

DESCRIPTION

The NEXEM EL1 series is PC-board mount type and suitable for control of various motor, solenoidal coil and power supply etc. applications for automobiles which require high quality and high performance.

The EL1 series has higher switching and carrying current performance than the current relays like EP1,ET1 and EX1 series.

FEATURE

- Suitable for inductive load and large current interruption
- Changing-over circuit available by Form C contacts
- Large current capacity (54A 1hour at 20°C)
- High heat resistance
- Flux tight housing
- Pb free soldering
- Through-hole reflow soldering available

APPLICATION

- Motor control such as fans and pumps
- Solenoidal coil control such as magnet clutch
- Central power supply control



For Proper Use of Miniature Relays
DO NOT EXCEED MAXIMUM RATING

Do not use relay under excessive conditions such as over ambient temperature, over voltage and over current. Incorrect use could result in abnormal heating and damage to the relay or other parts.

READ CAUTIONS IN THE SELECTION GUIDE

Read the cautions described in EM Devices' "Miniature Relays Selection Guide" catalog before does designing your relay applications.

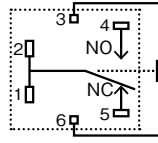
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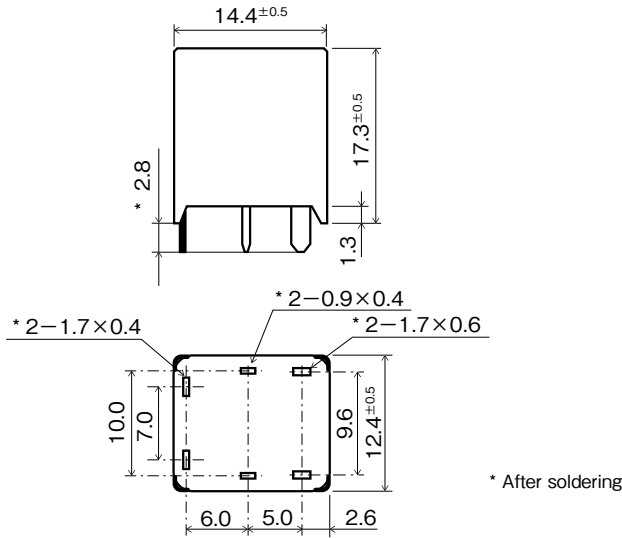
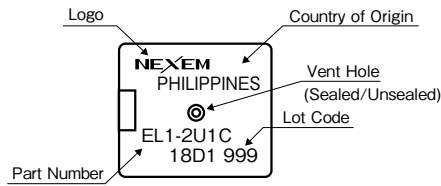
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SCHEMATIC (BOTTOM VIEW)

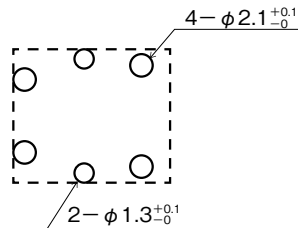


1 form C

DIMENSIONS [mm]



PCB HOLE LAYOUT [mm] (BOTTOM VIEW)



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SPECIFICATIONS

(Ambient temperature:20°C)

Items		Specifications
Contact Form		1c (1 Form C)
Contact Material		Silver oxide complex alloy
Contact Rating	Contact Resistance	NO : 3mΩ typical, NC : 5mΩ typical (measured at 7A) initial
	Rating Load	NO : 40A 14VDC, NC : 20A 14VDC (Resistive load)
	Maximum Switching Current	100A ON/60A OFF, 14VDC (Resistive load, 10 operations)
	Maximum Carrying Current	54A at 14VDC for 1hour ¹
	Minimum Switching Current	5VDC, 1A
Operate Time (Excluding bounce)		4ms typical (at Nominal voltage)
Release Time (Excluding bounce)		1ms typical (at Nominal voltage, without diode) initial
Nominal Operating Power		640mW
Insulation Resistance		100MΩ at 500VDC
Withstand Voltage	Between open contacts	500VAC min. (for 1 minute)
	Between coil and contacts	500VAC min. (for 1 minute)
Shock Resistance	Misoperation	98m/s ²
	Destructive Failure	980m/s ²
Vibration Resistance	Misoperation	10 ~ 300Hz, 43m/s ²
	Destructive Failure	10 ~ 500Hz, 43m/s ² , for 200 hours
Ambient Temperature		- 40 to + 125°C
Running Specifications	Non-load	1 x 10 ⁶ operations
	Load	100 x 10 ³ operations (NO: 14VDC, Resistive load, 40A) 100 x 10 ³ operations (NO: 14VDC, Inductive load (0.5mH), 30A)
Weight		7.5g typical

*1 Mounted on PC-board: FR-4 (thickness: 1.6mm); Copper (thickness: 105 μm & width: 15mm)

This is the allowable value at abnormal case such as fuse blow. And cyclical current is not guaranteed.

