DATA SHEET

AUTOMOTIVE LATCHING RELAYS

EM1KT SERIES

DESCRIPTION

The NEXEM EM1KT series is latching relay of PC-board mount type and suitable for power supply, fan, pumps, heater, CR circuits controls and other applications for automobiles which require high quality and high performance.

FEATURE

- Large current capacity (81A 1hour at 20℃)
- Two coils latching type
- High heat resistance
- Flux tight housing
- Pb free
- Through-hole reflow soldering available

APPLICATION

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

For Proper Use of Miniature Relays

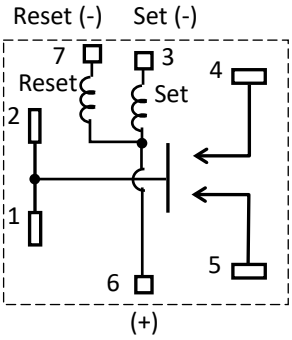
DO NOT EXCEED MAXIMUM RATING

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.

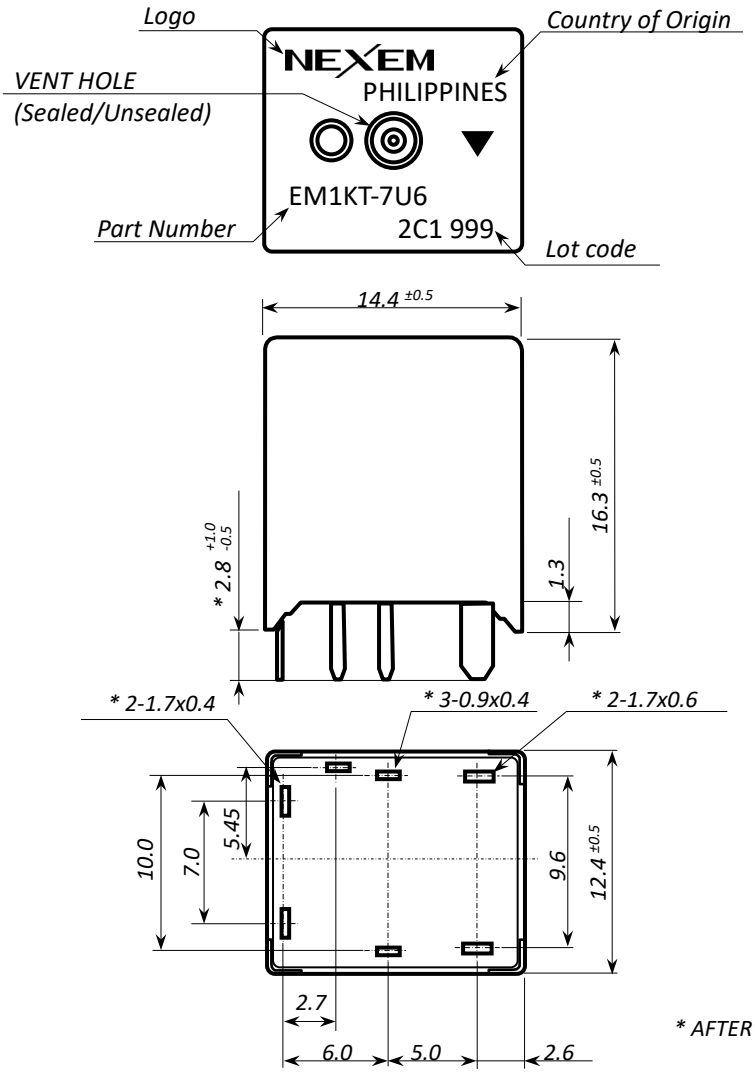
READ CAUTIONS IN THE USER'S MANUAL

Read the cautions described in EM Devices' "AUTOMOTIVE POWER RELAY USER'S MANUAL" before does designing your relay applications.

SCHEMATICS (BOTTOM VIEW)

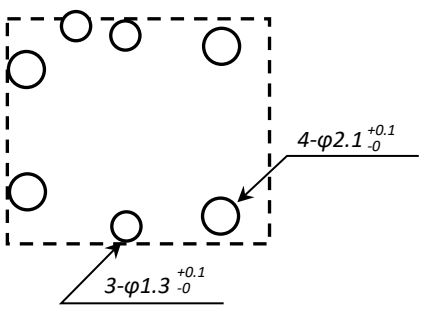


DIMENSIONS (in mm)



* AFTER SOLDER DIP

RECOMMENDED PCB PAD LAYOUT (BOTTOM VIEW) (in mm)



SPECIFICATIONS

(Ambient temperature: 20°C)

Items		Specifications
Contact form		1 form U
Contact rating	Max. switching voltage (1)	16Vdc
	Max. switching current (1)	100A ON / 60A OFF at 14Vdc
	Min. switching current	1A at 5Vdc
	Max. carrying current (2)	81A at 14Vdc for 1hour at 20°C
	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 (3)		10ms max.
Release time (3)		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)
Life expectancy	Mechanical	1,000,000 cycles
	Electrical	100,000 cycles (Rated load)
Weight		8g typical

(1) Resistive, 10cycles
(2) Copper thickness: 105µm, width: 15mm.
(3) Excluding contact bounce, nominal voltage applied, without flywheel coil diode
(4) EM Devices recommends that the usage of the coating agent close to the relay is to be avoided.

