Power relay F4


Powertrain Systems


Chassis Systems


Safety


Security


Body


Driver Information


Convenience

Description

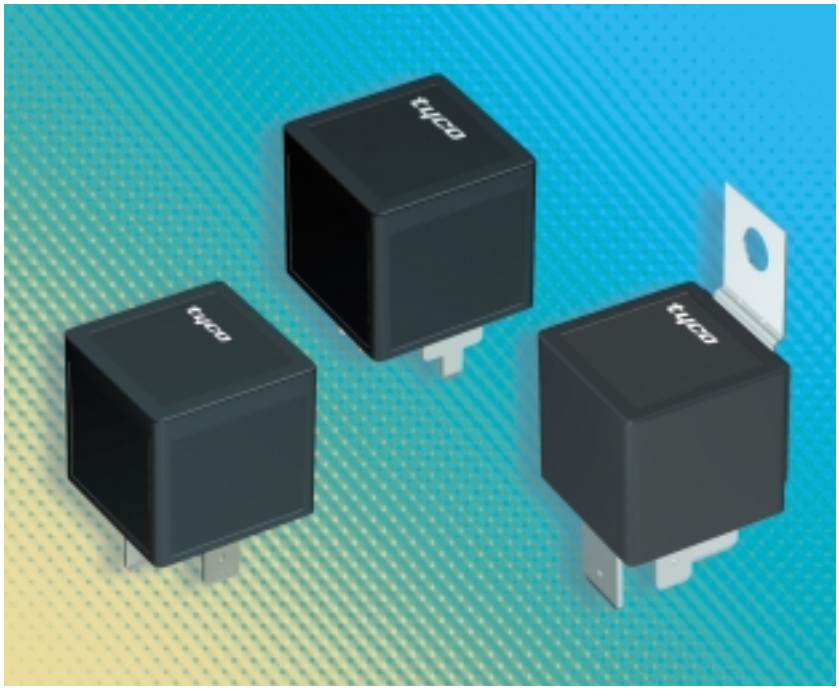
Features

- Limiting continuous currents 60/40 A at the NO / NC contacts
- Dimensional characteristics and the functional allocations 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

- Ignition lock
- Lamp load (headlights)
- Cooling fan
- ABS
- Exhaust emission control
- Cross carline up to 60 A
- Fuel pump
- Engine cooling fan
- A/C blower
- A/C compressor clutch
- Also available for 42 V applications

Please contact Tyco Electronics for relay application support.



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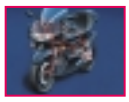
Car Industry


Truck Industry


Other Industry

Design

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

Options

Shrouded and weatherproof covers

Weight

Approx. 1.2 oz. (35 g)

Nominal voltage

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

Terminals

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

Accessories

Connectors see page 188

Special models on request

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

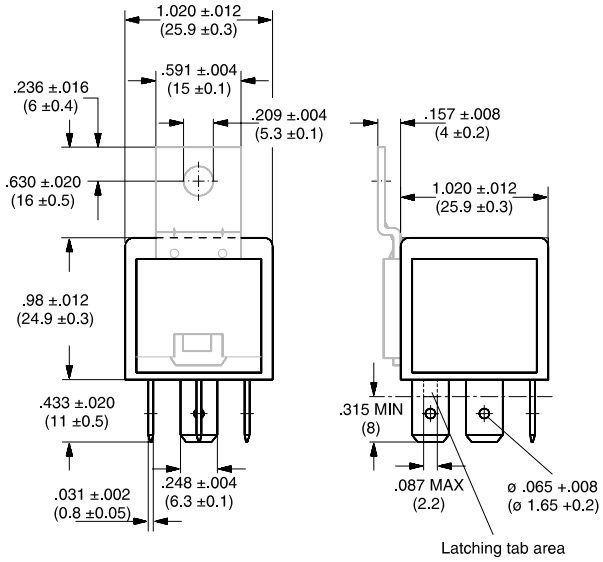
Conditions

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.

Power relay F4

Dimensional drawing

Version with quick connect terminals

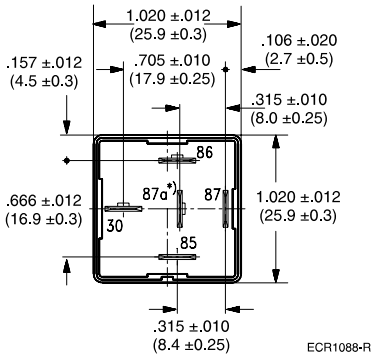


Quick connect terminal similar to ISO 8092-1

ECR1093-S

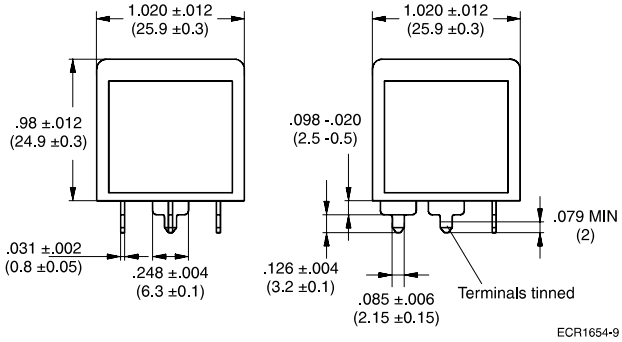
View of the terminals (bottom view)

*) For the make contact (2 x pin 87), pin 87a = 87.
For the twin make contact, pin 87a = 87b.



