Power Relay F7 / VF7


Powertrain Systems


Chassis Systems


Safety


Security


Body


Driver Information


Convenience

Description

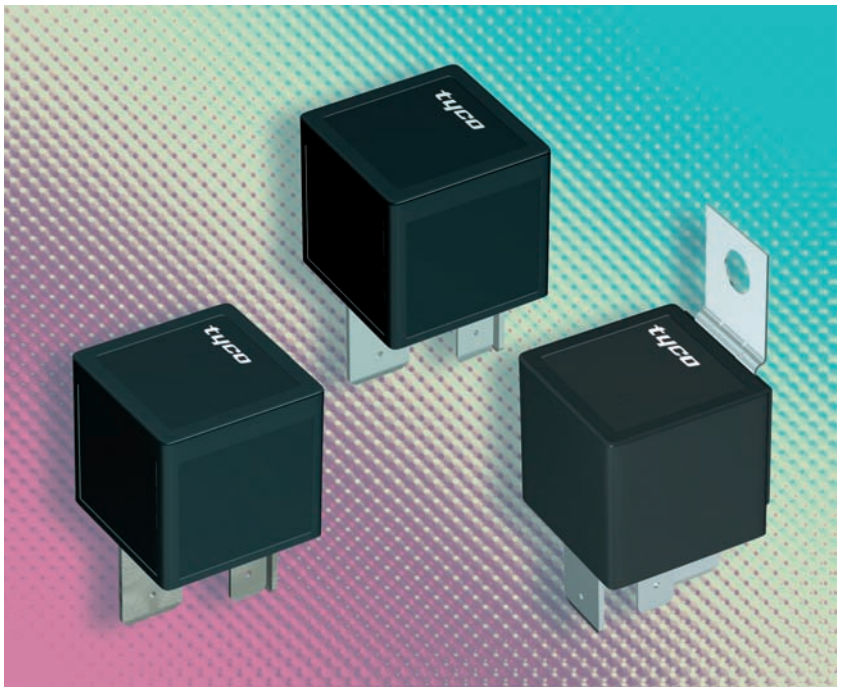
Features

- Limiting continuous current 70 A
- Dimensional characteristics and the functional allocation of the plug-in terminals to ISO 7588 part 1
- Standardized dimensions
- 24 V versions with contact gap > 0.8 mm
- Plug-in or PCB terminals

Typical applications

- Rear window defogger
- Battery disconnection
- Power distribution (clamp 15)

Please contact Tyco Electronics for relay application support.



134_kop2


Car Industry


Truck Industry


Other Industry

Design

Dustproof;
protection class IP 54 to IEC 529 (EN 60 529);
with either mounting bracket or mounting clip

Weight

Approx. 1.3 oz. (38 g)

Nominal voltage

12 V or 24 V;
other nominal voltages available on request

Terminals

Quick connect terminals similar to ISO 8092-1
coil 6.3 x 0.8 mm,
load 9.5 x 1.2 mm;
surfaces tin-plated
or PCB terminals

Accessories

Connectors see page 189

Special models on request

- Integrated components: resistor, varistor, diode
- Special labels
- Special cover shapes

Conditions

All parametric, environmental and endurance tests are performed according to EIA Standard RS-407-A at standard test conditions unless otherwise noted:
23 °C ambient temperature,
20-50% RH, 29.5 ± 1.0" Hg
(998.9 ±33.9 hPa).
Please also refer to the Application Recommendations in this catalog for general precautions.

