

<FEATURE>

- Large current capacity (54A 1hour at 20°C)
- High heat resistance
- Flux tight housing
- Pb free
- Through-hole reflow soldering available



<APPLICATION>

- Motor control such as fan and pumps, Heater control, CR circuit control, Lamp control

<PART NUMBER SYSTEM>

EM1	-	2	U	1	S	
Type						
						Enclosure
						Must operate voltage
						Contact Material
						Coil Resistance
						Nil: Unsealed
						S: Sealed
						1: 6.5V
						3: 5.5V
						U: Silver oxide complex alloy (Standard)
						2: 225Ω
						4: 160Ω

Contact Form	Contact Material	Coil Nominal Voltage	Coil Resistance	Sealed Type	Unsealed Type
1 form U	Standard	12VDC	225Ω	EM1-2U1S	EM1-2U1
1 form U	Standard	12VDC	160Ω	EM1-4U3S	EM1-4U3

<COIL RATING>

(Ambient temperature: 20°C)

Coil Nominal Voltage	Nominal Operating Power	Coil Resistance (±10%)	Must Operate Voltage ⁽¹⁾	Must Release Voltage ⁽¹⁾
12VDC	0.64W	225Ω	6.5VDC	0.9VDC
12VDC	0.9W	160Ω	5.5VDC	0.7VDC

(1) Test by pulse voltage

<SPECIFICATIONS>

(Ambient temperature: 20°C)

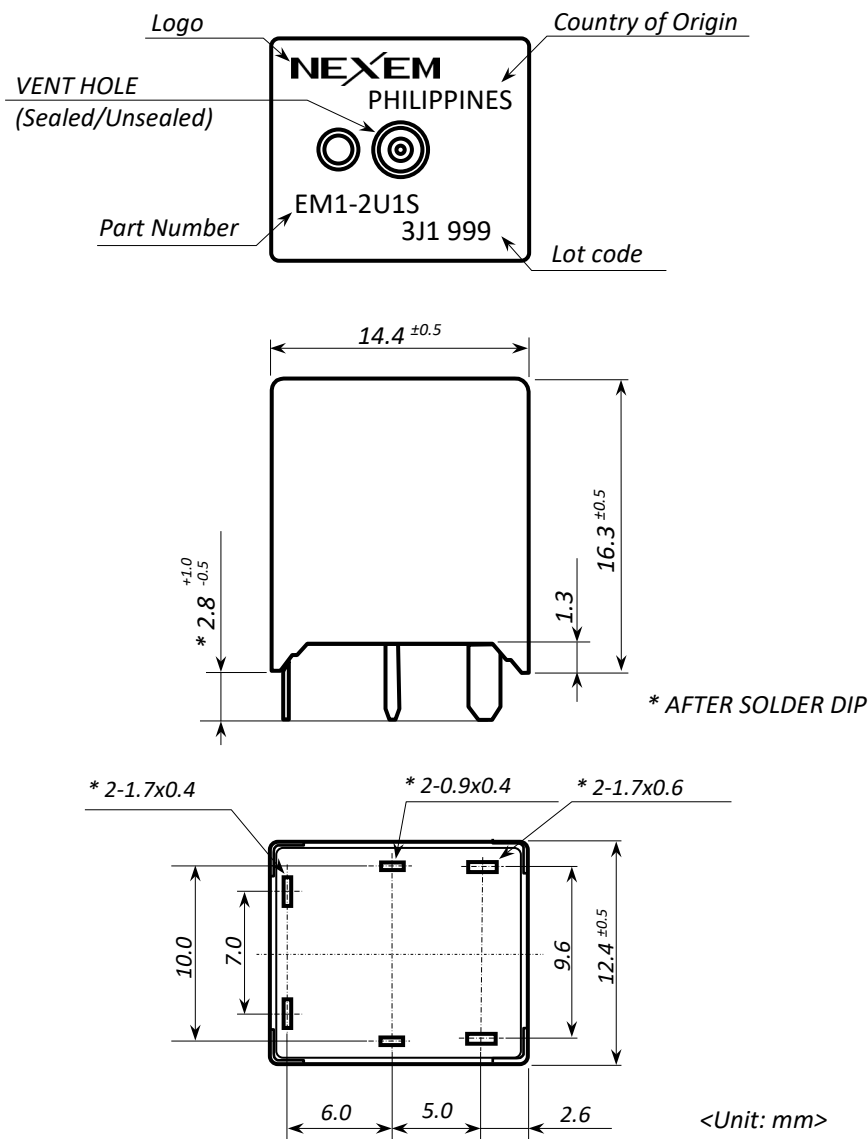
Items		Specifications
Contact form		1 form U
Contact rating	Max. switching voltage ⁽²⁾	16Vdc
	Max. switching current ⁽²⁾	100A ON / 60A OFF at 14Vdc
	Min. switching current	1A at 5Vdc
	Max. carrying current ⁽³⁾	54A at 14Vdc for 1hour
	Contact resistance	2.5mΩ typical, 25mΩ max. (6Vdc-7A voltage drop method, initial)
	Rated load	40A-14Vdc, Resistive load
Contact material		Silver oxide complex alloy
Operate time ⁽⁴⁾		10ms max.
Release time ⁽⁴⁾		10ms max.
Insulation resistance		100MΩ min. at 500Vdc
Breakdown voltage	Between open contacts	500Vac min. for 1minute
	Between coil and contact	500Vac min. for 1minute
Shock resistance	Misoperation	98m/s ²
	Destructive failure	980m/s ²
Vibration resistance	Misoperation	10 to 300Hz, 43m/s ²
	Destructive failure	10 to 500Hz, 43m/s ² for 200hours
Ambient temperature		-40 to +125°C (no freezing and condensation)
Life expectancy	Mechanical	1,000,000 cycles
	Electrical	100,000 cycles (Rated load)
Weight		8g typical

