DATA SHEET

AUTOMOTIVE RELAYS

EP1K SERIES

DESCRIPTION

The NEXEM EP1K series is PC-board mount type and suitable for various heaters, fans and pumps, etc. controls for automobiles which require high quality and high performance.

The EP1K series was developed based on the EP1 series and the performance of carrying current is about 10A larger than the EP1F relay.

FEATURE

- Large current capacity (54A 1hour at 20℃ , Approx. 10A larger than the EP1F)
- High heat resistance
- Flux tight housing
- Pb free
- Through-hole reflow soldering available

APPLICATION

- Heater control
- Motor control such as fans and pumps

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 G-UIDE

Read the cautions described in EM Devices' "Miniature Relays" before dose designing your relay applications.

The information in this document is subject to change without notice.

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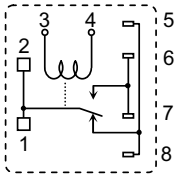
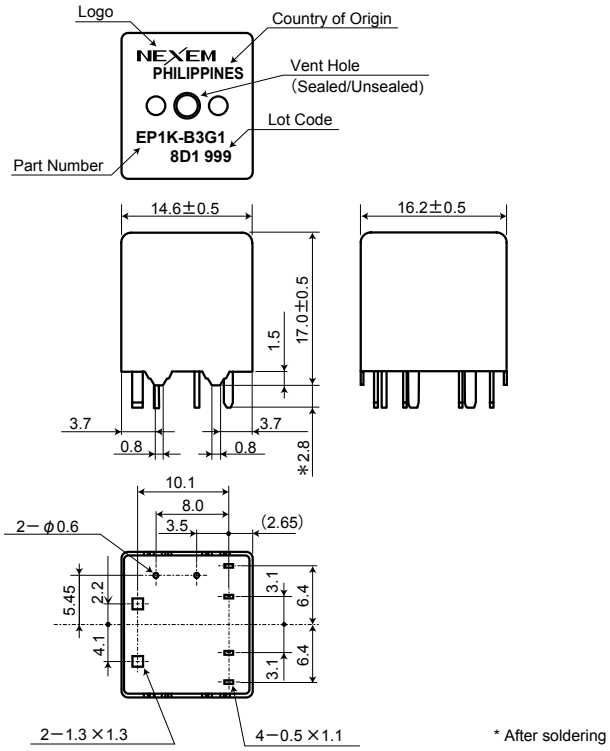
●All specifications in this catalog and production status of products are subject to change without notice. Prior to the purchase, please contact EM Devices for updated product data.
●Please request for a specification sheet for detailed product data prior to the purchase.
●Before using the product in this catalog, please read "NOTES ON CORRECT USE" in "Miniature Relays selection guide" catalog.

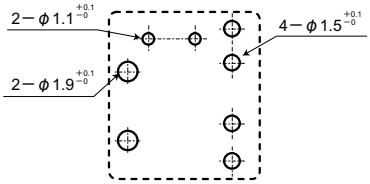
SCHEMATIC (BOTTOM VIEW)



DIMNSIONS [mm]



PCB PAD LAYOUT [mm] (BOTTOM VIEW)



SPECIFICATIONS

(Ambient Temperature 20°C)

Items		Specifications
Contact Form		1 Form C
Contact Ratings	Maximum Switching Voltage	16VDC
	Maximum Switching Current	30A
	Minimum Switching Current	1 A (5VDC)
	Maximum Carrying Current	54A at 14VDC for 1hour *1
	Contact Resistance	4mΩ typical (measured at 7A) initial
Contact Material		Silver oxide complex alloy
Operate Time (Excluding bounce)		5ms typical（at Nominal Voltage）
Release Time (Excluding bounce)		2ms typical（at Nominal Voltage, without diode) initial 8ms typical (at Nominal Voltage, with diode) initial
Nominal Operating Power		640mW
Coil Temperature Rise		Approx. 45℃ /W (contact carrying current 0A）
Insulation Resistance		100MΩ at 500VDC
Withstand Voltage	Between open contacts	500VAC (for 1minute)
	Between coil and contacts	500VAC (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^2，200 hours
Ambient Temperature		－40 to ＋125℃
Running Specifications	Non-load	1 x 10^6 operations
	Load (Motor load)	100 × 10^3 operations (at 25℃，14VDC，Lock 25A / Steady 7A) 100 × 10^3 operations（at 125℃，14VDC，Lock 18A / Steady 5A)
Weight		Approx. 8g

*1 Mounted on PC-board: FR-4 (Thickness; 1.6mm), Copper (Thickness; 105μm,Width; 15mm）
This is the allowable value at abnormal case such as fuse blow. And cyclical current is not guaranteed.

