

V23079 (P2) series

5 Amp Switching, High Dielectric DPDT Polarized FCC Part 68 PC Board Relay

File E48393

File LR45064

Users should thoroughly review the technical data before selecting a product part number. It is recommended that users also seek out the pertinent approvals files of the agencies/laboratories and review them to ensure the product meets the requirements for a given application.

Features

- Surface and through hole mounting types.
- Breakdown voltage between contacts and coil: 1,500Vrms.
- Surge withstand between contacts and coil: 2,500V (Bellcore).
- High capacity contact: 2A @ 30VDC.
- 2 Form C contact arrangement.
- Board space saving, vertical mount (14.6 x 7.2mm surface area).
- Immersion cleanable, plastic sealed case.
- Single and dual coil latching versions available.
- Basic insulation (coil-to-contact) according to EN 60950 / UL 1950.
- Ultrasonic cleaning is not recommended.

Contact Data @ 23°C

Arrangement: 2 Form C (DPDT) bifurcated contacts.

Material: Gold overlay on silver nickel.

Rating:

Max. Switching Voltage: 250VAC, 220VDC.

Max. Switching Current: 5A.

Max Carrying Current: 2A.

Max Switching Power: 60W, DC; 62.5VA, AC.

Min. Permissible Load: 100μV.

UL/CSA Rating: 1A @ 30VDC; 300mA @ 110VDC; 500mA @ 120VAC; 250mA @ 240VAC.

Expected Mechanical Life: Approx. 100 million ops.

Expected Electrical Life: 50 million ops. @ 10mA, 12V,
10 million ops. @ 100mA, 6V.
1 million ops. @ 1A, 30V,
500,000 ops. @ 500mA, 60V.
200,000 ops. @ 2A, 30V.

Initial Contact Resistance: 50 milliohms @ 10mA, 20mV.

Thermoelectric potential: <10μV.

High Frequency Data

Capacitance: **Between Open Contacts:** 2pF, max.

Between Coil and Contacts: 1.5pF, max.

Between Poles: 1pF, max.

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 .

Initial Dielectric Strength

Between Open Contacts: 1,000Vrms for 1 minute. (1,500Vrms on request, consult factory for availability).

Between Coil and Contacts: 1,500Vrms for 1 minute. (single coil relay).

Between Poles: 1,000Vrms for 1 minute.

Surge Voltage Resistance per Bellcore TR-NWT-001089 (2 / 10 μs):

Between Open Contacts: 2,000V.

Between Coil and Contacts: 2,500V (single coil relay).

Between Poles: 2,500V.

Surge Voltage Resistance per FCC 68 (10 / 160 μs):

Between Open Contacts: 1,500V.

Between Coil and Contacts: 1,500V (single coil relay).

Between Poles: 1,500V.

Initial Insulation Resistance

Between Mutually Insulated Conductors: 10⁹ ohms @ 500VDC.

Coil Data @ 23°C

Voltage: 3-24V.

Nominal Power: 70mW-140mW, dependent on model. See chart below.

Nominal Voltage (VDC)	Operating Range @ 23°C		@ 85°C	Coil Resistance @ 23°C
	Must Operate Voltage (VDC)	Max. Voltage (VDC)	Max. Voltage (VDC)	
Non-Latching, 140mW Nominal Power				
3	2.25	6.5	3.4	64.3 ± 6
4.5	3.375	9.8	5.1	145 ± 15
5	3.75	10.9	5.7	178 ± 18
6	4.50	13.0	6.8	257 ± 26
9	6.75	19.6	10.3	578 ± 58
12	9.0	26.1	13.8	1,029 ± 103
24	18.0	52.3	27.7	4,114 ± 411
Single Coil Latching, 70mW Nominal Power				
3	2.25	9.2	4.8	128 ± 13
4.5	3.375	13.8	7.3	289 ± 29
5	3.75	15.3	8.1	357 ± 36
6	4.5	18.5	9.8	514 ± 51
9	6.75	27.7	14.6	1,157 ± 116
12	9.0	37.0	19.6	2,057 ± 206
24	18.0	74.0	39.2	8,228 ± 823
Dual Coil Latching, 140mW Nominal Power				
3	2.25	6.5	-	64.3 ± 6
4.5	3.375	9.8	-	145 ± 15
5	3.75	10.9	-	178 ± 18
6	4.5	13.0	-	257 ± 26
9	6.75	19.6	-	578 ± 58
12	9.0	26.1	-	1,029 ± 103
24	18.0	52.3	-	4,114 ± 411

