

# POWER RELAY

## 1 POLE—5 A (MEDIUM LOAD CONTROL)

### VE SERIES

#### ■ FEATURES

- UL, CSA, VDE recognized
- 1 form A (SPST-NO) or 1 form C (SPDT) contact
- Low cost, miniature relay with big performance in small package  
—Surge strength: 4,000 V or 6,000 V
- Slim type—meets high density mounting requirement
- Wide operating range
- Easy circuit design with completely separated terminal arrangement (coil and contact terminals)
- Plastic sealed type backfilled with nitrogen



#### ■ ORDERING INFORMATION

[Example]  $\frac{VE}{(a)}$  -  $\frac{12}{(*)}$   $\frac{H}{(b)}$   $\frac{M}{(c)}$   $\frac{S}{(d)}$   $\frac{E}{(e)}$  -  $\frac{K}{(f)}$  -  $\frac{HV}{(g)}$  -  $\frac{VD}{(h)}$

(a)	Series Name	VE: VE Series
(b)	Nominal Voltage	Refer to the COIL DATA CHART
(c)	Contact Rating	H : Heavy duty type
(d)	Contact Arrangement	Nil : 1 form C (SPDT) M : 1 form A (SPST-NO)
(e)	Coil Type	Nil : Standard type S : High sensitivity type
(f)	Contact Material (Rating)	Nil : Gold overlay silver-nickel (N.C.: 3 A, N.O.: 5 A) E : Silver-nickel (N.C.: 3 A, N.O.: 5 A) 5 : Silver alloy (N.C.: 5 A, N.O.: 5 A)
(g)	Enclosure	K : Plastic sealed type
(h)	Surge Strength	Nil : Standard type (4,000 V) HV: High dielectric strength type (6,000 V)
(i)	Standard	VD: UL, CSA, VDE approved type

Note: Actual marking omits the hyphen (-) of (\*)

## ■ SAFETY STANDARD AND FILE NUMBERS

UL508 (File No. E56140)

C22.2 No. 14 (File No. LR35579)

VDE0435

Please note that UL/CSA ratings may differ from the standard ratings.

Type	Nominal voltage	Contact rating
VE-H	5 to 48 VDC	Normally open: 1/14 HP 125 VAC/250 VAC 5 A 30 VDC/250 VAC, resistive Pilot duty D300 Normally close: 1/14 HP 125 VAC/250 VAC 3 A 30 VDC/250 VAC, resistive Pilot duty D150
VE-HM	5 to 48 VDC	1/12 HP 125 VAC/250 VAC 5 A 30 VDC/250 VAC, resistive Pilot duty D300
VE-H5 VE-HM5	5 to 48 VDC	Normally open: 1/10 HP 125 VAC/250 VAC 5 A 30 VDC/250 VAC, resistive Pilot duty D300 Normally close: 1/14 HP 125 VAC/250 VAC 5 A 30 VDC/250 VAC, resistive

## ■ SPECIFICATIONS

Item		VE-( ) HME-K VE-( ) HM-K	VE-( ) HE-K VE-( ) H-K	VE-( ) HM5-K	VE-( ) H5-K	
Contact	Arrangement	1 form A (SPST-NO)	1 form C (SPDT)	1 form A (SPST-NO)	1 form C (SPDT)	
	Material	Gold overlay silver alloy		Silver-cadmium oxide alloy		
	Style	Single				
	Resistance (initial) (at 1 A 6 VDC)	Maximum 70 mΩ (VE-HM, H) Maximum 100 mΩ (VE-HME, HE)		Maximum 200 mΩ		
	Rating (resistive)	5 A 250 VAC	5 A 250 VAC (N.O.) 3 A 250 VAC (N.C.)	5 A 250 VAC		
	Maximum Carrying Current	7 A				
	Maximum Switching Power	1,250 VA	1,250 VA (N.O.) 750 VA (N.C.)	1,250 VA		
	Maximum Switching Voltage	250 VAC, 150 VDC				
	Maximum Switching Current	5 A	5 A (N.O.) 3 A (N.C.)	5 A		
	Minimum Switching Load*1	10 mA, 5 VDC (VE-HM, H), 100 mA 5 VDC (VE-HME, HE, HM5, H5)				
Coil	Nominal Power (at 20°C)	Standard type: 0.36 W. High sensitivity type: 0.25 W				
	Operate Power (at 20°C)	Standard type: 0.177 W. High sensitivity type: 0.13 W				
	Operating Temperature	Standard: -40°C to +85°C. High sensitivity: -40°C to +90°C (no frost)				
Time Value	Operate (at nominal voltage)	Maximum 10 ms				
	Release (at nominal voltage)	Maximum 5 ms				
Insulation	Resistance (at 500 VDC)	Minimum 1,000 MΩ				
	Dielectric Strength	between open contacts	1,000 VAC 1 minute	750 VAC 1 minute	1,000 VAC 1 minute	750 VAC 1 minute
		between coil and contacts	2,000 VAC 1 minute			
Surge Strength	Standard type: 4,000 V (at 2 × 10 μs) High dielectric strength type: 6,000 V (at 2 × 10 μs)					
Life	Mechanical	1 × 10 <sup>7</sup> operations minimum				
	Electrical (at Rating)	Standard Type: 1 × 10 <sup>5</sup> ops. min. High sensitivity type: 5 × 10 <sup>4</sup> ops. min.				
Other	Vibration Resistance	Misoperation	10 to 55 Hz (double amplitude of 3.3 mm)			
		Endurance	10 to 55 Hz (double amplitude of 3.3 mm)			
	Shock Resistance	Misoperation	100 m/s <sup>2</sup> (11 ± 1 ms)			
		Endurance	500 m/s <sup>2</sup> (6 ± 1 ms)			
	Weight	Approximately 8 g				