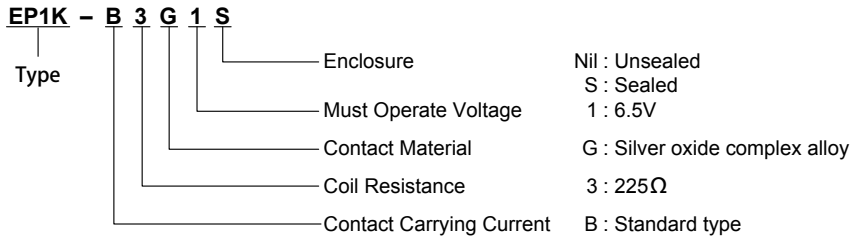
COIL RATING

(Ambient temperature:20°C)

Part Numbers	Nominal Voltage (VDC)	Coil Resistance (Ω) ±10%	Must Operate Voltage*2 (VDC)	Must Release Voltage*2 (VDC)
EP1K-B3G1	12	225	6.5	0.9

*2 Test by pulse voltage

PART NUMBER SYSTEM

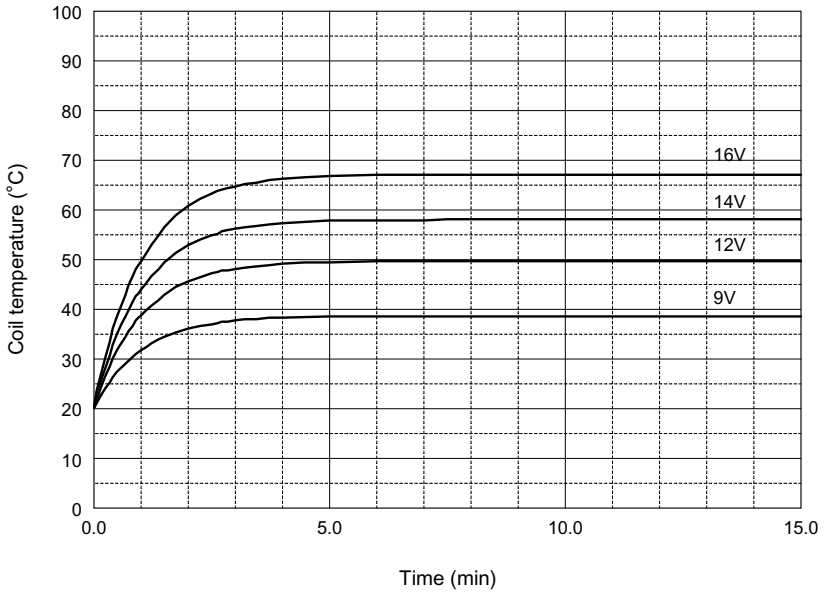


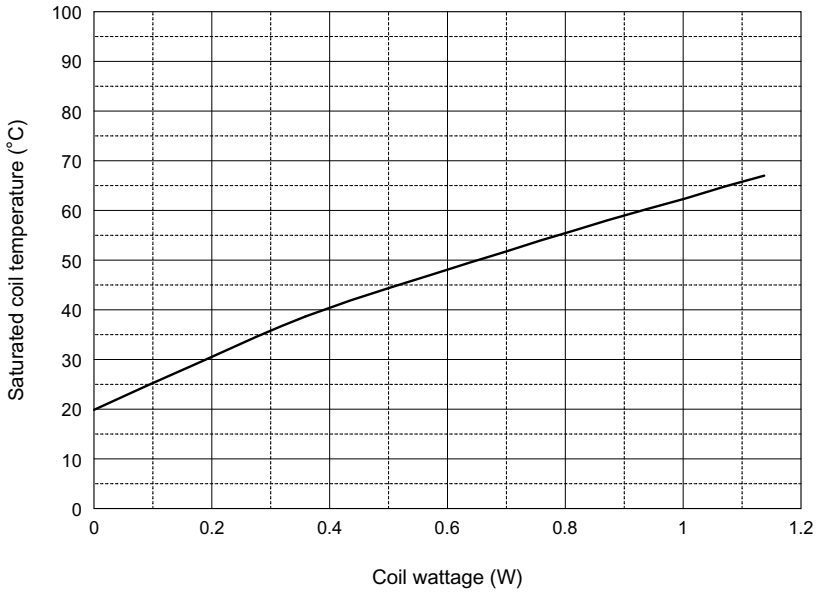
TECHINICAL DATA

Coil Temperature Rise

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

(Ambient Temperature 20°C)

