

AXICOM

Telecom-, Signal and RF Relays

D2n V23105 Relay

D2n V23105 Relay

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The dimensions in this datasheet are for reference purpose only and are subject to change without notice. Specifications are subject to change without notice.

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D2n V23105 Relay

2 pole telecom relay, non-polarized,
Through Hole Type (THT)

Relay types: non-latching with 1 coil

ROHS compliant (Directive 2002/95/EC) as per
product date code 0418.

Features

- Standard DIL relay
- Dimensions 20 x 10 x 11 mm,
0.795 x 0.394 x 0.433 inch
- Switching and continuous current 3 A
- 2 changeover contacts (2 form C / DPDT)
- Single contacts
- Immersion cleanable
- Four different coil sensitivities
- (150, 200, 400, > 500 mW)
- Surge voltage resistance meets FCC Part 68 require-
ment:
1.5 kV (10 / 700 μ s) between coil and contacts

Typical applications

- Communications equipment
- Office equipment
- Measurement and control equipment
- Entertainment electronics
- Medical Equipment
- Consumer electronics

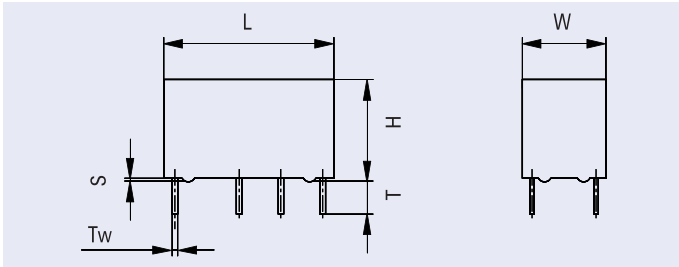
D2n V23105 Relay

Dimensions

Dimensions in mm

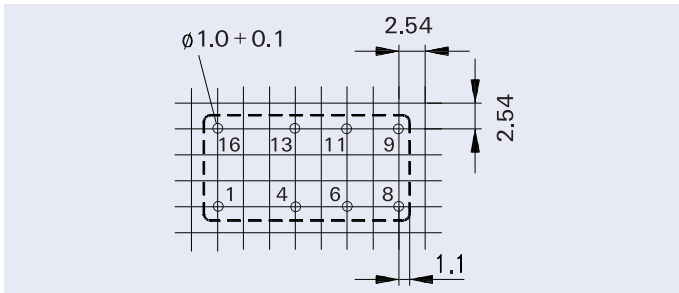
| | THT | |
|----|-------------------|-----------------------|
| | mm | inch |
| L | 20.2 + 0.05/-0.02 | 0.795 + 0.002/-0.0008 |
| W | 10 + 0.05/-0.02 | 0.393 + 0.002/-0.0008 |
| H | 11 + 0.1/-0.2 | 0.433 + 0.004/-0.008 |
| T | 3.1 ± 0.3 | 0.122 ± 0.011 |
| T1 | N / A | N / A |
| T2 | 7.62 ± 0.15 | 0.3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

THT Version



Mounting hole layout

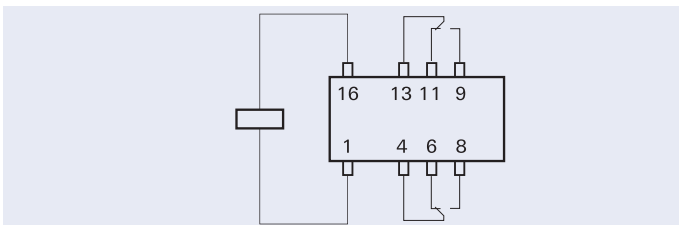
View onto the component side of the PCB (top view)



