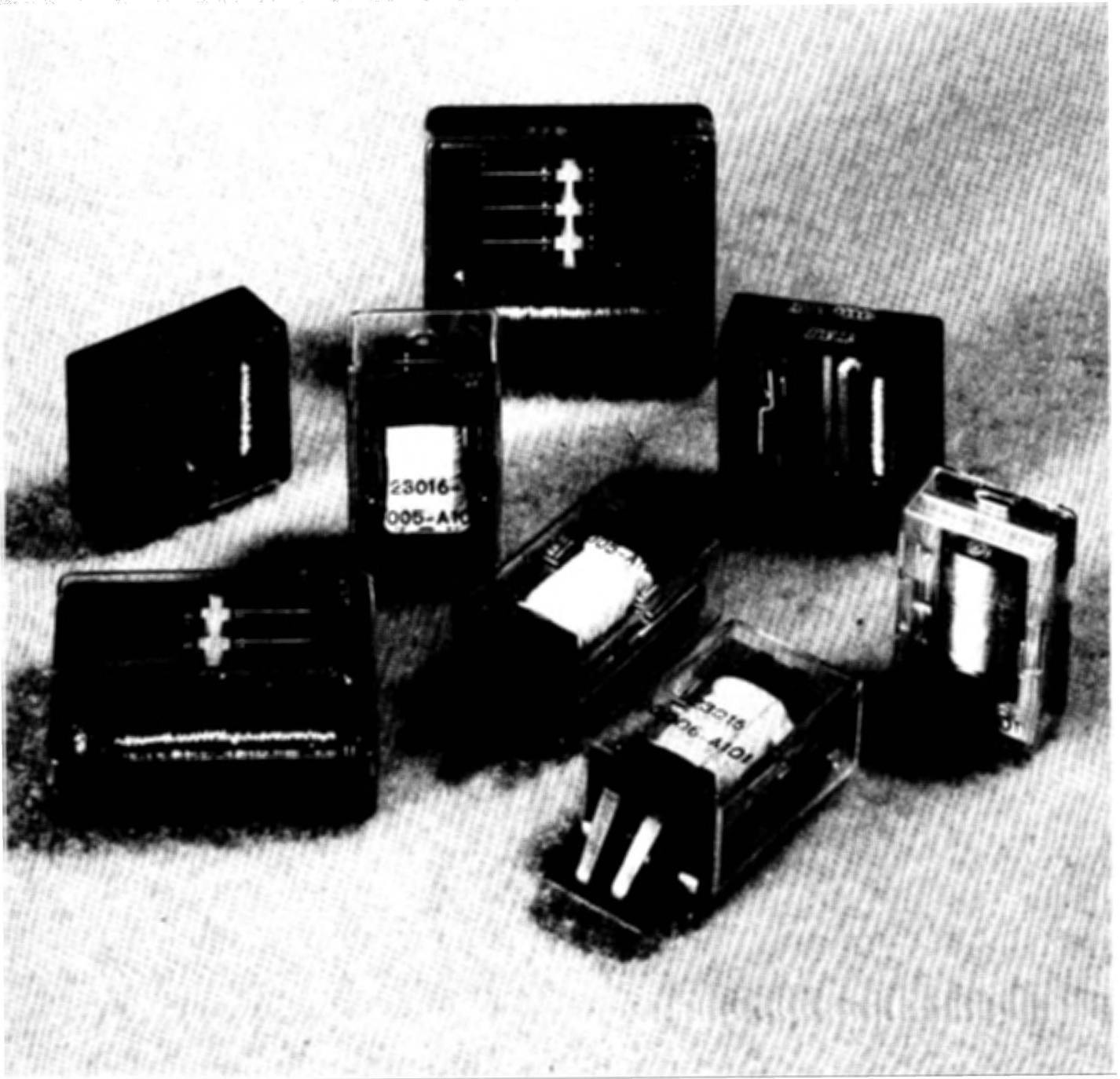


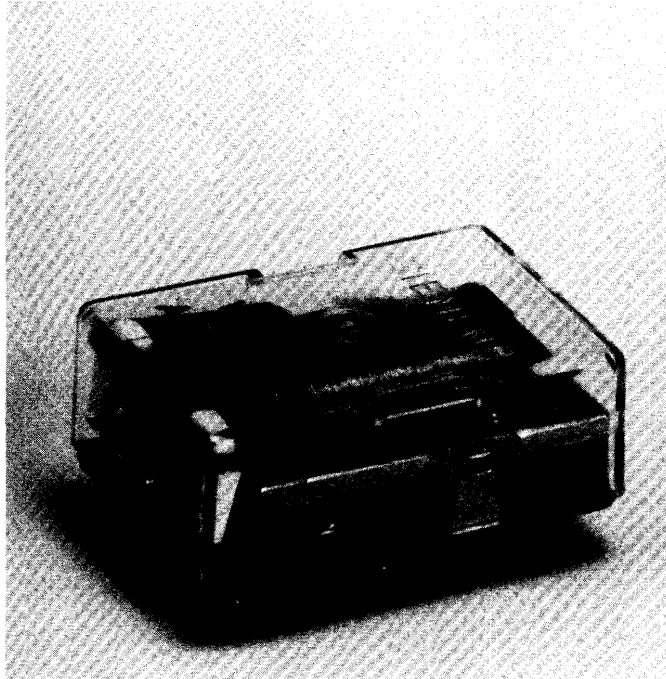
General Purpose Relays

V23012
 V23016 V23054
 V23027 V23154
 V23030 V23162



Siemens developed a popular line of general purpose relays, suitable for mounting onto printed circuit boards. A variety of styles, emphasizing compactness, choice in contact arrangement and material, coil voltages, dust cover protection or hermetically sealed types are available. Some types have CSA certification including TV-5 rating. All relay types are available in a magnetic latching version.

Siemens Electric Limited, Canada, also represents MAGNECRAFT ELECTRIC, Chicago, exclusively in Canada. The magnecraft line of relays ranges from