

Cradle P Relay V23003

- Highly reliable multi purpose relay
- Great variety of contact arrangements and materials to meet specific applications
- Contacts for signal loads and currents up to 5A
- Primarily intended for impulse operation
- Sockets for easy and quick mounting of relays (see datasheet Accessories)

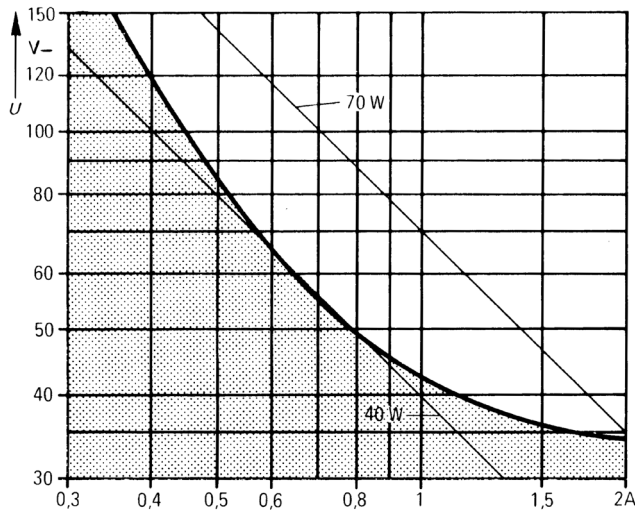


Typical applications
applications where the switching status must be maintained, measuring systems

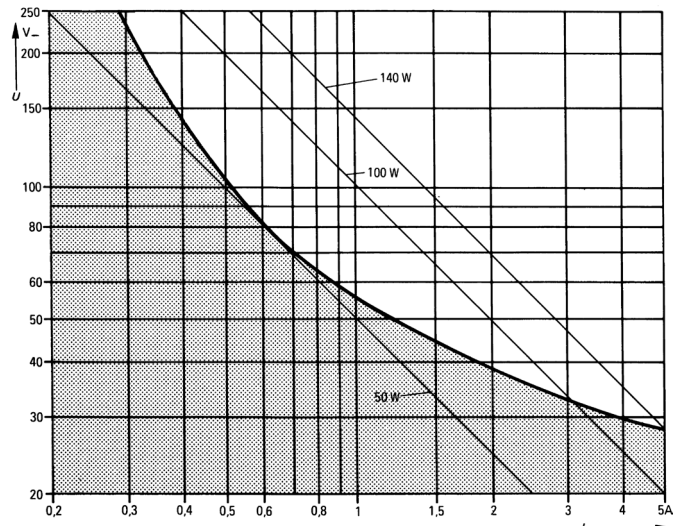
Contact Data

| Product code block 3 | B104/B110 | B604/B610 | C104/C110 | C404/C410 | F104 to F107 |
|---|--|---------------------------|---------------------------|---------------------------|---------------------------|
| Contact arrangement | max. 4 form C (4 CO) contacts, 2 form C (2 CO), 2 form A (2 NO) or 2 form B (2 NC) contacts (see product code table) | | | | |
| Max. switching voltage | 150VDC 125VAC | 36VDC 30VAC | 150VDC 125VAC | 36VDC 30VAC | 250VDC 250VAC |
| Rated current | 2A | 0.2A | 2A | 0.2A | 5A |
| Limiting continuous current at max. ambient temperature | 2A | 2A | 2A | 2A | 5A |
| Breaking capacity see DC load breaking capacity curve below | 35 to 70W 50VA | 5W, 5VA - | 35 to 70W 50VA | 5W, 5VA - | 50 to 140W 500VA |
| Contact material | silver, gold-flashed | gold F | silver, gold-flashed | gold F | silver, gold-flashed |
| Contact style | single contact | single contact | bifurcated contacts | bifurcated contacts | single contact |
| Frequency of operation, without load, max. | 20 ops./s | 20 ops./s | 20 ops./s | 20 ops./s | 20 ops./s |
| Mechanical endurance | app. 10 ⁷ ops. | app. 10 ⁷ ops. | app. 10 ⁷ ops. | app. 10 ⁷ ops. | app. 10 ⁸ ops. |