\*1 Minimum switching loads mentioned above are reference values. Please perform the confirmation test with the actual load before production since reference values may vary according to switching frequencies, environmental conditions and expected reliability levels.

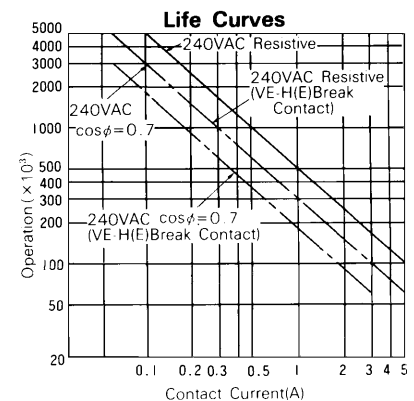
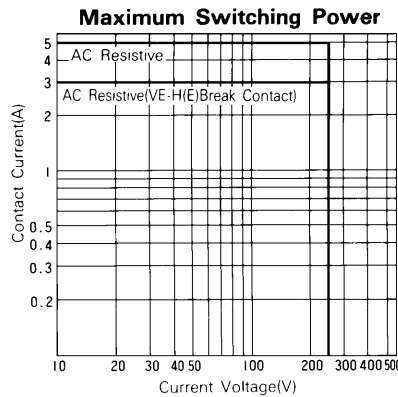
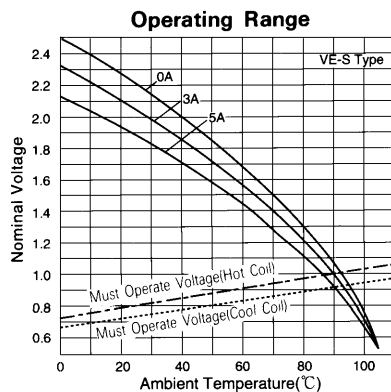
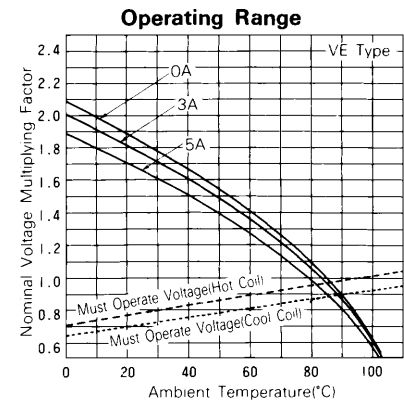
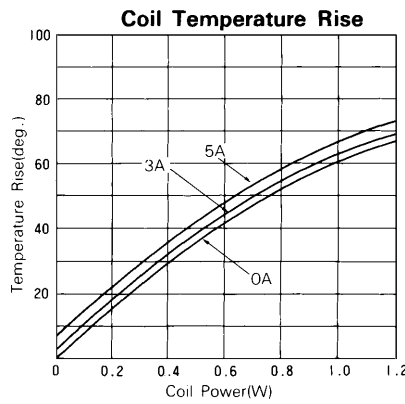
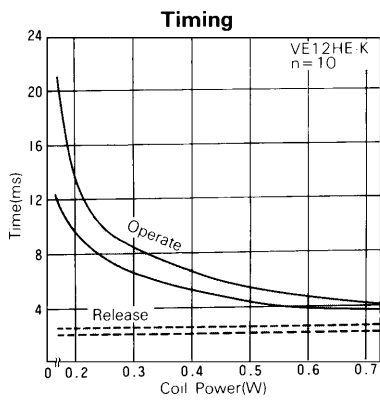
# VE SERIES

