

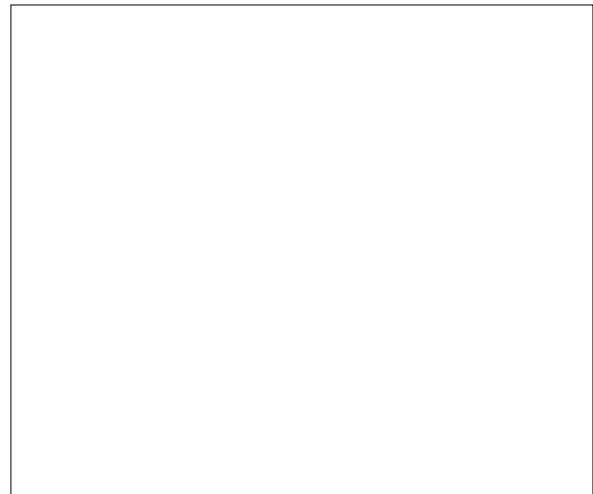
POWER RELAY

1 POLE—15 A (HEAVY POWER CONTROL)

VR SERIES

■ FEATURES

- UL recognized, VDE recognized TV-5 rated
- 1 form A (SPST-NO) contact
- Heavy duty 15 A miniature power relay with tab-terminals (#18r)
- UL class B (130°C) insulation
- High isolation and high surge strength
 - Insulation distance: 3 mm
 - Dielectric strength: 5,000 VAC (between coil and contacts)
 - Surge strength: 10,000 V
- VRB type—good for high density mounting



■ ORDERING INFORMATION

[Example] $\frac{VR}{(a)} \frac{B}{(b)} \frac{-}{(*)} \frac{12}{(c)}$

(a)	Series Name	VR: VR Series
(b)	Terminal	Nil: Top Tab-terminal (control) Bottom.... PCB terminal (control) B: Top Tab-terminal (contact) Bottom.... PCB terminal (coil removable contact)
(c)	Nominal Voltage	Refer to the COIL DATA CHART

Actual marking omits the hyphen (-) of (*)

■ SAFETY STANDARD AND FILE NUMBERS

UL508 (File No. E56140, E108658)
C22.2, No. 1, No. 14 (File No. LR35579)
VDE0435, 0631, 0700

Type	Nominal voltage	Contact rating
VR VRB	3 to 60 VDC	TV-5 120 VAC 1HP 250 VAC 15 A 277 VAC/30 VDC resistive Pilot duty B 150

■ SPECIFICATIONS

Item		VR, VRB	
Contact	Arrangement	1 form A (SPST-NO)	
	Material	Silver-cadmium oxide	
	Style	Single	
	Resistance (initial) (at 1 A 6 VDC)	Maximum 100 mΩ	
	Rating (resistive)	15 A 30 VDC/277 VAC	
	Maximum Carrying Current	15 A	
	Maximum Switching Power	4,155 VA, 450 W	
	Maximum Switching Voltage	277 VAC, 30 VDC	
	Maximum Switching Current	15 A	
	Minimum Switching Load *1	100 mA 5 VDC	
Coil	Nominal Power (at 20°C)	0.8 W	
	Operate Power (at 20°C)	0.36 W	
	Operating Temperature	-40°C to +85°C (no frost) (refer to the CHARACTERISTIC DATA)	
Time Value	Operate (at nominal voltage)	Maximum 15 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	5,000 VAC 1 minute
	Surge Strength	10,000 V (at 1.2 × 50 μs)	
Life	Mechanical	5 × 10 ⁶ operations minimum	
	Electrical	1 × 10 ⁵ operations minimum (contact rating)	
Other	Vibration Resistance	Misoperation	10 to 55 Hz (double amplitude of 1.65 mm)
		Endurance	10 to 55 Hz (double amplitude of 2.0 mm)
	Shock Resistance	Misoperation	200 m/s ² (11 ±1 ms)
		Endurance	1,000 m/s ² (6 ±1 ms)
	Weight		Approximately 24 g