Basic grid 2.54 mm

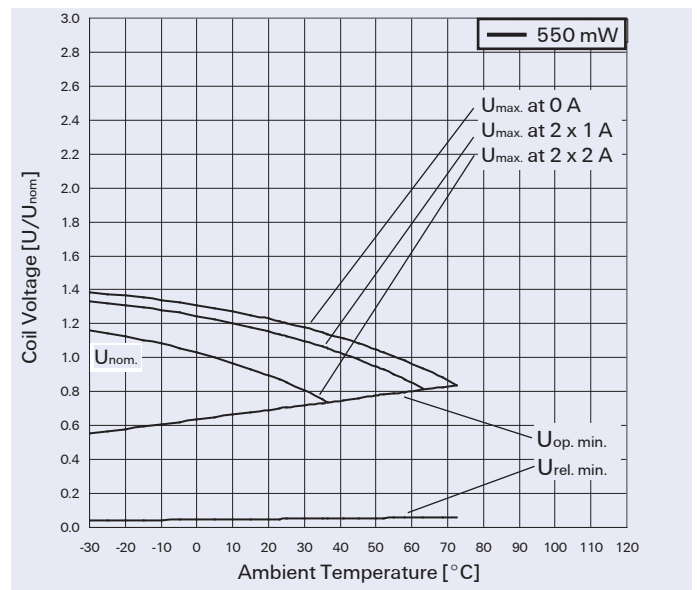
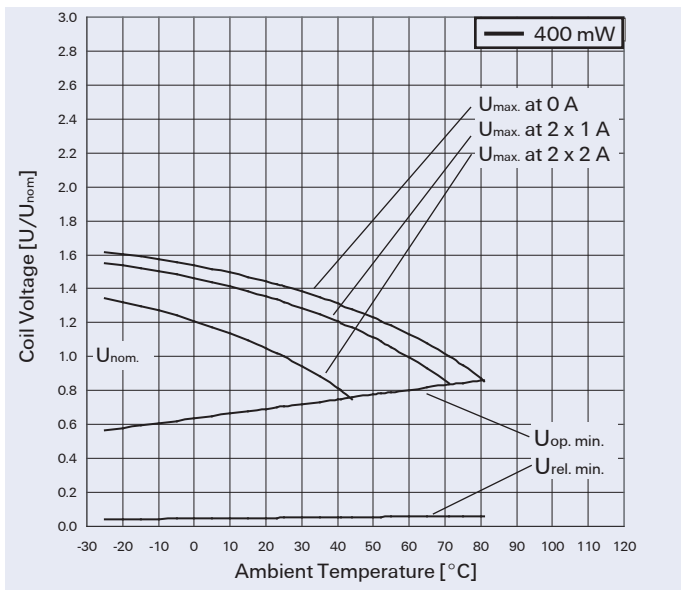
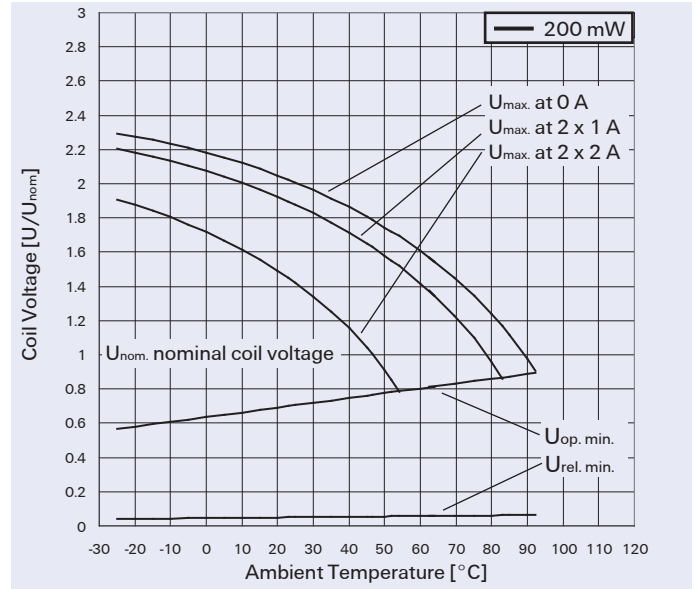
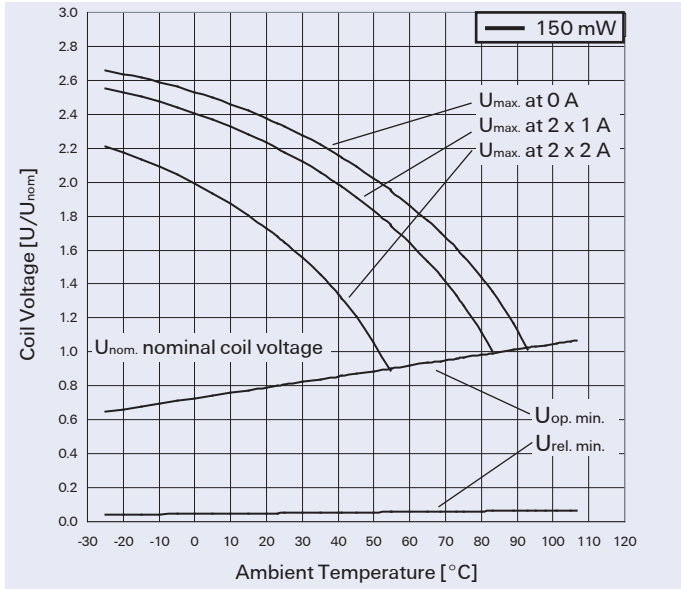
Terminal assignment

