tyco Electronics

AXICOM

The Best Relaytion

Reed Relays

1 and 2 pole relays
non-polarized, non-latching

Features

- Direct coil control with TTL-signals possible
- Highly reliable switching
- High switching rates
- Ultrasonic cleanable
- High vibration and shock resistance

Typical applications

- Incircuit tester
- Measuring and control systems
- Telecom equipment
- Alarm and security equipment

E 48393

Relay Types
DIP version (flat)

- Standard version
- Electrostatic shield between coil and contact
- Protective diode
- Electrostatic shield and protective diode
- Contact arrangement: 1 form a (1 normally open contact) or 1 form c (1 changeover contact)

DIP version (high)

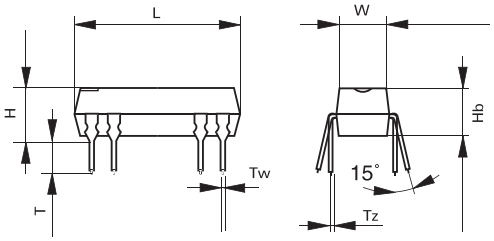
- Standard version
- Electrostatic shield between coil and contact
- Protective diode
- Electrostatic shield and protective diode
- Contact arrangement: 2 form a (2 normally open contacts) or 1 form c (1 changeover contact)

SIL version

- Standard version
- Protective diode
- Electrostatic shield and protective diode
- Contact arrangement: 1 form a (1 normally open contact)

DIP version (flat)

Dimensions drawing (in mm)

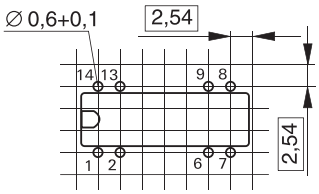


Dimensions

	DIP-flat version	
	mm	inch
L	19.3 - 0.2	0.760 - 0.008
W	6.40 - 0.2	0.252 - 0.008
H	5.70 - 0.2	0.224 - 0.008
Hb	5.10 - 0.2	0.201 - 0.008
T	3.20 ± 0.1	0.126 ± 0.004
Tw	0.50 ± 0.1	0.020 ± 0.004
Tz	0.25 ± 0.1	0.010 ± 0.004

Mounting hole layout

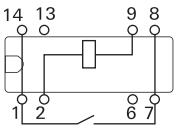
Top view



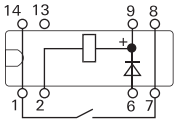
Terminal assignment

Relay - top view

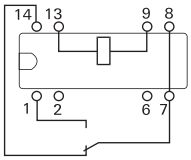
1 form a, standard



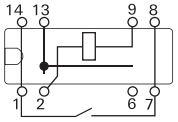
1 form a, with diode



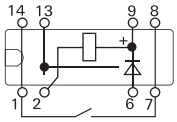
1 form c, standard

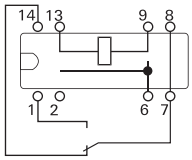


1 form a, with electrostatic shield



1 form a, with electrostatic shield and diode





Ordering Information

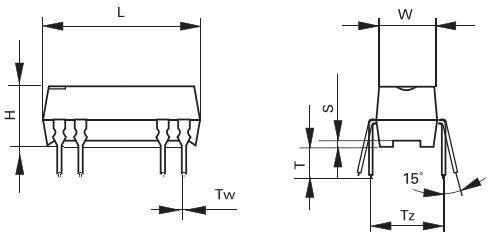
1 form a, standard	V23100-V40** - A000
1 form a, with electrostatic shield	V23100-V40** - A001
1 form a, with diode	V23100-V40** - A010
1 form a, with electrostatic shield and diode	V23100-V40** - A011
1 form c, standard	V23100-V43** - C000
1 form c, with electrostatic shield	V23100-V43** - C001

05 = 5 Vdc coil
12 = 12 Vdc coil
15 = 15 Vdc coil
24 = 24 Vdc coil

Ordering Code	Tyco Part Number	Ordering Code	Tyco Part Number
V23100-V4005-A000	0-1393763-1	V23100-V4024-A000	1-1393763-4
V23100-V4005-A001	0-1393763-3	V23100-V4024-A001	1-1393763-5
V23100-V4005-A010	0-1393763-4	V23100-V4024-A010	1-1393763-6
V23100-V4005-A011	0-1393763-5	V23100-V4024-A011	1-1393763-7
V23100-V4012-A000	0-1393763-6	V23100-V4305-C000	2-1393763-0
V23100-V4012-A001	0-1393763-7	V23100-V4305-C001	2-1393763-1
V23100-V4012-A010	0-1393763-8	V23100-V4312-C000	2-1393763-8
V23100-V4012-A011	0-1393763-9	V23100-V4312-C001	2-1393763-9
V23100-V4015-A000	1-1393763-0	V23100-V4315-C000	3-1393763-4
V23100-V4015-A001	1-1393763-1	V23100-V4315-C001	3-1393763-5
V23100-V4015-A010	1-1393763-2	V23100-V4324-C000	4-1393763-0
V23100-V4015-A011	1-1393763-3	V23100-V4324-C001	4-1393763-1