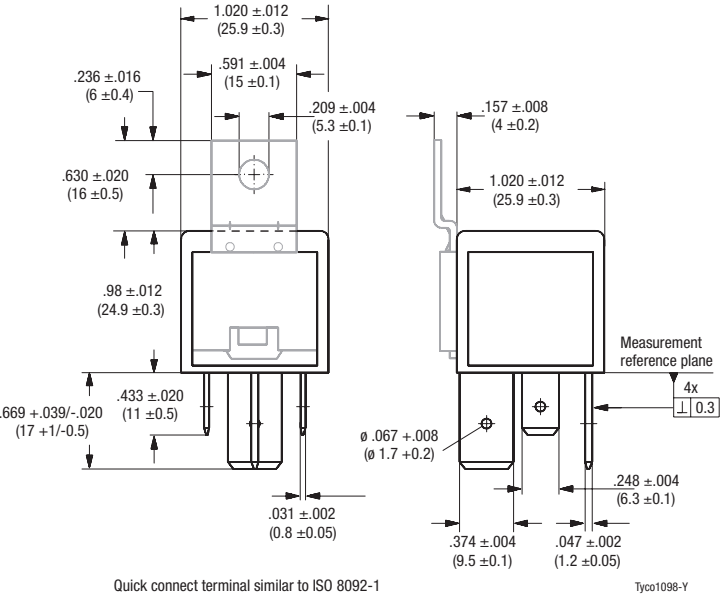
Disclaimer

All technical performance data apply to the relay as such, specific conditions of the individual application are not considered. Please always check the suitability of the relay for your intended purpose. We do not assume any responsibility or liability for not complying herewith. We recommend to complete our questionnaire and to request our technical service. Any responsibility for the application of the product remains with the customer only. All specifications are subject to change without notification. All rights of Tyco are reserved.

Power Relay F7 / VF7

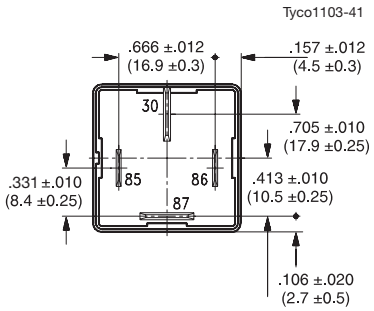
Dimensional drawing

Dust cover with quick connect terminals

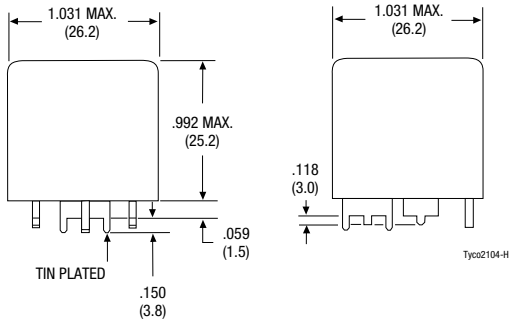


Quick connect terminal similar to ISO 8092-1

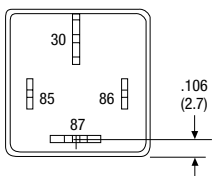
View of the terminals (bottom view)



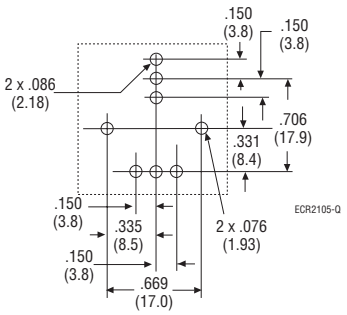
PCB terminals



View of the terminals (bottom view)



Mounting holes (bottom view)



Please observe the disclaimer.