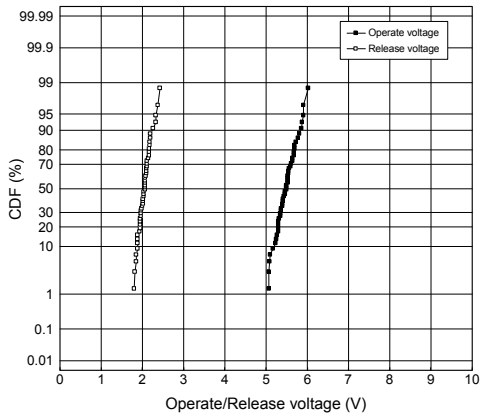




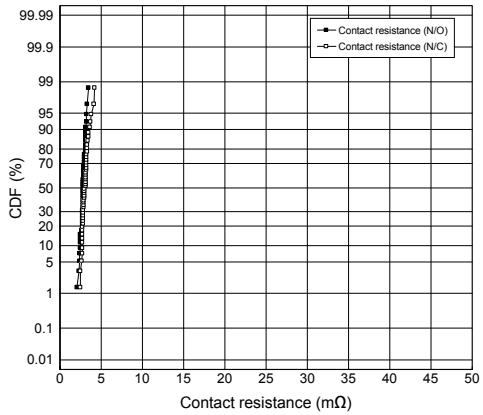
RELAY CHARACTERISTICS DISTRIBUTION (INITIAL)

Specimen : EP1K-B3G1S
Ambient Temperature : 20˚C
Quantity :50pcs.

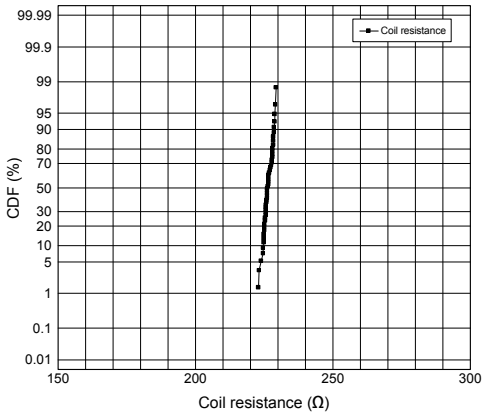
Operate/Release Voltage



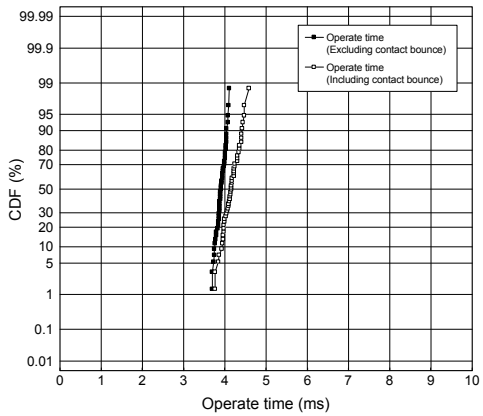
Contact Resistance



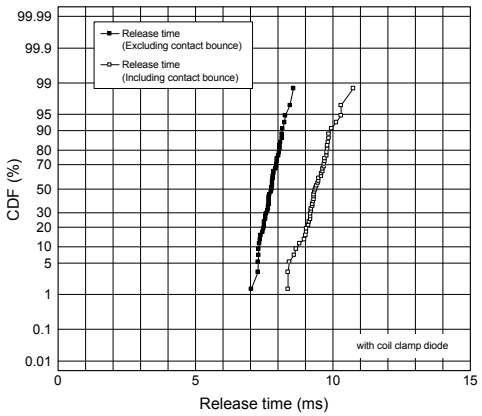
Coil Resistance



Operate Time

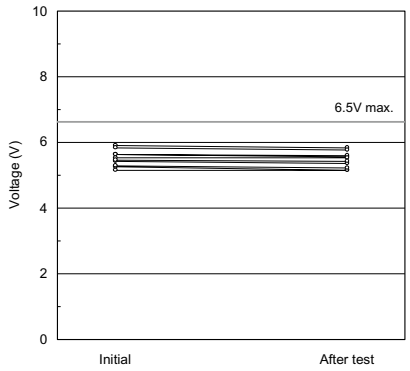


Release Time

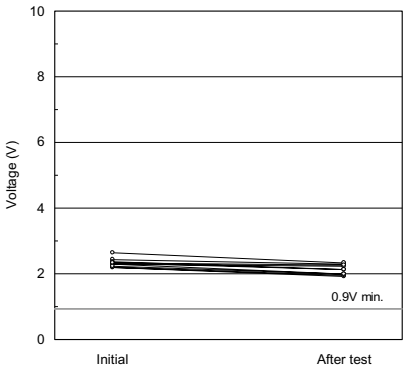


ELECTRICAL LIFE TEST (14VDC-25A, P/W motor, Lock)