DIP version (high)

Dimensions drawing (in mm)

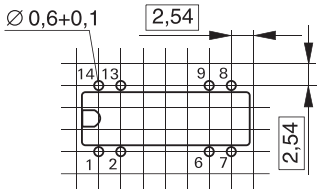


Dimensions

	DIP-flat version	
	mm	inch
L	19.3 - 0.2	0.760 - 0.008
W	7.00 - 0.2	0.276 - 0.008
H	7.50 - 0.2	0.295 - 0.008
S	0.50 ± 0.1	0.200 ± 0.004
T	3.20 ± 0.1	0.126 ± 0.004
Tw	0.50 ± 0.1	0.020 ± 0.004
Tz	0.25 ± 0.1	0.010 ± 0.004

Mounting hole layout

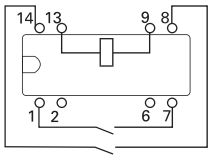
Top view



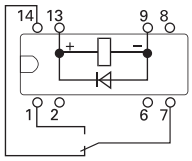
Terminal assignment

Top view

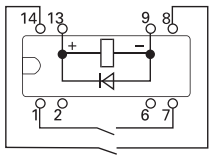
2 form a, standard



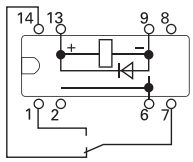
1 form c, with diode



2 form a, with diode



1 form c, with electrostatic shield and diode



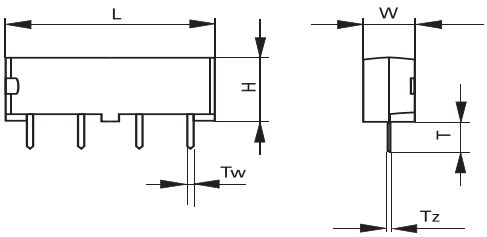
Ordering Information

2 form a, standard	V23100-V43** - B000	05 = 5 Vdc coil
2 form a, with diode	V23100-V43** - B001	12 = 12 Vdc coil
1 form c, with diode	V23100-V43** - C010	15 = 15 Vdc coil
1 form c, with electrostatic shield and diode	V23100-V43** - C011	24 = 24 Vdc coil

Ordering Code	Tyco Part Number	Ordering Code	Tyco Part Number
V23100-V4305-B000	1-1393763-8	V23100-V4315-B000	3-1393763-2
V23100-V4305-B010	1-1393763-9	V23100-V4315-B010	3-1393763-3
V23100-V4305-C010	2-1393763-2	V23100-V4315-C010	3-1393763-6
V23100-V4305-C011	2-1393763-3	V23100-V4315-C011	3-1393763-7
V23100-V4312-B000	2-1393763-6	V23100-V4324-B000	3-1393763-8
V23100-V4312-B010	2-1393763-7	V23100-V4324-B010	3-1393763-9
V23100-V4312-C010	3-1393763-0	V23100-V4324-C010	4-1393763-2
V23100-V4312-C011	3-1393763-1	V23100-V4324-C011	4-1393763-3

SIL version

Dimensions drawing (in mm)

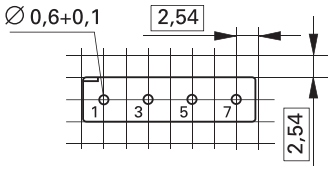


Dimensions

	DIP-flat version	
	mm	inch
L	19.8 - 0.2	0.780 - 0.008
W	5.08 - 0.2	0.200 - 0.008
H	7.80 - 0.2	0.307 - 0.008
T	3.50 ± 0.2	0.138 ± 0.008
Tw	0.60 ± 0.1	0.024 ± 0.004
Tz	0.25 ± 0.1	0.010 ± 0.004