## COIL DATA CHART

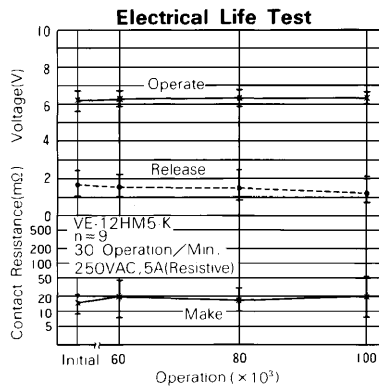
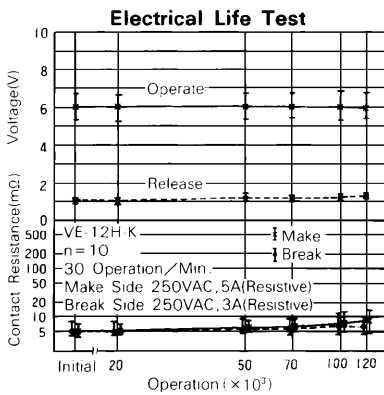
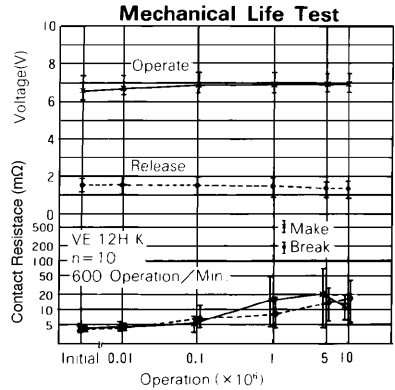
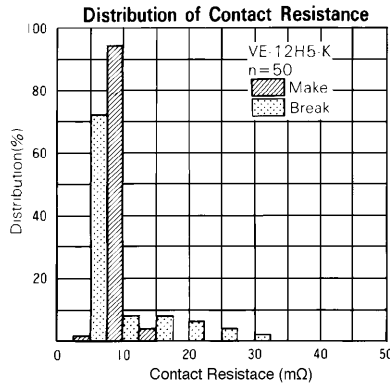
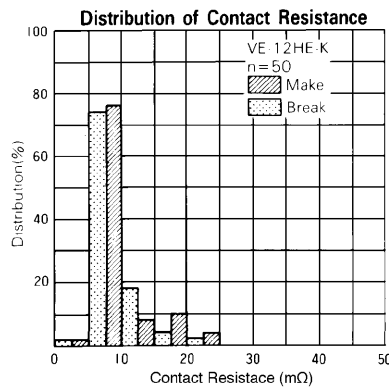
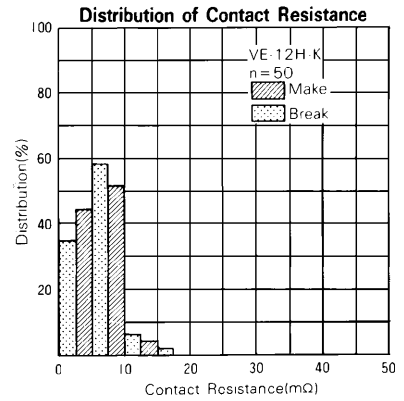
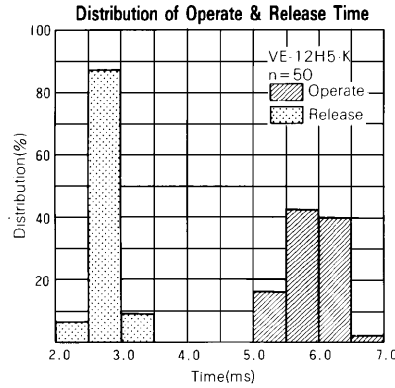
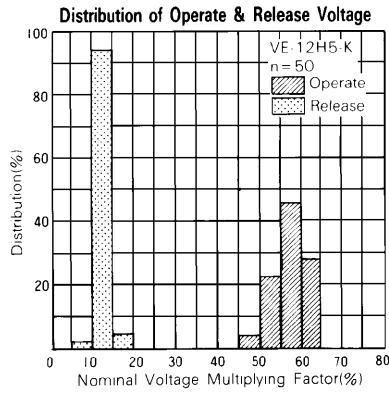
	MODEL		Nominal voltage	Coil resistance (±10%)	Must operate voltage	Must release voltage	Nominal power
	VE-( ) HM VE-( ) H	VE-( ) HME VE-( ) HE					
Standard Type	VE- 5H (M) (E)-K	VE- 5H (M) (E) 5-K	5 VDC	69 Ω	3.5 VDC	0.25 VDC	360 mW
	VE- 6H (M) (E)-K	VE- 6H (M) (E) 5-K	6 VDC	100 Ω	4.2 VDC	0.3 VDC	360 mW
	VE- 9H (M) (E)-K	VE- 9H (M) (E) 5-K	9 VDC	225 Ω	6.3 VDC	0.45 VDC	360 mW
	VE-12H (M) (E)-K	VE-12H (M) (E) 5-K	12 VDC	400 Ω	8.4 VDC	0.6 VDC	360 mW
	VE-18H (M) (E)-K	VE-18H (M) (E) 5-K	18 VDC	900 Ω	12.6 VDC	0.9 VDC	360 mW
	VE-24H (M) (E)-K	VE-24H (M) (E) 5-K	24 VDC	1,600 Ω	16.8 VDC	1.2 VDC	360 mW
	VE-48H (M) (E)-K	VE-48H (M) (E) 5-K	48 VDC	6,400 Ω	33.6 VDC	2.4 VDC	360 mW
High Sensitive Type	VE- 5H (M) S (E)-K	VE- 5H (M) S5-K	5 VDC	100 Ω	3.6 VDC	0.25 VDC	250 mW
	VE- 6H (M) S (E)-K	VE- 6H (M) S5-K	6 VDC	145 Ω	4.3 VDC	0.3 VDC	250 mW
	VE- 9H (M) S (E)-K	VE- 9H (M) S5-K	9 VDC	325 Ω	6.5 VDC	0.45 VDC	250 mW
	VE-12H (M) S (E)-K	VE-12H (M) S5-K	12 VDC	575 Ω	8.6 VDC	0.6 VDC	250 mW
	VE-18H (M) S (E)-K	VE-18H (M) S5-K	18 VDC	1,300 Ω	13.0 VDC	0.9 VDC	250 mW
	VE-24H (M) S (E)-K	VE-24H (M) S5-K	24 VDC	2,310 Ω	17.3 VDC	1.2 VDC	250 mW
	VE-48H (M) S (E)-K	VE-48H (M) S5-K	48 VDC	9,220 Ω	34.7 VDC	2.4 VDC	250 mW

