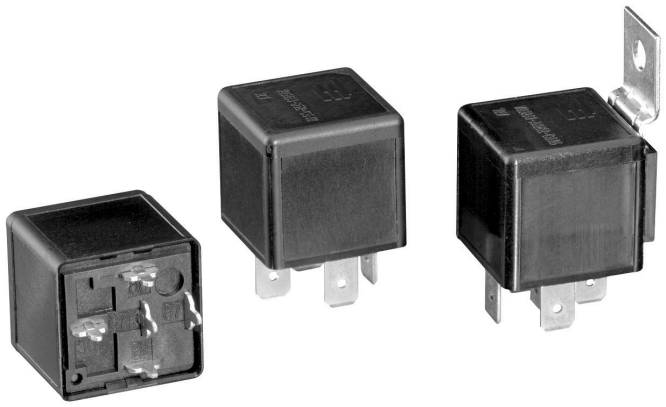
Power Relay F4

- **Pin assignment similar to ISO 7588 part 1**
- **Plug-in or PCB terminals**

Customized versions on request
- **– 48VDC version on request**
- **– Integrated components (e.g. resistor, diode)**
- **– Customized marking/color**
- **– Special covers (e.g. notches, release features, brackets)**
- **– Various contact arrangements and materials**
- **– For latching (bistable) version refer to Power Relay F7 A Latching**
- **– For shrouded/weatherproof dust cover versions refer to Shrouded Power Relay F4 A and F4**



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

Contact Data

Contact arrangement	1 form A, 1 NO/1 NO (2x87)	1 form U, 2 NO	1 form C, 1 CO
Rated voltage	12VDC/24VDC	12VDC/24VDC	12VDC/24VDC
Maximum switching voltage	16VDC/32VDC	16VDC/32VDC	16VDC/32VDC
Limiting continuous current	NO	NO	NO/NC
23°C	60A	2x32A	60/45A
85°C	40A	2x25A	40/30A
125°C	17A	2x11A	17/12A
Limiting short-time current overload current ISO 8820-3[1] (2015)	1.35 x 40A, 900s 2.00 x 40A, 60s 3.50 x 40A, 7s 6.00 x 40A, 1s	1.35 x 40A, 900s 2.00 x 40A, 60s 3.50 x 40A, 7s 6.00 x 40A, 1s	1.35 x 40A/30A, 900s 2.00 x 40A/30A, 60s 3.50 x 40A/30A, 7s 6.00 x 40A/30A, 1s
Contact material	silver alloy	silver alloy	silver alloy
Min. contact load[2]	1A 5VDC	1A 5VDC	1A 5VDC
Initial voltage drop NO contact at 10A, typ./max.	15mV/200mV	2x15mV/200mV	15mV/200mV
NC contact at 10A, typ./max.			20mV/250mV
Operate time[3]	typ. 7ms	typ. 7ms	typ. 7ms
Release time[3]	typ. 2ms	typ. 2ms	typ. 2ms
Mechanical endurance	>1x10^{6}ops.	>1x10^{6}ops.	>1x10^{6}ops.

Electrical Endurance 12VDC Coil

Load voltage/ coil voltage	Load type		Load current 1 form A NO	1 form U 2 NO	1 form C[5] NO	1 form C[5] NC	On / off ratio	Electrical endurance[4] Coil supression[6] Resistor	Diode
14VDC	resistive	make	40A	2x25A	40A	30A	1s/1s	>1x10^5 ops.	on request
		break	40A	2x25A	40A	30A			

Electrical Endurance 24VDC Coil

28VDC	resistive	make	20A	2x20A	20A	10A	2s/2s	>1x10^5 ops.	on request
		break	20A	2x20A	20A	10A			

All tests performed with cyclic temperature.

1) Current and time are compatible with circuit protection by a typical automotive fuse. Relay will make, carry and break the specified current.
2) 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/
3) 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.
4) According Weibull.
5) NO & NC contacts tested independently.
6) Any diode or pn-junction parallel to the coil (internal or external) will significantly decrease the electrical lifetime, especially when used for inductive loads.