D.I.P.'s, general purpose types, power, mercury displacement, solid state, coaxial, and high voltage relays. For more detailed information please request.



PC Board Relay

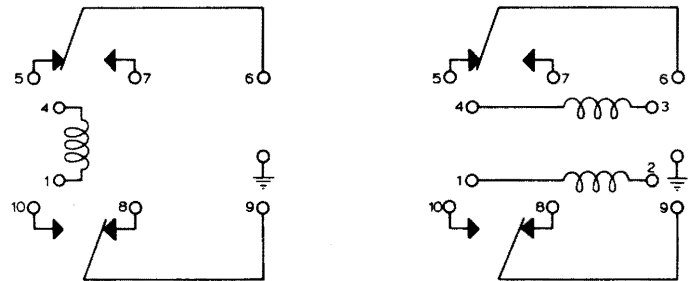
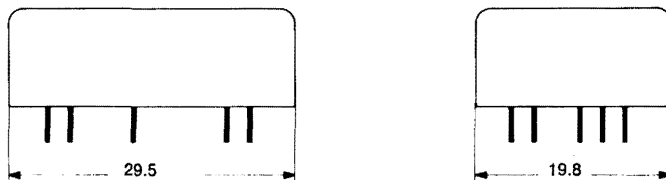
Model V23012
DPDT Contacts

Features

- Excellent packaging density
- High reliability
- Long life
- Low cost
- Extremely low height
- Low power consumption
- Single or bifurcated contacts
- Dual wound coils optional
- Standard .1 inch grid spacing for terminals
- Magnetic latch version available (Request data sheet model V23015)

Dimensions

PC Board layout as seen from the wiring side of relay.
Standard grid spacing 2.5 G = Ground terminal.