(2) Resistive, 10cycles

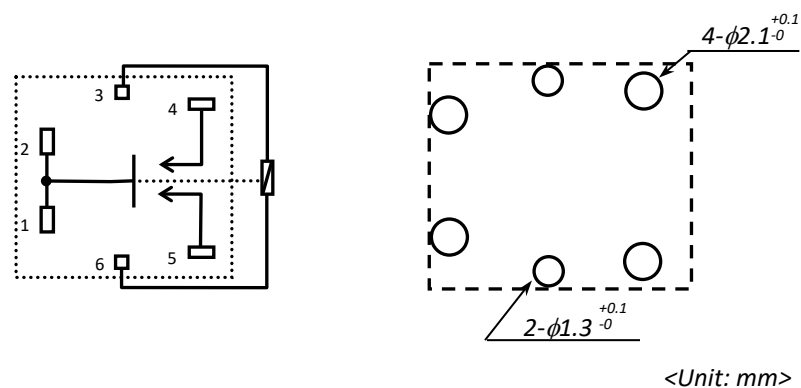
(3) Copper thickness: 105μm, width: 15mm

(4) Excluding contact bounce, nominal voltage applied, without flywheel coil diode

<DIMENSIONS>

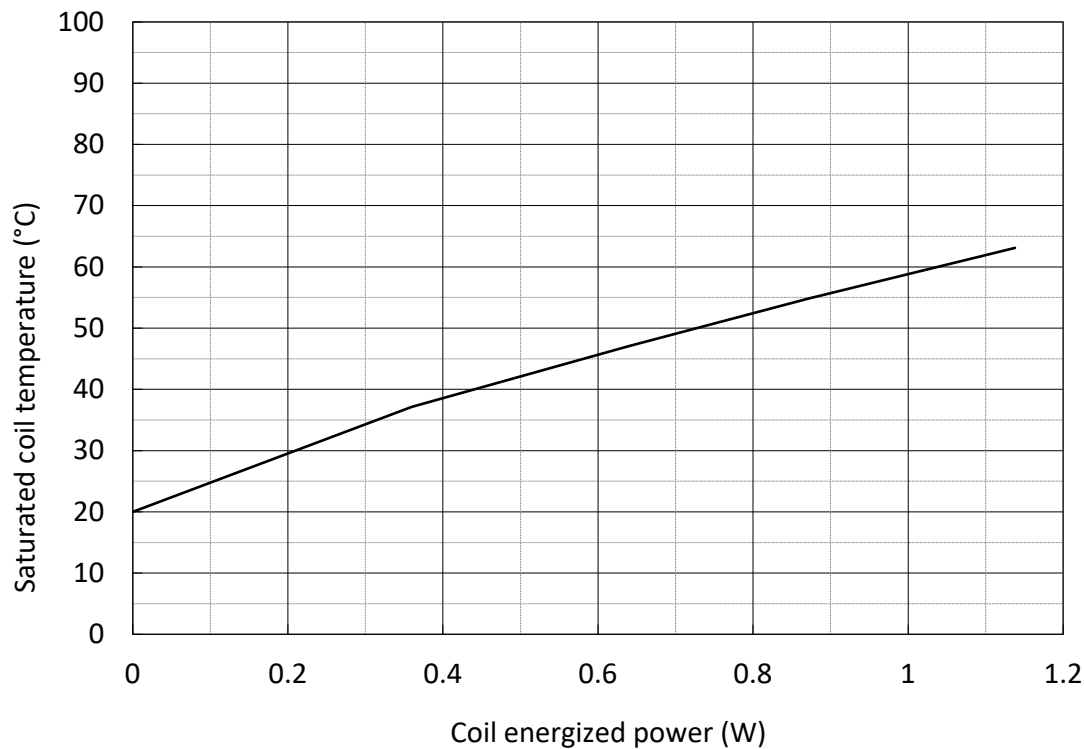
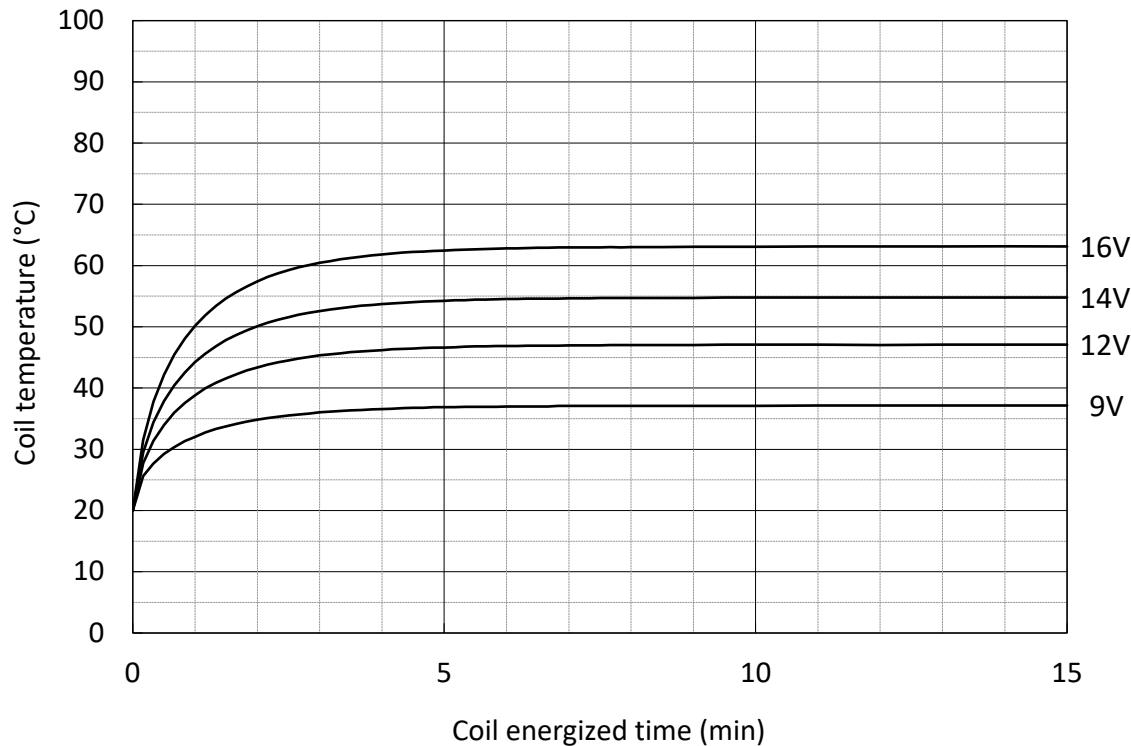


