

# POWER RELAY

## 1 POLE—16 A (HEAVY POWER CONTROL)

### VSB SERIES

#### ■ FEATURES

- All or nothing relay
- UL, CSA, VDE, SEV, SEMKO, IMQ, ÖVE, BSI recognized
- Working class: C
- Type of service: continuous duty
- Heavy duty 16 A miniature power relay
- UL Class B (130°C) insulation
  - Insulation distance: 8 mm
  - Dielectric strength: 5,000 VAC (between coil and contacts)
  - Surge strength: 10,000 V
- Low power consumption and high sensitivity type available (VSB-S)
- Plastic sealed (with tape) type available



#### ■ ORDERING INFORMATION

[Example]     VSB - 12 S T B  
                   (a) (\*) (b) (c) (d) (e)

(a)	Series Name	VSB: VSB Series
(b)	Nominal Voltage	Refer to the COIL DATA CHART
(c)	Coil Type	Nil : Standard type S : High sensitivity type
(d)	Contact Arrangement	M : 1 form A (SPST-NO) T : 1 form C (SPDT)
(e)	Enclosure	B : Flux free type C : Plastic sealed type (with tape)

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

#### ■ SAFETY STANDARD AND FILE NUMBERS

UL508, (File No. E56140, E108658)

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

VDE0435, 0631, 0700

Nominal voltage	Contact rating
3 to 100 VDC	1/3 HP 125 VAC/250 VAC 16 A 30 VDC/250 VAC resistive Pilot duty C 150

## ■ SPECIFICATIONS

Item		Standard Type	High Sensitive Type
		VSB-( )	VSB-( )-S
Contact	Arrangement	1 form A (SPST-NO) or 1 form C (SPDT)	
	Material	Silver alloy	
	Style	Single	
	Resistance (initial)	Maximum 200 mΩ (at 1 A 6 VDC)	
	Rating (resistive)	16 A 250 VAC/30 VDC	
	Maximum Carrying Current	16 A	
	Maximum Switching Power	4,000 VA, 480 W	
	Maximum Switching Voltage	380 VAC, 150 VDC	
	Maximum Switching Current	16 A	
	Minimum Switching Load*1	100 mA 5 VDC	
Coil	Nominal Power (at 20°C)	0.7 to 0.75 W	0.53 W
	Nominal Voltage (at 20°C)	0.35 to 0.37 W	0.26 W
	Operating Temperature	-40°C to +65°C (no frost)	-40°C to +75°C (no frost)
Time Value	Operate (at nominal voltage)	Maximum 20 ms	
	Release (at nominal voltage)	Maximum 10 ms	
Insulation	Resistance (at 500 VDC)	Minimum 1,000 MΩ	
	Dielectric Strength	between open contacts	1,000 VAC 1 minute
		between coil and contacts*2	5,000 VAC 1 minute
Surge Strength*3	10,000 V (at 1.2 × 50 μs)		
Life	Mechanical	2 × 10 <sup>7</sup> operations minimum	
	Electrical	1 × 10 <sup>5</sup> operations minimum (contact rating)	
Other	Vibration Resistance	Misoperation	10 to 55 Hz (double amplitude of 1.5 mm)
		Endurance	10 to 55 Hz (double amplitude of 1.5 mm)
	Resistance	Misoperation	100 m/s <sup>2</sup> (11 ±1 ms)
		Endurance	1,000 m/s <sup>2</sup> (6 ±1 ms)
Weight	Approximately 18 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.