Operate Data @ 23°C

Must Operate Voltage: 75% of nominal or less.

Must Release Voltage: 10% of nominal or more.

Operate Time (at nominal voltage): 3 ms, typ.; 5 ms, max.

Reset Time (at nominal voltage): 3 ms, typ.; 5 ms, max.

Release Time (non-latching w/o diode in parallel): 2 ms, typ.; 4 ms, max.

Release Time (non-latching with diode in parallel): 4 ms, typ.; 6 ms, max.

Bounce Time (at contact close): 1 ms, typ.; 3 ms, max.

Maximum Switching Rate (no load): 50 operations/s.

Environmental Data

Temperature Range: -40°C to +85°C.

Maximum Allowable Coil Temperature: 110°C.

Thermal Resistance: < 165K/W.

Shock, half sinus, 11 ms: Functional: 50g.

Shock, half sinus, 11 ms: Destructive: 150g.

Vibration, 10-1,000 Hz.: Functional: 35g.

Needle Flame Test: Application time 20s, burning time <15s.

Resistance to Soldering Heat: 260°C for 10s.

Mechanical Data

Termination: Through hole or surface mount printed circuit terminals.

Mounting Position: Any.

Enclosure: Immersion cleanable (IP67) plastic case.

Weight: .084 oz. (2.5g) approximately.

Ordering Information

Typical Part Number ▶

V23079

A10

01

B301

1. Basic Series:

V23079 = P2 Miniature, printed circuit board relay.

2. Termination:

	Non-Latching Normal Ht.	Non-Latching Reduced Ht.	Dual Coil Latching	Single Coil Latching
Through-Hole	A10	A20⁽¹⁾	B12	C11
SMT Extended Terminal	D10	D20⁽¹⁾	E12	F11
SMT Short Terminal	G10	G20⁽¹⁾	H12	J11

3. Coil Voltage:

08 = 3VDC 11 = 4.5VDC 01 = 5VDC 02 = 6VDC 06 = 9VDC 03 = 12VDC 05 = 24VDC⁽²⁾

4. Contact Type:

B301 = Bifurcated, 2 Form C (DPDT), Silver Nickel.

(1) Reduced mounting height of 10.0 mm, as opposed to 10.4 mm (SMT) or 9.6 mm as opposed to 9.9 (through-hole). Non-latching only, not available with 24V coil.

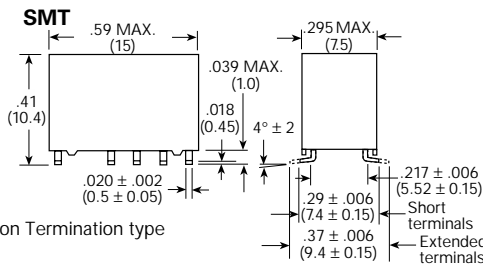
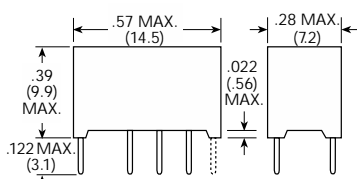
(2) Not available with Termination A20, D20 or G20.

Our authorized distributors are more likely to stock the following items for immediate delivery.