Relay – top view



D2n V23105 Relay

Coil Operating Range



U_{nom} = Nominal coil voltage

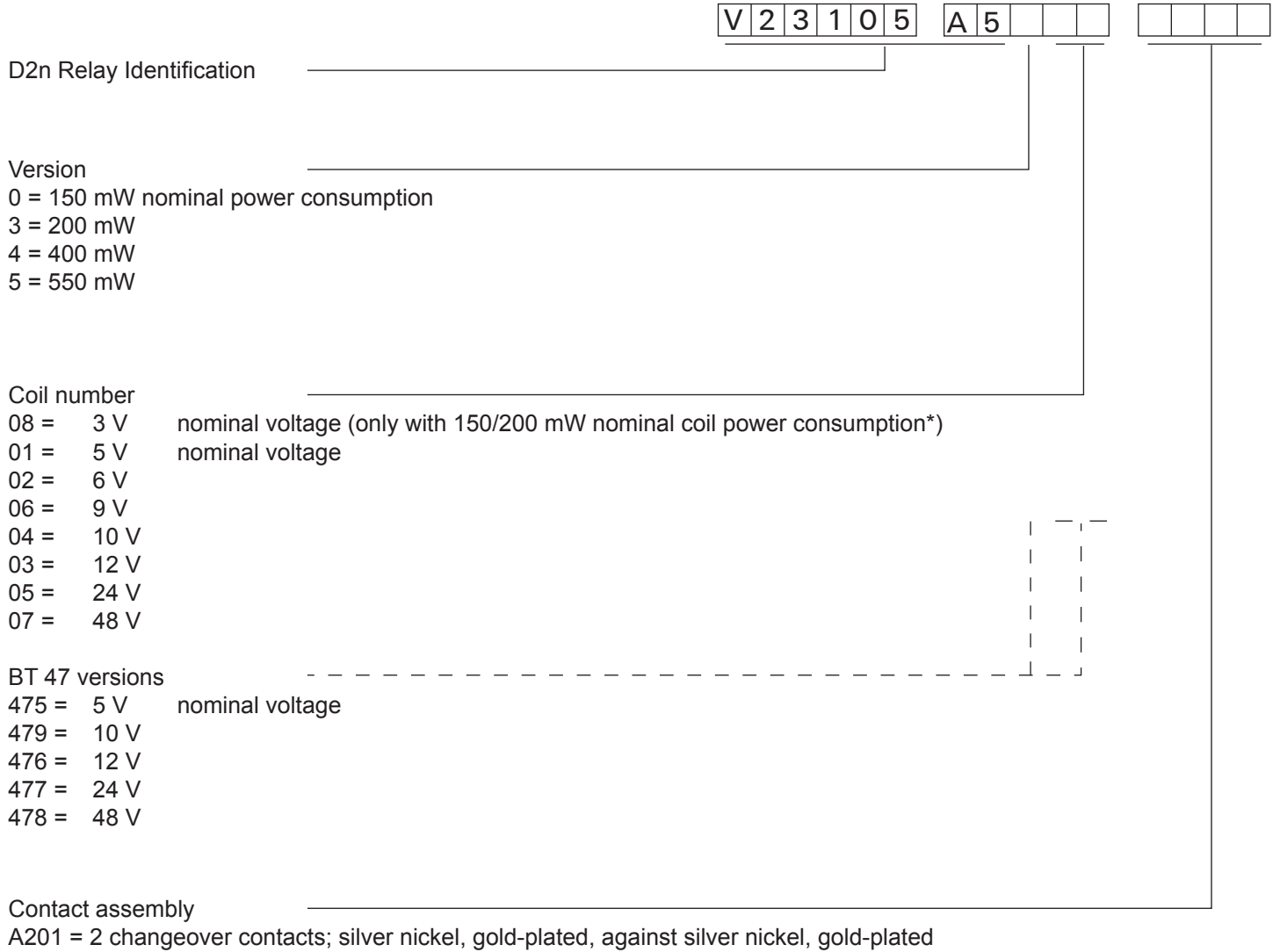
U_{max.} = Upper limit of the operative range of the coil voltage (limiting voltage) when coils are continuously energized