Note: All values in the table are measured at 20 °C.

## CHARACTERISTIC DATA



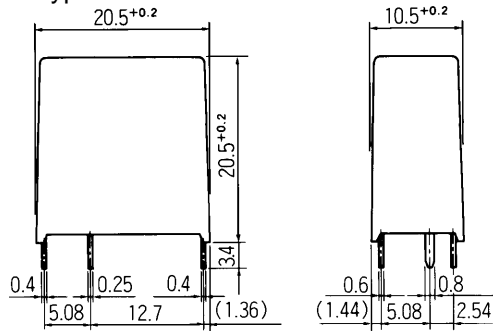
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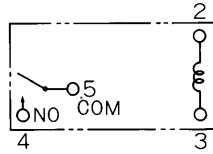
## ■ DIMENSIONS

### ● Dimensions

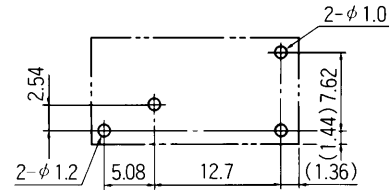
VE-M type



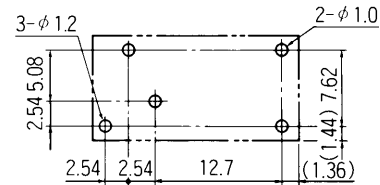
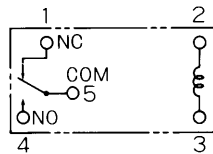
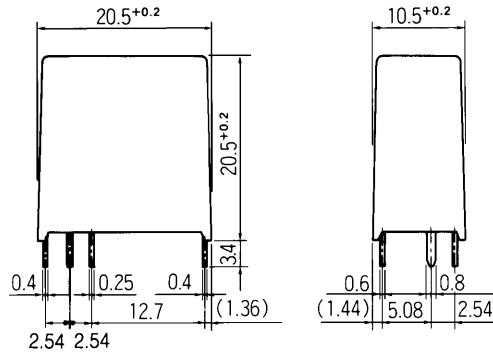
### ● Schematics (BOTTOM VIEW)



### ● PC board mounting hole layout (BOTTOM VIEW)



VE type



Unit: mm

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