Power Relay F4 A

- **Pin assignment similar to ISO 7588 part 1**
- **Plug-in terminals**
- **Customized versions on request**
  - **– Integrated components (e.g. resistor, diode)**
  - **– Customized marking**
  - **– Special covers (e.g. notches, shrouded)**

Typical applications
Cross carline up to 40A for example: ABS control, blower fans, cooling fan, Electric Power Steering, energy management, engine control, fuel pump, heated front screen, lamps: front, rear, fog light, main switch/supply relay.

Contact Data

Contact arrangement	1 form A, 1 NO	1 form C, 1 CO	1 form C, 1 CO
Rated voltage	12VDC	12VDC	24VDC
Maximum switching voltage	16VDC	16VDC	32VDC
Limiting continuous current[1)]	NO	NO/NC	NO/NC
23°C	60A	60/45A	50/35A
85°C	40A	40/30A	35/25A
125°C	17A	17/12A	--
Limiting short-time current[2)]			
overload current	1.35 x 40A, 900s	1.35 x 40A/30A, 900s	1.35 x 35A/25A, 900s
ISO 8820-3 (2010-06)	2.00 x 40A, 60s	2.00 x 40A/30A, 60s	2.00 x 35A/25A, 60s
	3.50 x 40A, 7s	3.50 x 40A/30A, 7s	3.50 x 35A/25A, 7s
	6.00 x 40A, 1s	6.00 x 40A/30A, 1s	6.00 x 35A/25A, 1s
Contact material	silver alloy	silver alloy	silver alloy
Min. contact load[3)]	1A 5VDC	1A 5VDC	1A 5VDC
Initial voltage drop			
NO contact at 10A, typ./max.	15mV/200mV	15mV/200mV	15mV/200mV
NC contact at 10A, typ./max.		20mV/250mV	20mV/250mV
Operate time[4)]	typ. 7ms	typ. 7ms	typ. 7ms
Release time[4)]	typ. 2ms	typ. 2ms	typ. 2ms
Mechanical endurance	>1x10^{6}ops.	>1x10^{6}ops.	>1x10^{6}ops.

Electrical Endurance[5)] 12VDC Coil

Load voltage/ coil voltage	Load type		Load current 1 form A NO	Load current 1 form C[6)] NO	Load current 1 form C[6)] NC	On / off ratio	Electrical endurance[7)] Coil supression[8)] Resistor	Coil supression[8)] Diode
14VDC	capacitive[9)]	make	150	150	--	2s/2s	>1x10^5 ops.	on request
		break	30	30	--			
	resistive	make	40	40	30	2s/2s	>1x10^5 ops.	on request
		break	40	40	30			
	inductive L=0.25mH (NO) L=0.20mH (NC)	make	80	80	40	2s/2s	>1x10^5 ops.	on request
		break	33	33	20			

Electrical Endurance[10)] 24VDC Coil

Load voltage/ coil voltage	Load type		Load current 1 form A NO	Load current 1 form C[6)] NO	Load current 1 form C[6)] NC	On / off ratio	Electrical endurance[11)] Coil supression[8)] Resistor	Coil supression[8)] Diode
28VDC	capacitive[9)]	make	--	72	36	2s/2s	on request	>2.5x10^5 ops. (NO)
		break	--	16	8			>5.0x10^4 ops. (NC)
	resistive	make	--	20	10	2s/2s	on request	>2.5x10^5 ops.
		break	--	20	10			
	inductive L=0,55mH	make	--	40	--	2s/2s	on request	>2.5x10^5 ops.
		break	--	16	--			

1) At rated voltage.
2) Current and time are compatible with circuit protection by a typical automotive fuse. Relay will make and carry the specified current.
3) See Definitions for automotive relays https://relays.te.com/definitions/ and chapter Diagnostics of Relays in our Application Notes at https://relays.te.com/appnotes/
4) At rated voltage and 23°C for a relay coil with suppression resistor. A suppression diode will influence the switching behaviour and reduce the service life.
5) All tests performed with cyclic temperature -40 to 125°C.
6) NO & NC contacts tested independently.
7) According Weibull.
8) Any diode or pn-junction parallel to the coil (internal or external) will significantly decrease the electrical lifetime, especially when used for inductive loads.
9) Max. inrush peak-current at 250 … 350µs.
10) All tests performed with cyclic temperature -40 to 85°C.
11) Single lifetime.