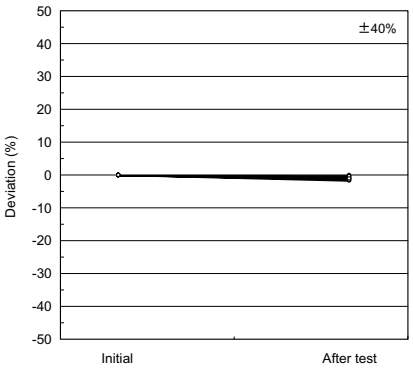
Test items	Test conditions	Samples
1. Operate voltage 2. Release voltage 3. Contact resistance 4. Coil resistance 5. Operate time 6. Release time (with coil clamp diode)	Temperature : 20°C Frequency : 0.1Hz (0.2s ON, 9.8s OFF) Contact load : 14VDC-25A, P/W motor, Lock Number of operations : 100×10^3	EP1K-B3G1S 10 pcs



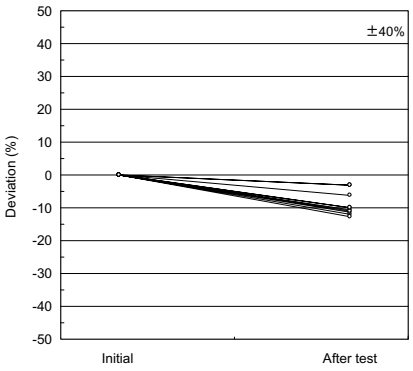
Operate voltage



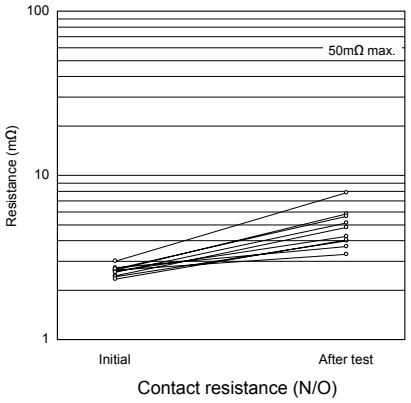
Release voltage



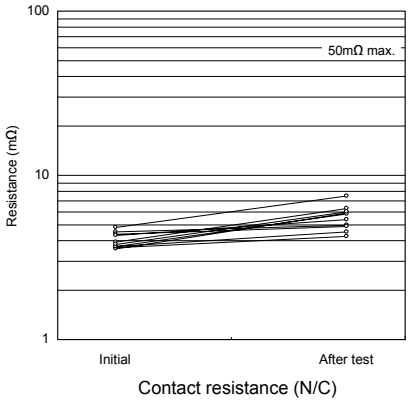
Operate voltage



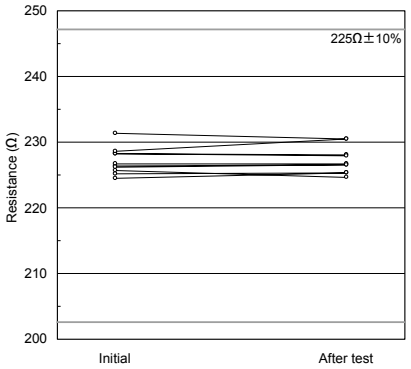
Release voltage



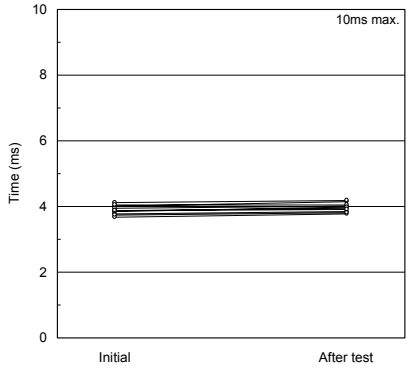
Contact resistance (N/O)



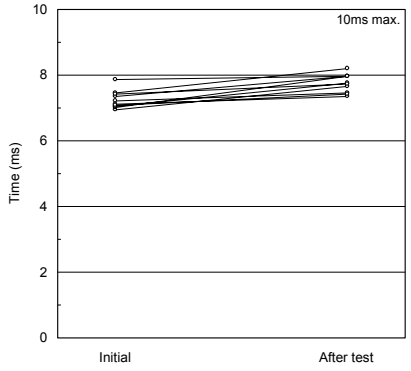
Contact resistance (N/C)



Coil resistance



Operate time



Release time

CARRYING CURRENT PERFORMANCE

Test items	Test conditions	Samples
Carrying current	Coil wattage : 0.87W（225Ω ,14VDC） Temperature : 20°C Mounting conditions : Mounted on NEXEM's PC board PC board FR-4, t1.6 Cu pattern thickness 105μm Pattern size 15mm(width) × 100mm(length) Failuer mode : Coil layer short	EP1K-B3G1S EP1F-B3G1S 5 pcs for each