U_{op. min.} = Lower limit of the operative range of the coil voltage (reliable operate voltage)

U_{rel. min.} = Lower limit of the operative range of the coil voltage (reliable release voltage)

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Relay Code



*) Coils with 400/500 mW nominal power consumption on request

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Coil Data (values at 23 °C)

Ordering Information

| Nominal voltage U_{nom} | Operate/set voltage range | | Release/ reset vol- tage Minimum | Coil power | Coil Resistance | Relay code | Tyco part number |
|------------------------------|------------------------------|---------------------------------|---|---------------|----------------------|---------------|---------------------|
| | Minimum voltage U_{min} | Maximum voltage U_{max} | | | | | |
| Vdc | Vdc | Vdc | Vdc | mW | $\Omega / \pm 10 \%$ | | |

150 mW nominal power consumption, non-latching

| | | | | | | | |
|----|------|------|------|-----|------|-----------------|-------------|
| 5 | 4.0 | 11.7 | 0.25 | 150 | 167 | V23105A5001A201 | 8-1393792-5 |
| 6 | 4.8 | 14.0 | 0.30 | 150 | 240 | V23105A5002A201 | 8-1393792-7 |
| 9 | 7.2 | 21.0 | 0.45 | 150 | 540 | V23105A5006A201 | 9-1393792-1 |
| 12 | 9.6 | 28.0 | 0.60 | 150 | 960 | V23105A5003A201 | 8-1393792-8 |
| 24 | 19.2 | 56 | 1.20 | 150 | 3840 | V23105A5005A201 | 9-1393792-0 |

200 mW nominal power consumption, non-latching

| | | | | | | | |
|----|------|------|------|-----|-------|-----------------|-------------|
| 3 | 2.1 | 6.1 | 0.15 | 200 | 45 | V23105A5308A201 | 1393793-5 |
| 5 | 3.5 | 10.1 | 0.25 | 200 | 125 | V23105A5301A201 | 9-1393792-3 |
| 6 | 4.2 | 12.2 | 0.30 | 200 | 180 | V23105A5302A201 | 9-1393792-5 |
| 9 | 6.3 | 18.2 | 0.45 | 200 | 405 | V23105A5306A201 | 1393793-2 |
| 12 | 8.4 | 24.3 | 0.60 | 200 | 720 | V23105A5303A201 | 9-1393792-7 |
| 24 | 16.8 | 48.6 | 1.20 | 200 | 2880 | V23105A5305A201 | 9-1393792-9 |
| 48 | 33.6 | 97.2 | 2.40 | 200 | 11520 | V23105A5307A201 | 1393793-3 |