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Power Relay F4 (Continued)

Coil Data

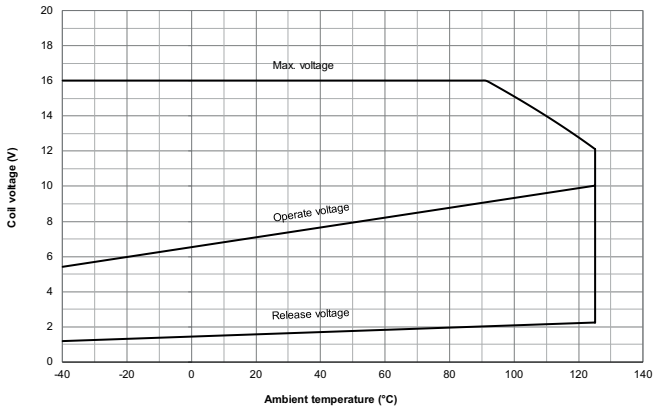
Coil code	Rated voltage [VDC]	Must Operate voltage [VDC]	Must Release voltage [VDC]	Coil resist. [Ω]	Suppr. resist. [Ω]	Total resist. ±10% [Ω]	Rated coil power [W]
052	12	7.2	1.6	90	--	90	1.6
052	12	7.2	1.6	90	560	78	1.8
052	12	7.2	1.6	90	680	79	1.8
056	24	16.0	4.0	268	--	268	2.1
056	24	16.0	4.0	268	1200	219	2.6
165	24	16.0	2.4	288	1200	232	2.5

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

Insulation Data

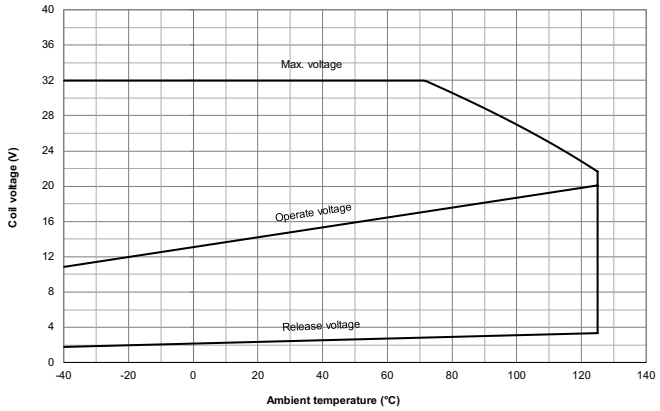
Initial dielectric strength	
between open contacts	500VAC$_{rms}$
between contact and coil	500VAC$_{rms}$

Coil operating range coil 0052



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

Coil operating range coil 0165



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[7]
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)	
Na	100 cycles, -40°C /+125°C
Damp heat cyclic	
IEC 60068-2-30 (2005)	
Db, Variant 1	6 cycles, upper air temp. 55°C
Degree of protection	
IEC 60529 (2013)	IP54
Vibration resistance (functional)	
ISO 16750-3 (2012)	10 to 1000Hz, 2.71g eff.[8]
Test IV	No change of switching state >10µs
Shock resistance (functional)	
IEC 60068-2-27 (2008)	min. 20g 11ms[8]
half sine	No change of switching state >10µs
Drop test, free fall	
IEC 60068-2-32 (2008)	1m onto concrete
Terminal type	Plug-in, QC/PCB
Cover retention	
pull	150N
push	200N
Terminal retention	
pull	100N
push	100N
resistance to bending	10N[9]
Weight	approx. 35g (1.2oz)
Packaging unit	
Plug-in/PCB	315 pcs.
Plug-in with bracket	200 pcs.

7) Refers to used materials.
8) Valid for NC contacts, NO contact values significantly higher.
9) Values apply 2mm from the end of the terminal. 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

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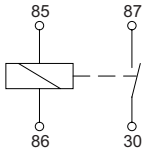
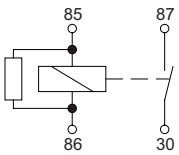
Power Relay F4 (Continued)

Terminal Assignment

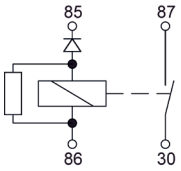
NO
1 form A, 1 NO



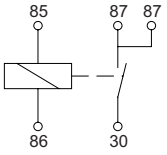
NOR
1 form A, 1 NO
with resistor



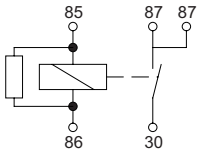
NOR_SD
1 form A, 1 NO
with resistor & serial diode



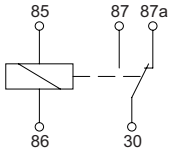
NO_2x87
1 form A, 1 NO (2x87)