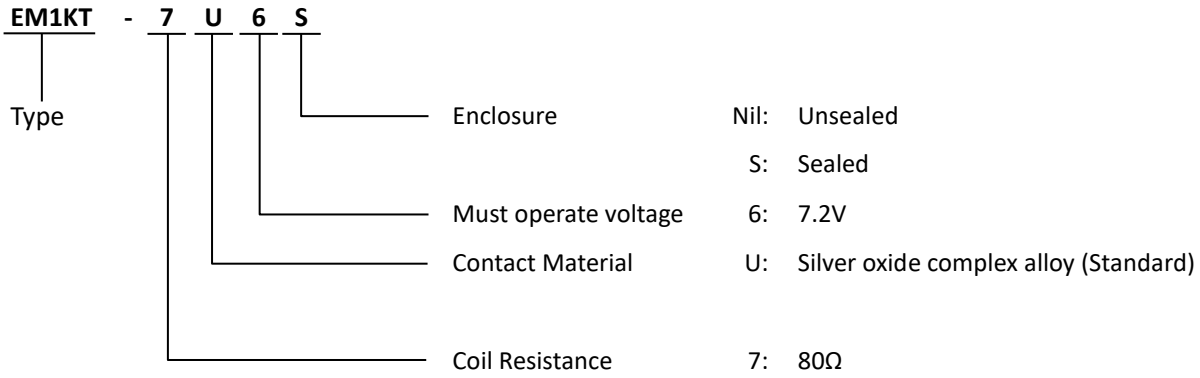
COIL RATING

(Ambient temperature: 20°C)

Nominal Voltage (VDC)	Coil Resistance (Ω)±10%		Set Voltage (5) (VDC)	Reset Voltage (5) (VDC)	Nominal Operating Power (W)	
	Set	Reset			Set	Reset
12	80	80	7.2	7.2	1.8	1.8

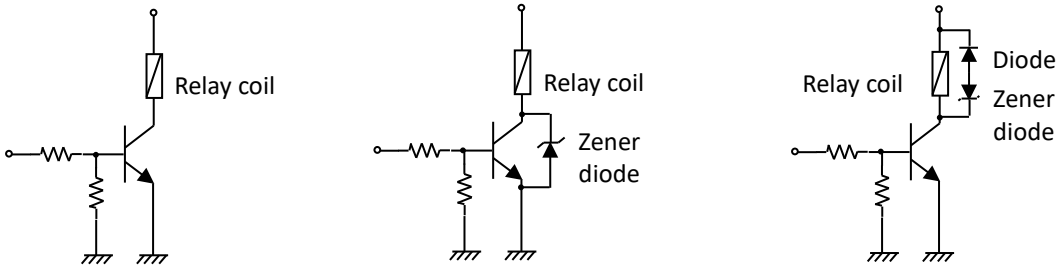
(5) Test by pulse voltage

PART NUMBER SYSTEM



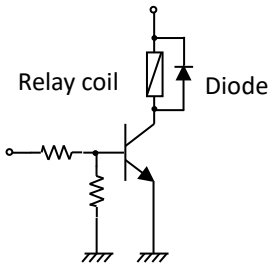
Contact form	Coil Nominal voltage	Coil Resistance	Sealed type	Unsealed type
1u	12VDC	80Ω	EM1KT-7U6S	EM1KT-7U6

RECOMMENDED COIL DRIVE CIRCUIT OF EM1KT RELAY



(a) **(b)** **(c)**

THE COIL DRIVE CIRCUIT OF EM1KT RELAY THAT EM Devices DOES NOT RECOMMEND



(d)

(Note)

EM Devices recommends coil drive circuit (b) and (c) for coil flyback suppression, but does not recommend the circuit (d) because the performance of the EM1KT relay does not appear enough.

PRECAUTIONS REGARDING LATCHING RELAYS

- Apply a voltage to the coil in the polarity specified by the internal connection diagram of the relay. With a double coil latching type relay, do not apply voltage in a manner that both the set and reset coils are energized at the same time.

- A latching relay is driven by a pulsating coil voltage. The pulse width of this drive voltage must be 10ms or wider. If the pulse is too short, the relay may not operate.

- A latching relay is factory-set to the reset state for shipment. However, it may be set while being transported due to vibration or shock. Make sure that the relay is reset when its application system starts operating. When the relay is employed in a portable system, the circuit must be designed so that the relay is reset at the beginning of operation of the system because the relay may be set by unexpected vibration or shock.

- When configuring a self-holding circuit that uses the self-break contacts of the relay, note that the coil drive circuit is disconnected by the self-contacts, causing troubles such as self-oscillation.