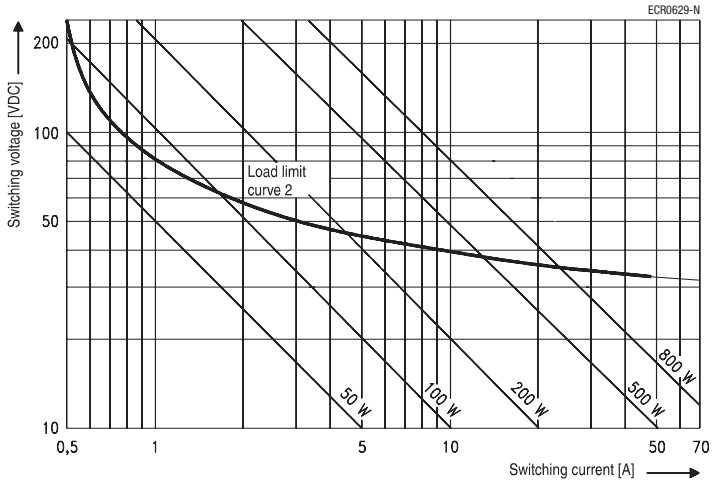
Power Relay F7 / VF7

Contact data

Contact configuration	Make contact/ Form A		
Circuit symbol (see also Pin assignment)			
Rated voltage	12 V	24 V	24 V[3]
Rated current at 85 °C	50 A	25 A	40 A
Contact material	AgNi0.15		$AgSnO_2$
Max. switching voltage/power	See load limit curve		
Max. switching current[1]			
On[2]	240 A	240 A	240 A
Off	70 A	25 A	40 A
Min. recommended load[4]	1 A at 5 V		
Voltage drop at 10 A (initial) NO contact	Typ. 10 mV, 200 mV max.		
Mechanical endurance (without load)	> 10^7 operations		
Electrical endurance (example of resistive load, without component in parallel to the coil, further information on request)	> 1 x 10^5 operations 70 A, 13.5 V > 2 x 10^5 operations 50 A, 13.5 V	> 1 x 10^5 operations 25 A, 28 V	> 1 x 10^5 operations 50 A, 28 V
Max. switching rate at nominal load	6 operations per minute (0.1 Hz)		

[1] The values apply to a resistive or inductive load with suitable spark suppression and at maximum 13.5 V for 12 V or 27 V for 24 V load voltages.
[2] For a load current duration of maximum 3 s for a make/break ratio of 1:10.
[3] Special high performance 24 V version with contact gap > 0.8 mm, part number V23134-J0056-X408 (see ordering information).
[4] See chapter Diagnostics in our Application Recommendations on page 18 of this catalog or consult the internet at http://relays.tycoelectronics.com/application.asp

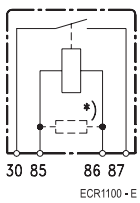
Load limit curve



Load limit curve 2 ≙ safe shutdown, no stationary arc (make contact)

Pin assignment

1 make contact/
1 form A



*) Models with resistor or diode in parallel to the coil on request.

Please observe the disclaimer.

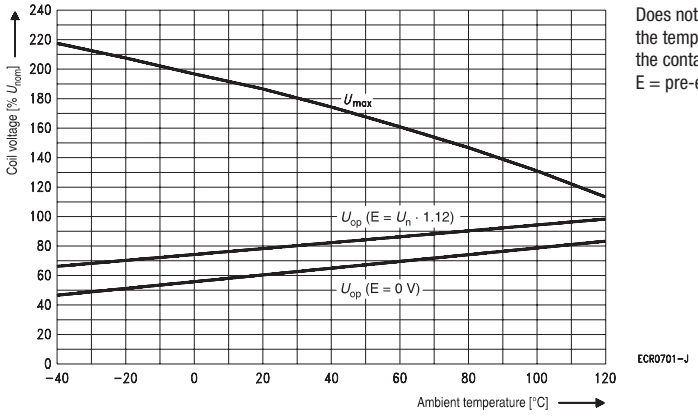
Power Relay F7 / VF7

Coil data

Available for nominal voltages	12, 24 V
Nominal power consumption of the unsuppressed coil at nominal voltage	1.6/2.0 W (F7/VF7)
Nominal power consumption at nominal voltage with suppression resistor	1.8/2.2/2.1 W (F7/VF7/high performance 24 V)
Test voltage winding/contact and contact/contact	500 VAC_{rms}
Ambient temperature range	– 40 to + 125 °C
Operate time at nominal voltage[1)]	Typ. 7 ms
Release time at nominal voltage[1)]	Typ. 2 ms