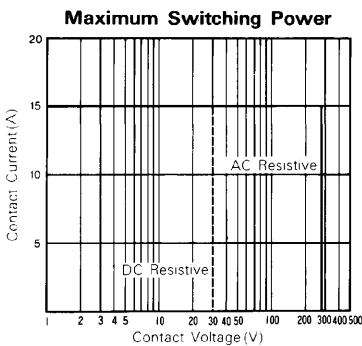
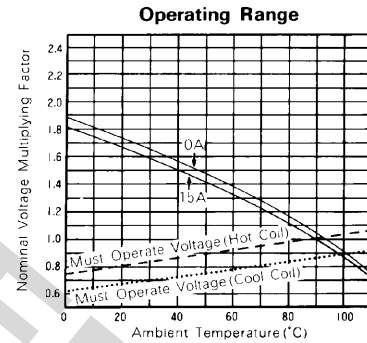
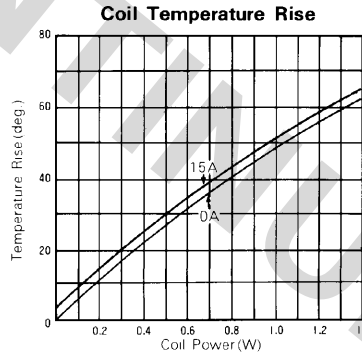
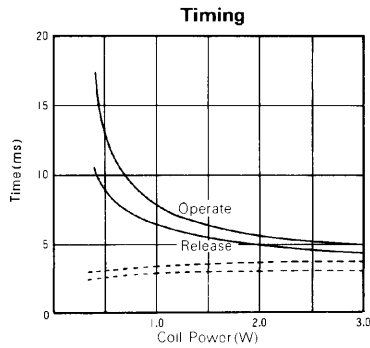
*1 Minimum switching loads mentioned above are reference values. Please perform the confirmation test with the actual load before production since reference values may vary according to switching frequencies, environmental conditions and expected reliability levels.

COIL DATA CHART

MODEL	Nominal voltage	Coil resistance ($\pm 10\%$)	Must operate voltage	Must release voltage	Nominal power
VR (B)- 3	3 VDC	11.2 Ω	2.0 VDC	0.3 VDC	0.8 W
VR (B)- 5	5 VDC	31 Ω	3.3 VDC	0.5 VDC	0.8 W
VR (B)- 6	6 VDC	45 Ω	4.0 VDC	0.6 VDC	0.8 W
VR (B)- 9	9 VDC	101 Ω	6.0 VDC	0.9 VDC	0.8 W
VR (B)-12	12 VDC	180 Ω	8.1 VDC	1.2 VDC	0.8 W
VR (B)-14	14 VDC	245 Ω	9.4 VDC	1.4 VDC	0.8 W
VR (B)-18	18 VDC	405 Ω	12.1 VDC	1.8 VDC	0.8 W
VR (B)-24	24 VDC	720 Ω	16.2 VDC	2.4 VDC	0.8 W
VR (B)-48	48 VDC	2,880 Ω	32.4 VDC	4.8 VDC	0.8 W
VR (B)-60	60 VDC	4,500 Ω	40.5 VDC	6.0 VDC	0.8 W

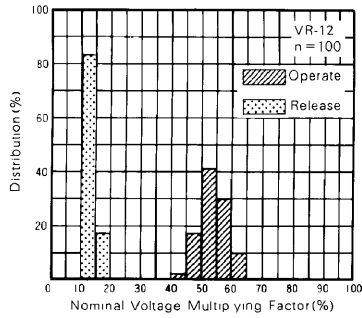
Note: All values in the table are measured at 20°C

CHARACTERISTIC DATA

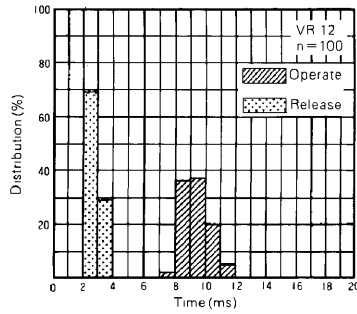


REFERENCE DATA

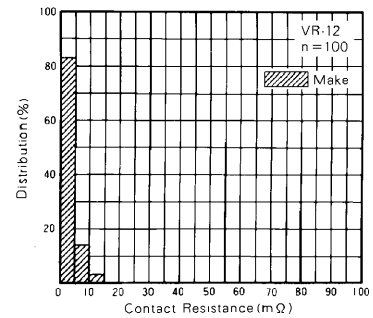
Distribution of Operate & Release Voltage



