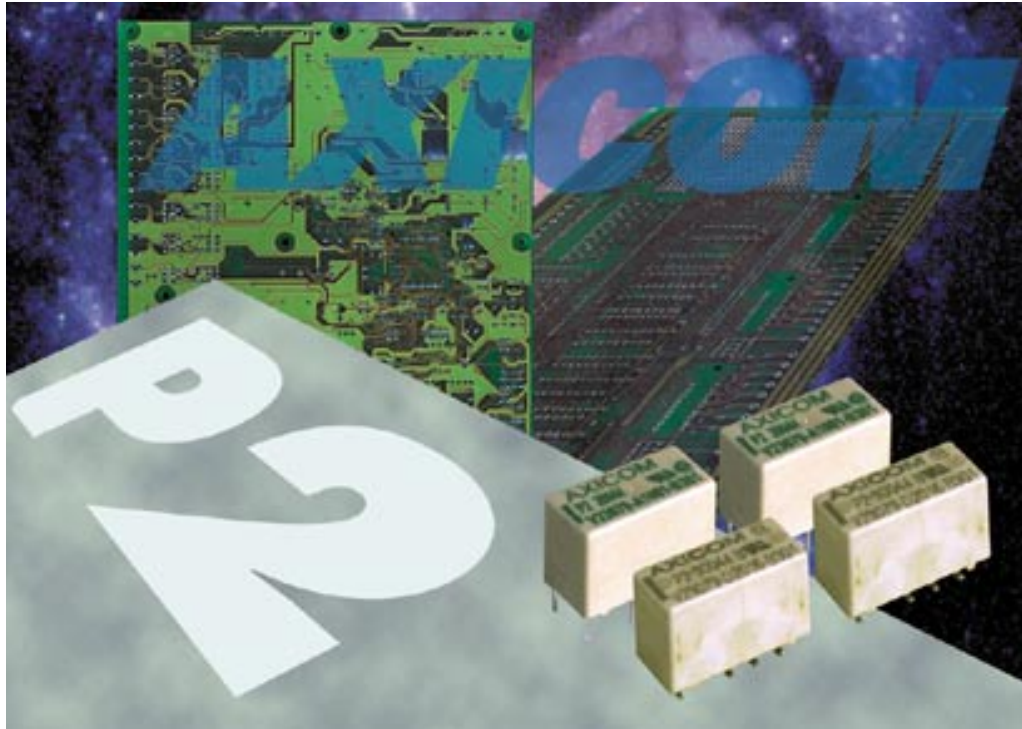


**The Best Relation**



**P2 Relay**

ISO  
9001

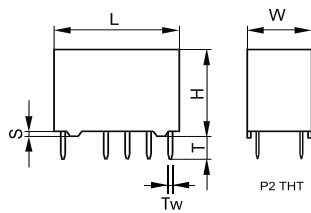




Dimensions

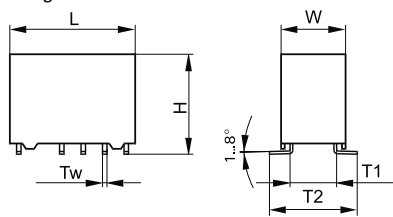
	THT V23079-x1xxx-B301 standard coil		THT V23079-x2xxx-B301 overmolded coil		SMT long terminals V23079-x1xxx-B301 standard coil		SMT long terminals V23079-x2xxx-B301 overmolded coil		SMT short terminals V23079-x1xxx-B301 standard coil		SMT short terminals V23079-x2xxx-B301 overmolded coil	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
L	14.5 ± 0.1	0.570 ± 0.004	14.5 ± 0.1	0.570 ± 0.004	14.5 ± 0.1	0.570 ± 0.004	14.5 ± 0.1	0.570 ± 0.004	14.5 ± 0.1	0.570 ± 0.004	14.5 ± 0.1	0.570 ± 0.004
W	7.2 ± 0.1	0.283 ± 0.004	7.2 ± 0.1	0.283 ± 0.004	7.2 - 0.15	0.283 ± 0.004	7.2 - 0.15	0.283 ± 0.004	7.2 - 0.15	0.283 ± 0.004	7.2 - 0.15	0.283 ± 0.004
H	9.8 ± 0.1	0.385 ± 0.004	9.5 ± 0.1	0.374 ± 0.004	10.4 ± 0.15	0.409 ± 0.006	9.9 ± 0.1	0.390 ± 0.004	10.4 ± 0.15	0.409 ± 0.006	9.9 ± 0.1	0.390 ± 0.004
T	3.25 - 0.25	0.128 - 0.010	3.25 - 0.25	0.128 - 0.010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
T1	N/A	N/A	N/A	N/A	5.52 ± 0.15	0.217 ± 0.006	5.52	0.217 ± 0.006	5.52	0.217 ± 0.006	5.52	0.217 ± 0.006
