

# POWER RELAY

## 1 POLE—20, 25, 30 A

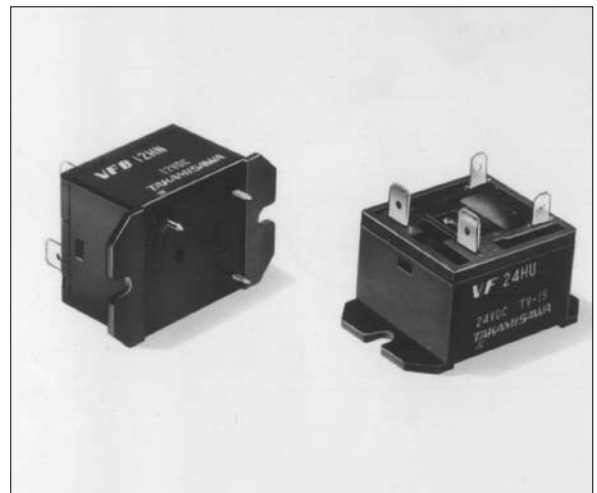
### (HEAVY POWER CONTROL)

# VF SERIES

RoHS compliant

#### ■ FEATURES

- UL, CSA, VDE recognized TV-15 rated
- 1 Form A (SPST-NO) contact
- Heavy duty 20 to 30 A small power relay
- High inrush current and high surge voltage
  - Inrush current 65 A
  - Surge strength 10,000 V
- Printed circuit coil terminals type available
- Small package meets high density mounting requirement
- RoHS compliant since date code: 0435L2  
Please see page 7 for more information



#### ■ ORDERING INFORMATION

[Example] VF B - 6 H U  
(a) (b) (\*) (c) (d) (e)

(a)	Series Name	VF : VF Series
(b)	Terminal	Nil : Top .....All tab-terminal B : Top .....Tab-terminal (contacts) : Bottom...PCB-terminal (coil and movable contact) D : Top .....Tab-terminal (coil) : Bottom...Screw tight terminal (contacts) P : Top .....Screw tight terminal (contacts) : Bottom...PCB terminal (coil and movable contact)
(c)	Nominal Voltage	Refer to the COIL DATA CHARAT
(d)	Contact Rating	H : 30 A (applicable for D.P.) M : 25 A L : 20 A
(e)	Standard	U : UL, CSA, VDE rating acquired

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

# VF SERIES

## ■ COIL DATA CHART

MODEL			Nominal voltage	Coil resistance (±10%)	Must operate voltage	Must release voltage	Nominal power
30 A Type	25 A Type	20 A Type					
VF (D or P) - 3H	VF ( ) - 3M	VF ( ) - 3L	3 VDC	7.5Ω	2.1 VDC	0.3 VDC	1,200 mW
VF (D or P) - 5H	VF ( ) - 5M	VF ( ) - 5L	5 VDC	20 Ω	3.5 VDC	0.5 VDC	1,250 mW
VF (D or P) - 6H	VF ( ) - 6M	VF ( ) - 6L	6 VDC	30 Ω	4.2 VDC	0.6 VDC	1,200 mW
VF (D or P) - 9H	VF ( ) - 9M	VF ( ) - 9L	9 VDC	67 Ω	6.3 VDC	0.9 VDC	1,200 mW
VF (D or P) -12H	VF ( ) -12M	VF ( ) -12L	12 VDC	120 Ω	8.4 VDC	1.2 VDC	1,200 mW
VF (D or P) -18H	VF ( ) -18M	VF ( ) -18L	18 VDC	270 Ω	12.6 VDC	1.8 VDC	1,200 mW
VF (D or P) -24H	VF ( ) -24M	VF ( ) -24L	24 VDC	480 Ω	16.8 VDC	2.4 VDC	1,200 mW
VF (D or P) -48H	VF ( ) -48M	VF ( ) -48L	48 VDC	1,920 Ω	33.6 VDC	4.8 VDC	1,200 mW
VF (D or P) -60H	VF ( ) -60M	VF ( ) -60L	60 VDC	3,000 Ω	42.0 VDC	6.0 VDC	1,200 mW