Mounting hole layout

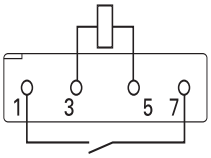
Top view



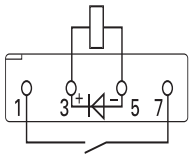
Terminal assignment

Top view

2 form a, standard



1 form a, with diode



Ordering Information

1 form a, standard V23100-V45** - A000
1 form a, with diode V23100-V45** - A010

Coil version:
05 = 5 Vdc coil
12 = 12 Vdc coil
15 = 15 Vdc coil
24 = 24 Vdc coil

Ordering Code	Tyco Part Number
V23100-V4505-A000	4-1393763-4
V23100-V4505-A010	4-1393763-5
V23100-V4512-A000	4-1393763-7
V23100-V4512-A010	4-1393763-8
V23100-V4515-A000	4-1393763-9
V23100-V4515-A010	5-1393763-0
V23100-V4524-A000	5-1393763-1
V23100-V4524-A010	5-1393763-2

Coil Data (values at 23°C)

Nominal voltage *U*nom	Operate/set voltage range		Release/ reset voltage	Nominal power consumption	Resistance
	Minimum voltage U_I	Maximum voltage U_{II}	Minimum		
Vdc	Vdc	Vdc	Vdc	mW	Ω / ± 10 %
DIP and SIL version: 1 form a contact					
5	3.5	22	0.75	50	500
12	8.4	33	1.80	144	1'000
15	10.5	44	2.25	112	2'000
24	16.8	44	3.60	288	2'000
DIP version: 2 form a contacts					
5	3.5	14	0.75	125	200
12	8.4	25	1.80	288	500
15	10.5	47	2.25	112	2'000
24	16.8	47	3.60	288	2'000
DIP version: 1 form c contact					
5	3.5	13 (14.5) *	0.75	125	200
12	8.4	22 (23.5) *	1.80	288	500
15	10.5	44 (14.5) *	2.25	112	2'000
24	16.8	44 (49) *	3.60	288	2'000

* Value in brackets refer to high relay with protective diode

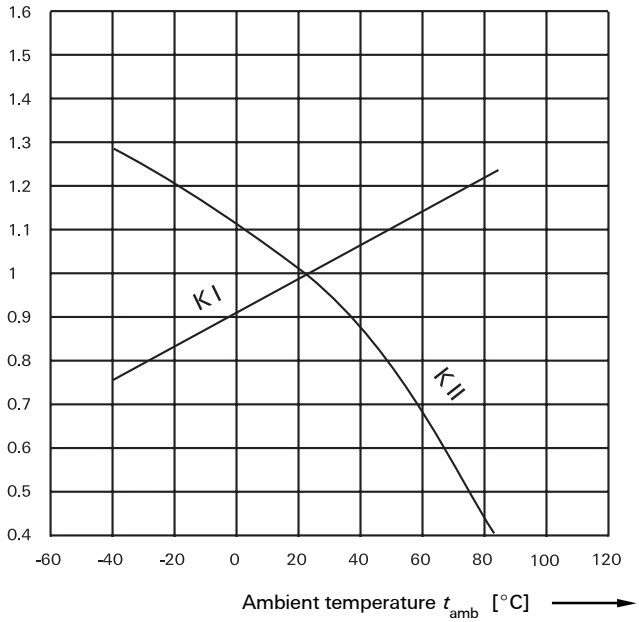
U_I = Minimum voltage at 23° C after pre-energizing with nominal voltage without contact current

U_{II} = Maximum continous voltage at 23°

The operating voltage limits U_I and U_{II} depend on the temperature according to the formula:

$U_{I\,tamb}$ = $K_I \cdot U_{I\,23°C}$
and
$U_{II\,tamb}$ = $K_{II} \cdot U_{II\,23°C}$

t_{amb} = Ambient temperature
$U_{I\,tamb}$ = Minimum voltage at ambient temperature, t_{amb}
$U_{II\,tamb}$ = Maximum voltage at ambient temperature, t_{amb}
k_I, k_{II} = Factors (dependent on temperature), see diagram