COIL RATING

(Ambient temperature:20°C)

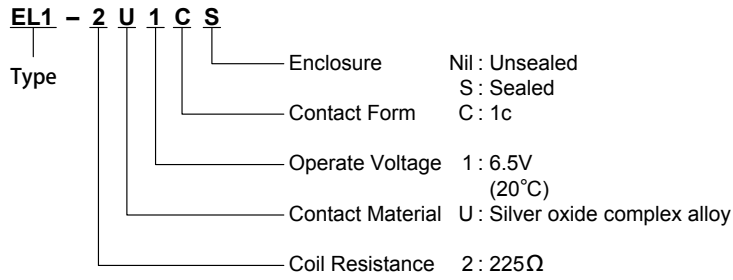
Part Numbers	Nominal Voltage (VDC)	Coil Resistance (Ω)	Must Operate Voltage ^{*2} (VDC)	Must Release Voltage ^{*2} (VDC)
EL1-2U1C	12	225 ± 10%	6.5	0.9

*2 Test by pulse voltage



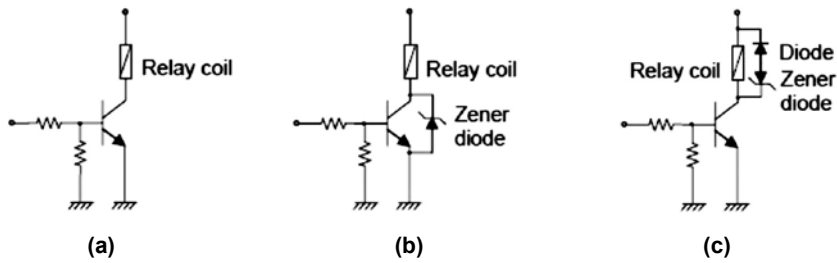
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PART NUMBER SYSTEM

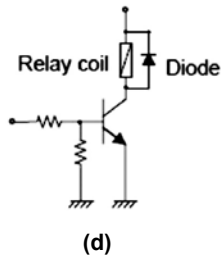


COIL DRIVE CIRCUIT

Recommended Circuit



Non-recommended Circuit



(NOTE)

EM Devices recommends coil drive circuit (b) and (c) for coil flyback suppression, However, EM Devices does not recommend the circuit (d) because EL1 relay's performance is not yet enough.

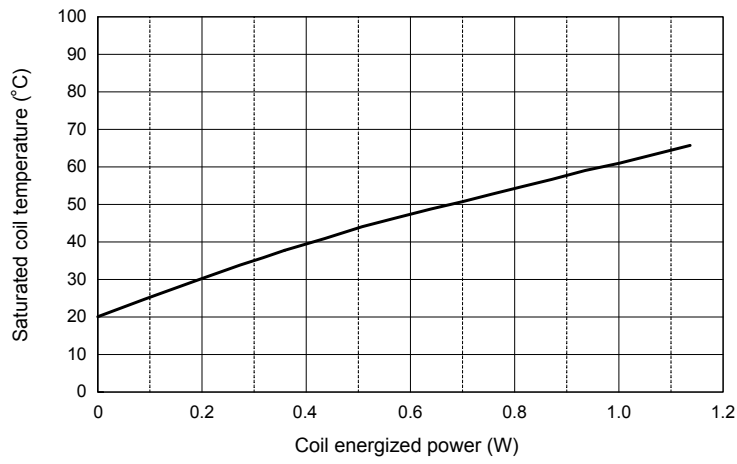
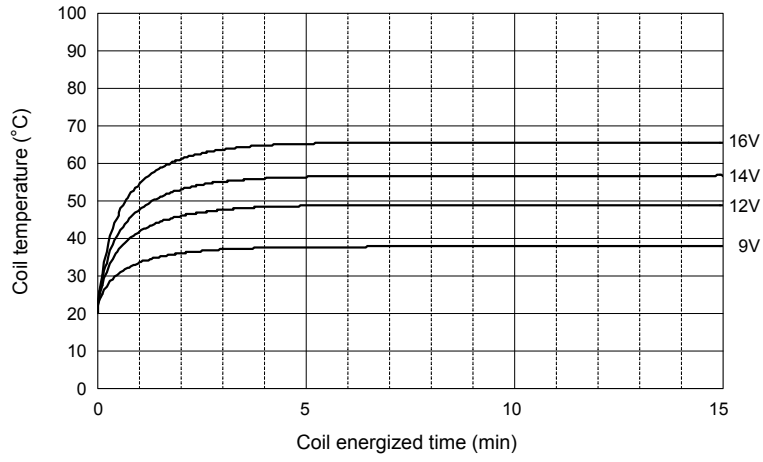