Pin numbering

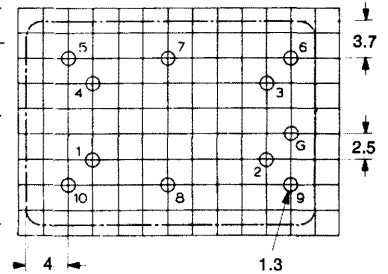
Relay with one winding

Relay with two windings

Operating Data

Nominal Coil Voltage VDC	Maximum Continuous VDC	Must Operate		OHMS	Number Turns	Ordering Code	
		mA	VDC			Standard Contacts DPDT	Bifurcated Contacts DPDT
6	10.5	57.5	4.2	81	1750	A0101-A001	A0101-B001
12	20.5	28.6	8.3	322	3500	A0102-A001	A0102-B001
24	41.0	19.2	17.0	1045	6100	A0105-A001	A0105-B001
48	82.0	7.3	32.8	5350	14600	A0133-A001	A0133-B001

The above values are at 20°C. Coil resistances are ±15% (24 to 48V coils), ±10% (6 to 12V coils). Coils with other resistances for different nominal voltages available on request.



Coil

Pull-In Power of Coil	250 mW
Nominal Coil Power	450 mW
Drop-Out Value..20% of must operate current or voltage	
Maximum Coil Power at 20°C	
Ambient Temperature	1.5 W
Maximum Ambient Temp. at Nominal Coil Power..70°C	
Maximum Switching Rate	50/second
Dielectric Strength, Winding/Frame	500 V RMS
Insulation Resistance	10,000 Megohms minimum

Contact Data (each circuit)

Contact Arrangement — standard or bifurcated	DPDT
Contact Rating	1 A, 24 VDC resistive
	3 A, 115 VAC/DC resistive
Capacitance	
Contact/contact	.3 pF
Open contact/frame	.5 pF

Closed contact/frame	1.6 pF
Operate Time (including bounce)	15 msec.
Release Time (including bounce)	6 msec.

General

Shock	
No contact discontinuity	12 G's
Mechanically	20 G's
Vibration — 10 to 55 Hz	10 G's
Weight	5 oz. approx.
Life, under Resistive Load	
12 W	10 ⁷ operations
24 W	5 x 10 ⁶ operations
Mechanical Life	2 x 10 ⁸ operations

The materials used in the manufacture of these relays are subject to damage by some cleaning solutions when removing flux from P.C. boards. Consult Siemens for proper cleaning methods.

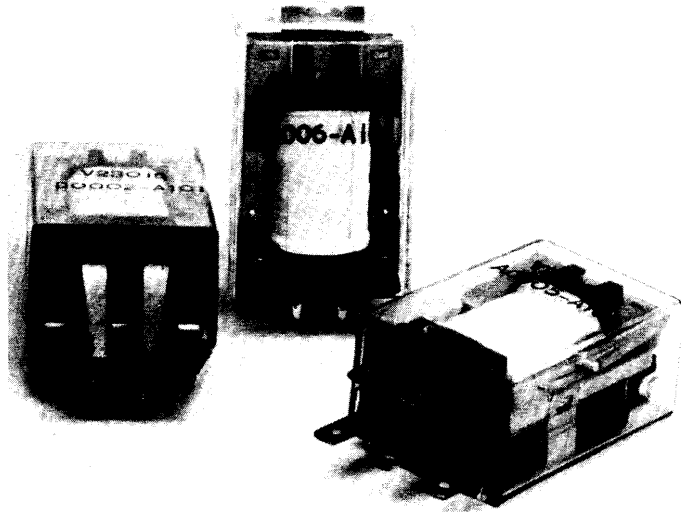
General Purpose Relays

V23016

Power Relay



Model V23016
 SPST No. or SPDT Contacts
 SPST-NODM



Features

- Compact design — excellent packaging density
- High reliability
- Low cost
- Unusually high surge capability
- Contact rating 7.5 A steady state, 15 A in-rush
- Standard Amp fast-on tap terminals
- Standard .1 inch grid spacing for P.C. terminals
- Low operate power
- Other mounting formats available
- CSA approved under file No. LR 26128 for 5A/250V operation.