T2	N/A	N/A	N/A	N/A	9.4 ± 0.15	0.370 ± 0.006	9.4 ± 0.15	0.370 ± 0.006	7.4 ± 0.15	0.291 ± 0.006	7.4 ± 0.15	0.291 ± 0.006
Tw	0.5 ± 0.05	0.020 ± 0.002	0.5 ± 0.05	0.020 ± 0.002	0.5 ± 0.05	0.020 ± 0.002	0.5 ± 0.05	0.020 ± 0.002	0.5 ± 0.05	0.020 ± 0.002	0.5 ± 0.05	0.020 ± 0.002
S	0.55 - 0.15	0.022 - 0.006	0.45	0.018 ± 0.002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

THT Version

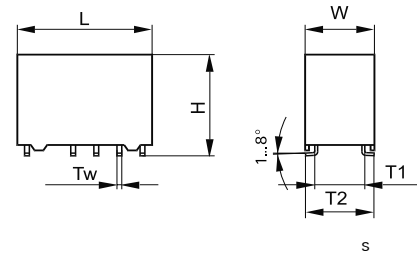


SMT Version

Long terminals

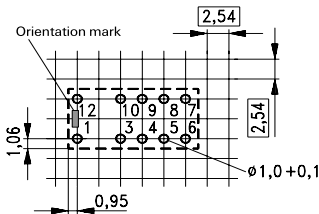


Short terminals



Mounting hole layout

View onto the component side of the PCB

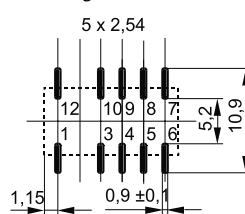


Note: Hole for pin 6 and 7 only for latching with 2 coils  
Basic grid 2.54 mm

Solder pad layout

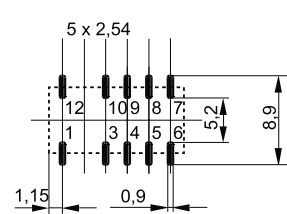
View onto the component side of the PCB

Long terminals



Note: Solder pad for pin 6 and 7 only for latching with 2 coils

Short terminals

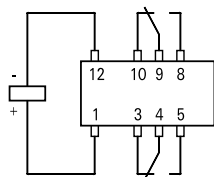


Note: Solder pad for pin 6 and 7 only for latching with 2 coils

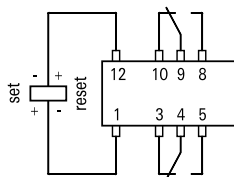
Terminal assignment

Relay - top view

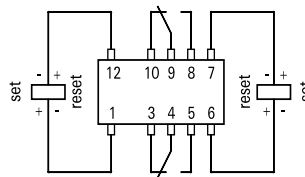
Non-latching type,  
not energized condition



