Cradle N Relay V23154/V23162

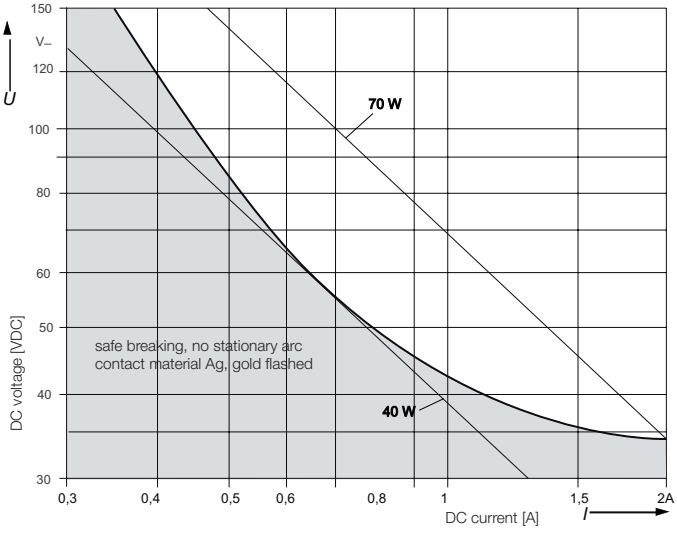
- **Multi purpose relay**
- **Highly reliable**
- **Great variety of contact arrangements and materials to meet specific applications**
- **Contacts for signal loads and currents up to 5 A**
- **DC coil, operating voltage 1.5VDC to 125VDC; AC, latching and non-latching coils on request**
- **Sockets for easy and quick mounting of relays**

Typical applications
Measurement and control equipment, control equipment in nuclear powerplant, press controls with high safety requirements (force-guided springs), telecommunications

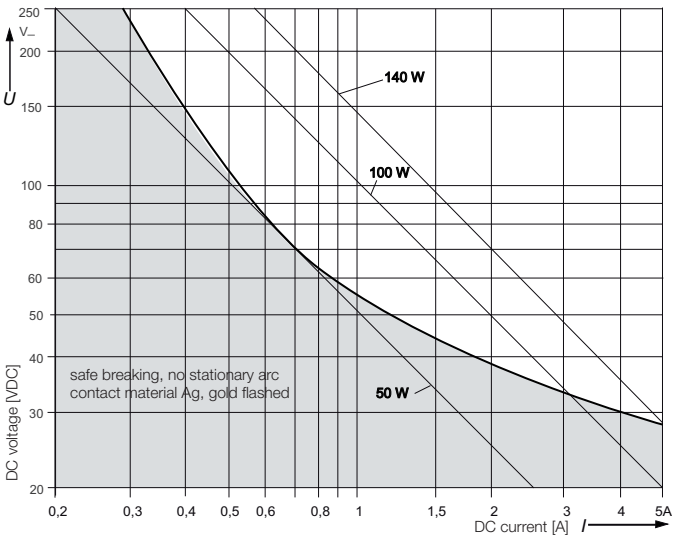
Contact Data

Product code block 3	B104/B110/B112	B604/B610/B612	C104/C110/C112	C404/C410	F104 to F107
Contact arrangement	max. 4 form C (4 CO)contacts, 2 form B (2 NC) contacts or 6 form A (6 NO) contacts (see product code table)				
Max. switching voltage	150VDC 125VAC	36VDC 30VAC	150VDC 125VAC	36VDC 30VAC	150VDC 125VAC
Rated current	2A	0.2A	2A	0.2A	5A
Limiting continuous current at max. ambient temperature	2A	2A	2A	2A	5A
Breaking capacity max. 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 Contact style	silver, gold-flashed single contact	gold F single contact	silver, gold-flashed bifurcated contacts	gold F bifurcated contacts	silver, gold-flashed single contact
Frequency of operation, without load, max.	50 ops./s	50 ops./s	50 ops./s	50 ops./s	10 ops./s
Operate / release time typ.	7.5/3ms	7.5/3ms	7.5/3ms	7.5/3ms	7.5/3ms
Mechanical endurance	app. 10^7 ops.	app. 10^7 ops.	app. 10^7 ops.	app. 10^7 ops.	app. 10^7 ops.