Operating Data

Nominal Coil Voltage VDC	Maximum Continuous VDC	Must Operate VDC	Ohms	Ordering Code			
				Amp Type Terminals		PC Board Type Terminals	
				SPDT	SPST-NODM	SPDT	SPST-NODM
6	11	4.2	65	A0002-A101	A0002-A102	D0002-A101	D0002-A102
12	22	8.3	230	A0005-A101	A0005-A102	D0005-A101	D0005-A102
24	44	16.8	970	A0006-A101	A0006-A102	D0006-A101	D0006-A102
48	88	32.8	3150	A0004-A101	A0004-A102	D0004-A101	D0004-A102

The above values are at 20°C. Coil resistances are ±15% (24 to 48V coils), ±10% (6 to 12V coils). Coils with other resistances for different nominal voltages available on request.

Contact Data (each circuit)

Contact Arrangement .. SPST-NO Double Make or SPDT
 Contact Rating, continuous current at 7.5 A 115/208 VAC
 Surge Rating, at 10% Duty cycle (with 4 sec. on time maximum) 15 A
 Power Rating
 30 VDC 120 W resistive
 250 VDC 50 W resistive
 115 VAC 900 VA resistive
 200 VAC 1650 VA resistive
 Capacitance
 Contact/contact 1.0 pF
 Open contact/frame 2.5 pF
 Closed contact/frame 5.0 pF
 Dielectric Strength
 Contacts/frame 2500 V RMS
 Contacts/winding 2500 V RMS
 Operate Time (including bounce) 10 msec.
 Release Time (including bounce) 6 msec.

Coil

Nominal Coil Power 600 mW
 Maximum Coil Power at 20°C Ambient Temp. 1.6 W
 Maximum Ambient Temp. at Nominal Coil Power .. 70°C
 Maximum Switching Rate 40/second
 Dielectric Strength, Winding/Frame 1500 V RMS
 Insulation Resistance 1000 Megohms minimum

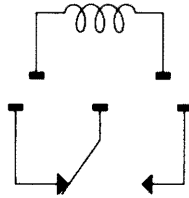
General

Shock
 No contact discontinuity 10 G's
 Mechanically 15 G's
 Vibration — 10 to 50 Hz 5 G's
 Weight 5 oz. approx.
 Life, under Resistive Load
 7.5 A at 115 VAC 10⁴ operations
 7.5 A at 24 VDC 10⁶ operations
 Mechanical Life 2 x 10⁸ operations

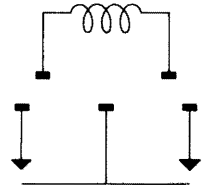
Dimensions

V23016 Contact arrangement wiring diagrams viewed from terminals

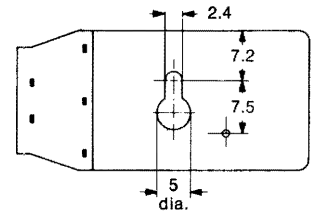
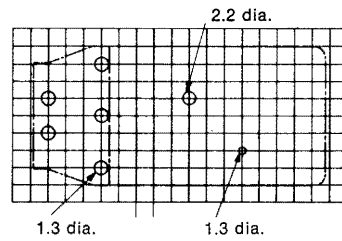
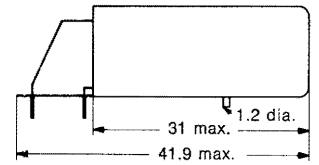
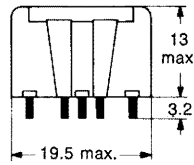
SPDT



SPST-NODM

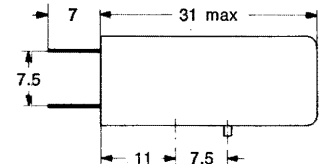
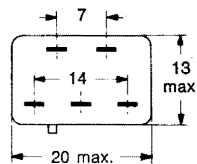


D version

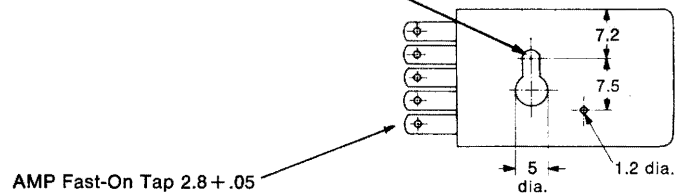


D Version P.C. board layout viewed from wiring side. Standard grid spacing 2.54 mm