Latching type, 1 coil  
reset condition



Latching type, 2 coils  
reset condition



**Coil Data (values at 23°C)**

Nominal voltage $U_{nom}$	Operate/set voltage range		Release/ reset voltage Minimum	Nominal power consumption	Resistance	Coil number
	Minimum voltage $U_I$	Maximum voltage $U_{II}$				
Vdc	Vdc	Vdc	Vdc	mW	$\Omega / \pm 10\%$	
non-latching 1 coil						A1xxx/D1xxx/G1xxx A2xxx/D2xxx/G2xxx
3	2.25	6.50	0.30	140	64.3	008
4	3.00	8.70	0.40	140	114	016
4.5	3.375	9.80	0.45	140	145	011
5	3.75	10.90	0.50	140	178	001
6	4.5	13.00	0.60	140	257	002
9	6.75	19.60	0.90	140	578	006
12	9.00	26.15	1.20	140	1029	003
24*	18.00	52.30	2.40	140	4114	005
latching 2 coils						B1xxx/E1xxx/H1xxx
3	2.25	6.50	2.25	140	64.3	208
4.5	3.375	9.80	3.375	140	145	211
5	3.75	10.90	3.75	140	178	201
6	4.5	13.00	4.50	140	257	202
9	6.75	19.60	6.75	140	578	206
12	9.00	26.15	9.00	140	1029	203
24	18.00	52.30	18.00	140	4114	205
latching 1 coil						C1xxx/F1xxx/J1xxx
3	2.25	9.20	2.25	70	128	108
4.5	3.375	13.85	3.375	70	289	111
5	3.75	15.33	3.75	70	357	101
6	4.5	18.50	4.50	70	514	102
9	6.75	27.75	6.75	70	1157	106
12	9.00	37.00	9.00	70	2057	103
24	18.00	74.00	18.00	70	8228	105

\* 24 V only in A1xxx/D1xxx/G1xxx  
Further coil versions are available on request.

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

$U_{II} =$  Maximum continuous voltage at 23°C

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

$$U_{I \text{ t amb}} = K_I \cdot U_{I \text{ 23}^\circ \text{C}}$$

and

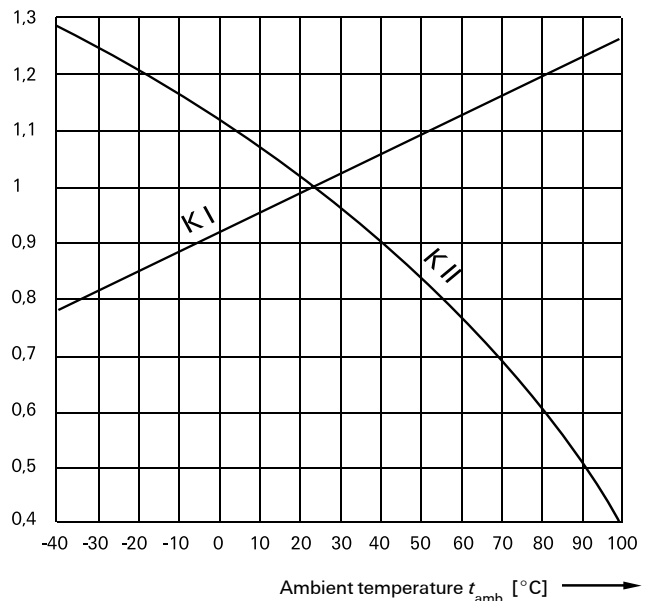
$$U_{II \text{ t amb}} = K_{II} \cdot U_{II \text{ 23}^\circ \text{C}}$$