Max. DC breaking capacity, contact sets B1xx, C1xx



Max. DC breaking capacity, contact sets F1xx



Cradle P Relay V23003 (Continued)

Coil Data

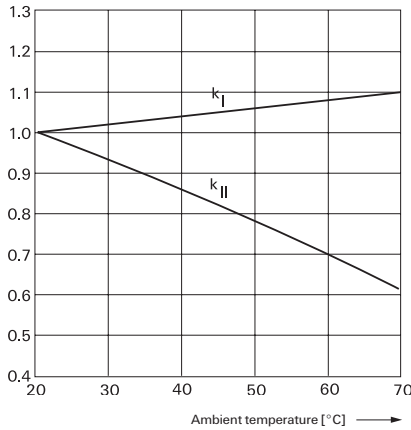
| | |
|-----------------------|--|
| Magnetic system | polarized, bistable |
| Coil voltage range | 6 to 60 VDC, typ. 1500 mW power consumption |
| Max. coil temperature | 100°C |
| Thermal resistance | 50K/W |

Coil versions, bistable 2 coils

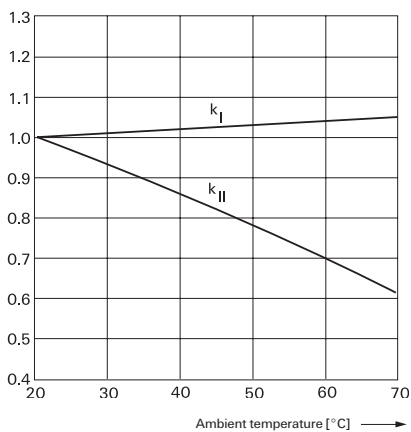
| Coil code | Rated voltage VDC | Set voltage VDC | Reset voltage VDC | Limiting Set/Reset VDC | Coil resistance $\Omega \pm 15\%$ | Rated coil power W (set) |
|-----------|-------------------|-----------------|-------------------|------------------------|-----------------------------------|--------------------------|
| 026 | 6 | 4.0 | 4.0 | 6.7/6.7 | 24.5/24.5 | 1.47 |
| 025 | 12 | 8.0 | 8.0 | 13.5/13.5 | 100/100 | 1.44 |
| 037 | 24 | 16.5 | 16.5 | 26.5/25.0 | 400/340 | 1.44 |
| 044 | 60 | 44.0 | 44.0 | 65.0/65.0 | 2400/2400 | 1.5 |
| 064 | 48 | 33.5 | 33.5 | 49.0/49.0 | 1400/1400 | 1.65 |

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

Set - negative potential at start of winding



Reset - plus potential at start of winding



Terminals:

- coil with 2 windings:
- winding I: start 3, end 2
- winding II: start 4, end 1

Coil Data (continued)

Note: with continuous operation only one winding to be energized within the specified voltage range at a time!

The minimum voltage U_I and the maximum voltage U_{II} only depends on the ambient temperature.

| | |
|-----------------------|---|
| $U_{I \text{ tamb}}$ | $U_I \cdot U_{20^\circ\text{C}} \cdot k_{I \text{ tamb}}$ |
| $U_{II \text{ tamb}}$ | $U_{II} \cdot U_{20^\circ\text{C}} \cdot k_{II \text{ tamb}}$ |
| tamb | Ambient temperature |
| $U_{I \text{ tamb}}$ | Minimum voltage at ambient temperature, tamb |
| $U_{II \text{ tamb}}$ | Maximum voltage at ambient temperature, tamb |
| k_I and k_{II} | Factors |

Insulation Data B1xx,B6xx,C1xx,C4xx F1xx

| | | |
|---|------------------------|-------------------------|
| Initial dielectric strength | | |
| between coil / frame | 500 VAC _{rms} | 500 VAC _{rms} |
| between contact / contact | 500 VAC _{rms} | 1000 VAC _{rms} |
| between contact / frame | 500 VAC _{rms} | 1000 VAC _{rms} |
| Initial insulation resistance, at 500 VDC | > 106Ω | |