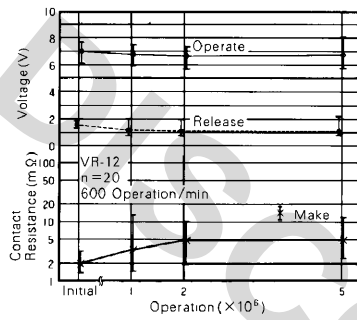
Distribution of Operate & Release Time



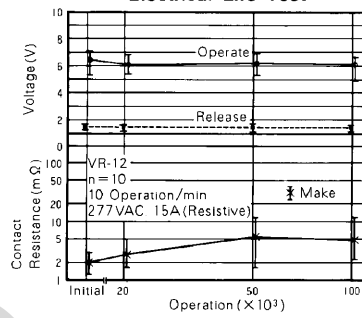
Distribution of Contact Resistance



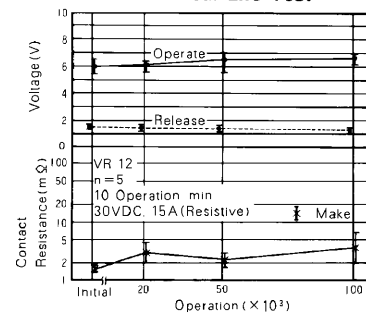
Mechanical Life Test



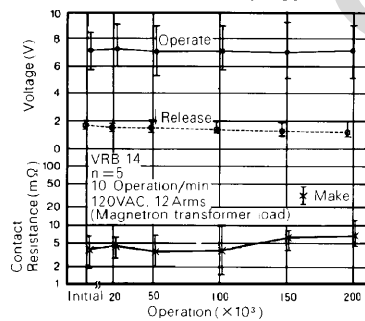
Electrical Life Test



Electrical Life Test



Electrical Life Test



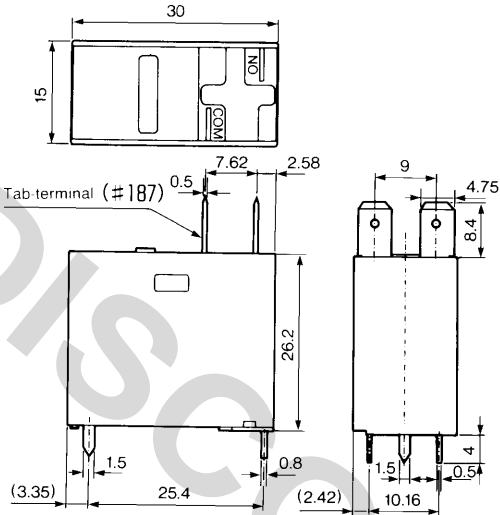
CONTINUED (1998)

VR SERIES

■ DIMENSIONS

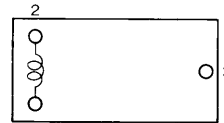
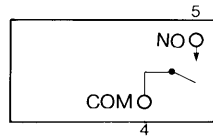
● Dimensions

VR type



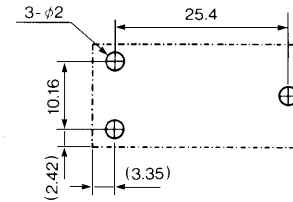
● Schematics

(TOP VIEW)



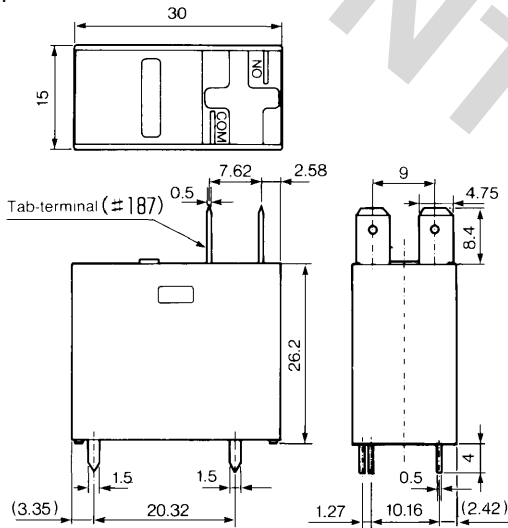
(BOTTOM VIEW)

● PC board mounting hole layout

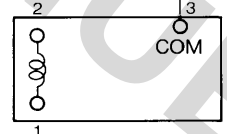
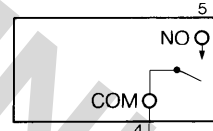


(BOTTOM VIEW)

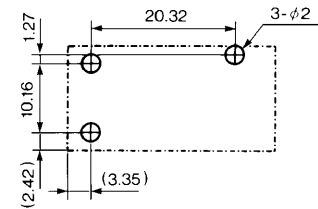
VRB type



(TOP VIEW)



(BOTTOM VIEW)



(BOTTOM VIEW)

Unit: mm

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