A version



center location of mounting screw
No. 2-56 x 1/4" depth of screw
slot .08



AMP Fast-On Tap 2.8 + .05

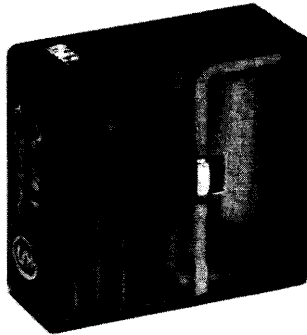
General Purpose Relays

V23027

PC Board Relay



Model V23027
 SPST — Contacts
 SPST NO. or SPDT



Features

- Slim and compact design
- 8 Amp contact rating
- Contact material for resistive, inductive or lamp loads
- SPDT contacts
- PC board mounting on 0.1" grid spacing
- Low cost
- Dust proof housing
- Low power consumption

Siemens miniature P.C. Board power relay fills the need for a low cost power relay to switch heavy current loads at a low power consumption rate. Typical applications are in heating systems, automotive and consumer electronics, process control, communications and data processing. Three different contact materials are available for resistive, lamp and inductive loads up to 8 Amps continuous or switching.

Coil Ordering Data

Nominal Coil VDC	Must Operate VDC	Maximum Continuous VDC	Coil Resistance In OHMS	Coil Code	
				Horizontal Mount	Vertical Mount
6	4.2	10.6	80 ± 8	—A0001—	—B0001—
12	8.3	21.5	330 ± 33	—A0002—	—B0002—
24	16.8	40.0	1200 ± 180	—A0006—	—B0006—
48	32.8	79.0	4750 ± 700	—A0013—	—B0013—

The above values are at 20°C. Other coils on request.

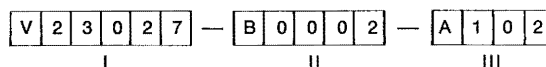
Contact Ordering Data

Type	Silver Gold Flashed	Silver Nickel	Silver Cadmium-Oxide
SPDT	—A101*	—A201	—A401
SPST-NO	—A102	—A202	—A402

*Preferred Stock Model

Ordering Data

The relay part number consists of 3 blocks:
 Block I — V23027 — Relay model
 Block II — Digit 1 — Relay mounting
 — Digits 2-5 — Coil code



Block III — Digits 1-2 — Contact Material
 — Digits 3-4 — Contact Type

V23027 Cont.

Contact Data

Contact Arrangement	SPDT or SPST-NO	Operate Time (including bounce)	8msec
Contact Rating		Release Time (including bounce)	4msec
Maximum Continuous Current	8A	Capacitance	
Maximum Switching Current	8A	Contact/Contact	1.6pF
Surge Rating at 10% Duty Cycle		Contact/Winding	1.0pF
with 4 sec. on-time maximum	15A	Contact/Frame	<1.25pF
Maximum Continuous Volts	250VRMS	Dielectric Strength	
Power Rating	100W/500VA	Contact/Contact	500VRMS
Contact Life, Resistive Load		Contact/Winding	2500VRMS
100 VAC/8A	10 ⁵	Contact/Frame	2500VRMS
100 VAC/5A	2 x 10 ⁵	Contact Material (3 types)	Silver, gold flashed
24 VDC/8A	10 ⁵		Silver Nickel
250 VDC/0.4A	5 x 10 ⁶		Silver Cad.-Oxide
Contact Pressure	15 grams		

Coil

Nominal Coil Power	450mW	Maximum Ambient Temperature at	
Average Pull-in Coil Power	200mW	Nominal Coil Power	60°C
Maximum Continuous Coil Power		Maximum Switching Rate	20/sec
Dissipation @ 20°C Ambient Temperature	1W	Dielectric Strength Winding/Frame	500VRMS
		Insulation Resistance	>100Mohms

