

Power relay F7



**Description**

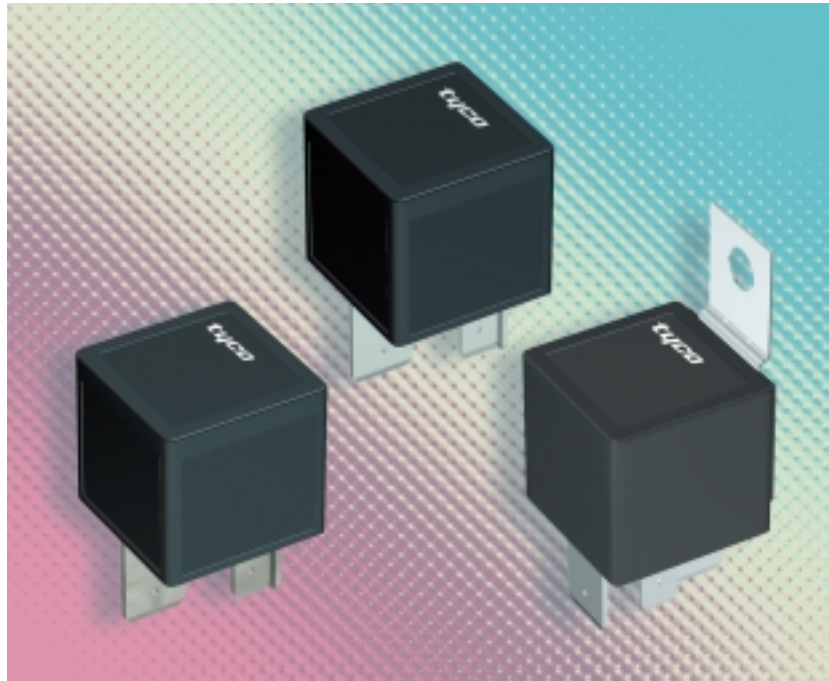
**Features**

- Limiting continuous current 70 A
- Dimensional characteristics and the functional allocation of the plug-in terminals to ISO 7588
- 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.



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**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**

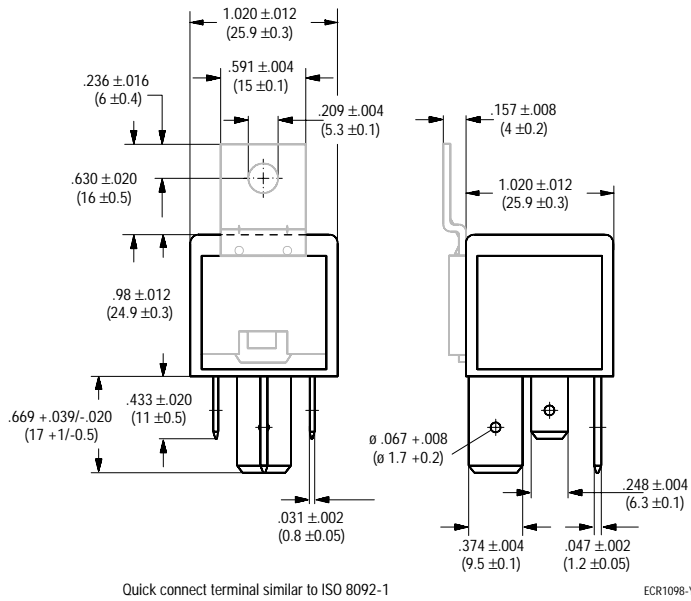
All parametric, environmental and endurance tests are performed according to EIA Standard RS-407-A at standard test conditions unless otherwise noted: 23 °C ambient temperature, 20-50% RH, 29.5 ± 1.0" Hg (998.9 ± 33.9 hPa). Please also refer to the Application Recommendations in this catalog for general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