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

# VF SERIES

## ■ SPECIFICATIONS

Item		30 A Type	25 A Type	20 A Type	
		VFD, VFP- ( ) H	VF ( ) - ( ) M	VF ( ) - ( ) L	
Contact	Arrangement	1 form A (SPST-NO)			
	Material	Silver alloy			
	Style	Single			
	Resistance (initial)	Maximum 30m Ω (at 1 A 6 VDC)			
	Rating	Resistive	30 A 250 VAC	25 A 250 VAC	20 A 250 VAC
		Motor	2 HP 250 VAC	1.5 HP 250 VAC	1 HP 250 VAC
	Maximum Carrying Current	30 A	25 A	20 A	
	Maximum Switching Power	7,500 VA	6,250 VA	5,000 VA	
	Maximum Switching Voltage	250 VAC			
	Maximum Switching Current	30 A	25 A	20 A	
Minimum Switching Load*1	1A, 10V				
Coil	Nominal Power (at 20°C)	1,200 to 1,250 mW			
	Operate Power (at 20°C)	1,590 to 620 mW			
	Operating Temperature	-30°C to +65°C (no frost) (refer to the CHARACTERISTIC DATA)			
Time Value	Operate (at nominal voltage)	Maximum 20 ms			
	Release (at nominal voltage)	Maximum 5 ms			
Life	Mechanical	5 × 10 <sup>6</sup> operations minimum			
	Electrical (at contact rating)	1 × 10 <sup>5</sup> operations minimum (resistive load)			
		2 × 10 <sup>5</sup> operations minimum (motor load)			
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)		
	Shock Resistance	Misoperation	200 m/s <sup>2</sup> (11 ±1 ms)		
		Endurance	1,000 m/s <sup>2</sup> ( 6 ±1 ms)		
	Weight	Approximately 55 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.

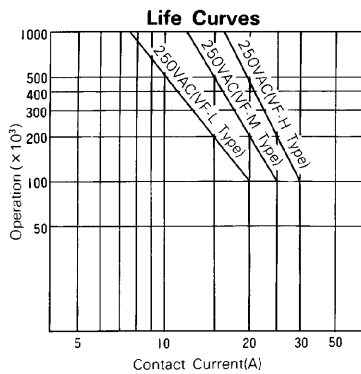
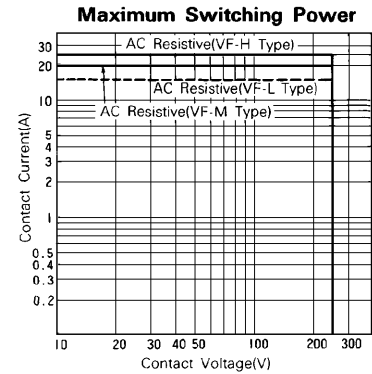
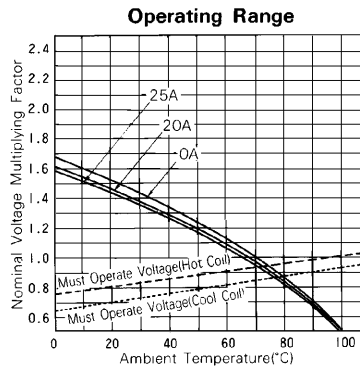
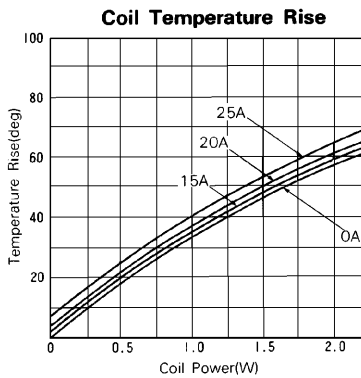
## ■ INSULATION

Item	30A	25A	20A	Note
Resistance (initial)	Minimum 1,000 MΩ 1 min.			at 500 VDC
Dielectric Strength	open contacts	1,200 VAC 1 min.		
	coil and contacts	4,000 VAC 1 min.		
Surge Voltage (coil and contact)	10,000 V			1.2 x 50μs standard wave