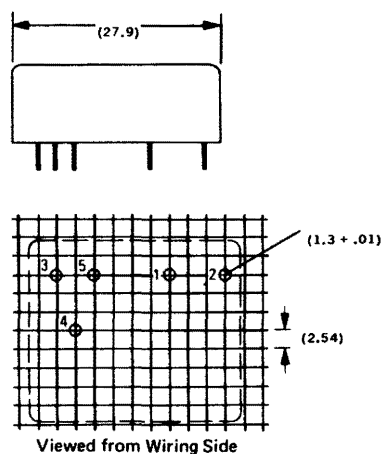
General

Weight	12 grams	Mechanical Life	2 x 10 ⁷
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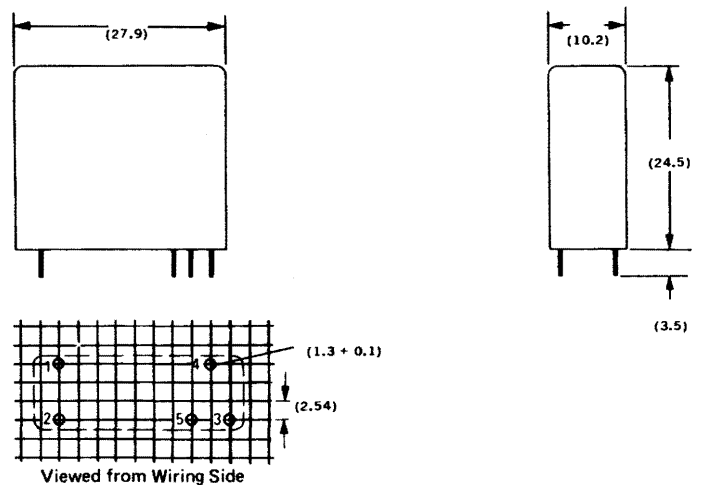
Dimensions (all dimension in mm)

All dimensions max. unless noted.

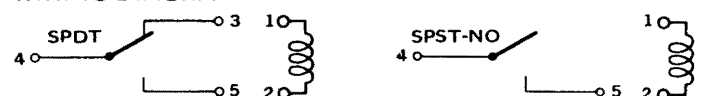
V23027-A



V23027-B

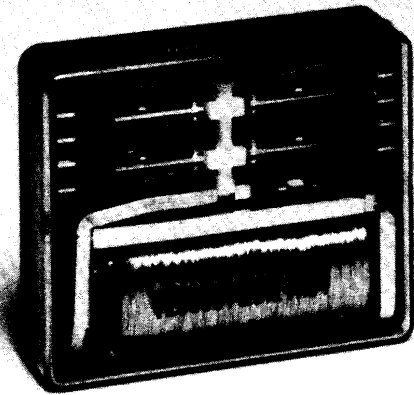


WIRING DIAGRAM



General Purpose Relays

V23030



PC Board Relay

Model V23030
4 PDT and 6 PDT

Features

- Overall height above P.C. board only .4 inches
- Allows .5" center-to-center P.C. board spacing
- Bifurcated contacts for high reliability
- 1 Amp contact rating
- Base sealed against flux creepage
- Terminals on standard .1 inch grid spacing
- Long life

Model V23030 was designed as a compact multipole relay for use directly on P. C. boards. It is the lowest profile electromechanical relay available for applications where close rack mounting of P. C. boards is required. With its overall height of .4" above the P. C. board, it permits standard .5" center-to-center P. C. board spacing. The sealed base prevents flux or solder from entering the relay, thus allowing automated wave soldering processes for simplification and economy. It is particularly suited for applications such as communication systems, data processing, and automatic control systems.