400 mW nominal power consumption, non-latching

| | | | | | | | |
|----|------|------|------|-----|------|-----------------|-------------|
| 5 | 3.5 | 7.2 | 0.25 | 400 | 62 | V23105A5401A201 | 1393793-6 |
| 6 | 4.2 | 8.6 | 0.30 | 400 | 90 | V23105A5402A201 | 1393793-7 |
| 9 | 6.3 | 12.9 | 0.42 | 400 | 203 | V23105A5406A201 | 1-1393793-0 |
| 12 | 8.4 | 17.2 | 0.60 | 400 | 360 | V23105A5403A201 | 1393793-8 |
| 24 | 16.8 | 34.3 | 1.20 | 400 | 1440 | V23105A5405A201 | 1393793-9 |
| 48 | 33.6 | 68.6 | 2.40 | 400 | 5760 | V23105A5407A201 | 1-1393793-1 |

> 500 mW nominal power consumption, non-latching

| | | | | | | | |
|----|------|------|------|-----|------|-----------------|-------------|
| 5 | 3.5 | 6.1 | 0.25 | 695 | 36 | V23105A5501A201 | 1-1393793-6 |
| 6 | 4.2 | 7.3 | 0.30 | 515 | 70 | V23105A5502A201 | 1-1393793-8 |
| 9 | 6.3 | 10.9 | 0.45 | 580 | 140 | V23105A5506A201 | 2-1393793-3 |
| 12 | 8.4 | 14.5 | 0.60 | 515 | 280 | V23105A5503A201 | 1-1393793-9 |
| 24 | 16.8 | 29.1 | 1.20 | 550 | 1050 | V23105A5505A201 | 2-1393793-1 |
| 48 | 33.6 | 58.1 | 2.40 | 575 | 4000 | V23105A5507A201 | 2-1393793-4 |

| Nominal voltage | Operate ing current | Nominal power consumption | Resistance | British Telecom Code | Relay code | Tyco part number |
|-----------------|---------------------------|------------------------------|------------|-------------------------|---------------|---------------------|
| Vdc | mA | Vdc | mW | $\Omega / \pm 10 \%$ | | |

Coil versions, BT 47 type / specification T4563 C (current tested)

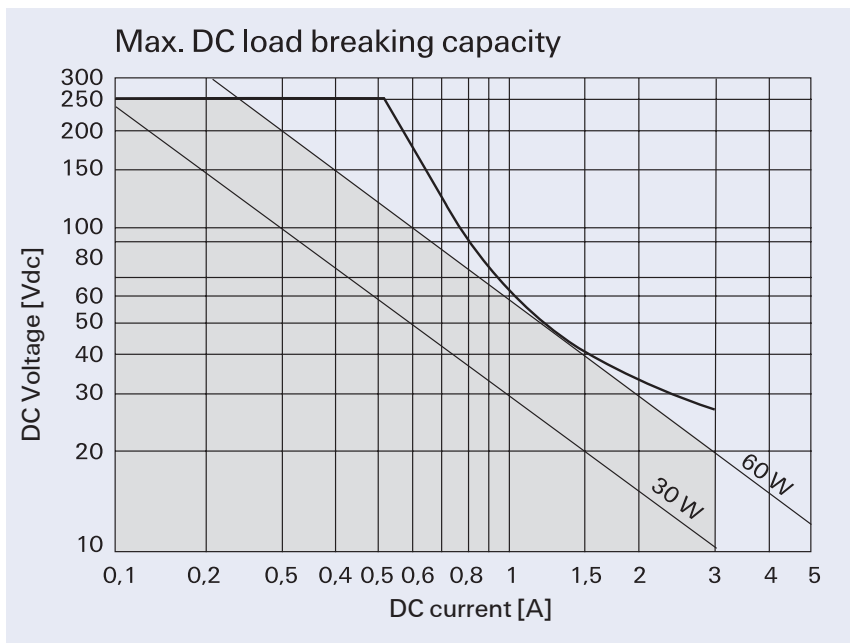
| | | | | | | |
|----|------|-----|------|----------|-----------------|-------------|
| 5 | 80.0 | 695 | 36 | 47 W / 5 | V23105A5475A201 | 1-1393793-2 |
| 10 | 32.5 | 500 | 200 | 47 W / 9 | V23105A5479A201 | 3-1393794-0 |
| 12 | 27.0 | 515 | 280 | 47 W / 6 | V23105A5476A201 | 1-1393793-3 |
| 24 | 14.0 | 550 | 1050 | 47 W / 7 | V23105A5477A201 | 1-1393793-4 |
| 48 | 7.0 | 575 | 4000 | 47 W / 8 | V23105A5478A201 | 1-1393793-5 |