ECR1088-R

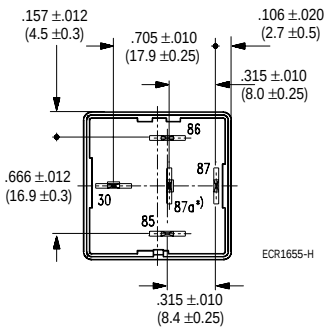
Version with PCB terminals



ECR1654-9

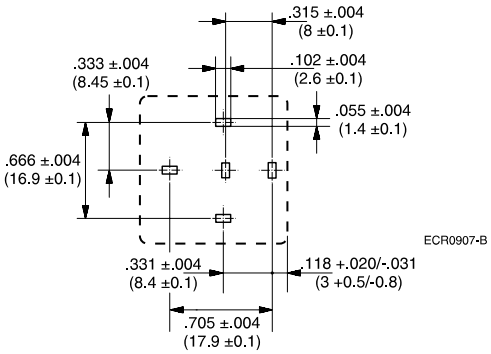
View of the terminals (bottom view)

*) For the make contact (2 x pin 87), pin 87a = 87.
For the twin make contact, pin 87a = 87b.



ECR1655-H

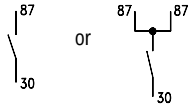
Mounting hole layout



ECR0907-B

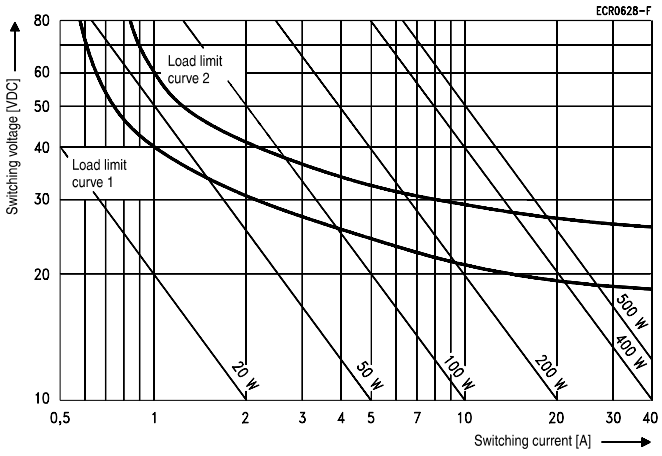
Power relay F4

Contact data

Contact configuration	Make contact/ Form A or Form A (2x87)		Double make contact/ Form U		Changeover contact/ Form C		
Circuit symbol (see also Pin assignment)							
Rated voltage	12 V	24 V	12 V	24 V	12 V	24 V	24 V[3]
Rated current at 85 °C	40 A	20 A	2 x 25 A	2 x 15 A	30/40 A	15/20 A	20/30 A
Contact material	AgNi0.15		AgNi0.15		AgNi0.15		$AgSnO_2$
Max. switching voltage/power	See load limit curve						
Max. switching current[1]					NC/NO	NC/NO	NC/NO
On[2]	120 A	120 A	2 x 100 A	2 x 100 A	45/120A	45/120A	45/120A
Off	60 A	20 A	2 x 40 A	2 x 15 A	40/60A	15/20A	20/30A
Min. recommended load[4]	1 A at 5 V						
Voltage drop at 10 A (initial)							
NO contact	Typ. 15 mV, 200 mV max.		Typ. 2 x 15 mV, 200 mV max.		Typ. 15 mV, 200 mV max.		
NC contact					Typ. 20 mV, 250 mV max.		
Mechanical endurance (without load)	> 10^7 operations						
Electrical endurance (example of resistive load)	> 2 x 10^5 operations 40 A, 14 V	> 1 x 10^5 operations 20 A, 28 V	> 2 x 10^5 operations 2 x 25 A, 14 V	> 1 x 10^5 operations 2 x 15 A, 28 V	> 2 x 10^5 operations 40 A, 14 V (NO contact)	> 1 x 10^5 operations 20 A, 28 V (NO contact)	> 1 x 10^5 operations 30 A, 28 V (NO contact)
							> 5 x 10^5 operations 10 A, 28 V (NC contact)
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-A0056-X432/-X433 (see ordering information).
[4] See chapter Diagnostics in our Application Recommendations on page 18.