Max. DC breaking capacity, contact sets B1xx, C1xx



Max. DC breaking capacity, contact sets F1xx



Cradle N Relay V23154/V23162 (Continued)

Coil Data

Magnetic system	neutral
Coil voltage range	1.1 to 125 VDC, typ. 800mW power consumption
Max. coil temperature	100 °C
Thermal resistance	< 50K/W

Coil versions, DC coil, monostable

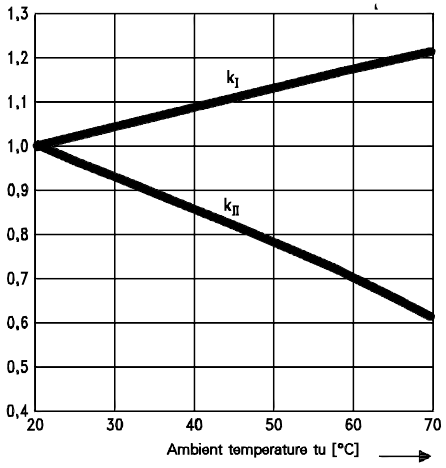
Coil code	Rated voltage VDC	Operate/Limiting voltage[1] VDC	Coil resistance Ω±15%	Rated coil power mW
702	1.1	-	2	807
711	5	-	28	893
712	7	-	58	845
715	9	-	110	736
716	10	-	150	667
717	12	-	220	655
719	15	-	325	692
720	20	-	550	727
721	24	-	890	647
722	32	-	1700	602
726	48	-	3200	720
734	60	-	4700	766
704	72	-	7600	682
735	110	-	15000	807
703	125	-	20900	748

1) refer to 'Part code table'.
All figures are given for coil without pre-energization, at ambient temperature +23°C.

Coil versions, DC coil, monostable

Coil code	Rated voltage VDC	Operate/Limiting voltage[1] VDC	Coil resistance Ω±15%	Rated coil power mW
430	10	-	140	714
418	12	-	230	626
471	12	-	220	655
479	16	-	390	656
421	24	-	700	823
472	24	-	890	647
496	25	-	730	856
473	60	-	4700	766
404	72	-	5800	894

1) refer to 'Part code table'.
All figures are given for coil without pre-energization, at ambient temperature +23°C.



Coil data (continued)

Terminals:
coil with 1 winding: start 4, end 1
coil with 2 windings (upon request):
start 3, end 2 for winding I, start 4, end 1 for winding II

The minimum voltage U_I depends on the contact set and the ambient temperature, the maximum voltage U_{II} only depends on the ambient temperature.
Between minimum voltage $U_{I\ tamb}$ and operating voltage U a safety margin of approx. 20% is recommended.

$U_{I\ tamb}$ (1.2)	$< U_I \leq U_{II}$ tamb
$U_{I\ tamb}$	$U_I \cdot U20\ °C \cdot k_{I\ tamb}$
$U_{II\ tamb}$	$U_{II}\ 20\ °C \cdot k_{II\ tamb}$
tamb	Ambient temperature
U	Operating voltage
$U_{I\ tamb}$	Minimum voltage at ambient temperature, tamb
$U_{II\ tamb}$	Maximum voltage at ambient temperature, tamb
k_I and k_{II}	Factors

Insulation Data

Product code, block 3	B1xx, B6xx, C1xx, C4xx	F1xx
Initial dielectric strength		
between coil / frame	$500V_{rms}$	$500V_{rms}$
between contact / contact	$500V_{rms}$	$1000V_{rms}$
between contact / frame	$500V_{rms}$	$1000V_{rms}$
between contact / coil	$1000V_{rms}$	$1500V_{rms}$
Initial insulation resistance, at 500VDC	> 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, RT V - hermetically sealed
Degree of protection, IEC 60529	dust-protected IP 30, hermetically sealed IP 67
Terminal type	PCB, plug-in, solder terminals
Weight	
V23154-C0/-MO Size I	approx. 20g
V23154-D0/-NO Size II	approx. 25g
V23162-A0xxx Size I	approx. 30g
V23162-B0xxx Size II	approx. 35g
Washing	not recommended
Ultrasonic cleaning	not recommended
Packaging unit	5 pcs.

Accessories

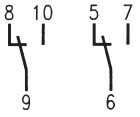
For details see datasheet Cradle Relay, Accessories and Mounting

Cradle N Relay V23154/V23162 (Continued)

Terminal assignment

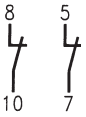
Size I

2 form C (2 CO)
V231xx-xxxxx-Bx04
V231xx-xxxxx-Cx04



2 form A (2 NO)
V231xx-xxxxx-F105

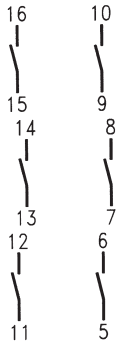
2 form B (2 NC)
V231xx-xxxxx-F107



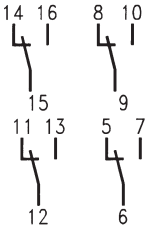
1 form A + 1 form B
(1 NO + 1 NC)
V231xx-xxxxx-F106