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TECHNICAL DATA

Coil Temperature Rise

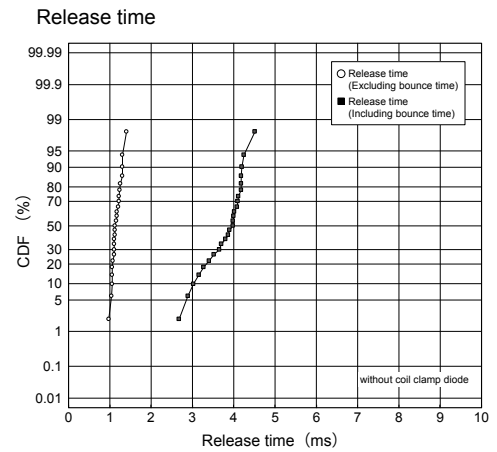
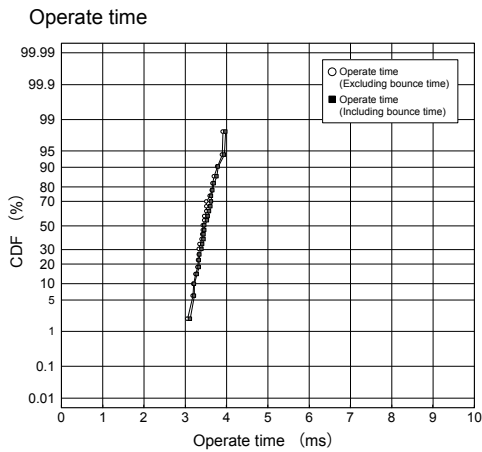
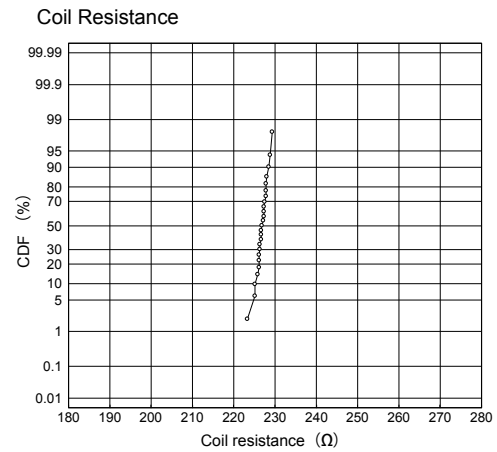
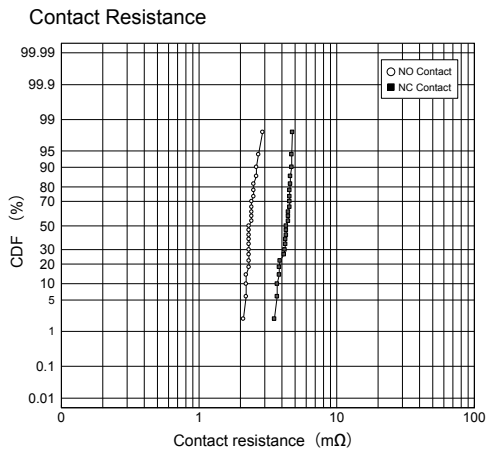
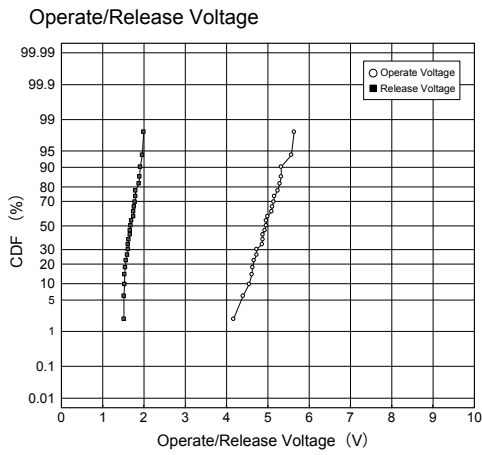
(Ambient Temperature:20°C)