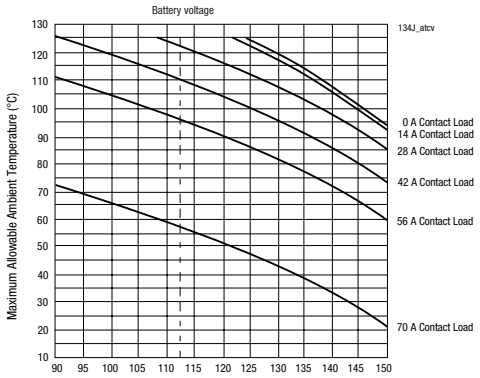
[1)] For unsuppressed relay coil
N.B.
A low resistive suppression device in parallel to the relay coil increases the release time and reduces the lifetime caused by increased erosion and/or higher risk of contact tack welding.

Operating voltage range



Does not take into account the temperature rise due to the contact current
E = pre-energization

Ambient temperature vs. coil voltage for continuous duty



Mechanical data

Cover retention	
Axial force	150 N (33.8 lbs)
Pul force	200 N (45 lbs)
Push force	200 N (45 lbs)
Terminals	
Pull force	100 N (22.5 lbs)
Push force	100 N (22.5 lbs)
Resistance to bending, force applied to front	10 N (2.25 lbs)[1)]
Resistance to bending, force applied to side	10 N (2.25 lbs)[1)]
Torsion	0.3 Nm
Enclosures	
Dust cover	Protects relay from dust. For use in passenger compartment or enclosures.

[1)] Values apply 2 mm from the end of the terminal. When the force is removed, the terminal must not have moved by more than 0.3 mm.

Please observe the disclaimer.

Power Relay F7 / VF7

Operating conditions				
Temperature range, storage	Refer to *Storage* in the "Glossary"			
Test	Relevant standard	Testing as per	Dimension	Comments
Climatic cycling with condensation	EN ISO 6988		6 cycles	Storage 8/16 h
Temperature cycling	IEC 68-2-14	Nb	10 cycles	– 40/+ 85 °C (5 °C per min.)
Damp heat cyclic constant	 IEC 68-2-30 IEC 68-2-3	 Db, Variant 1 Ca	 6 cycles 56 days	 Upper air temperature 55 °C
Corrosive gas	IEC 68-2-42 IEC 68-2-43	10 ± 2 cm^3/m^3 SO_2 1 ± 0.3 cm^3/m^3 H_2S	10 days 10 days	
Vibration resistance	IEC 68-2-6 (sine sweep)		10-500 Hz min.18 g	No change in the switching state > 10 µs
Shock resistance	IEC 68-2-27 (half sine pulse form)		min. 30 g 6 ms	
Load dump	ISO 7637-1 (12 V) ISO 7637-2 (24 V)	Test pulse 5 Test pulse 5	Vs =+ 86.5 V Vs =+ 200 V	
Jump start	24 V for 5 minutes conducting nominal current at 23 °C			
Drop test	Capable of meeting specifications after 1.0 m (3.28 foot) drop onto concrete			
Flammability	UL94-HB or better (meets FMVSS 302)[1]			
Overload current for relays with rated currents as shown in contact data table [2]	1.35 x I_{rated} 1800 s 2.00 x I_{rated} 5 s 3.50 x I_{rated} 0.5 s 6.00 x I_{rated} 0.1 s			

[1] FMVSS: Federal Motor Vehicle Safety Standard.
[2] Current and time are compatible with circuit protection by a typical automotive fuse. Relay will make, carry and break the specified current.