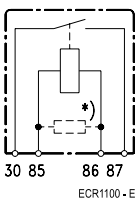
Load limit curve



Load limit curve 1 ≙ arc extinguishes during transit time (changeover contact)
Load limit curve 2 ≙ safe shutdown, no stationary arc (make contact)

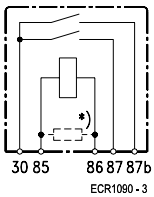
Pin assignment

1 make contact/
1 form A



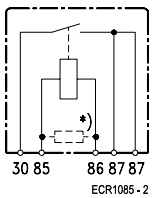
*) Models with resistor or diode in parallel to the coil on request.

Power relay F4 only
1 double make contact/
1 form U



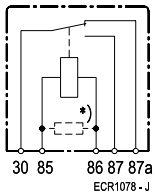
*) Models with resistor or diode in parallel to the coil on request.

Power relay F4 only
1 make contact (2 x pin 87)/
1 form A (2 x pin 87)



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

1 changeover contact/
1 form C



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

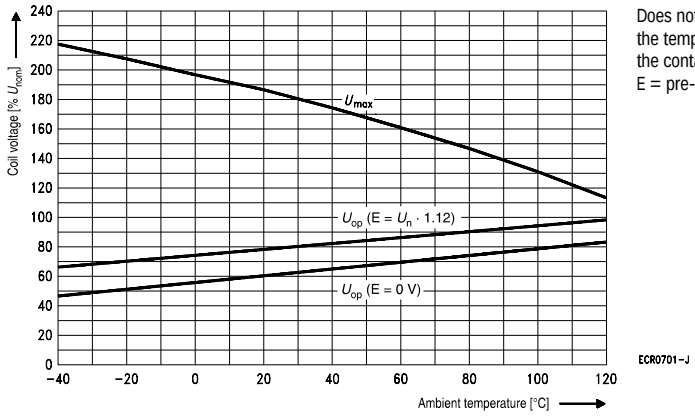
Power relay F4

Coil data

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

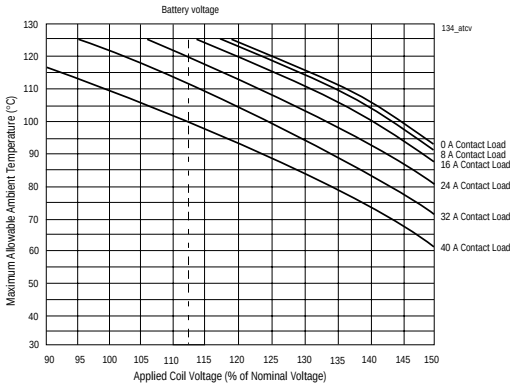
[1)] For unsuppressed relay coil
N.B.
A low resistive suppression device in parallel to the relay coil increases the release time and reduces the lifetime caused by increased erosion and/or higher risk of contact tack welding.

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)
Pull 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
Shrouded dust cover	Protects relay and relay connector (order separately) from dust and splash
Weatherproof cover	Mates with a connector (order separately) to seal relay from salt spray etc. Recommended for under hood application

[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.

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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^3/m^3 SO_2	10 days	
	IEC 68-2-43	1 ± 0.3 cm^3/m^3 H_2S	10 days	
Vibration resistance	IEC 68-2-6 (sine sweep)		10-500 Hz min. 5 g	No change in the switching state > 10 µs
Shock resistance	IEC 68-2-27 (half sine pulse form)		min. 20 g 11 ms	Valid for NC contacts, NO contact values significantly higher
Load dump	ISO 7637-1 (12 V)	Test pulse 5	Vs =+ 86.5 V	
	ISO 7637-2 (24 V)	Test pulse 5	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[2)]	54 A, 1800 s 80 A, 5 s 140 A, 0.5 s 240 A, 0.1 s			

