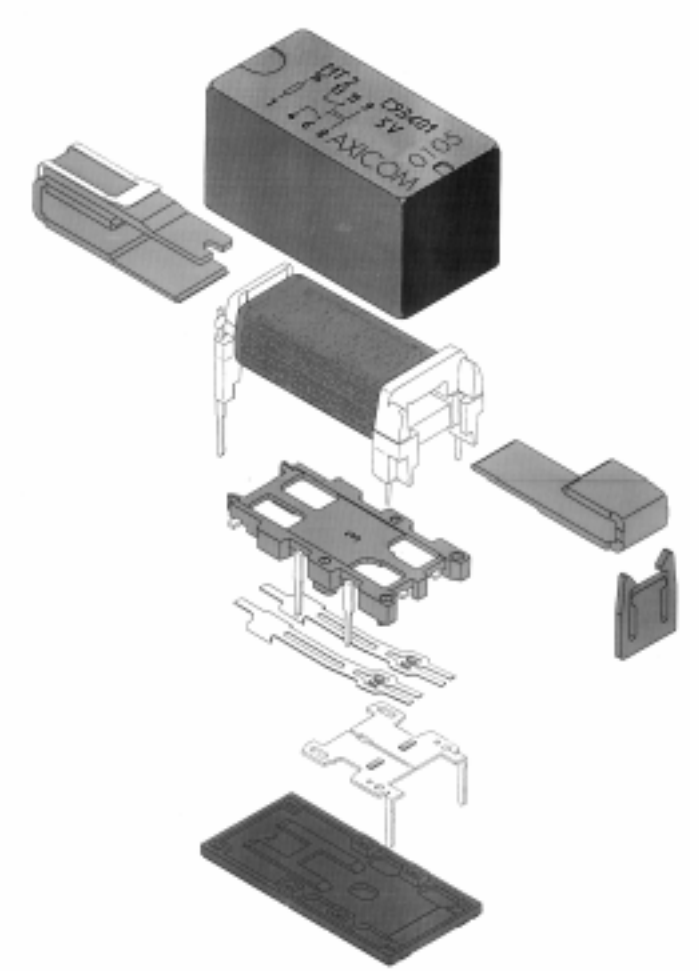
tyco Electronics

AXICOM

The Best Relaytion

MT2 Relay

2 pole telecom/signal relay
Through Hole Type (THT)
Non-polarized. non-latching 1 coil



Features

- Telecom/signal relay (dry circuit, test access, ringing)
- Slim line 20 x 10 mm, 0.795 x 0.393 inch
- Switching current 1.25A
- 2 changeover contacts (2 form C / DPDT)
- Bifurcated contacts
- Meets FCC Part 68 and ITU-T K20

Typical applications

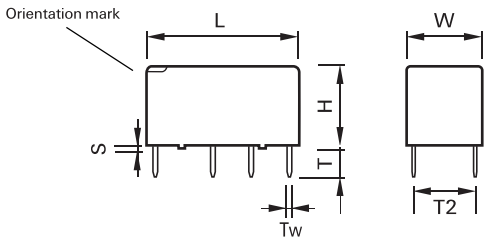
- Communications equipment
  Linecard application – analog, ISDN, xDSL
  PABX
  Voice over IP
- Office and business equipment
- Measurement and control equipment
- Consumer electronics
- Set top boxes, HiFi
- Medical equipment
- Automotive Equipment

CSA-C22.2 No 14-95 File No. 176679-1079886

UL 508 File No. E 111441

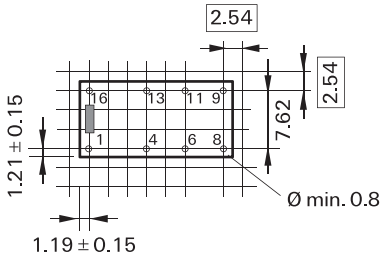
CECC 16502-001

THT Version



Mounting hole layout

View onto the component side of the PCB
(top view)

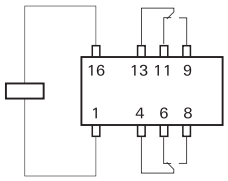


Basic grid 2.54 mm

Terminal assignment

Relay - top view

non-latching 1 coil
release condition



Dimension

	THT	
	mm	inch
L	20.2 + 0.05/-0.02	0.795 + 0.002/-0.0008
W	10 + 0.05/-0.02	0.393 + 0.002/-0.0008
H	11+0.1/-0.2	0.433 + 0.004/-0.008
T	3.1 ± 0.3	0.122 ± 0.011
T1	N/A	N/A
T2	7.62 ± 0.15	0.3 ± 0.005
S	0.55	0.021
Tw	0.5	0.020

Coil Data (values at 23°C)