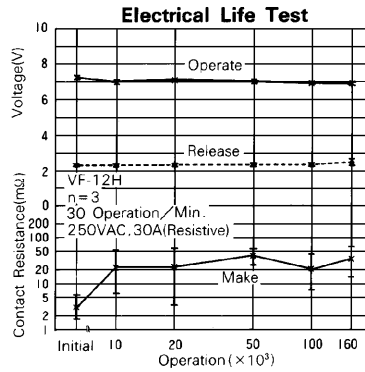
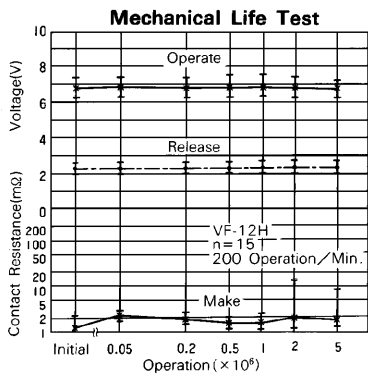
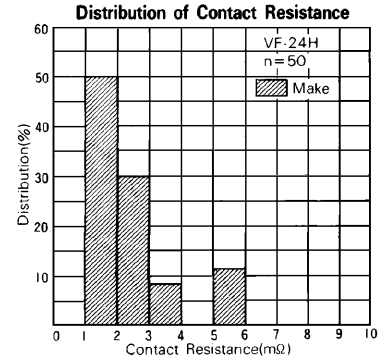
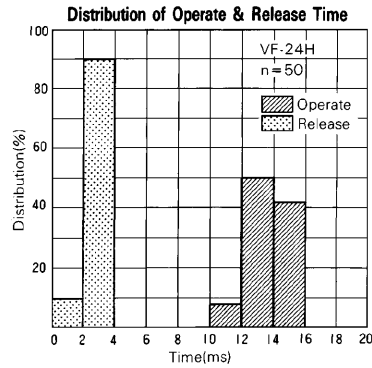
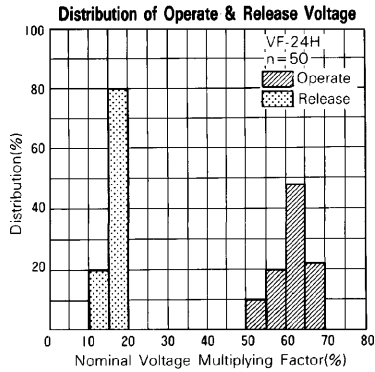
## ■ SAFETY STANDARD AND FILE NUMBERS

Type	Compliance	Contact rating
UL	UL 508 873 E56140	Flammability: UL 94-V0 (plastics) [VF-( )-( ) L] 20A, 250VAC (resistive) 1hp, 250VAC/125VAC TV-15 120 VAC
CSA	C22.2 No. 14 LR 35579	[VF-( )-( ) M] 25A, 250VAC (resistive) 1.5 hp, 250VAC TV-15 120VAC [VFD, VFP-( )-H] 30A, 250VAC (resistive) 2 hp, 250VAC TV-15 120VAC
VDE	0435	