Ordering Data

Nominal Coil Voltage DC	Maximum Continuous VDC	Must Operate				Coil Resistance in OHMS	Ordering Code Bifurcated Contacts	
		4 PDT		6 PDT			4 PDT	6 PDT
		mA	VDC	mA	VDC			
6	9.7	78.0	3.5	102.0	4.6	50	A2012-A104	C2012-A106
12	19.0	42.0	7.0	57.0	9.5	185	A2017-A104	C2017-A106
24	37.0	21.5	14.0	28.2	18.5	730	A2021-A104	C2021-A106
48	70.0	12.4	28.5	16.2	37.0	2700	A2026-A104	C2026-A106

The above values are at 20°C. Coil resistances are ±10% up to and including 730 ohms; ±15% for 2.7 K ohms and up. Coils with other resistances for different nominal voltages available on request.

How to Order

Ordering Code — Add the code reference to the basic relay type number V23030. For example: a 24VDC relay with 6PDT Bifurcated Contacts.

V23030 — C2021 — A106
(type) (coil) (contact)

Coil

	4PDT	6PDT
Nominal Coil Power	700mW	700mW
Average Pull-in Coil Power	250mW	450mW
Drop-out Value (% of Nominal Coil VDC)	10%	10%
Maximum Continuous Coil Power Dissipation @ 20°C Ambient Temperature	2W	2W
Maximum Ambient Temperature at Nominal Coil Power	70°C	70°C
Maximum Switching Rate	20/sec	20/sec
Dielectric Strength, Winding/Frame	500VRMS	500VRMS
Insulation Resistance	10 ¹⁰ ohms	10 ¹⁰ ohms

V23030 Continued

Contact Data

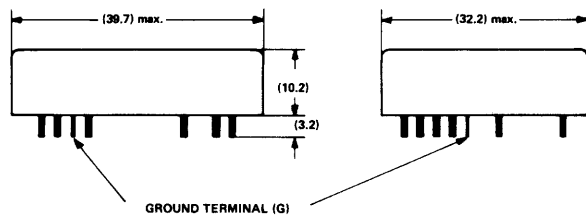
	4PDT	6PDT
Contact Arrangement (Bifurcated)	4PDT	6PDT
Contact Rating		
@ 24 VDC resistive	1A	1A
@ 115 VAC/DC resistive	.3A	.3A
Capacitance		
Contact/Contact	<2pF	<2pF
Open Contact/Frame	<1.8pF	<1.8pF
Closed Contact/Frame	<2.3pF	<2.3pF
Operate Time (including bounce)	11msec	11msec
Release Time (including bounce)	5.5msec	5.5msec
Contact Material Standard	Copper Nickel Alloy, Silver Plated	Gold
Optional, for low level switching applications	Gold	Gold
Contact Pressure	10 grams	10 grams
Dielectric Strength		
Contact/Contact	500VRMS	500VRMS
Contact/Frame	500VRMS	500VRMS

General

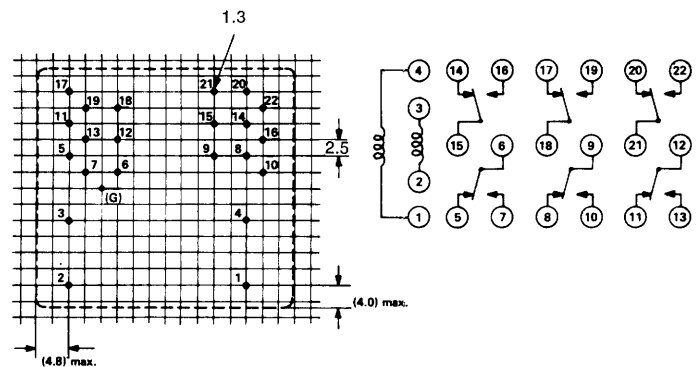
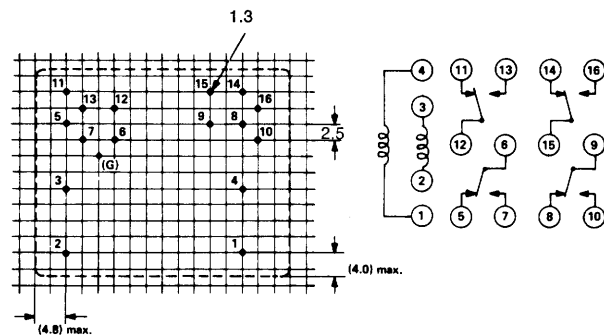
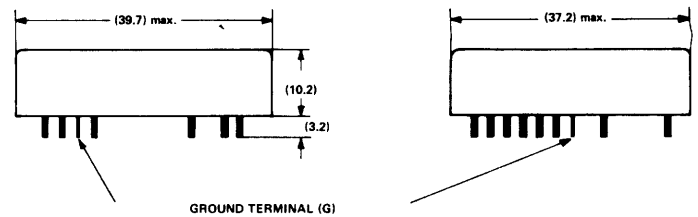
Weight	25 grams	30 grams
Mechanical Life	10 ⁸ operations	10 ⁸ operations

