



VF7series

70 Amp Relay With PC Board or Quick Connect Terminals for Automotive Applications

Features

- 70A continuous contact rating @ 85°C.
- 1 Form A arrangements.
- Plug-in or PC board terminals.
- Optional mounting bracket.

Conditions

All parametric, environmental and life tests are performed according to EIA Standard RS-407-A at standard test conditions (23°C Ambient, 20-50% RH, 29.5 ± 1.0" Hg.) unless otherwise noted.

Contact Data

Arrangements: 1 Form A (SPST-NO).
Material: AgNi 0.15 (consult factory for other contact materials).
Max. Switching Rate: 20 operations per second with no contact load.
 6 operations per minute for rated life at rated load.
Max. Switching Voltage: 75VDC⁽¹⁾.
Max. Load Current (@ 14VDC Load Voltage):
 Max. Continuous Current: 70A.
 Max. Make Current: 120A⁽²⁾.
 Max. Break Current (1): 70A.
Max. Switching Power: 60-800 watts DC (voltage dependent)⁽¹⁾.
Min. Recommended Current: 1 amp @ 12VDC.
Initial Voltage Drop: 200 millivolts, max., @ 70 amp contact load.
Expected Life: 10 million operations, mechanical; 100,000 operations at 70 amps, 14VDC, resistive load.

Initial Dielectric Strength

Between Contacts and Coil: 500V rms.

Coil Data

Voltage: 12 and 24VDC.
Resistance: See Coil Data table.
Nom. Power: (@ 23°C coil temp. and rated coil voltage):
 2.0W, unsuppressed.
 2.21W, with 680 ohm resistor.
Thermal Resistance: 50°C per actual coil watt in still air with no contact load current.

Operate Data

Must Operate and Must Release Voltage: See Coil Data table.
Initial Operate Time: 7 milliseconds, typical, with rated coil voltage applied.
Initial Release Time: 2 milliseconds, typical, with zero volts applied (for unsuppressed relays after having been energized at rated coil voltage).

Environmental Data

Temperature Range: **Storage:** -40°C to +155°C.
 Operating: -40°C to +125°C⁽⁴⁾.
Shock: 20g, 11 milliseconds, half sine wave pulse.
Vibration: (For NC contacts, NO contacts are significantly higher.)
 10-40 Hz., 1.27mm double amplitude.
 40-70 Hz., 5g's constant.
 70-100 Hz., 0.5mm double amplitude.
 100-500 Hz., 10g's constant.

Mechanical Data

Termination: 0.250" and 0.375" quick connect and printed circuit terminals.
Enclosures: Plastic dust cover.
Cover Retention: Cover will withstand a 33.7 pound (150 Newton) force (axially applied) without detachment.
Weight: 31g (1.1 oz.) approximately.

Abnormal Operation

Overload Current: 140A, 60 sec.⁽⁵⁾
 245A, 2 sec.
 420A, 0.15 sec.
24V Jump Start: 24VDC for 5 minutes conducting rated contact current @ 23°C.
Drop Test: Capable of meeting specifications after a 1.0 meter drop onto concrete, (Sealed model only.)
Flammability: UL94-HB or better (meets FMVSS 302).

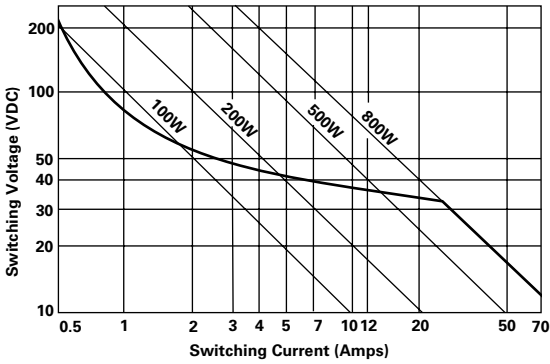
Notes

- (1) See Figure 1.
- (2) Inrush current for lamp load.
- (3) Allowable overdrive is rated at ambient temperature for 23°C or 85°C as stated with no load current flowing through the relay contacts and minimum coil resistance. Also see Figure 2 for maximum ambient temperature versus applied coil voltage.
- (4) See Figure 2.
- (5) Current and times are compatible with circuit protection by a typical 70A automotive fuse. Relay will make, carry and break the specified current.

Coil Data (@ 23°C Coil Temperature)

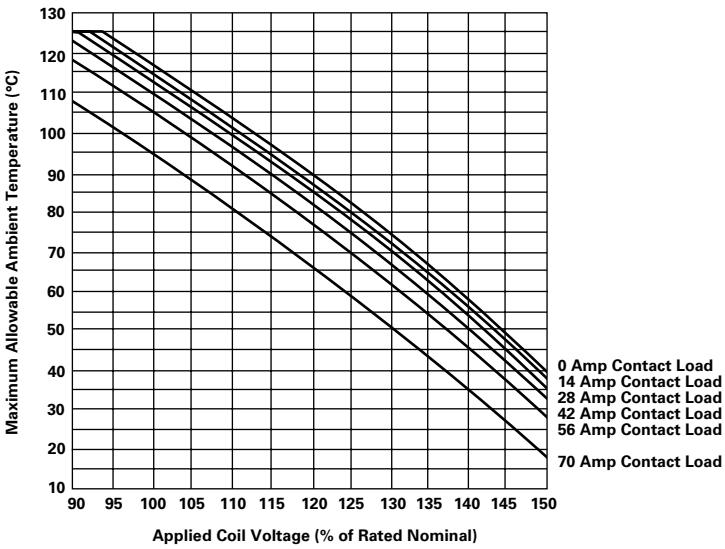
Coil Designator	Rated Coil Voltage (VDC)	Coil Resistance ±10% (Ohms)	Coil Inductance (H) (Ref)	Must-Operate Voltage (VDC)	Must-Release Voltage (VDC)	Allowable ⁽³⁾ Overdrive (VDC)	
						@ 23°C	@ 85°C
F	12	72	0.5	72	1.2	18.1	14.1
H	24	288	2.0	14.4	2.4	36.2	28.2

Figure 1 - Limiting Curve for Power Load



Safe breaking, arc extinguished (normally open contact) for resistive loads.