$t_{amb}$  = Ambient temperature

$U_{I \text{ t amb}}$  = Minimum voltage at ambient temperature,  $t_{amb}$

$U_{II \text{ t amb}}$  = 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 continuous current at max. ambient temperature	2 A
Maximum switching current	5 A
Maximum switching voltage	220 Vdc 250 Vac
Maximum switching capacity	60 W, 62.5 VA
Thermoelectric potential	< 10 $\mu$ V
Minimum switching voltage	100 $\mu$ V
Initial contact resistance / measuring condition: 10 mA / 20 mV	< 50 m $\Omega$
Electrical endurance	at 12 V / 10 mA      typ. 5 x 10 <sup>7</sup> operations at 6 V / 100 mA      typ. 1 x 10 <sup>7</sup> operations at 60 V / 500 mA      typ. 5 x 10 <sup>5</sup> operations at 30 V / 1000 mA      typ. 1 x 10 <sup>6</sup> operations at 30 V / 2000 mA      typ. 2 x 10 <sup>5</sup> operations
Mechanical endurance	typ. 10 <sup>8</sup> operations
UL contact ratings	220 Vdc / 0.24 A - 60 W 125 Vdc / 0.24 A - 30 W 250 Vac / 0.25 A - 62.5 VA 125 Vac / 0.5 A - 62.5 VA 30 Vdc / 2 A - 60 W

Insulation	
Insulation resistance at 500 VDC	> 10 <sup>9</sup> $\Omega$
Dielectric test voltage (1 min)	
between coil and contacts (Relay with 1 coil)	1500 Vrms
between adjacent contact sets	1000 Vrms
between open contacts	1000 Vrms (1500 Vrms on request)
Surge voltage resistance	
according to Bellcore TR-NWT-001089 (2 / 10 $\mu$ s)	
between coil and contacts (Relay with 1 coil)	2500 V
between adjacent contact sets	2500 V
between open contacts	2000 V
according to FCC 68 (10 / 160 $\mu$ s)	
between coil and contacts (Relay with 1 coil)	1500 V
between adjacent contact sets	1500 V
between open contacts	1500 V

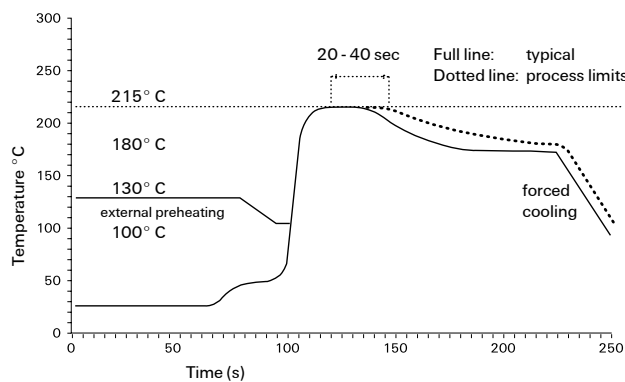
High Frequency Data	
Capacitance	
between coil and contacts	max. 2 pF
between adjacent contact sets	max. 1.5 pF
between open contacts	max. 1 pF
RF Characteristics	
Isolation at 100 / 900 MHz	- 39.0 dB / - 20.7 dB
Insertion loss at 100 / 900 MHz	- 0.02 dB / - 0.27 dB
V.S.W.R. at 100 / 900 MHz	1.04 / 1.40

General data	
Operate time at $U_{nom}$ typ. / max.	3 ms / 5 ms
Reset time (latching) at $U_{nom}$ , typ. / max.	3 ms / 5 ms
Release time without diode in parallel (non-latching), typ. / max.	2 ms / 4 ms
Release time with diode in parallel (non-latching), typ. / max.	4 ms / 6 ms
Bounce time at closing contact, typ. / max.	1 ms / 3 ms
Maximum switching rate without load	50 operations/s
Ambient temperature	-40° C ... +85° C (105° C on request)
Thermal resistance	< 165 K/W
Maximum permissible coil temperature	110° C
Vibration resistance (function)	35 G
	10 to 1000 Hz
Shock resistance, half sinus, 11 ms	50 G (function) 150 G (damage)
Degree of protection / Environmental protection	immersion cleanable, IP 67 / RT III
Needle flame test	application time 20 s, burning time < 15 s
Mounting position	any
Processing information	Ultrasonic cleaning is not recommended
Weight (mass)	max. 2.5 g
Resistance to soldering heat	260° C / 10 s