D2n V23105 Relay

Contact Data

| | |
|--|--|
| Number of contacts and type | 2 changeover contacts |
| Contact assembly | single contacts |
| Contact material | Silver-nickel, gold-covered |
| Limiting continuous current at max. ambient temperature | 3 A |
| Maximum switching current | 3 A |
| Maximum switching voltage | 220 Vdc 250 Vac |
| Maximum switching capacity | 60 W, 125 VA |
| Thermoelectric potential | < 10 μ V |
| Minimum switching voltage | 100 μ V |
| Initial contact resistance / measuring condition: 10 mA / 20 mV | < 100 m Ω |
| Electrical endurance at 230 Vac / 0.5 A at 6 Vdc / 0.1 A at 30 Vdc / 1 A at 30 Vdc / 2 A | typ. 3.0 x 10 ⁵ operations typ. 2.0 x 10 ⁶ operations typ. 5.0 x 10 ⁵ operations typ. 1.0 x 10 ⁵ operations |
| Mechanical endurance | typ. 15.0 x 10 ⁶ operations |
| UL contact ratings | 30 Vdc / 1.0 A 100 Vdc / 0.3 A 125 Vac / 0.5 A for 150 mW and 200 mW coil 125 Vac / 1.0 A for 400 mW and 500 mW coil |

Max. DC Load Breaking Capacity



D2n V23105 Relay

Insulation

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

High Frequency Data

| | |
|--|---|
| Capacitance between coil and contacts between adjacent contact sets between open contacts | max. 4 pF max. 2 pF max. 2 pF |
| RF Characteristics Isolation at 100 / 900 MHz Insertion loss at 100 / 900 MHz V.S.W.R. at 100 / 900 MHz | -39.0 dB / -20.7 dB -0.02 dB / -0.27 dB 1.04 / 1.40 |

General Data

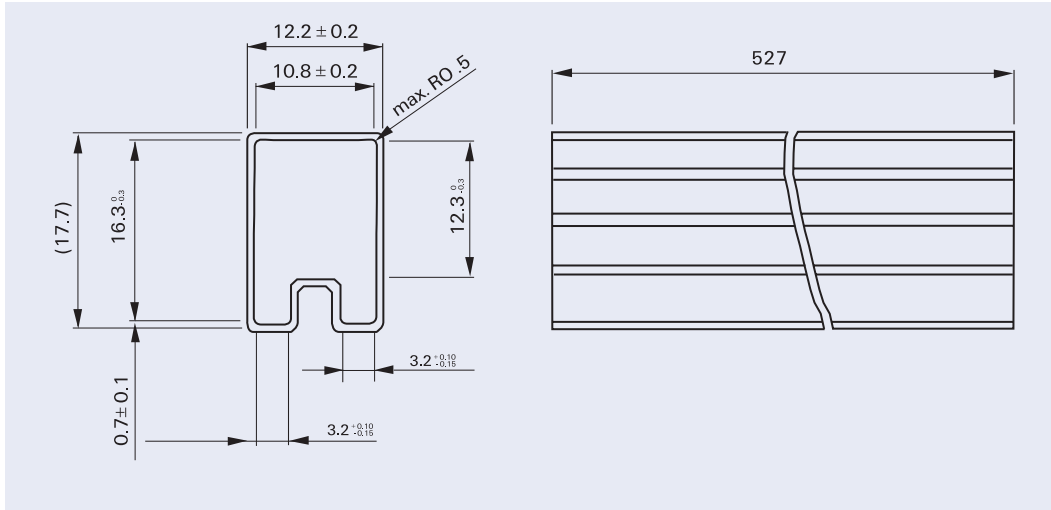
| | |
|--|---|
| Operate time at U _{nom} typ. / max. | 5 ms / 6 ms |
| Release time without diode in parallel, typ. / max. | 4 ms / 4 ms |
| Release time with diode in parallel, typ. / max. | 5 ms / 5 ms |
| Bounce time at closing contact, typ. / max. | 3 ms / 5 ms |
| Maximum switching rate without load | 50 operations/s |
| Ambient temperature 150 and 200 mW coil 400 mW coil 500 mW coil | -25 °C ... +85 °C -25 °C ... +75 °C -25 °C ... +60 °C |
| Thermal resistance | < 85 K/W |
| Maximum permissible coil temperature | 115 °C |
| Vibration resistance (function) | 10 g 10 to 55 Hz |
| Shock resistance, half sinus, 11 ms | 10 g (function) 50 g (damage) |
| Degree of protection / Environmental protection | immersion cleanable, IP 67 / RT III |
| Needle flame test | application time 10 s |
| Mounting position | any |
| Processing information | Ultrasonic cleaning is not recommended |
| Weight (mass) | max. 6 g |
| Terminal coating | SnCu 0.7 |
| Resistance to soldering heat | 265 °C / 10 s |