Figure 2 - Ambient Temperature vs. Coil Voltage for Continuous Duty



Assumptions:

1. Thermal resistance = 50°C per watt
2. Still air
3. Nominal coil resistance
4. Maximum mean coil temperature = 180°C
5. Coil temperature rise due to load
 - = 2°C @ 14 amps
 - = 4°C @ 28 amps
 - = 7°C @ 42 amps
 - = 12°C @ 56 amps
 - = 22°C @ 70 amps
6. Thermal resistance and power dissipation based on coil resistance at 180°C
7. Curves are based on 2.0 watts at 23°C
8. When full lifetime is at high ambient and high load current, subtract 25°C from maximum allowable ambient temperature.

Ordering Information

Part Number	Contact Arrangement	Enclosure	Terminals
VF7-11 * 11	1 Form A	Dust cover	Quick connect
VF7-11 * 12	1 Form A	Dust cover	Printed circuit (clinch)
VF7-41 * 11	1 Form A	Dust cover with bracket	Quick connect

*Standard Coil Voltages: F = 12VDC
H = 24VDC (Consult factory for availability)

Optional Coil Suppression

Add suffix -S01 for 680 ohm resistor in parallel with 12VDC coil.
Add suffix -S08 for 2700 ohm resistor in parallel with 24VDC coil.

Epoxy Sealed Construction

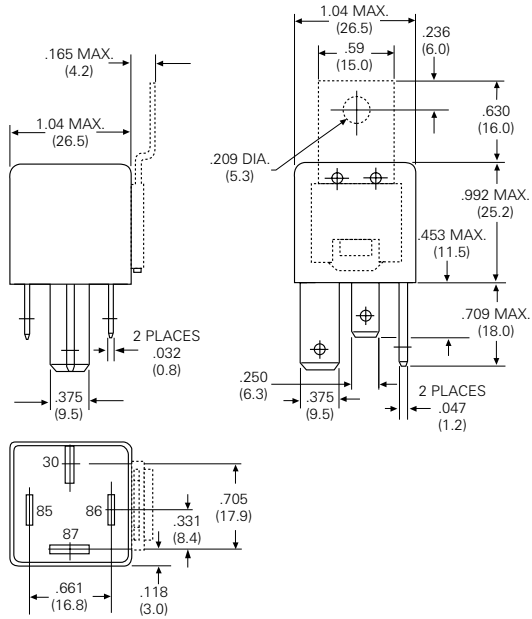
Add suffix -C01 for epoxy sealed unit.

Stock Items - The following items are normally maintained in stock for immediate delivery.

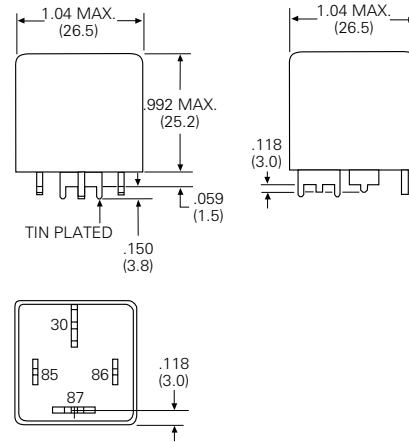
- VF7-11F11
- VF7-11F12
- VF7-41F11

Outline Dimensions

Dust Cover With Quick Connect Terminals

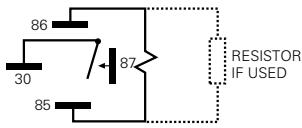


Printed Circuit Board Terminals

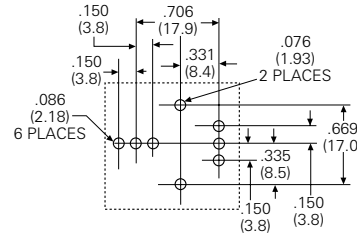


Wiring Diagram (Bottom View)

1 Form A

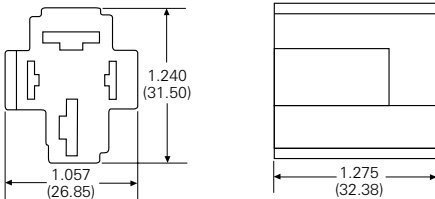


Suggested PC Board Layout (Bottom View)



Connector

Wiring Harness Style Connector For Use With Quick Connect VF7 Relays (order terminals separately)
VCF7-1000



Connector/Terminal Usage Chart - Boldface items are stocked.

Connector	Terminal P/N	Required Crimp Terminals (Order Separately)		
		Alternate P/N	Wire AWG	Qty. Required
VCF7-1000	26A 1350A	AMP 280756-4	10-12	2 (Contacts)
	26A 1350B	AMP 280755-4	6-10	2 (Contacts) and
	26A 1349B	AMP 42281-1	14-18	2 (Coil)

Note: For information on crimping tools, please consult local representative or factory.