Other Data

Material compliance: EU RoHS/ELV, China RoHS, REACH, Halogen content refer to the Product Compliance Support Center at www.te.com/customersupport/rohssupportcenter

| | |
|---|--------------------------------|
| Ambient temperature | -40 to + 70°C |
| Category of environmental protection, IEC 61810 | RT I - dust-protected |
| Degree of protection, IEC 60529 | IP 30 |
| Terminal type | hand solder terminals, plug-in |
| Weight | |
| V23003-A0xxx Size I | approx. 25g |
| V23003-B0xxx Size II | approx. 30g |
| Packaging unit | 5 pcs. |

Accessories

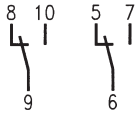
For details see datasheet Cradle Relay, Accessories and Mounting

Cradle P Relay V23003 (Continued)

Terminal assignment

Size I

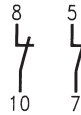
2 form C (2 CO)
V23003-xxxx-Bx04
V23003-xxxx-Cx04



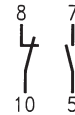
2 form A (2 NO)
V23003-xxxx-F105



2 form B (2 NC)
V23003-xxxx-F107

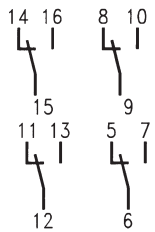


1 form A + 1 form B
(1 NO + 1 NC)
V23003-xxxx-F106

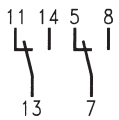


Size II

4 form C (4 CO)
V23003-xxxx-Bx10

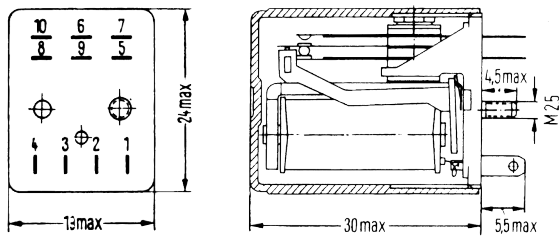


2 form C (2 CO)
V23003-xxxx-F104

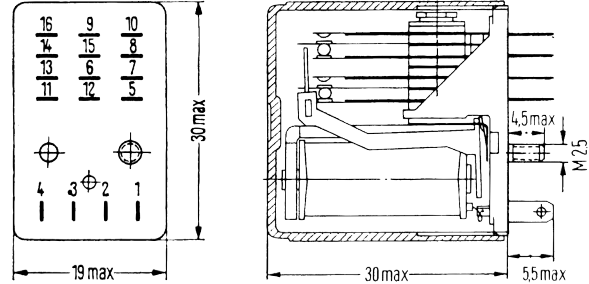


Dimensions

V23003-A0xx, size I type



V23003-B0xx, size II type



Cradle P Relay V23003 (Continued)

Instructions for Impulse Operation

Cradle relay P is primarily intended for impulse operation. The maximum voltage stated in the coil table can be increased for impulse operation as follows:

$U_{II \text{ Impuls}} = U_{II \text{ tamb}} \times q$
 $U_{II \text{ tamb}}$ Maximum continuous voltage at ambient temperature t_{amb}
 q Factor

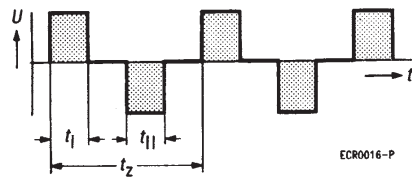
The impulse voltage must not exceed 80% of the test voltage (winding/frame or winding/winding) or 3.3 times at ambient temperature 20°C and 2.3 times at ambient temperature <20°C the value of the maximum voltage listed in the coil table.

If $t_{ED} \leq 3s$ then $q = \sqrt{\frac{t_2}{t_{ED}}}$; t_{ED} = Pulse width, t_2 = Cycle time.

If $t_{ED} > 3s$ the value of q must be obtained from the nomograph.