\*2 IMQ 

\*3 IMQ 

# VSB SERIES

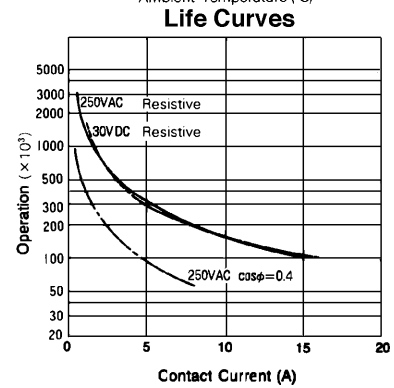
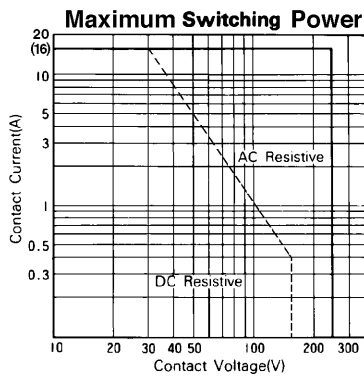
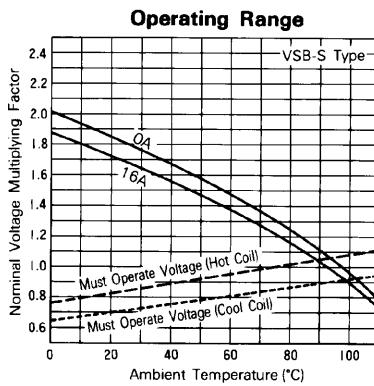
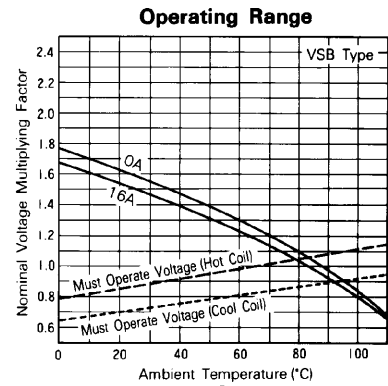
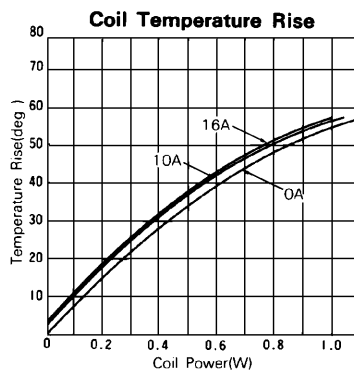
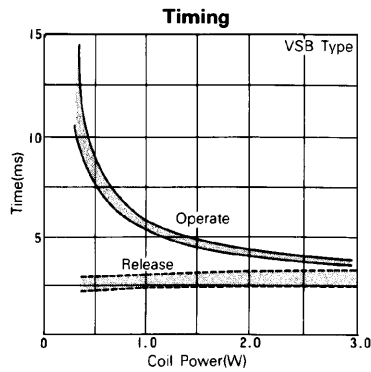
## ■ COIL DATA CHART

	MODEL	Nominal voltage	Coil resistance (±10%)	Must operate voltage	Must release voltage	Nominal power
Standard Type	VSB- 3 ( ) ( )	3 VDC	12.5 Ω	2.1 VDC	0.3 VDC	0.72 W
	VSB- 5 ( ) ( )	5 VDC	36 Ω	3.5 VDC	0.5 VDC	0.70 W
	VSB- 6 ( ) ( )	6 VDC	50 Ω	4.2 VDC	0.6 VDC	0.72 W
	VSB- 9 ( ) ( )	9 VDC	115 Ω	6.3 VDC	0.9 VDC	0.70 W
	VSB- 12 ( ) ( )	12 VDC	200 Ω	8.4 VDC	1.2 VDC	0.72 W
	VSB- 14 ( ) ( )	14 VDC	280 Ω	9.8 VDC	1.4 VDC	0.70 W
	VSB- 18 ( ) ( )	18 VDC	460 Ω	12.6 VDC	1.8 VDC	0.70 W
	VSB- 24 ( ) ( )	24 VDC	820 Ω	16.8 VDC	2.4 VDC	0.70 W
	VSB- 36 ( ) ( )	36 VDC	1,850 Ω	25.2 VDC	3.6 VDC	0.70 W
	VSB- 48 ( ) ( )	48 VDC	3,300 Ω	33.6 VDC	4.8 VDC	0.70 W
	VSB- 60 ( ) ( )	60 VDC	5,100 Ω	42.0 VDC	6.0 VDC	0.70 W
VSB-100 ( ) ( )	100 VDC	13,400 Ω	70.0 VDC	10.0 VDC	0.75 W	
High Sensitivity Type	VSB- 3S ( ) ( )	3 VDC	17 Ω	2.1 VDC	0.3 VDC	0.53 W
	VSB- 5S ( ) ( )	5 VDC	47 Ω	3.5 VDC	0.5 VDC	0.53 W
	VSB- 6S ( ) ( )	6 VDC	68 Ω	4.2 VDC	0.6 VDC	0.53 W
	VSB- 9S ( ) ( )	9 VDC	155 Ω	6.3 VDC	0.9 VDC	0.53 W
	VSB- 12S ( ) ( )	12 VDC	270 Ω	8.4 VDC	1.2 VDC	0.53 W
	VSB- 14S ( ) ( )	14 VDC	370 Ω	9.8 VDC	1.4 VDC	0.53 W
	VSB- 18S ( ) ( )	18 VDC	610 Ω	12.6 VDC	1.8 VDC	0.53 W
	VSB- 24S ( ) ( )	24 VDC	1,100 Ω	16.8 VDC	2.4 VDC	0.53 W
	VSB- 36S ( ) ( )	36 VDC	2,450 Ω	25.2 VDC	3.6 VDC	0.53 W
	VSB- 48S ( ) ( )	48 VDC	4,400 Ω	33.6 VDC	4.8 VDC	0.53 W
	VSB- 60S ( ) ( )	60 VDC	6,800 Ω	42.0 VDC	6.0 VDC	0.53 W
	VSB-100S ( ) ( )	100 VDC	18,560 Ω	70.0 VDC	10.0 VDC	0.53 W