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Power Relay F4 A (Continued)

Coil Data

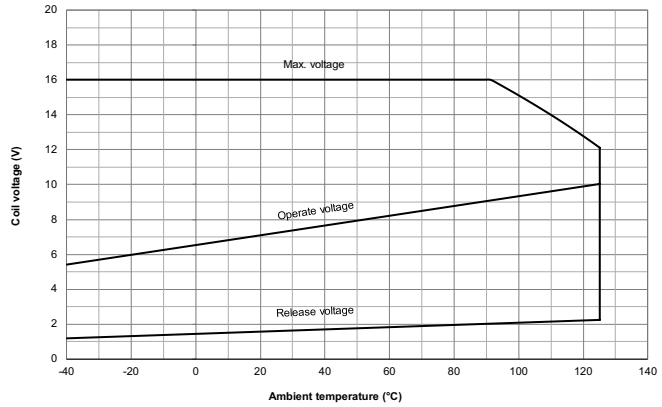
Coil code	Rated voltage [VDC]	Must Operate voltage [VDC]	Must Release voltage [VDC]	Coil resist. [Ω]	Suppr. resist. [Ω]	Total resist. ±10% [Ω]	Rated coil power [W]
001	12	7.2	1.6	114	680	98	1.3
004	12	7.2	1.6	90	680	79	1.8
004	12	7.2	1.2	90	--	90	1.6
103	24	16.0	3.0	255	1200	210	2.7
103	24	16.0	3.0	255	---	255	2.3

All figures are given for coil without pre-energization, at ambient temperature +23°C.

Insulation Data

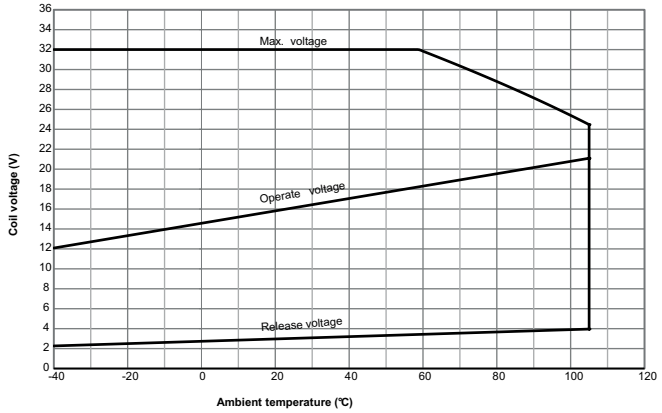
Initial dielectric strength	
between open contacts	500VAC$_{rms}$
between contact and coil	500VAC$_{rms}$

Coil operating range 001/004



Does not take into account the temperature rise due to the contact current

Coil operating range 103



Does not take into account the temperature rise due to the contact current

Other Data

EU RoHS/ELV compliance	compliant
Protection to heat and fire	UL94-HB or better[11]
Ambient temperature	
for 12V Coil	-40 to +125°C
for 24V Coil	-40 to +105°C
Rapid change of temperature (thermal shock), IEC 60068-2-14 (2009-01)	
Na	100 cycles, -40°C /+125°C
Damp heat cyclic IEC 60068-2-30 (2005-08)	
Db, Variant 1	6 cycles, upper air temp. 55°C
Degree of protection IEC 60529 (2013-08)	IP54
Vibration resistance (functional)	
ISO 16750-3 (2012-12)	10 to 1000Hz, > 2.71g eff
Test IV	No change of switching state >10µs
Shock resistance (functional)	
IEC 60068-2-27 (2008-02)	min. 20g 11ms[12]
half sine	No change of switching state >10µs
Drop test, free fall	
IEC 60068-2-32 (2008-05)	1m onto concrete
Terminal type	Plug-in, QC
Cover retention	
pull	150N
push	200N
Terminal retention	
pull	100N
push	100N
resistance to beanding	10N[13]
Weight	approx. 35g (1.2oz)
Packaging unit	108 pcs

11) Refers to used materials.

12) valid for NC contacts, NO contact values significantly higher.

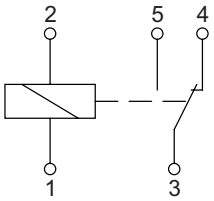
13) Values apply 2mm from the end of the terminals. When the force is removed, the terminal must not have moved by more than 0.3mm.