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RELAY CHARACTERISTICS DISTRIBUTION (INITIAL)

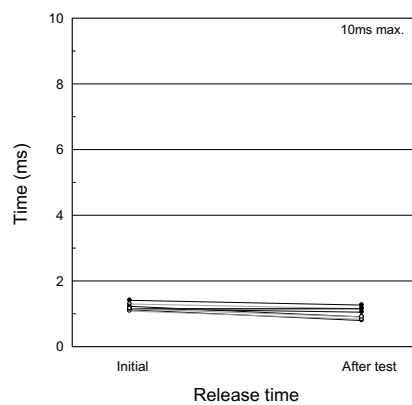
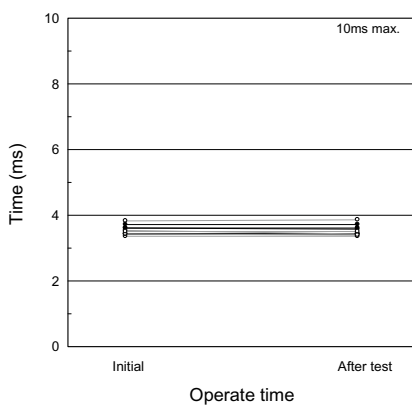
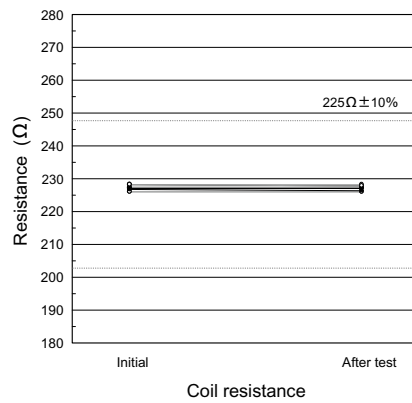
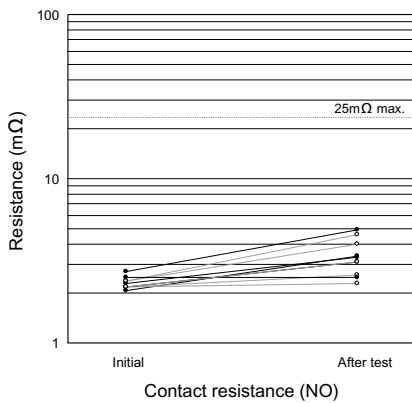
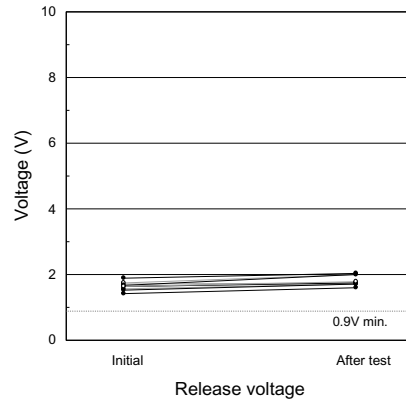
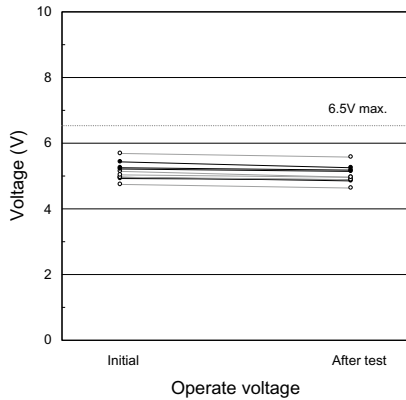
Specimen : EL1-2U1C
 Ambient Temperature : 20°C
 Quantity : 25 pcs



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ELECTRICAL LIFE TEST (Example: NO contact, 14VDC, Resistive load, 40A)