**Disclaimer**

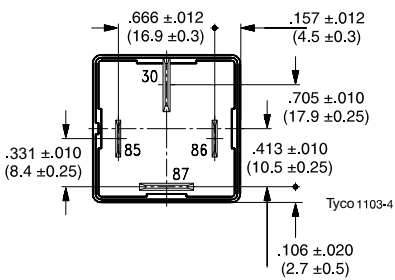
All technical performance data apply to the relay as such, specific conditions of the individual application are not considered. Please always check the suitability of the relay for your intended purpose. We do not assume any responsibility or liability for not complying herewith. We recommend to complete 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

Dimensional drawing



View of the terminals (bottom view)



Power relay F7

**Contact data**

Contact configuration	Make contact/ Form A		
Circuit symbol (see also Pin assignment)			
Rated voltage	12 V	24 V	24 V <sup>3)</sup>
Rated current at 85 °C	50 A	25 A	40 A
Contact material	AgNi0.15		AgSnO <sub>2</sub>
Max. switching voltage/power	See load limit curve		
Max. switching current <sup>1)</sup>			
On <sup>2)</sup>	240 A	240 A	240 A
Off	70 A	25 A	40 A
Min. recommended load <sup>4)</sup>	1 A at 5 V		
Voltage drop at 10 A (initial) NO contact	Typ. 10 mV, 200 mV max.		
Mechanical endurance (without load)	> 10 <sup>7</sup> operations		
Electrical endurance (example of resistive load, further information on request)	> 1 x 10 <sup>5</sup> operations 70 A, 14 V > 2 x 10 <sup>5</sup> operations 50 A, 14 V	> 1 x 10 <sup>5</sup> operations 25 A, 28 V	> 1 x 10 <sup>5</sup> operations 50 A, 28 V
Max. switching rate at nominal load	6 operations per minute (0.1 Hz)		

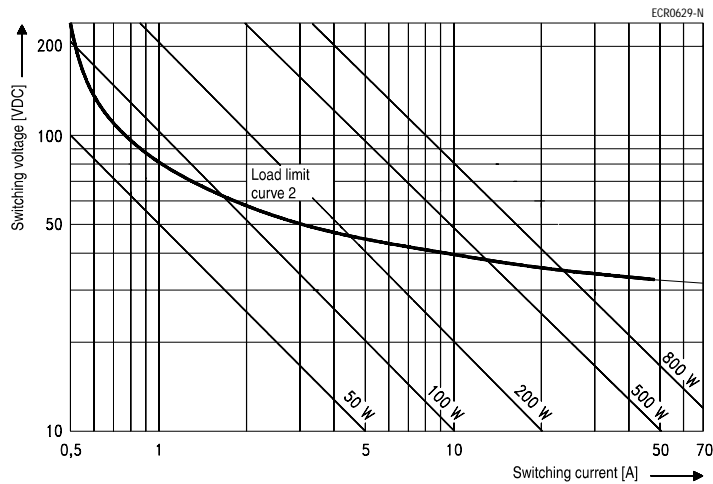
<sup>1)</sup> The values apply to a resistive or inductive load with suitable spark suppression and at maximum 13.5 V for 12 V or 27 V for 24 V load voltages.

<sup>2)</sup> For a load current duration of maximum 3 s for a make/break ratio of 1:10.

<sup>3)</sup> Special high performance 24 V version with contact gap > 0.8 mm, part number V23134-J0056-X408 (see ordering information).

<sup>4)</sup> See chapter Diagnostics in our Application Recommendations on page 18.