V23079A1001B301	V23079A1011B301	V23079A2011B301	V23079D1005B301	V23079D2003B301
V23079A1003B301	V23079A2001B301	V23079D1001B301	V23079D1011B301	V23079D2011B301
V23079A1005B301	V23079A2003B301	V23079D1003B301	V23079D2001B301	

Outline Dimensions

THT



Note: Mounting height varies dependent upon Termination type selected in step 2 of Ordering Information

Coil Limits

U_I = Minimum voltage at 23° C after pre-energizing with nominal voltage without contact current
 U_{II} = Maximum continuous voltage at 23°

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

$U_{I \text{ t amb}} = K_I \cdot U_I \text{ 23° C}$

and

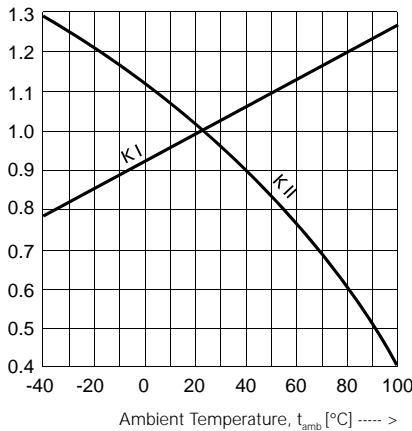
$U_{II \text{ t amb}} = K_{II} \cdot U_{II \text{ 23° C}}$

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

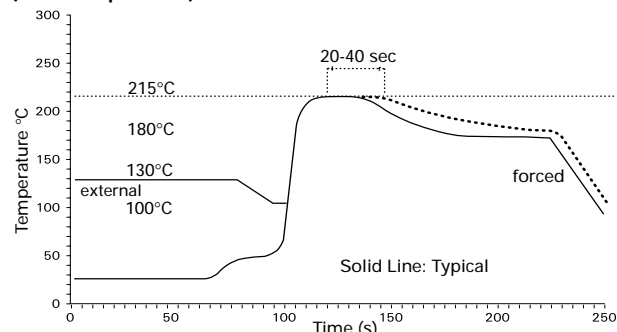


Packaging Information

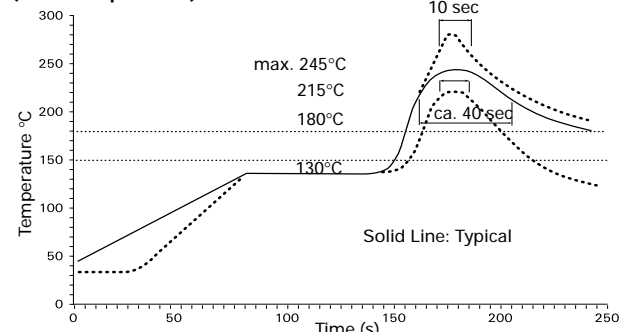
THT P2 relays are shipped in tubes of 50. There are 2,000 relays in a carton. SMT P2 relays with long terminals are shipped in reels of 400, with 2,000 relays in a carton. SMT P2 relays with short terminals are shipped in reels of 500. There are 2,500 relays in a full carton.

Recommended Soldering Conditions (according to CECC 00802)

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

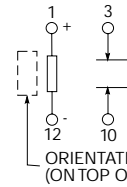


Infrared Soldering: Temperature/Time Profile (Lead Temperature)

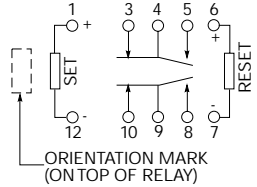


Wiring Diagrams (Bottom Views)

Single Coil Latching* and Single Coil Non-latching**



Dual Coil Latching***



Note: All diagrams shown in de-energized or reset position.

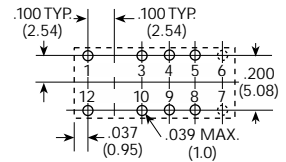
***Note:** For non-latching versions, coil polarity must be observed.

****Note:** For single coil latching versions, polarity shown results in "set" condition. Reverse polarity results in "reset" condition.

*****Note:** The contact position illustrated shows the reset condition. If a positive potential is applied to terminal 1 or 7, the relay adopts the set position.

PC Board Layout (Bottom View)

THT



SMT (Solder Pad)