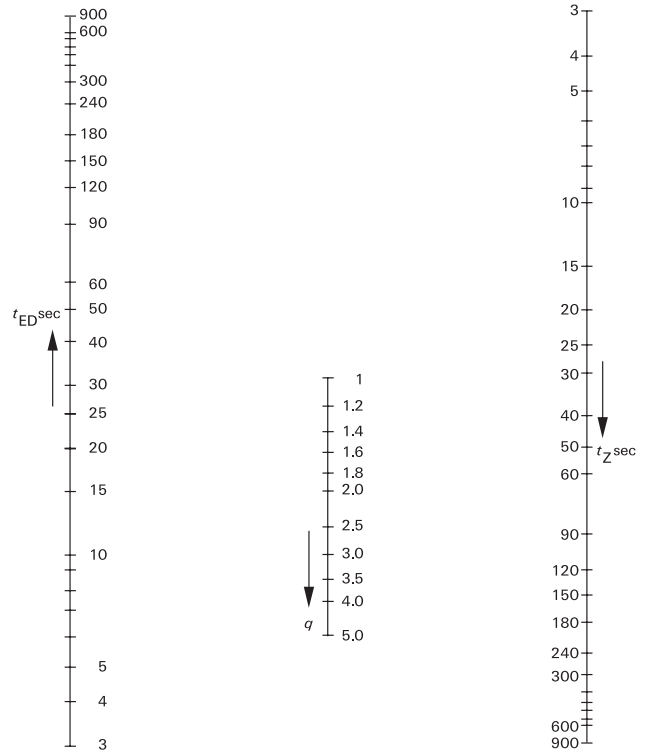
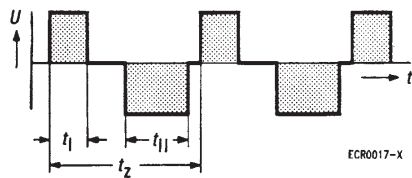
Examples of various periodic pulse trains (energizing side)

1. Periodic recurrence of one energizing pulse



$t_{ED} = t1 + t11$
 $t1$ = Pulse width of the positive pulse at the start of the winding
 $t11$ = Pulse width of the negative pulse at the start of the winding
 $t1 + t11$ = Pulse widths within one cycle

2. Periodic recurrence of two unequal energizing pulses



Product code structure

Typical product code **V23003 -B0 037 -F1 04**

| | | | | |
|--|--|-----------------------------------|--|--|
| Type V23003 Cradle P Relay, dust protected | | | | |
| Size A0 Size I, dust-protected B0 Size II, dust-protected | | | | |
| Coils Coil code: please refer to coil versions table | | | | |
| Contact style B1 Single contacts C1 Bifurcated contacts | B6 Single contacts C4 Bifurcated contacts | F1 Single contacts | | |
| Contact arrangement 04 2 form C, 2 CO 10 4 form C, 4 CO | 05 2 form A, 1 NO | 06 1 form A+ 1 form B, 1 NO+ 1 NC | | |

Other types on request

Cradle P Relay V23003 (Continued)