General data

Type of relay	DIP version			SIL version
Type of contact/s	1 form a	2 form a	1 form c	1 form a
Maximum operate time (including bounce)	0.5 ms		0.7 ms	0.5 ms
Maximum release time (including bounce)	0.2 ms		1.0 ms	0.2 ms
Maximum switching load without load	650 operations/s	500 operations/s	150 operations/s	650 operations/s
Operating temperature range	-40° ...+70° C, + 85 ° C on request			
Storage temperature	-40 ° C ... + 95° C			
Thermal resistance	Approx. 75 K / W			
Maximum permissible coil temperature	105° C			
Vibration resistance (function)	10 g 10 to 2000 Hz		30 g 50 to 2000 Hz	10 g 10 to 2000 Hz
Shock resistance, half sinus, 11 ms	150 g		50 g	150 g
Degree of protection	immersion cleanable, IP 67			
Typical mechanical endurance	5 x 10 6 operations		4 x 10 6 operations	5 x 10 6 operations
Mounting position	any			
Resistance to soldering heat	10 s/ 260 ° C			

Contact data

Type of relay	DIP version			SIL version
Type of contact/s	1 form a	2 form a	1 form c	1 form a
Contact material	Gold covered with Rhodium			
Maximum continuous current	1 A		1.2 A	1 A
Maximum switching current	0.5 A		0.25 A	0.5 A
Maximum switching voltage				
at nominal voltage: 5 Vdc	180 Vdc / Vac		175 Vdc	180 Vdc / Vac
12-24 Vdc	200 Vdc / Vac			200 Vdc / Vac
Maximum switching capacity				
DC voltage	10 W		3 W	10 W
AC voltage	10 VA		3 VA	10 VA
Thermoelectric potential	< 100 μV			
Initial contact resistance /				
measuring condition:	<150 mΩ			
Electrical endurance				
12 V / 10 mA	5 x 10^7			
24 V / 400 mA	5 x 10^6			
Mechanical endurance, typ.	5 x 10^6 operations		4 x 10^6 operations	5 x 10^6 operations

Insulation

Insulation resistance at 500 VDC	contact coil > 10^{11} Ω		
Dielectric test voltage (1 min)			
contact / coil	1500 Vdc	1500 Vdc	1500 Vdc
contact / contact	250 Vdc	200 Vdc	250 Vdc

High Frequency Data

Capacitance	
between coil and contacts	max. 2 pF
between adjacent contact sets	max. 1 pF
between open contacts	max. 1 pF

IM Relays

4th generation slim line – low profile polarized 2 c/o telecom relay with bifurcated contacts, available as non latching or latching relay with 1 coil. Nominal voltage range from 1.5... 24 V, coil power consumption of 140... 200 mW, latching relays with 1 coil 100 mW. The IM relay is available as through hole and surface mount type (J-Legs and Gull Wings) and capable to switch loads up to 60 W/62,5 VA. Dielectric strength fulfills the Bellcore requirements according GR 1089 (2,5 kV – 2 / 10 µs) and FCC part 68 (1,5 kV – 10 / 160 µs). The IM relay is CECC/IECQ approved and certified in accordance with IEC/EN 60950 and UL1950. Dimensions approx. 10 x 6 mm board space and 5.65 mm height.

P2 Relays

3rd generation polarized 2 c/o telecom relay with bifurcated contacts, available as non latching or latching relay with 1 or 2 coils. Nominal voltage range from 3 ... 24 V, coil power consumption 140 mW, latching relays with 1 coil 70 mW. The P2 Relay is available as through hole or surface mount type and capable to switch currents up to 5 A. Dielectric strength fulfills the Bellcore requirements according GR 1089 (2,5 kV – 2 / 10 µs) and FCC part 68 (1,5 kV – 10 / 160 µs). Dimensions approx. 15 x 7,5 mm board space and 10 mm height.

FX Relays

3rd generation polarized 2 c/o telecom relay with bifurcated contacts, available as non latching or latching relay with 1 coil. Nominal voltage range from 3 ... 48 V, coil power consumption of 80 ... 260 mW for the high sensitive version, 140... 300 mW for the standard version, latching relays with 1 coil 100 mW. The FX2 relay is available as through hole type and capable to switch loads up to 60 W/62,5 VA. Dielectric strength fulfills the Bellcore requirements according GR 1089 (2,5 kV – 2 / 10 µs) and FCC part 68 (1,5 kV – 10 / 160 µs). The FX2 is CECC/IECQ approved and certified in accordance with IEC/EN 60950 and UL1950. Dimensions approx. 15 x 7,5 mm board space and 10,7 mm height.

FT2 / FU2 Relays

3rd generation non polarized, non latching 2 c/o telecom relay with bifurcated contacts. Nominal voltage range from 3 ... 48 V, coil power consumption 200 ... 300 mW. Most sensitive 48 V relay. Available as through hole and surface mount type. Dielectric strength fulfills the Bellcore requirements according GR 1089 (2,5 kV – 2 / 10 µs) and FCC part 68 (1,5 kV – 10 / 160 µs). The FT2/FU2 is CECC/IECQ approved and certified in accordance with IEC/EN 60950 and UL1950. Dimensions approx. 15 x 7,5 mm board space and 10 mm height.