Nominal voltage *U*nom	Operate/voltage range Minimum voltage U_I	Operate/voltage range Maximum voltage U_{II}	Release voltage Minimum	Nominal power consumption	Resistance	Relay Code
Vdc	Vdc	Vdc	Vdc	mW	Ω / ± 10 %	
High sensitive version (150 mW) non-latching 1 coil						
3	2.1	6.7	0.30	150	60	C 93400
4.5	3.2	10.1	0.45	150	136	C 93406
5	3.6	11.3	0.50	150	168	C 93401
6	4.3	13.4	0.60	150	240	C 93427
9	6.4	20.3	0.90	150	544	C 93405
12	8.6	27.1	1.20	150	968	C 93402
24	17.1	54.1	2.40	150	3872	C 93403
48	33.1	108.3	4.80	150	15468	C 93404
Sensitive version (200 mW) non-latching 1 coil						
3	2.0	5.8	0.30	200	45	C 93414
4.5	2.9	8.7	0.45	200	101	C 93415
5	3.3	9.7	0.50	200	125	C 93416
6	3.9	11.6	0.60	200	180	C 93428
9	5.9	17.5	0.90	200	405	C 93417
12	7.8	23.3	1.20	200	720	C 93418
24	15.6	46.7	2.40	200	2880	C 93419
48	31.2	93.4	4.80	200	11520	C 93420
Sensitive version (300 mW) non-latching 1 coil						
4.5	3.1	7.4	0.45	300	73	C 93433
5	3.4	8.2	0.50	300	90	C 93434
12	8.25	19.7	1.20	300	515	C 93412
24	16.5	39.5	2.40	300	2060	C 93435
48	32.5	79.0	4.80	300	8240	C 93436
Standard version (400 mW) non-latching 1 coil						
4.5	2.9	6.1	0.45	400	50	C 93421
5	3.3	6.9	0.50	400	63	C 93422
6	3.9	8.2	0.60	400	90	C 93429
9	5.9	12.4	0.90	400	203	C 93423
12	7.8	16.5	1.20	400	360	C 93424
24	15.6	33.0	2.40	400	1440	C 93425
48	31.2	66.0	4.80	400	5760	C 93426
Standard version (550 mW) non-latching 1 coil						
4.5	2.9	6.0	0.45	550	36	C 93438
5	3.3	6.8	0.5	550	45	C 93450
6	3.9	8.1	0.60	550	66	C 93437
12	7.8	16.7	1.20	550	280	C 93432
24	15.6	32.4	2.40	550	1050	C 93431
48	31.2	64.1	4.80	550	4100	C 93430

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

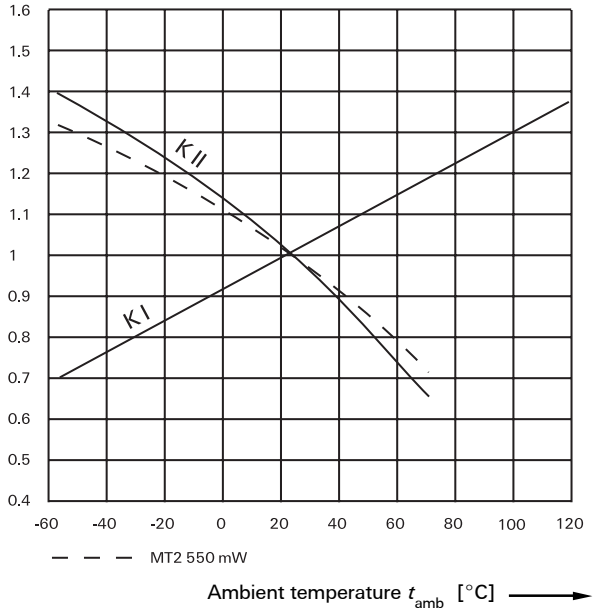
$U_{II\,tamb}$ = $K_{II} \cdot U_{II\,23°C}$

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



Contact Data

Number of contacts and type		2 changeover contacts
Contact assembly		Bifurcated contacts
Contact material		Silver-nickel, gold-covered
Limiting continous current at max. ambient temperature		1.25 A
Maximum switching current		2 A
Maximum swichting voltage		150 Vdc 150 Vac
Maximum switching capacity		30 W, 62.5 VA
Thermoelectric potential		< 10 μV
Initial contact resictance / measuring condition: 10 mA / 20 mV		< 70 mΩ
Electrical endurance	Contact application 0 (30 mV/ 10 mA)	min. 5 x 10^6 operations
	Cable load open end	min. 2.5 x 10^6 operations
	Resistive load 150 V / 0.2 A - 30 W	min. 2.0 x 10^5 operations
	24 V / 1.25 A - 30 W	min. 2.0 x 10^5 operations
Mechanical endurance		typ. 10^8 operations
UL/CSA ratings		125 Vac / 0.4 A 24 Vdc / 1.25 A