| Product code | Version | Coil | Arrangement | Contacts | Enclosure | Part number |
|--|-------------------|-------|-----------------|------------|----------------|-------------|
| V23003-AXXXX, standard, size I | | | | | | |
| V23003-A0025-B104 | Standard, size I | 12VDC | 2 form C (2 CO) | Single | Dust protected | 1393817-4 |
| V23003-A0025-C104 | Standard, size I | 12VDC | 2 form C (2 CO) | Bifurcated | Dust protected | 1393817-5 |
| V23003-A0037-B104 | Standard, size I | 24VDC | 2 form C (2 CO) | Single | Dust protected | 1393817-7 |
| V23003-A0037-B604 | Standard, size I | 24VDC | 2 form C (2 CO) | Single | Dust protected | 1393817-8 |
| V23003-A0037-C104 | Standard, size I | 24VDC | 2 form C (2 CO) | Bifurcated | Dust protected | 1393817-9 |
| V23003-A0044-B104 | Standard, size I | 60VDC | 2 form C (2 CO) | Single | Dust protected | 1-1393817-8 |
| V23003-A0064-B104 | Standard, size I | 48VDC | 2 form C (2 CO) | Single | Dust protected | 2-1393817-0 |
| V23003-A0064-B604 | Standard, size I | 48VDC | 2 form C (2 CO) | Single | Dust protected | 2-1393817-1 |
| V23003-A0064-C104 | 5A size I | 48VDC | 2 form C (2 CO) | Single | Dust protected | 2-1393817-2 |
| V23003-AXXXX, 5A, size I | | | | | | |
| V23003-A0026-F106 | 5A size I | 6VDC | 1A+1B (1NO+1NC) | Single | Dust protected | 1393817-6 |
| V23003-A0037-F105 | 5A size I | 24VDC | 2 form A (2 NO) | Single | Dust protected | 1-1393817-1 |
| V23003-A0037-F106 | 5A size I | 24VDC | 1A+1B (1NO+1NC) | Single | Dust protected | 1-1393817-2 |
| V23003-BXXXX, standard, size II | | | | | | |
| V23003-B0025-B110 | Standard, size II | 12VDC | 4 form C (4 CO) | Single | Dust protected | 3-1393817-1 |
| V23003-B0025-C110 | Standard, size II | 12VDC | 4 form C (4 CO) | Bifurcated | Dust protected | 3-1393817-2 |
| V23003-B0026-B110 | Standard, size II | 6VDC | 4 form C (4 CO) | Single | Dust protected | 3-1393817-4 |
| V23003-B0026-C110 | Standard, size II | 6VDC | 4 form C (4 CO) | Bifurcated | Dust protected | 3-1393817-5 |
| V23003-B0037-B110 | Standard, size II | 24VDC | 4 form C (4 CO) | Single | Dust protected | 3-1393817-9 |
| V23003-B0037-B610 | Standard, size II | 24VDC | 4 form C (4 CO) | Single | Dust protected | 4-1393817-0 |
| V23003-B0037-C110 | Standard, size II | 24VDC | 4 form C (4 CO) | Bifurcated | Dust protected | 4-1393817-1 |
| V23003-B0037-C410 | Standard, size II | 24VDC | 4 form C (4 CO) | Bifurcated | Dust protected | 4-1393817-4 |
| V23003-B0044-B110 | Standard, size II | 60VDC | 4 form C (4 CO) | Single | Dust protected | 5-1393817-4 |
| V23003-B0044-B610 | Standard, size II | 60VDC | 4 form C (4 CO) | Single | Dust protected | 1413004-1 |
| V23003-B0044-B610 | Standard, size II | 60VDC | 4 form C (4 CO) | Single | Dust protected | 1-1419137-0 |
| V23003-B0044-C110 | Standard, size II | 60VDC | 4 form C (4 CO) | Bifurcated | Dust protected | 5-1393817-6 |
| V23003-B0064-B110 | Standard, size II | 48VDC | 4 form C (4 CO) | Single | Dust protected | 6-1393817-3 |
| V23003-B0064-C110 | Standard, size II | 48VDC | 4 form C (4 CO) | Bifurcated | Dust protected | 6-1393817-4 |
| V23003-BXXXX, 5A, size II | | | | | | |
| V23003-B0025-F104 | 5A size II | 12VDC | 2 form C (2 CO) | Single | Dust protected | 3-1393817-3 |
| V23003-B0026-F104 | 5A size II | 6VDC | 2 form C (2 CO) | Single | Dust protected | 3-1393817-6 |
| V23003-B0037-F104 | 5A size II | 24VDC | 2 form C (2 CO) | Single | Dust protected | 4-1393817-5 |
| V23003-B0044-F104 | 5A size II | 60VDC | 2 form C (2 CO) | Single | Dust protected | 5-1393817-7 |
| V23003-B0064-F104 | 5A size II | 48VDC | 2 form C (2 CO) | Single | Dust protected | 6-1393817-5 |