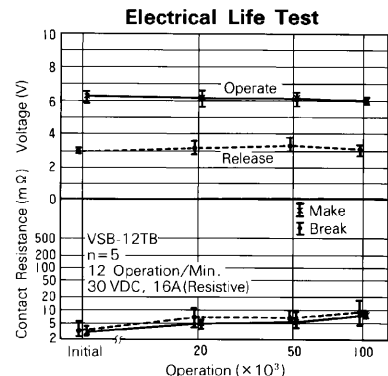
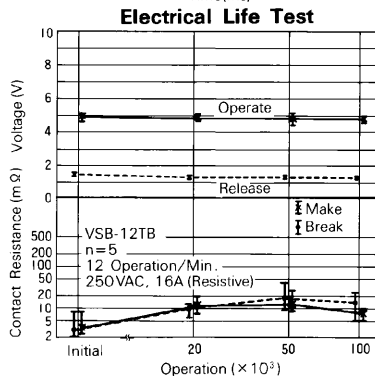
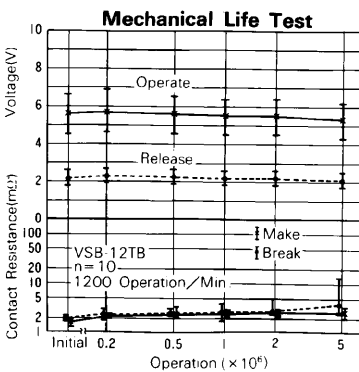
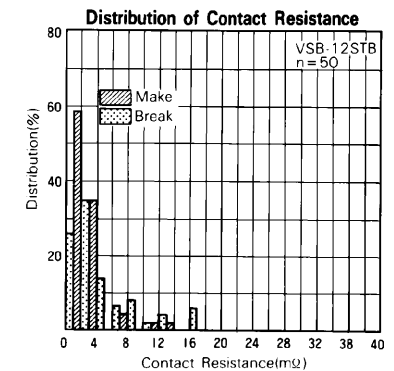
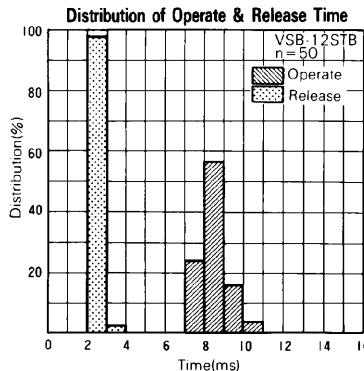
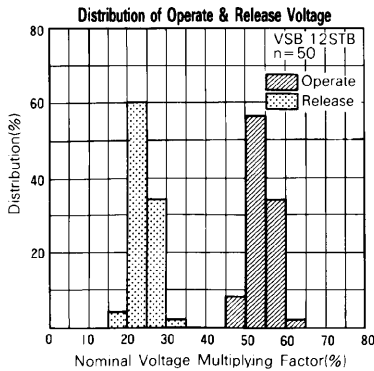
Note: All values in the table are measured at 20°C