Ordering information

Part numbers for Power Relay F7/VF7 (see table below for coil data)			**Contact arrangement**	**Contact material**	**Enclosure**	**Special features**
Relay part number	**Internal reference**	**Tyco order number**				
12 V Plug-In Relays						
V23134-J0052-D642		7-1393303-3	1 Form A	AgNi0.15	Dust cover	
V23134-J1052-D642		1393304-9	1 Form A	AgNi0.15	Dust cover	Bracket
V23134-J0052-X429		1-1414147-0	1 Form A	AgNi0.15	Dust cover	Resistor 680 Ω
V23134-J0052-X439		1-1414286-0	1 Form A	AgSnO2	Dust cover	Diode (cathode at 86)
V23134-J0052-X461		1-1414469-0	1 Form A	AgSnO2	Dust cover	14.5mm load terminals, resistor
12 V PCB Relays						
V23134-J0052-X455		1-1414478-0	1 Form A	AgNi0.15	Dust cover	Resistor 470 Ω
24 V Plug-In Relays						
V23134-J0053-D642		9-1393303-7	1 Form A	AgNi0.15	Dust cover	
V23134-J1053-D642		1-1393304-1	1 Form A	AgNi0.15	Dust cover	Bracket
V23134-J0056-X408		1393304-5	1 Form A	AgSnO2	Dust cover	Contact gap > 0.8mm, resistor 1.2 kΩ
12 V Plug-In Relays						
VF7-11F11	V23134-J0055-X834	4-1393306-5	1 Form A	AgNi0.15	Dust cover	
VF7-11F11-S01	V23134-J0055-X836	4-1393306-6	1 Form A	AgNi0.15	Dust cover	Resistor
VF7-41F11	V23134-J1055-X845	5-1393306-8	1 Form A	AgNi0.15	Dust cover	Bracket
VF7-41F11-C05	V23134-J1056-X846	1432055-1	1 Form A	AgNi0.15	Dust cover, sealed	Bracket, resistor 680 Ω
VF7-41F11-S01	V23134-J1055-X849	1-1393302-6	1 Form A	AgNi0.15	Dust cover	Bracket, resistor 680 Ω
12 V PCB Relays (clinch)						
VF7-11F12	V23134-J0055-X838	1-1393302-3	1 Form A	AgNi0.15	Dust cover	
VF7-11F12-C05	V23134-J0055-X864	1432556-1	1 Form A	AgNi0.15	Dust cover, sealed	Resistor 680 Ω
24 V Plug-In Relays						
VF7-11H11	V23134-J0065-X839	1-1393302-4	1 Form A	AgNi0.15	Dust cover	
VF7-41H11	V23134-J1065-X853	1-1393302-7	1 Form A	AgNi0.15	Dust cover	Bracket
VF7-41H11-S08	V23134-J1065-X855	6-1393306-7	1 Form A	AgNi0.15	Dust cover	Bracket, diode (cathode at 86)
24 V PCB Relays (clinch)						
VF7-11H12	V23134-J0065-X841	1-1393302-5	1 Form A	AgNi0.15	Dust cover	

Please observe the disclaimer.

Power Relay F7 / VF7

Coil versions

Coil data for Power F7/VF7	Rated coil (V)	Coil resistance voltage (Ω)	Must operate +/- 10% (V)	Must release voltage (V)	Allowable overdrive [1] voltage at 23 °C	voltage (V) at 85 °C
V23134-**052****	12	90	7.2	1.6	22	17
V23134-**053****	24	324	14.4	3.2	41	32
V23134-**056****	24	268	16.0	4.0	38	29
VF7-**F**-**	12	72	7.2	1.2	18.1	14.1
VF7-**H**-**	24	288	14.4	2.4	36.2	28.2

[1] Allowable overdrive is stated with no load applied and minimum coil resistance.

Standard delivery packs (orders in multiples of delivery pack)

Power Relay F7:	Plug-in version:	210 pieces
	Plug-in version with bracket:	208 pieces
	PCB version:	200 pieces
VF7:		300 pieces

All specifications subject to change. Consult Tyco Electronics for latest specifications.