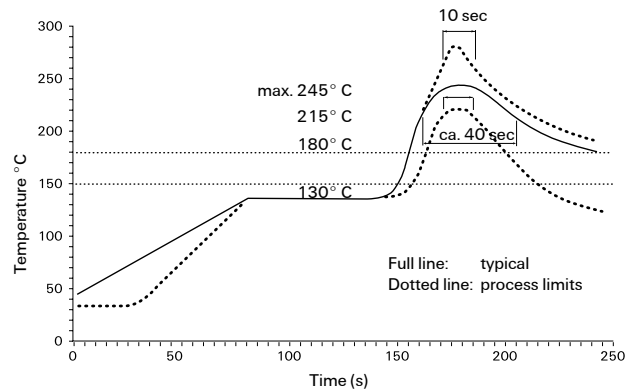
All data refers to 23° C unless otherwise specified.

## Recommended soldering conditions

Soldering conditions according CECC 00802



Vapor Phase Soldering: Temperature/Time Profile (Lead Temperature)

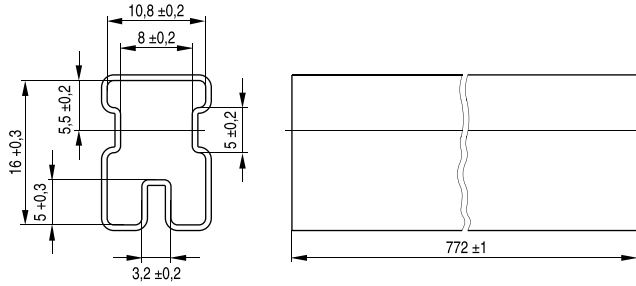


Infrared Soldering: Temperature/Time Profile (Lead Temperature)

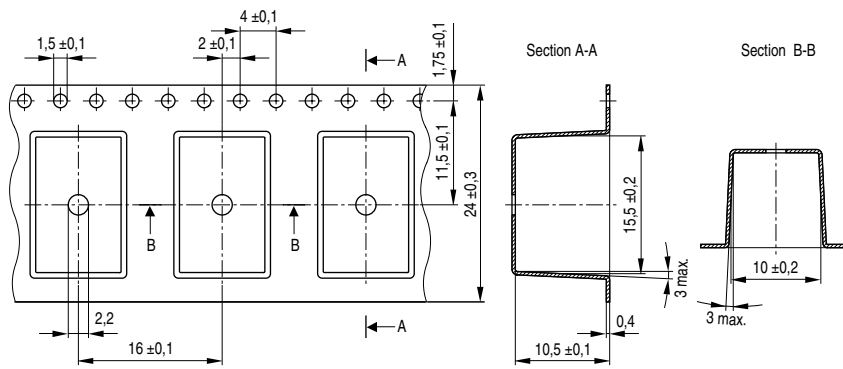
Packing

Dimensions in mm

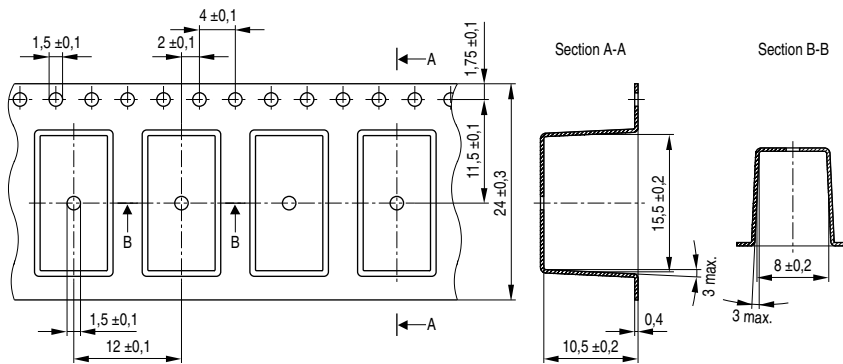
Tube for THT version - 50 relays per tube, 2000 relays per box