## ■ CHARACTERISTIC DATA



## ■ REFERENCE DATA



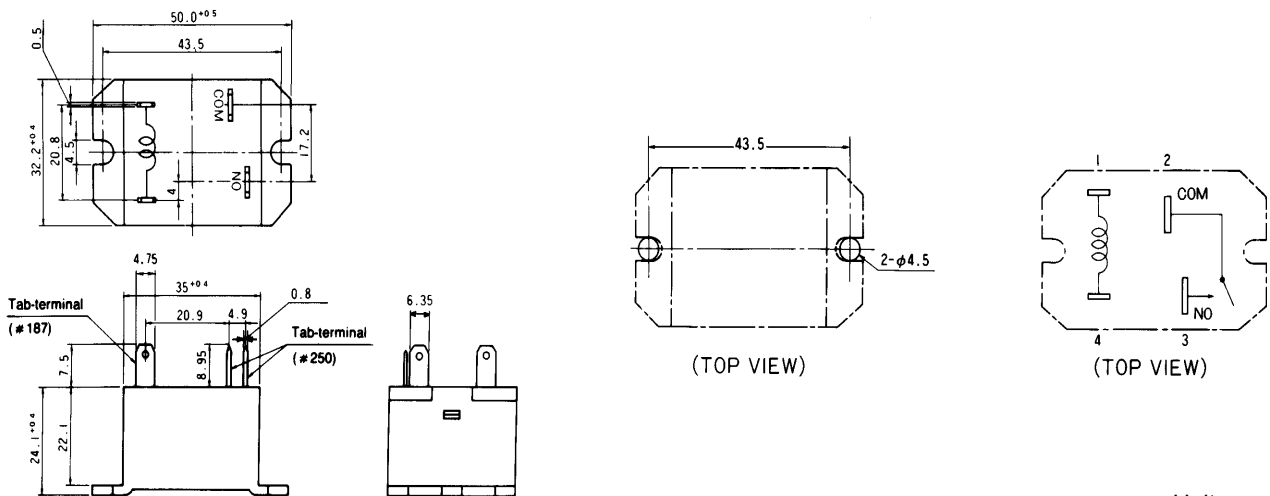
## ■ DIMENSIONS

### ● Dimensions

### ● Schematics

### ● PC board mounting hole layout

VF type

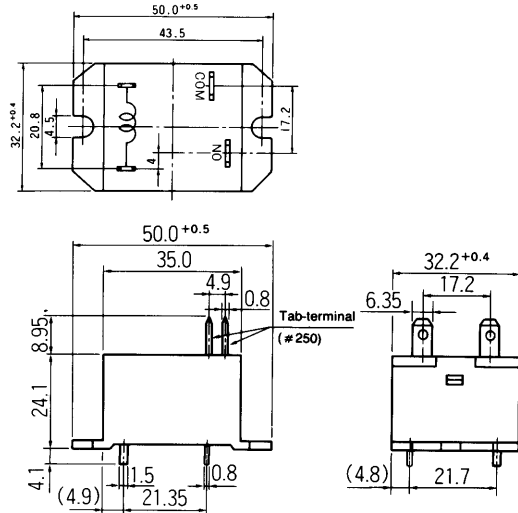


Unit: mm

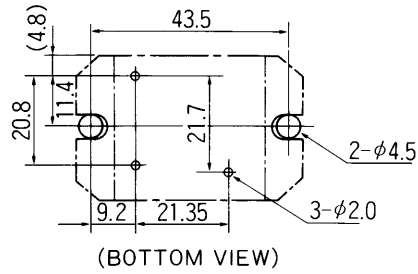
# VF SERIES

## ● Dimensions

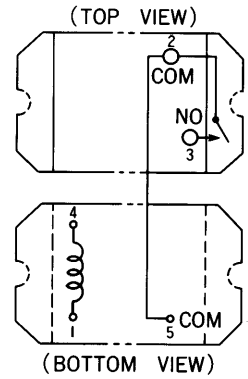
### VFB type



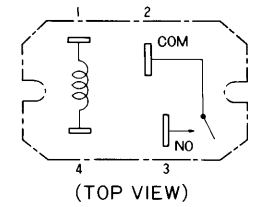
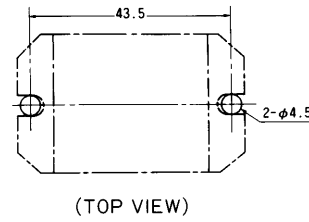
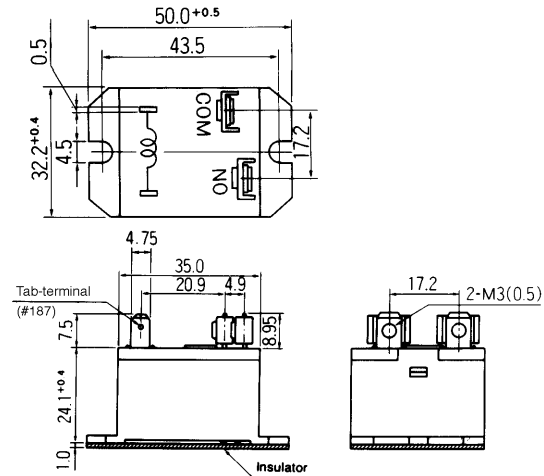
## ● Schematics