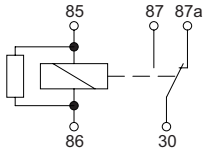
NOR_2x87
1 form A, 1 NO (2x87)
with resistor



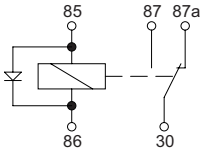
CO
1 form C, 1 CO



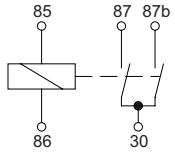
COR
1 form C, 1 CO
with resistor



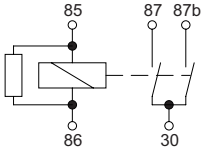
COD
1 form C, 1 CO
with diode



DNO
1 form U, 2 NO

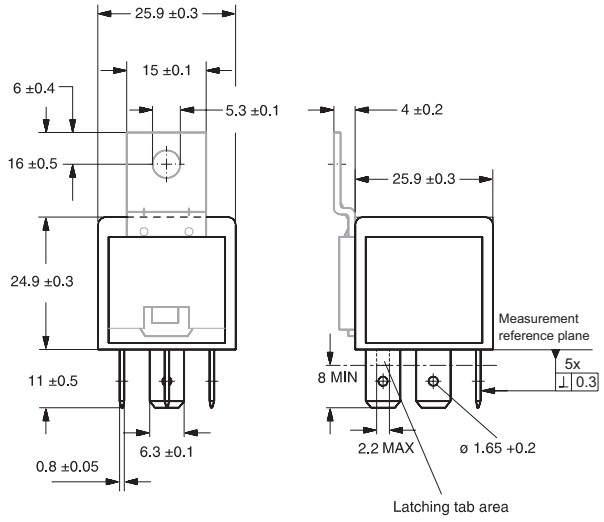


DNOR
1 form U, 2 NO
with resistor

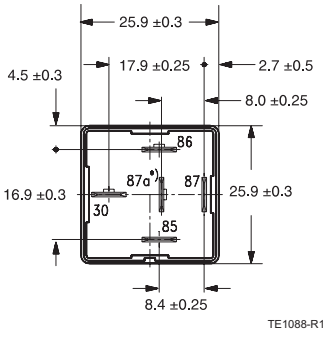


Dimensions
Power Relay F4 with quick connect (QC) terminals

External dimensions



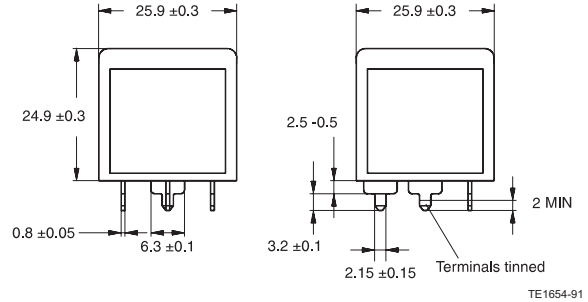
View of the terminals (bottom view)



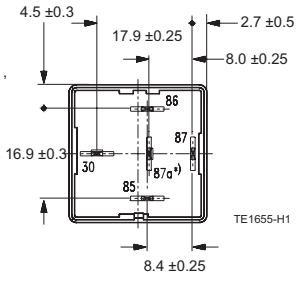
For the make contact (2x87), pin 87a = 87;
for the double make contact, pin 87a = 87b.

Power Relay F4 with PCB terminals

External dimensions

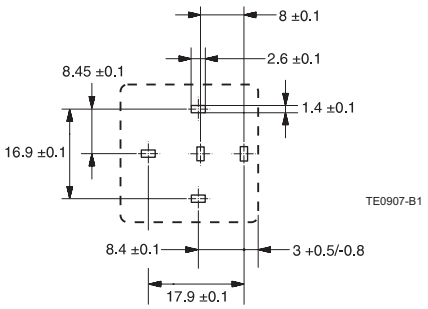


View of the terminals (bottom view)



For the make contact (2x87), pin 87a = 87;
for the double make contact, pin 87a = 87b.