Insulation

Insulation resistance at 500 Vdc	> 10^9 Ω
Dielectric test voltage (1 min)	
between coil and contacts	1050 Vrms
between adjacent contact sets	750 Vrms
between open contacts	750 Vrms
Surge voltage resistance	
according to FCC 68 (10 / 160 μs) and IEC (10 / 700 μs)	1500 V
between coil and contacts	1500 V
between adjacent contact sets	1500 V
between open contacts	

High Frequency Data

Capacitance	
between coil and contacts	max. 4 pF
between adjacent contact sets	max. 2 pF
between open contacts	max. 2 pF
RF Characteristics	
Isolation at 100 / 900 MHz	- 31.8 dB / - 14.2 dB
Insertion loss at 100 / 900 MHz	- 0.02 dB / - 0.97 dB
V.S.W.R. at 100 / 900 MHz	1.03 / 1.31

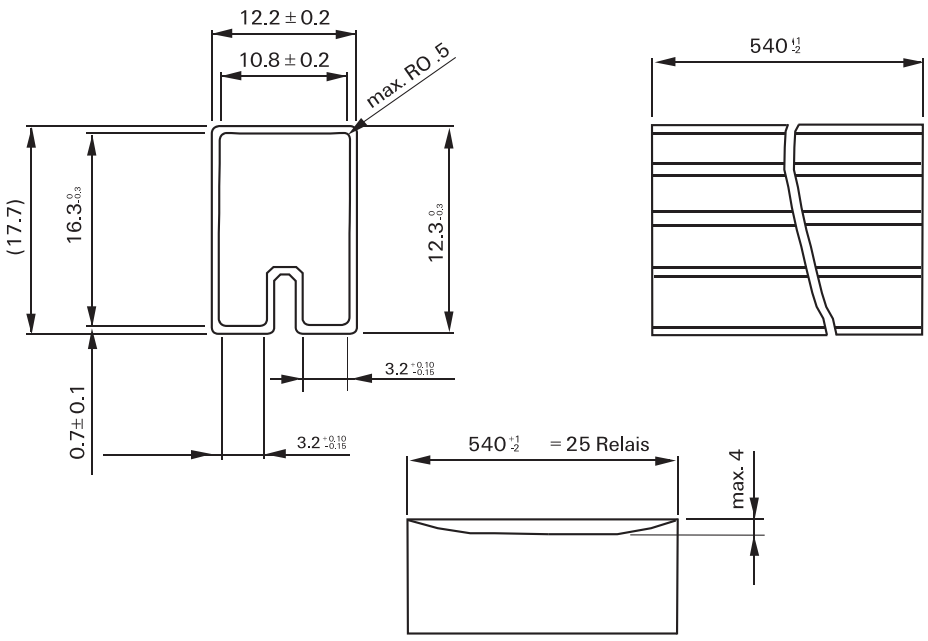
General data

Operate time at U_{nom} typ. / max.	4 ms / 5 ms
Release time without diode in parallel (non-latching), typ. / max.	1 ms / 3 ms
Release time with diode in parallel (non-latching), typ. / max.	4 ms / 6 ms
Bounce time at closing contact, typ. / max.	1 ms / 5 ms
Maximum switching rate without load	50 operations/s
Ambient temperature	-55° C ... +85° C
Thermal resistance	< 125 K/W
Maximum permissible coil temperature	125° C
Vibration resistance (function)	10 g 10 to 500 Hz
Shock resistance, half sinus, 11 ms	50 g (function) 100 g (damage)
Degree of protection	immersion cleanable, IP 67
Needle flame test	application time 10 s,
Mounting position	any
Processing information	Ultrasonic cleaning is not recommended
Weight (mass)	max. 5 g
Resistance to soldering heat	260° C / 10 s

All data refers to 23° C unless otherwise specified.

Packing

Tube for THT version - 25 relays per stick, 1'000 relays per



Ordering Information

Relay Code	Tyco Part Number	Relay Code	Tyco Part Number
C 93400	1-1462001-2	C 93423	5-1462000-0
C 93401	0-1462000-1	C 93424	5-1462000-1
C 93402	0-1462000-7	C 93425	5-1462000-3
C 93403	1-1462000-3	C 93426	5-1462000-5
C 93404	1-1462000-8	C 93427	5-1462000-6
C 93405	2-1462000-0	C 93428	5-1462000-7
C 93406	2-1462000-2	C 93429	5-1462000-8
C 93412	2-1462000-6	C 93430	5-1462000-9
C 93414	1-1462001-1	C 93431	6-1462000-1
C 93415	3-1462000-0	C 93432	6-1462000-2
C 93416	3-1462000-1	C 93433	6-1462000-6
C 93417	3-1462000-6	C 93434	6-1462000-8
C 93418	3-1462000-7	C 93435	7-1462000-0
C 93419	4-1462000-1	C 93436	7-1462000-2
C 93420	4-1462000-5	C 93437	7-1462000-6
C 93421	4-1462000-7	C 93438	7-1462000-7
C 93422	4-1462000-8	C 93450	8-1462000-5

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.

FP2 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 FP2 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.

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