[1)] FMVSS: Federal Motor Vehicle Safety Standard.
[2)] Current and time are compatible with circuit protection by a typical 40 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) Relay part number	Tyco order number	Contact arrangement	Contact material	Enclosure	Special features
12 V plug-in relays					
V23134-A0052-C643	2-1393302-2	1 Form C	AgNi0.15	Dust cover	
V23134-A0052-X205	3-1393302-6	1 Form C	AgNi0.15	Dust cover	Diode
V23134-A0052-X278	4-1393302-1	1 Form C	AgNi0.15	Dust cover	Resistor 560 Ω
V23134-A1052-C643	5-1393302-8	1 Form C	AgNi0.15	Dust cover	Bracket
V23134-A1052-X828*)	7-1393305-5	1 Form C	AgNi0.15	Sealed	Bracket, resistor 680 Ω
V23134-B0052-C642	7-1393302-5	1 Form A	AgNi0.15	Dust cover	
V23134-B1052-C642	3-1393303-4	1 Form A	AgNi0.15	Dust cover	Bracket
V23134-B1052-X824*)	6-1393305-9	1 Form A	AgNi0.15	Dust cover	Bracket, resistor 680 Ω
V23134-C0052-C642	3-1393303-9	1 Form A (2 pins 87)	AgNi0.15	Dust cover	
V23134-C1052-C642	4-1393303-7	1 Form A (2 pins 87)	AgNi0.15	Dust cover	Bracket
V23134-M0052-C642	5-1393304-6	1 Form U	AgNi0.15	Dust cover	
V23134-M1052-C642	7-1393304-1	1 Form U	AgNi0.15	Dust cover	Bracket
24 V plug-in relays					
V23134-A0053-C643	5-1393302-1	1 Form C	AgNi0.15	Dust cover	
V23134-A0056-X432	1-1414167-0	1 Form C	AgSnO2	Dust cover	Contact gap > 0.8mm, diode
V23134-A0056-X433	1-1414168-0	1 Form C	AgSnO2	Dust cover	Contact gap > 0.8mm, resistor 1.2 KΩ
V23134-A0064-X816*)	5-1393305-3	1 Form C	AgNi0.15	Sealed	Resistor 2.7 KΩ
V23134-A1053-C643	6-1393302-3	1 Form C	AgNi0.15	Dust cover	Bracket
V23134-A1064-X829*)	1432219-1	1 Form C	AgNi0.15	Sealed	Bracket, resistor 2.7 KΩ
V23134-A1064-X830*)	8-1393305-4	1 Form C	AgNi0.15	Dust cover	Bracket, diode
V23134-B0053-C642	1393303-9	1 Form A	AgNi0.15	Dust cover	
V23134-B1053-C642	3-1393303-7	1 Form A	AgNi0.15	Dust cover	Bracket
V23134-C0053-C642	4-1393303-4	1 Form A (2 pins 87)	AgNi0.15	Dust cover	
V23134-C1053-C642	5-1393303-0	1 Form A (2 pins 87)	AgNi0.15	Dust cover	Bracket
V23134-M0053-C642	6-1393304-7	1 Form U	AgNi0.15	Dust cover	
V23134-M1053-C642	7-1393304-4	1 Form U	AgNi0.15	Dust cover	Bracket

*) Marking according to VF4 shematic.

Power relay F4

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

Part numbers (see table below for coil data) Relay part number	Tyco order number	Contact arrangement	Contact material	Enclosure	Special features
12 V pcb relays					
V23134-A0052-G243	2-1393302-3	1 Form C	AgNi0.15	Dust cover	
V23134-A0052-X812*)	4-1393305-5	1 Form C	AgNi0.15	Sealed	
V23134-A0052-X813*)	4-1393305-7	1 Form C	AgNi0.15	Sealed	Resistor 680 Ω
V23134-B0052-G242	7-1393302-7	1 Form A	AgNi0.15	Dust cover	
V23134-B0052-X802*)	2-1393305-2	1 Form A	AgNi0.15	Sealed	
V23134-C0052-G242	4-1393303-0	1 Form A (2 pins 87)	AgNi0.15	Dust cover	
V23134-M0052-G242	5-1393304-7	1 Form U	AgNi0.15	Dust cover	
24 V pcb relays					
V23134-A0053-G243	5-1393302-2	1 Form C	AgNi0.15	Dust cover	
V23134-A0064-X820*)	5-1393305-9	1 Form C	AgNi0.15	Sealed	
V23134-B0053-G242	1-1393303-0	1 Form A	AgNi0.15	Dust cover	
V23134-C0053-G242	4-1393303-5	1 Form A (2 pins 87)	AgNi0.15	Dust cover	
V23134-M0053-G242	6-1393304-8	1 Form U	AgNi0.15	Dust cover	

*) Marking according to VF4 shematic.

Coil versions

Coil data for Power relay F4	Rated coil voltage (V)	Coil resistance +/- 10% (Ω)	Must operate voltage (V)	Must release voltage (V)	Allowable overdrive 1) 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-****	24	275	16.0	4.0	38	30
V23134-**064-****	24	345	14.4	2.4	40.5	31.5

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

Standard delivery packs (orders in multiples of delivery pack)

Power relay F4	Quick connect verson:	315 pieces
	Quick connect with bracket:	200 pieces
	PCB version:	200 pieces

Общество с ограниченной ответственностью «МосЧип» ИНН 7719860671 / КПП 771901001
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Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

http://moschip.ru/get-element

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

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Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

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