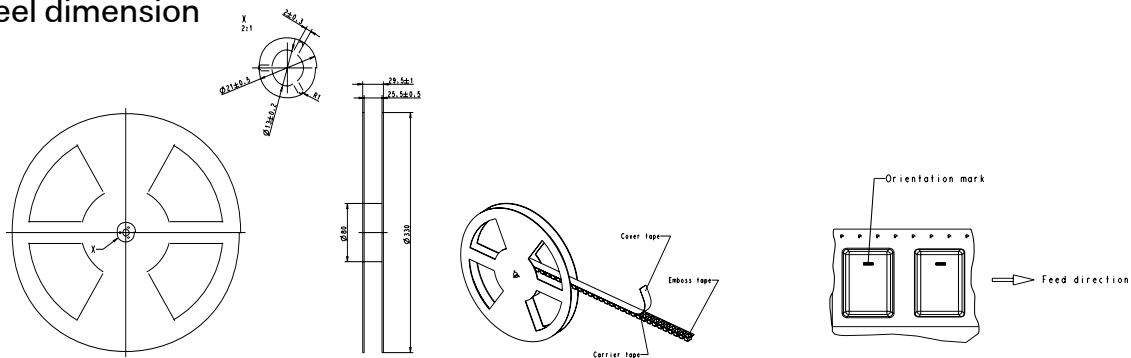
Tape and reel for SMT version with long terminals - 400 relays per reel, 2000 relays per box



Tape and reel for SMT version with short terminals - 500 relays per reel, 2500 relays per box



Reel dimension



## Ordering Information

Relay Code	Tyco Part Number	Relay Code	Tyco Part Number
V23079-A1001-B301	0-1393788-3	V23079-E1201-B301	6-1393788-8
V23079-A1002-B301	0-1393788-8	V23079-E1202-B301	0-1393789-5
V23079-A1003-B301	1-1393788-1	V23079-E1203-B301	6-1393788-9
V23079-A1005-B301	1-1393788-6	V23079-E1205-B301	7-1393788-0
V23079-A1006-B301	2-1393788-0	V23079-E1206-B301	0-1393789-9
V23079-A1008-B301	2-1393788-2	V23079-E1208-B301	7-1393788-1
V23079-A1011-B301	2-1393788-4	V23079-E1211-B301	7-1393788-2
V23079-A2001-B301	3-1393789-5	V23079-F1101-B301	7-1393788-3
V23079-A2002-B301	3-1393789-6	V23079-F1102-B301	1-1393789-0
V23079-A2003-B301	3-1393789-7	V23079-F1103-B301	7-1393788-4
V23079-A2005-B301	0-1393790-2	V23079-F1105-B301	1-1393789-1
V23079-A2006-B301	3-1393789-8	V23079-F1106-B301	1-1393789-2
V23079-A2008-B301	6-1419120-6	V23079-F1108-B301	7-1393788-5
V23079-A2011-B301	3-1393789-9	V23079-F1111-B301	1-1393789-4
V23079-B1201-B301	3-1393788-3	V23079-G1001-B301	7-1393788-6
V23079-B1202-B301	3-1393788-5	V23079-G1002-B301	1-1393789-5
V23079-B1203-B301	3-1393788-6	V23079-G1003-B301	7-1393788-7
V23079-B1205-B301	3-1393788-7	V23079-G1005-B301	7-1393788-8
V23079-B1206-B301	3-1393788-9	V23079-G1006-B301	1-1393789-6
V23079-B1208-B301	4-1393788-1	V23079-G1008-B301	8-1393788-0
V23079-B1211-B301	4-1393788-2	V23079-G1011-B301	1-1393789-7
V23079-C1101-B301	4-1393788-5	V23079-G2001-B301	4-1393789-9
V23079-C1102-B301	4-1393788-7	V23079-G2002-B301	5-1393789-0
V23079-C1103-B301	4-1393788-8	V23079-G2003-B301	5-1393789-1
V23079-C1105-B301	5-1393788-0	V23079-G2006-B301	5-1393789-3
V23079-C1106-B301	5-1393788-1	V23079-G2008-B301	5-1393789-4
V23079-C1108-B301	5-1393788-3	V23079-G2011-B301	5-1393789-5
V23079-C1111-B301	5-1393788-4		
V23079-D1001-B301	5-1393788-5	V23079-H1201-B301	2-1393789-0
V23079-D1002-B301	5-1393788-6	V23079-H1202-B301	2-1393789-1
V23079-D1003-B301	5-1393788-7	V23079-H1203-B301	8-1393788-3
V23079-D1005-B301	5-1393788-8	V23079-H1205-B301	2-1393789-2
V23079-D1006-B301	5-1393788-9	V23079-H1206-B301	2-1393789-3
V23079-D1008-B301	6-1393788-1	V23079-H1208-B301	2-1393789-4
V23079-D1011-B301	6-1393788-2	V23079-H1211-B301	8-1393788-4
V23079-D2001-B301	4-1393789-3	V23079-J1101-B301	2-1393789-5
V23079-D2002-B301	4-1393789-4	V23079-J1102-B301	2-1393789-6
V23079-D2003-B301	4-1393789-5	V23079-J1103-B301	2-1393789-7
V23079-D2006-B301	4-1393789-6	V23079-J1105-B301	2-1393789-8
V23079-D2008-B301	4-1393789-7	V23079-J1108-B301	2-1393789-9
V23079-D2011-B301	4-1393789-8	V23079-J1111-B301	3-1393789-0