<SCHEMATIC AND PCB PAD LAYOUT (BOTTOM VIEW)>



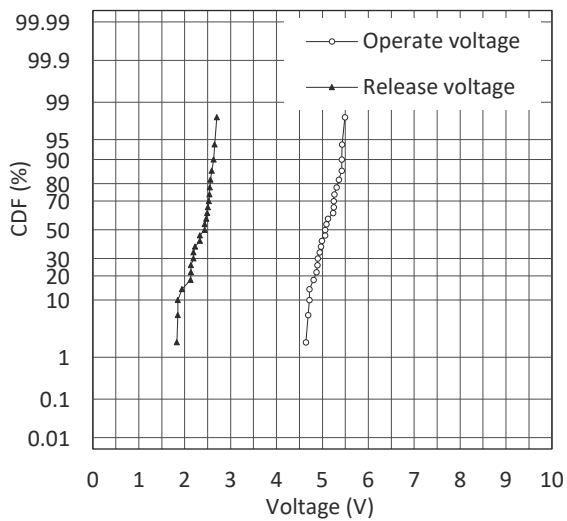
<TECHNICAL DATA>

COIL TEMPERATURE DATA (Ambient temperature: 20°C)



RELAY CHARACTERISTICS DISTRIBUTION (INITIAL)

Operate / Release voltage

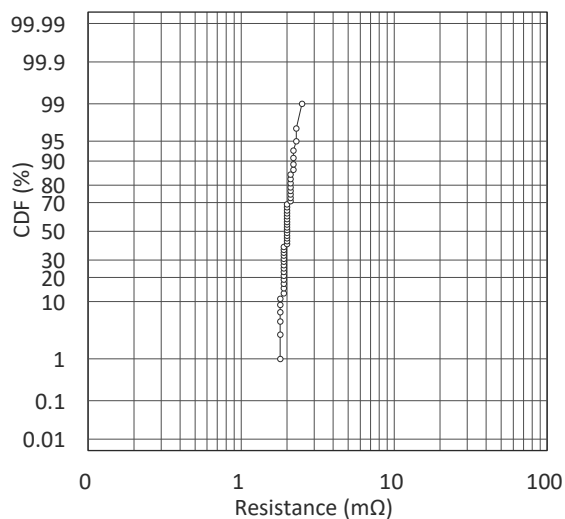


Specimen: EM1-2U1S

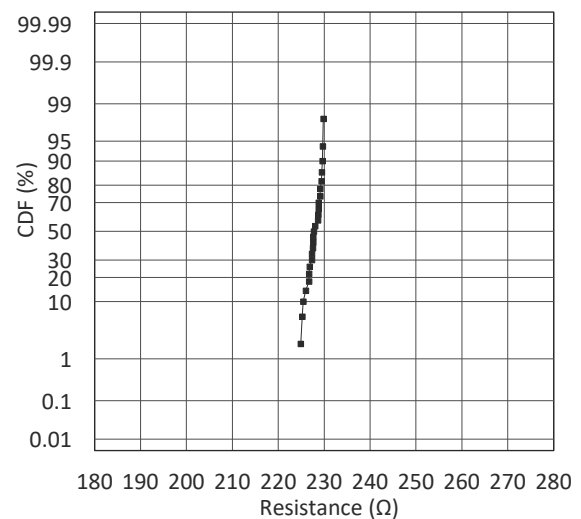
Ambient Temperature: 20°C

Quantity: 25pcs.