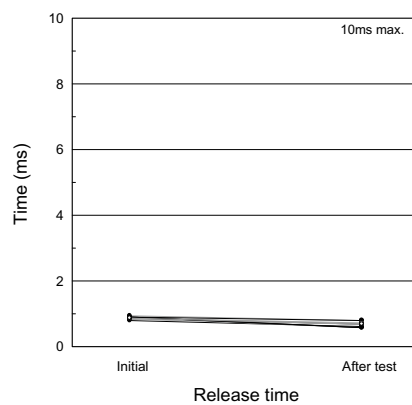
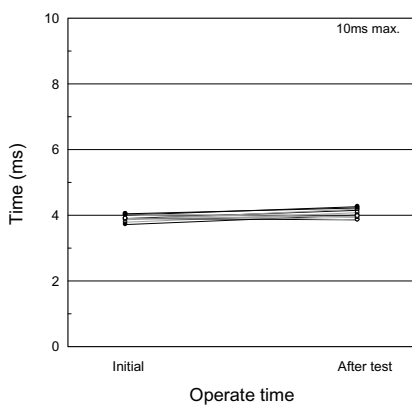
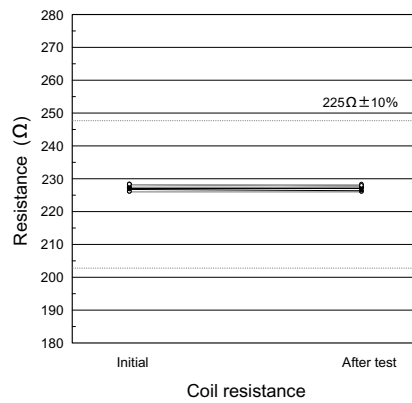
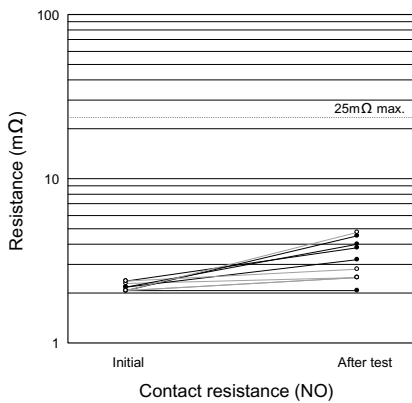
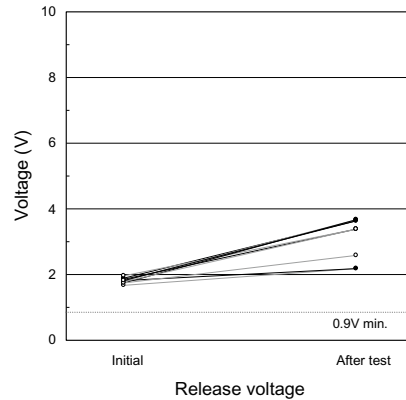
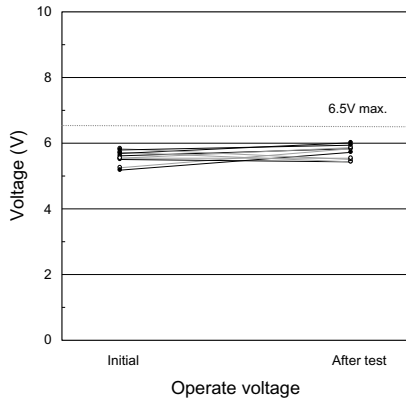
Test items	Test conditions	Samples
1. Operate voltage 2. Release voltage 3. Contact resistance 4. Coil resistance 5. Operate time 6. Release time (Without coil clamp diode)	Temperature : 20°C Frequency : 100ms ON, 900ms OFF Contact load : NO contact, 14VDC, Resistive load, 40A Number of operations : 100 x 10 ³	EL1-2U1C 10 pcs



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ELECTRICAL LIFE TEST (Example: NO contact, 14VDC, Inductive load (0.5mH), 30A)

Test items	Test conditions	Samples
1. Operate voltage 2. Release voltage 3. Contact resistance 4. Coil resistance 5. Operate time 6. Release time (Without coil clamp diode)	Temperature : 20°C Frequency : 200ms ON, 9800ms OFF Contact load : NO contact, 14VDC, Inductive load (0.5mH), 30A Number of operations : 100 x 10 ³	EL1-2U1C 10 pcs



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