Size II

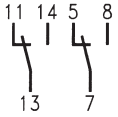
6 form A (6 NO)
V231xx-xxxxx-Bx12
V231xx-xxxxx-Cx12



4 form C (4 CO)
V231xx-xxxxx-Bx10

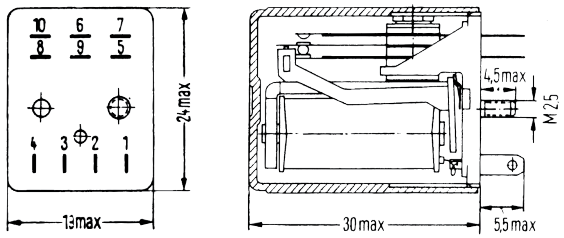


2 form C (2 CO)
V231xx-xxxxx-F104

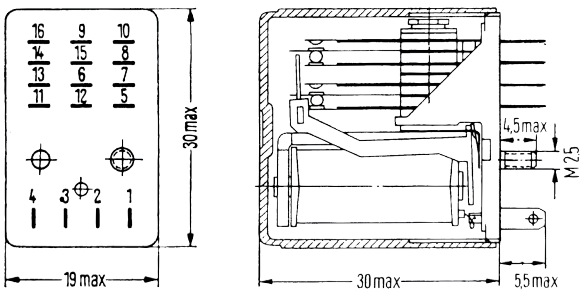


Dimensions

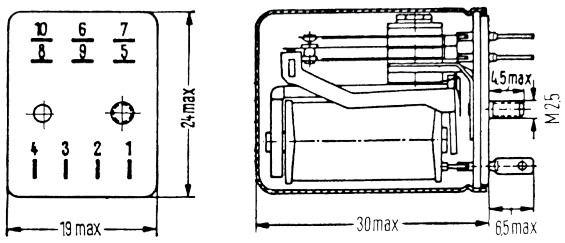
V23154-C0xx, size I type



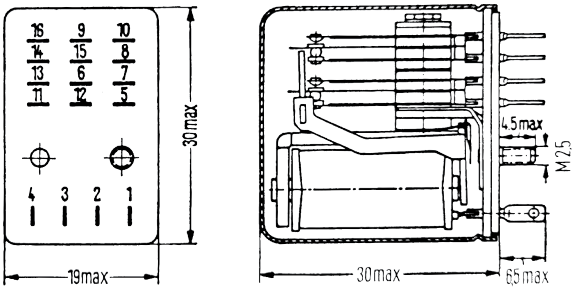
V23154-D0xx, size II type



V23162-A0xx, size I type



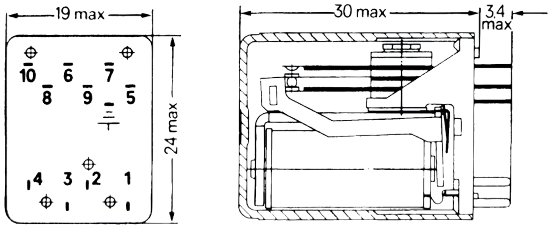
V23162-B0xx, size II type
V23162-H0xx, size II type



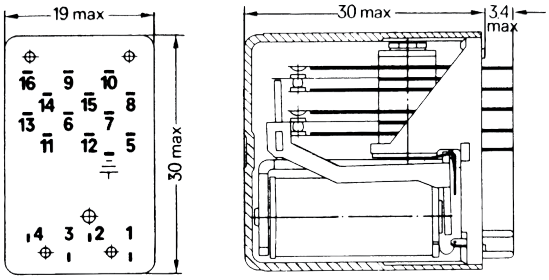
Cradle N Relay V23154/V23162 (Continued)

Dimensions

V23154-Mxxx, size I type



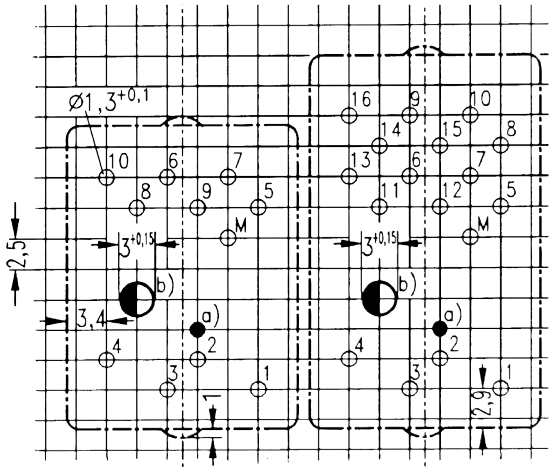
V23154-Nxxx, size II type



PCB layout

TOP view on component side of PCB

V23154-M/Nxx versions



M = Earth terminal
a) Hole for mechanical armature actuation, if required
b) Hole for socket mounting with screw M1.6.