Mounting hole layout (bottom view)



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Power Relay F4 (Continued)

Product Code Structure — Typical product code: **V23134 -A 0 052 -C643**

Type				
	V23134	Power Relay F4		
Contact arrangement				
	A	1 form C, 1 CO	**C**	1 form A, 1 NO (2x87)
	B	1 form A, 1 NO	**M**	1 form U, 2 NO
Cover				
	0	Standard	**1**	Bracket at terminal 30 ISO
Coil				
	052	12VDC	**056**	24VDC
	165	24VDC		
Terminal arrangement				
	C642	Plug-in/NO	**C643**	Plug-in/CO
	G242	PCB/NO	**G243**	PCB/CO
	Xnnn	Customized (nnn: version number)		

Production in Europe (only)

Product Code	Arrangement	Cover	Coil Suppr.	Circuit[10)]	Coil	Terminals	Part Number
V23134-A0052-C643	1 form C, 1 CO	Standard	--	CO	12VDC	Plug-in, QC	2-1393302-2
V23134-A0052-G243	1 form C, 1 CO	Standard	--	CO	12VDC	PCB	2-1393302-3
V23134-A0052-X278	1 form C, 1 CO	Standard	R 560Ω	COR	12VDC	Plug-in, QC	4-1393302-1
V23134-A1052-C643	1 form C, 1 CO	Bracket	--	CO	12VDC	Plug-in, QC	5-1393302-8
V23134-A1052-X131	1 form C, 1 CO	Bracket	D (cathode 86)	COD	12VDC	Plug-in, QC	7-1393306-1
V23134-A1052-X294[11)]	1 form C, 1 CO	Bracket	R 560Ω	COR	12VDC	Plug-in, QC	6-1393302-0
V23134-B0052-C642	1 form A, 1 NO	Standard	--	NO	12VDC	Plug-in, QC	7-1393302-5
V23134-B0052-G242	1 form A, 1 NO	Standard	--	NO	12VDC	PCB	7-1393302-7
V23134-B0052-X270[13)]	1 form A, 1 NO	Standard	R 680Ω	NOR	12VDC	Plug-in, QC	1-1414099-0
V23134-B0052-X506	1 form A, 1 NO	Standard	R 560Ω	NOR_SD[12)]	12VDC	Plug-in, QC	4-1414992-3
V23134-B1052-C642	1 form A, 1 NO	Bracket	--	NO	12VDC	Plug-in, QC	3-1393303-4
V23134-C0052-C642	1 form A, 1 NO (2x87)	Standard	--	NO_2x87	12VDC	Plug-in, QC	3-1393303-9
V23134-C1052-C642	1 form A, 1 NO (2x87)	Bracket	--	NO_2x87	12VDC	Plug-in, QC	4-1393303-7
V23134-C1052-X280[11)12)]	1 form A, 1 NO (2x87)	Bracket	R 560Ω	NOR_2x87	12VDC	Plug-in, QC	4-1393303-8
V23134-M0052-C642	1 form U, 2 NO	Standard	--	DNO	12VDC	Plug-in, QC	5-1393304-6
V23134-M0052-G242	1 form U, 2 NO	Standard	--	DNO	12VDC	PCB	5-1393304-7
V23134-M1052-C642	1 form U, 2 NO	Bracket	--	DNO	12VDC	Plug-in, QC	7-1393304-1
V23134-A0056-X432	1 form C, 1 CO	Standard	D (cathode 86)	COD	24VDC	Plug-in, QC	1-1414167-0
V23134-A0056-X433	1 form C, 1 CO	Standard	R 1200Ω	COR	24VDC	Plug-in, QC	1-1414168-0
V23134-M0165-X539	1 form U, 2 NO	Standard	R 1200Ω	DNOR	24VDC	Plug-in, QC	3-1904117-6

Other types on request.
This list represents the most common types and does not show all variants covered by this datasheet.

Production in Asia (only)

Product Code	Arrangement	Cover	Coil Suppr.	Circuit[10)]	Coil	Terminals	Part Number
V23134-B0052-C642	1 form A, 1 NO	Standard	--	NO	12VDC	Plug-in, QC	7-1904094-0
V23134-B0052-X270[13)]	1 form A, 1 NO	Standard	R 680Ω	NOR	12VDC	Plug-in, QC	7-1904094-1
V23134-B0165-X589	1 form A, 1 NO	Standard	R 1200Ω	NO	24VDC	Plug-in, QC	2402652-1

Other types on request.
This list represents the most common types and does not show all variants covered by this datasheet.

10) See terminal assignment diagrams.
11) No hole in terminal 30.
12) No hole in terminal 87a.
13) No holes in all terminals.

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