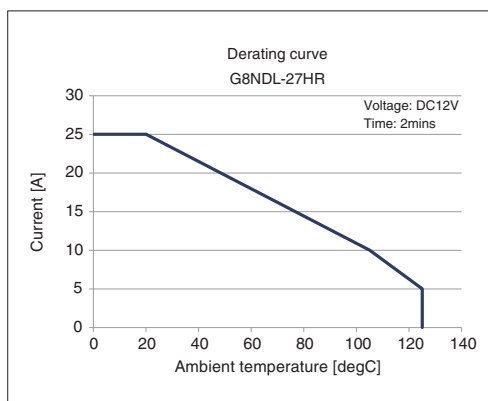


●Coil temperature rise[degC] at 20°C (Single coil energized)

(For using under a higher ambient temperature, please select the proper current carrying condition to avoid a possible excessive temperature rising.)



●Derating curve



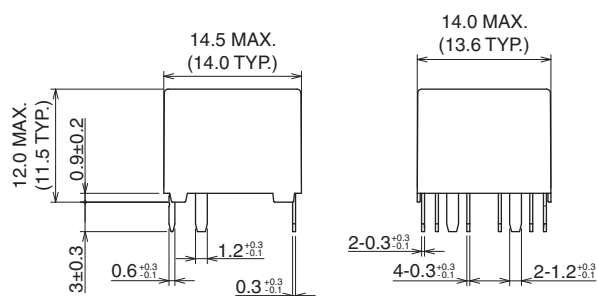
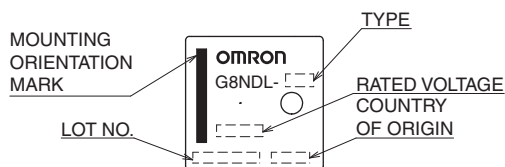
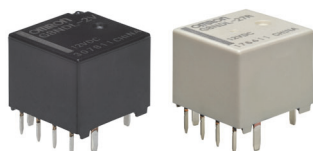
■Dimensions

CAD Data

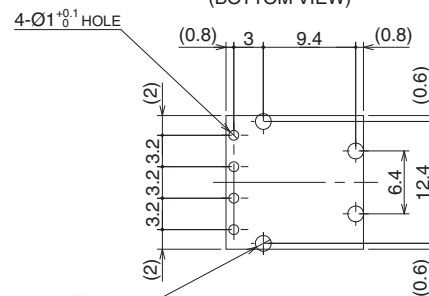
Please visit our website, which is noted on the last page.

(Unit: mm)

G8NDL

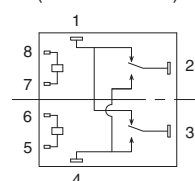


FOR REFERENCE:PCB MOUNTING HOLES
(BOTTOM VIEW)



*Please study & choose other appropriate hole diameters if confirmed the diameter values recommended above don't work with the soldering process.

TERMINAL ARRANGEMENT/
INTERNAL CONNECTIONS
(BOTTOM VIEW)



TOLERANCE UNLESS OTHERWISE SPECIFIED

LESS THAN 1mm	: ±0.1mm
1 to 3mm	: ±0.2mm
3mm OR MORE	: ±0.3mm

CAD Data

■Precautions

- Please refer to “Safety Precautions for All Automotive Relays” for correct use.

Please check each region's Terms & Conditions by region website.

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Device & Module Solutions Company

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