Instructions for Impulse Operation

The maximum voltage stated in the part code table can be increased for impulse operation as follows:

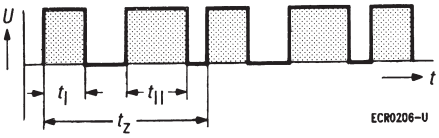
$U_{II\ Impuls}$	$U_{II\ tamb} \times q$
$U_{II\ tamb}$	Maximum continuous voltage at ambient temperature t_{amb}
q	Factor

The impulse voltage must not exceed 80% of the test voltage (winding/frame or winding/winding) or 2.5 times the value of the maximum voltage listed in the part code table.

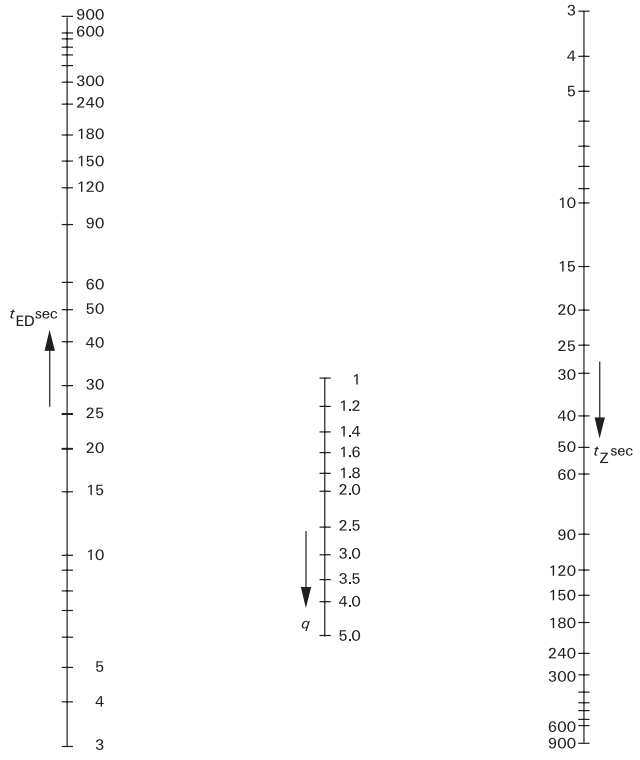
$Ift_{ED} \leq 3s$ then $q = \sqrt{\frac{t_z}{t_{ED}}}$; Ift_{ED} = Pulse width, t_2 = Cycle time. If $t_{ED} > 3s$ the value of q must be obtained from the nomograph.

Examples of various periodic pulse trains (energizing side)
1. Periodic recurrence of one energizing pulse
2. Periodic recurrence of two unequal energizing pulses

tED = tI + tII



tI + tII = Pulse widths within one cycle



Cradle N Relay V23154/V23162 (Continued)

Product code structure

Typical product code	V23154	-D0	721	-B1	10

Type

V23154	Cradle N Relay, dust protected
V23162	Cradle N Relay, hermetically sealed

Version

V23154 types

C0	Size I, for plug-in and screw fixing, hand solder terminals silver-plated, with earth terminal, dust-protected (V23154)
D0	Size II, for plug-in and screw fixing, hand solder terminals silver-plated, with earth terminal, dust-protected (V23154)
M0	Size I, for printed circuit mounting, with earth terminal, dust-protected (V23154)
M4	Size I, for printed circuit mounting, without earth terminal, dust-protected (V23154)
N0	Size II, for printed circuit mounting, with earth terminal, dust-protected (V23154)
N4	Size II, for printed circuit mounting, without earth terminal, dust-protected (V23154)

V23162 types

A0	Size I, for plug-in and screw fixing, hand solder terminals tinned, hermetically sealed (V23162)
B0	Size II, for plug-in and screw fixing, hand solder terminals tinned, hermetically sealed (V23162)
H0	Size II, for plug-in and screw, fixing, hand solder terminals, gold-plated, hermetically sealed (V23162)

Coils

Coil code: please refer to coil versions table

Contact style

B1	Single contacts	**B6**	Single contacts	**F1**	Single contacts
C1	Bifurcated contacts	**C4**	Bifurcated contacts		

Contact arrangement

04	2 form C, 2 CO	**05**	2 form A, 1 NO	**06**	1 form A+ 1 form B, 1 NO+ 1 NC
07	2 form B, 2 NC	**10**	4 form C, 4 CO	**12**	6 form A, 6 NO

Other types on request