## Middle block of relay code

V23079-yyxxx-B301

yy: See table below

xxx: See coil table on page 4

yy	Description
A1	THT, non latching, standard coil
A2	THT, non latching, overmolded coil
B1	THT, latching, 2 standard coils
C1	THT, latching, 1 standard coil

D1	SMT, long pins, non latching, standard coil
D2	SMT, long pins, non latching, overmolded coil
E1	SMT, long pins, latching, 2 standard coils
F1	SMT, long pins, latching, 1 standard coil
G1	SMT, short pins, non latching, standard coil
G2	SMT, short pins, non latching, overmolded coil
H1	SMT, short pins, latching, 2 standard coils
J1	SMT, short pins, latching, 1 standard coil



**Option: high dielectric between open contacts (overmolded coil)**

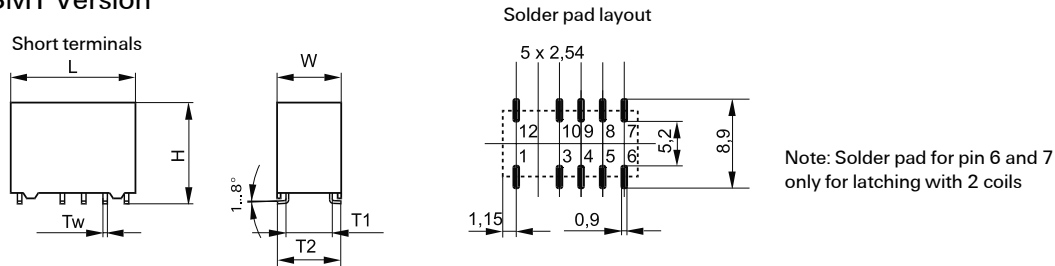
This supplementary data sheet refers to the basic data sheet of the P2 relay series (V23079) with following additions:

- Dielectric strength 1500 V<sub>rms</sub> between open contacts - as well as between coil and contacts and between adjacent contact sets
- Only non-latching types available
- SMT version with short terminals as preferred type
- mechanical and electrical endurance typ. 10<sup>6</sup> operations