# VSB SERIES

## CHARACTERISTIC DATA



## REFERENCE DATA

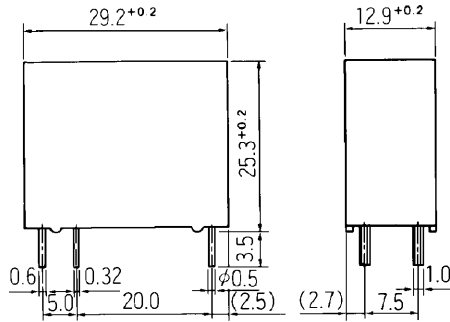


# VSB SERIES

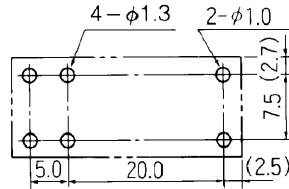
## ■ DIMENSIONS

### ● Dimensions

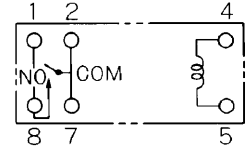
#### VSB-M type



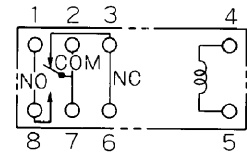
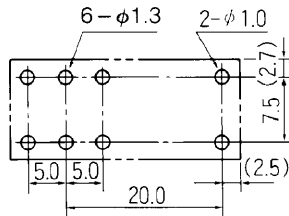
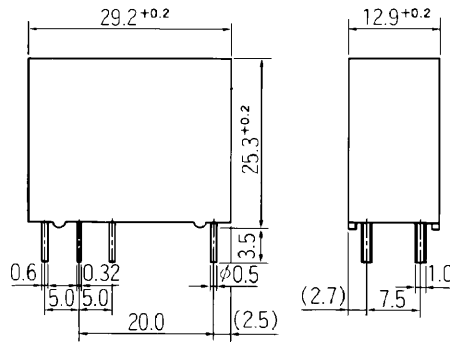
### ● Schematics (BOTTOM VIEW)



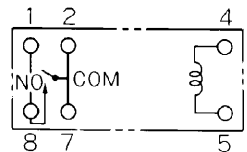
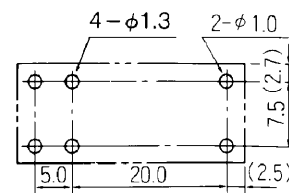
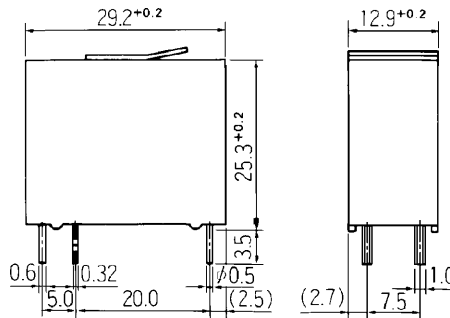
### ● PC board mounting hole layout (BOTTOM VIEW)



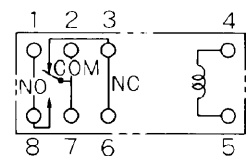
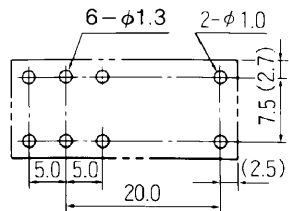
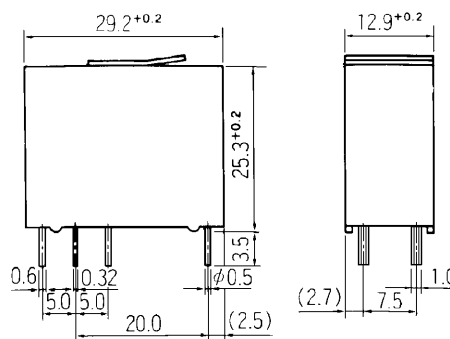
#### VSB type



#### VSB-MC type (Plastic sealed type with tape)



#### VSB-C type (Plastic sealed type with tape)



Unit: mm