Accessories

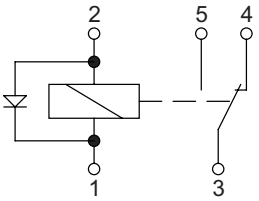
For details see datasheet	Connectors for Mini ISO Relays

Terminal Assignment

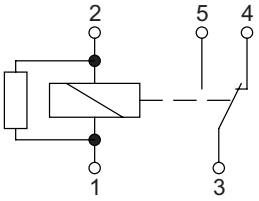
CO
1 form C, 1 CO



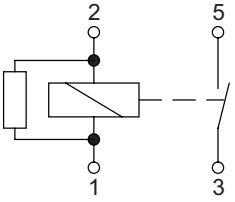
COD
1 form C, 1 CO with diode



COR
1 form C, 1 CO with resistor



NOR
1 form A, 1 NO with resistor



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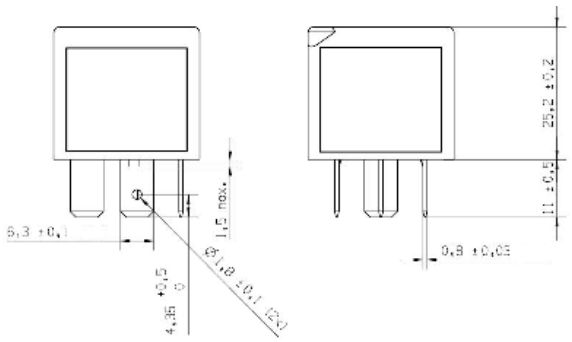
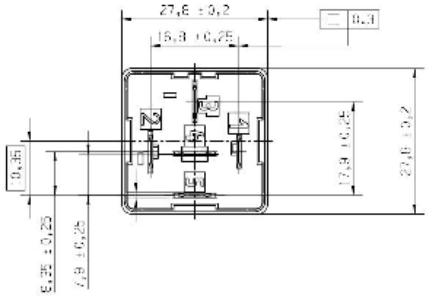
Power Relay F4 A (Continued)

Dimensions (standard cover)

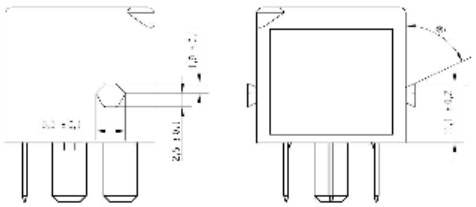


Note:
Holes in terminal 1 and 2 only for 24V versions.

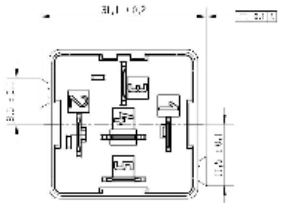
View of the terminals (bottom view)



Dimensions (special cover with notches -V23136-A0001-X083)



View of the terminals (bottom view)



Product Code Structure

Typical product code **V23136 -A 0 001 -Xnnn**

Type
V23136 Power Relay F4 A

Contact arrangement
A 1 form C, 1 CO
B 1 form A, 1 NO

Cover
0 Standard

Coil
001 12VDC
004 12VDC
103 24VDC

Terminal/arrangement
Xnnn Customized (nnn: version number)

Production in Europe (only)

Product Code	Arrangement	Coil Suppr.	Circuit[14)]	Coil	Part Number
V23136-A0001-X083[15)]	1 form C, 1 CO	Resistor 680Ω	COR	12VDC	4-1414977-8
V23136-A0004-X058	1 form C, 1 CO	--	CO	12VDC	1-1414686-0
V23136-A0004-X059	1 form C, 1 CO	Resistor 680Ω	COR	12VDC	1-1414687-0
V23136-A0004-X086	1 form C, 1 CO	Diode (cathode 1)	COD	12VDC	4-1414992-7

Production in Asia (only)

Product Code	Arrangement	Coil Suppr.	Circuit[14)]	Coil	Part Number
V23136-A0001-X155	1 form C, 1 CO	Resistor 680Ω	COR	12VDC	2325917-1
V23136-A0004-X058	1 form C, 1 CO	--	CO	12VDC	6-1904112-9
V23136-A0004-X059	1 form C, 1 CO	Resistor 680Ω	COR	12VDC	7-1904112-0
V23136-A0004-X086	1 form C, 1 CO	Diode (cathode 1)	COD	12VDC	7-1904112-1
V23136-B0001-X104	1 form A, 1 NO	Resistor 680Ω	NOR	12VDC	7-1904116-0
V23136-A0103-X151	1 form C, 1 CO	Diode (cathode 1)	COD	24VDC	2383369-1
V23136-A0103-X153	1 form C, 1 CO	Resistor 1200Ω	COR	24VDC	2383365-1

Other types on request. These liste represent the most common types and do not show all variants covered by this datasheet.
14) See terminal assignment diagrams.
15) Special cover with notches.