FP1 Relays

3rd generation polarized 2 c/o telecom relay with bifurcated contacts, available as non latching or latching relay with 1 or 2 coils. Nominal voltage range from 3 ... 48 V, coil power consumption of 80 ... 260 mW for the high sensitive version, 140... 300 mW for the standard version, latching relays with 1 coil 100 mW.. The FP1 Relay is available as through hole type and capable to switch loads up to 30 W/62,5 VA. Dielectric strength fulfills FCC part 68 (1,5 kV – 10 / 160 µs). The FP2 is CECC/IECQ approved. Dimensions approx. 14 x 9 mm board space and 5 mm height.

MT2 / MT4

2nd generation non polarized, non latching 2 c/o and 4 c/o telecom and signal relay with bifurcated contacts. Nominal voltage range from 4.5 ... 48 V, coil power consumption 150/200/300/400 and 550 mW, and 300 mW (MT4). Dielectric strength fulfills the requirements according FCC part 68 (1,5 kV – 10 / 160 µs) for both and the Bellcore requirements according GR 1089 (2,5 kV – 2 / 10 µs) the MT4 only.
Dimensions MT2 approx. 20 x 10 mm board space and 11 mm height, MT4 approx. 20 x15 mm board space and 11 mm height.

D2n Relays

2nd generation non polarized 2 c/o relay for telecom and various other applications. Nominal voltage range from 3 ... 48 V, coil power consumption from 150 .... 500 mW. The D2n relay is capable to switch currents up to 3 A. Dielectric strength fulfills the requirements according FCC part 68 (1,5 kV – 10 / 160 µs). Dimensions approx. 20 x10 mm board space and 11,5 mm height.

P1 Relays

Extremely sensitive, polarized 1 c/o relay with bifurcated contacts for a wide range of applications, available as non latching or latching relay with 1 or 2 coils. Nominal voltage range from 3 ... 24 V, coil power consumption 65 mW, latching relays with 1 coil 30 mW. The P1 relay is available as through hole or surface mount type and capable to switch currents up to 1 A. Dielectric strength fulfills the requirements according FCC part 68 (1,5 kV – 10 / 160 µs). Dimensions approx. 13 x 7,6 mm board space and 7 mm height for THT or 8 mm height for SMT version.

W11 Relays

Low cost, non polarized 1 c/o relay for various applications. Nominal voltage range from 3 ... 24 V, coil power consumption 450 mW, sensitive versions 200 mW. The W11 relay is capable to switch currents up to 3 A. Dielectric strength 1000 Vrms. Dimensions approx. 15,6 x 10,6 mm board space and 11,5 mm height.

Reed Relays

High sensitive, non polarized relay for telecom and various other applications, available with 1 n/o, 2 n/o or 1c/o contacts. Nominal voltage range from 5 ... 24 V, coil power consumption 50...280 mW for 1 n/o and 125 ... 280 mW for 2 n/o or 1 c/o versions. Reedrelays are available in DIP or SIL housing and capable to switch currents up to 0,5 A. Integrated diode and/or electrostatic shield optional. Dielectric strength 1500 Vdc. Dimensions approx. 19,3 x 7 mm board space and 5 ... 7,5 mm height for DIP or 19,8 x 5 mm board space and 7,8 mm height for SIL version.

Cradle Relays

Extremely reliable and mature relay family of 1st generation for various signal switching applications. Available as non polarized, polarized / latching and relay with AC coil. The benefit is the possibility of combining various contact sets from 1 up to 6 poles, single and bifurcated contacts, different contact materials with a coil voltage range from 1,5 Vdc to 220 Vac. Cradle relays are available as dust protected and hermetically sealed versions, with plug in or solder terminals and are capable to switch currents up to 5 A. Forcibly guided (linked) contact sets optional. Dielectric strength 500 Vrms. Dimensions from approx. 19 x 24 to 19x35 mm board space and 30 mm height.

Other Relays

We offer a variety of different relay families for maintenance and replacement purposes. These relays are up to 60 years old now, such as Card Relay SN (V23030 / V23031 series), Small General Purpose Relay (V23006 series), Small Polarized Relay (V23063 ... V23067 and V23163 ... V23167 series). Accessories like sockets, hold down springs, etc. optional.

tyco Electronics

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