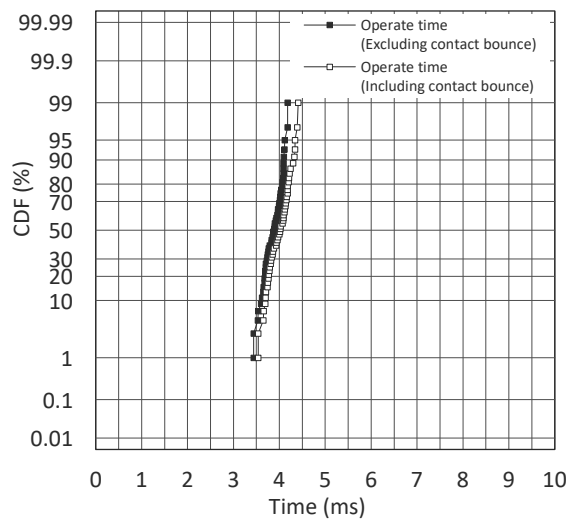
Contact resistance



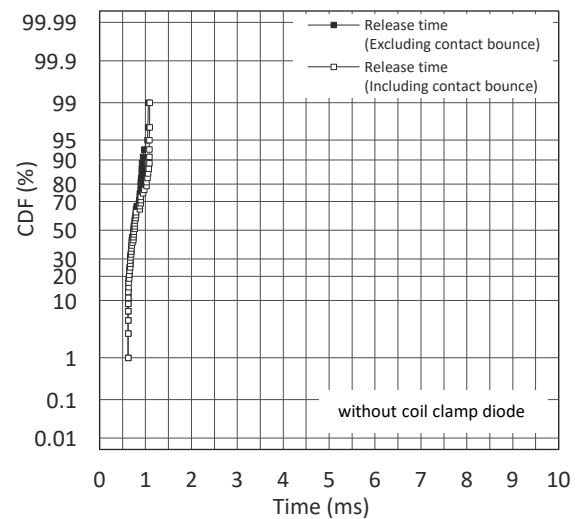
Coil resistance



Operate time

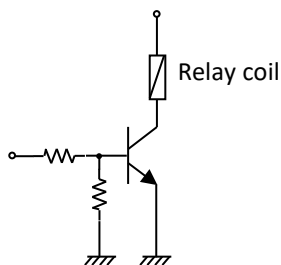


Release time

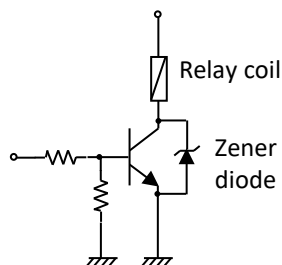


<NOTICE>

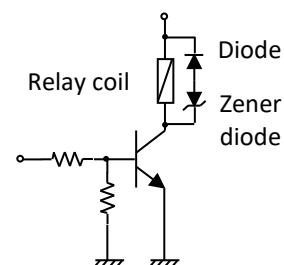
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<COIL DRIVE CIRCUIT>
Recommended Circuit


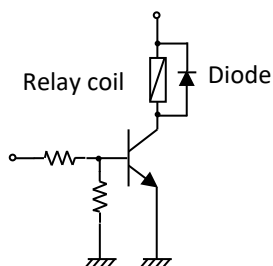
(a)



(b)



(c)

Non-recommended Circuit


(d)

EM Devices recommends coil drive circuit (b) and (c) for coil fly back suppression, but does not recommend the circuit (d) because the performance of the EM1 relay does not appear enough.