All data refers to 23 °C unless otherwise specified.

D2n V23105 Relay

Packing

Dimensions in mm



Tube for THT version
25 relays per tube
1'000 relays per box

D2n V23105 Relay

IM Relays

4th generation slim line – low profile polarized 2 c/o telecom signal 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 50 ... 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. It is currently the only 2 A rated 4G relay on the market. Dielectric strength fulfills the Telcordia requirements according GR 1089 (2,5 kV – 2 / 10 µs) and FCC part 68 (1,5 kV – 10 / 160 µs). The IM relay is tested according CECC/IECQ and certified in accordance with IEC/EN 60950 and UL 60950.

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 Telcordia requirements according GR 1089 (2,5 kV – 2 / 10 µs) and FCC part 68 (1,5 kV – 10 / 160 µs). The P2 relay is tested according CECC/IECQ and certified in accordance with IEC/EN 60950 and UL 60950. Dimensions approx. 15 x 7,5 mm board space and 10 mm height.

FX2 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 Telcordia requirements according GR 1089 (2,5 kV – 2 / 10 µs) and FCC part 68 (1,5 kV – 10 / 160 µs). The FX2 relay is tested according CECC/IECQ and certified in accordance with IEC/EN 60950 and UL 60950. 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 Telcordia requirements according GR 1089 (2,5 kV – 2 / 10 µs) and FCC part 68 (1,5 kV – 10 / 160 µs). The FT2/FU2 relay is tested according CECC/IECQ and certified in accordance with IEC/EN 60950 and UL 60950. 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 60 W/62,5 VA. Dielectric strength fulfills FCC part 68 (1,5 kV – 10 / 160 µs). The FP2 is tested according CECC/IECQ approved.

Dimensions approx. 14 x 9 mm board space and 5 mm height.

MT2

2nd generation non polarized, non latching 2 c/o telecom and signal relay with bifurcated contacts. Nominal voltage range from 3 ... 48 V, coil power consumption 150/200/300/400 and 550 mW. Dielectric strength fulfills the requirements according FCC part 68 (1,5 kV – 10 / 160 µs).

Dimensions approx. 20 x 10 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 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 series), Small General Purpose Relay (V23006 series), Small Polarized Relay (V23063 ... V23067 and V23163 ... V23167 series). Accessories like sockets, hold down springs, etc. optional.

High Frequency Relays

HF3 / HF3S / HF6 series RF relays offering excellent RF characteristics in a small package. All HF series relays are suitable for SMD soldering processes. Available as non latching or latching versions with 1 or 2 coils and a nominal coil voltage range from 3 ... 24 V, a coil power consumption of 140 mW or 70 mW (single coil latching types).

HF3: Low cost RF relay suitable up to 3 GHz. Impedance 50 and 75 Ohm. 50 W hot switching and 50 W RF power carry capability. Dimensions 14.6 x 7.3 x 10.3 mm.

HF3S: High performance, high power RF relay suitable up to 3 GHz, 50 W hot switching and 150 W RF power carry capability. Dimensions 15 x 7.6 x 10.6 mm.

HF6: High performance, high power RF relay suitable up to 6 GHz, 50 W hot switching and 50 W RF power carry capability. Dimensions 15 x 7.6 x 10.6 mm.



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