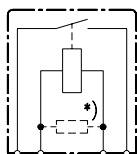
**Load limit curve**



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

**Pin assignment**

1 make contact/  
1 form A



ECR1100 - E

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

Power relay F7

**Coil data**

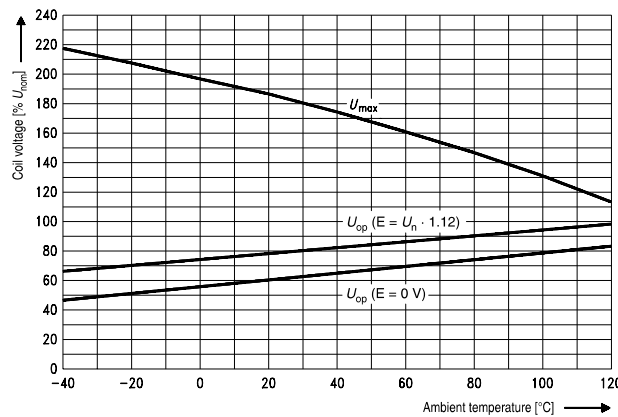
Available for nominal voltages	12, 24 V
Nominal power consumption of the unsuppressed coil at nominal voltage	1.6/2.0 W (F7/VF7)
Nominal power consumption at nominal voltage with suppression resistor	1.8/2.2/2.1 W (F7/VF7 high performance 24 V)
Test voltage winding/contact and contact/contact	500 VAC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

<sup>1)</sup> 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.

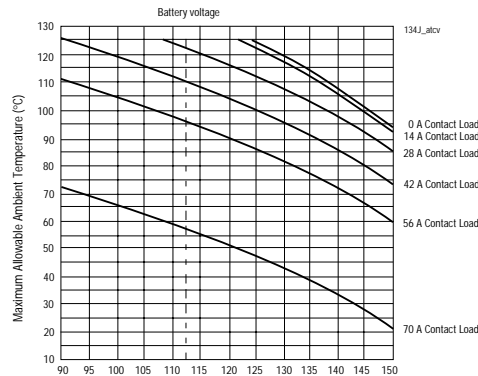
**Operating voltage range**



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

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**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) <sup>1)</sup>
Resistance to bending, force applied to side	10 N (2.25 lbs) <sup>1)</sup>
Torsion	0.3 Nm
Enclosures	
Dust cover	Protects relay from dust. For use in passenger compartment or enclosures.

<sup>1)</sup> 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.

Power relay F7

Operating conditions				
Temperature range, storage	-40 °C to 155 °C			
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	IEC 68-2-30	Db, Variant 1	6 cycles	Upper air temperature 55 °C
constant	IEC 68-2-3	Ca	56 days	
Corrosive gas	IEC 68-2-42	10 ± 2 cm <sup>3</sup> /m <sup>3</sup> SO <sub>2</sub>	10 days	
	IEC 68-2-43	1 ± 0.3 cm <sup>3</sup> /m <sup>3</sup> H <sub>2</sub> S	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	V <sub>s</sub> =+ 86.5 V V <sub>s</sub> =+ 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) <sup>1)</sup>			
Overload current <sup>2)</sup>	95 A, 1800 s 140 A, 5 s 245 A, 0.5 s 420 A, 0.1 s			

<sup>1)</sup> FMVSS: Federal Motor Vehicle Safety Standard.

<sup>2)</sup> Current and time are compatible with circuit protection by a typical 70 A automotive fuse. Relay will make, carry and break the specified current.

Ordering information (Production in Europe, Asia and south America)

Part numbers (see table below for coil data)		Contact arrangement	Contact material	Enclosure	Special features
Relay part number	Tyco order number				
<b>12 V Plug-in relays</b>					
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
V23134-J0052-X439	1-1414286-0	1 Form A	AgSnO2	Dust cover	Diode
V23134-J0052-X461	1-1414469-0	1 Form A	AgSnO2	Dust cover	14.5mm load terminals, resistor
<b>12 V PCB relays</b>					
V23134-J0052-X455	1-1414478-0	1 Form A	AgNi0.15	Dust cover	Resistor
<b>24 V Plug-in relays</b>					
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

Coil versions

Coil data for F7	Rated coil voltage (V)	Coil resistance +/- 10% (Ω)	Must operate voltage (V)	Must release voltage (V)	Allowable overdrive <sup>1)</sup> voltage (V)	
					at 23 °C	at 85 °C
V23134-**052****	12	91	7.2	1.6	23	18
V23134-**053****	24	332	14.4	3.2	44	34
V23134-**056**** <sup>2)</sup>	24	223	16.0	4.0	38	30

<sup>1)</sup> Allowable overdrive is stated with no load applied and minimum coil resistance.

<sup>2)</sup> Resistance value including 1200 Ω parallel resistor.

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