**Dimensions**

	SMT short terminals V23079-G2xxx-X0xx overmolded coil	
	mm	inch
L	14.5 ± 0.1	0.570 ± 0.004
W	7.2 - 0.15	0.283 ± 0.004
H	9.9 ± 0.1	0.390 ± 0.004
T	N/A	N/A
T1	5.52	0.217 ± 0.006
T2	7.4 ± 0.15	0.291 ± 0.006
Tw	0.5 ± 0.05	0.020 ± 0.002
S	N/A	N/A

**SMT Version**



**Coil Data (values at 23°C)**

Nominal voltage <i>U<sub>nom</sub></i>	Operate/set voltage range		Release/ reset voltage Minimum	Nominal power consumption	Resistance	Relay code
	Minimum voltage <i>U<sub>I</sub></i>	Maximum voltage <i>U<sub>II</sub></i>				
Vdc	Vdc	Vdc	Vdc	mW	Ω / ± 10 %	
non-latching 1 coil						V23079-
5	3.75	10.90	0.50	140	178	G2001-X071
6	4.50	13.00	0.60	140	257	G2002-X072
9	6.75	19.60	0.90	140	578	G2006-X073
12	9.00	26.15	1.20	140	1029	G2003-X074

**Ordering Information**

Relay Code	Tyco Part Number
V23079-G2001-X071	0-1422006-1
V23079-G2002-X072	0-1422006-2
V23079-G2006-X073	0-1422006-3
V23079-G2003-X074	0-1422006-4

## IM Relays

4<sup>th</sup> 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  $\mu$ s) and FCC part 68 (1,5 kV – 10 / 160  $\mu$ s). The IM relay is CECC/IECQ approved and certified in accordance with IEC/EN 60950 and UL 1950. Dimensions approx. 10 x 6 mm board space and 5.65 mm height.

## P2 Relays

3<sup>rd</sup> 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  $\mu$ s) and FCC part 68 (1,5 kV – 10 / 160  $\mu$ s). Dimensions approx. 15 x 7,5 mm board space and 10 mm height.

## FX Relays

3<sup>rd</sup> 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  $\mu$ s) and FCC part 68 (1,5 kV – 10 / 160  $\mu$ s). The FX2 is CECC/IECQ approved and certified in accordance with IEC/EN 60950 and UL 1950. Dimensions approx. 15 x 7,5 mm board space and 10,7 mm height.

## FT2 / FU2 Relays

3<sup>rd</sup> 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  $\mu$ s) and FCC part 68 (1,5 kV – 10 / 160  $\mu$ s). The FT2/FU2 is CECC/IECQ approved and certified in accordance with IEC/EN 60950 and UL 1950. Dimensions approx. 15 x 7,5 mm board space and 10 mm height.

## FP1 Relays

3<sup>rd</sup> 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  $\mu$ s). The FP2 is CECC/IECQ approved. Dimensions approx. 14 x 9 mm board space and 5 mm height.

## MT2 / MT4

2<sup>nd</sup> 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  $\mu$ s) for both and the Bellcore requirements according GR 1089 (2,5 kV – 2 / 10  $\mu$ s) the MT4 only. Dimensions MT2 approx. 20 x 10 mm board space and 11 mm height, MT4 approx. 20 x 15 mm board space and 11 mm height.

## D2n Relays

2<sup>nd</sup> 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  $\mu$ s). Dimensions approx. 20 x 10 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  $\mu$ s). 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 1<sup>st</sup> 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.

## HF3 Relay

High performance low cost RF relay with excellent RF characteristics. Available with an impedance of 50 and 75 Ohm. Suitable for frequencies up to 3 GHz. Actually smallest RF relay available combining small size, excellent RF performance and SMD solderability. Available as non latching or latching relay with 1 or 2 coils and a nominal coil voltage range from 3 ... 24 V, coil power consumption 140 mW, latching relays with 1 coil 70 mW. Dimensions 14.6 x 7.3 x 10 mm.



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