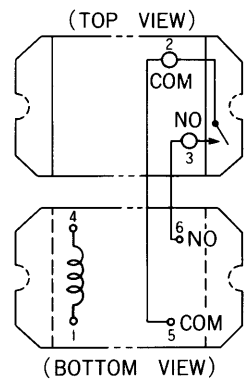
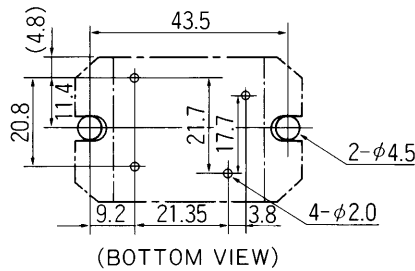
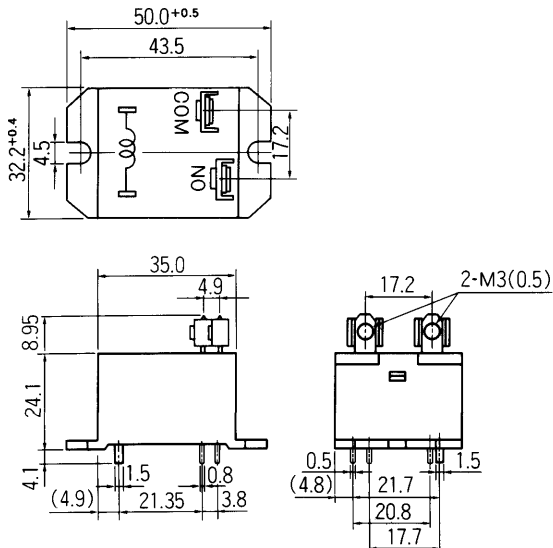
## ● PC board mounting hole layout



### VFD type



### VFP type



Unit: mm

## RoHS Compliance and Lead Free Relay Information

### 1. General Information

- Relays produced after the specific date code that is indicated on each data sheet are lead-free now. Most of our signal and power relays are lead-free. Please refer to Lead-Free Status Info. (<http://www.fujitsu.com/us/downloads/MICRO/fcai/relays/lead-free-letter.pdf>)
  - Lead free solder paste currently used in relays is Sn-3.0Ag-0.5Cu.
  - All signal and most power relays also comply with RoHS. Please refer to individual data sheets. Relays that are RoHS compliant do not contain the 5 hazardous materials that are restricted by RoHS directive (lead, mercury, chromium IV, PBB, PBDE).
  - It has been verified that using lead-free relays in leaded assembly process will not cause any problems (compatible).
  - "LF" is marked on each outer and inner carton. (No marking on individual relays).
  - To avoid leaded relays (for lead-free sample, etc.) please consult with area sales office.
  - We will ship leaded relays as long as the leaded relay inventory exists.
- Note: Cadmium was exempted from RoHS on October 21, 2005. (Amendment to Directive 2002/95/EC)

### 2. Recommended Lead Free Solder Profile

- Recommended solder paste Sn-3.0Ag-0.5Cu.

#### Reflow Solder condition

**Flow Solder condition:**

Pre-heating: maximum 120°C  
Soldering: dip within 5 sec. at  
260°C solder bath

**Solder by Soldering Iron:**

Soldering Iron  
Temperature: maximum 360°C  
Duration: maximum 3 sec.

**We highly recommend that you confirm your actual solder conditions**

### 3. Moisture Sensitivity

- Moisture Sensitivity Level standard is not applicable to electromechanical relays.

### 4. Tin Whisker

- Dipped SnAgCu solder is known as low risk tin whisker. No considerable length whisker was found by our in house test.

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