Dimensions

4 PDT



6 PDT



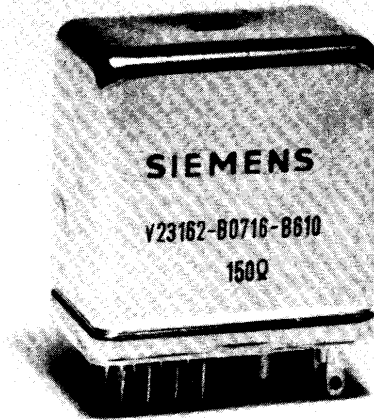
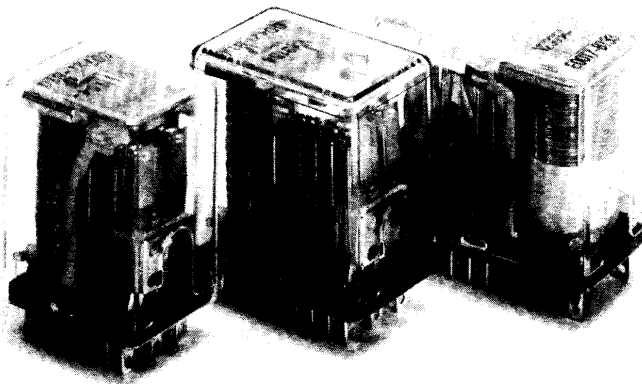
PC BOARD LAYOUTS AS SEEN FROM THE WIRING SIDE OF RELAYS. STANDARD GRID SPACING 1". G - GROUND TERMINAL

WIRING DIAGRAM SHOWN WITH TWO COILS.

WIRING DIAGRAM SHOWN WITH TWO COILS.

General Purpose Relays

V23054
V23154
V23162



Cradle Relay

Models V23054, V23154 and V23162

The **Cradle Relay**, originally designed by Siemens, is now one of the most successful and widely used relays in the world. It was developed as a communications relay sensitive enough to operate with minimum power consumption but capable of switching up to

5 Amp loads. A perfect interface for such applications as computer peripherals, communications, industrial controls, alarms and signal equipment, medical electronics and office machines.

Contact Data

	2 Amps	0.2 Amps	5 Amps
Material	Silver/gold flashed	Gold	Silver/gold flashed
Type	Single*	Single*	Single
Rating	2A @ 28VDC/115VAC Resistive	0.2A @ 24V Resistive	5A @ 28VDC/115VAC Resistive
Max. switching rate	50/sec.	50/sec.	10/sec.
Contact pressure	9 to 12 grams	9 to 12 grams	12 grams
Test Voltage			
(Contact/contact)	1000 VRMS	1000 VRMS	1000 VRMS
(Contact/frame)	1000 VRMS	1000 VRMS	1000 VRMS
Approx. operate time	7.5 m sec	7.5 m sec	7.5 m sec
Approx. release time	3 m sec	3 m sec	3 m sec
Mechanical life	10 ⁸	10 ⁸	10 ⁷

*Bifurcated contacts available on request.

Coil

Max. cont. coil power dissipation	2 watts
Test voltage (coil/frame)	1000 VRMS

General

Weight (depending on size)	20 to 27 grams
Relay ambient temperature range	-55°C to +80°C
Terminal material	Silver

Note:

The materials used in the manufacture of these relays are subject to damage by some cleaning solutions when removing solder and flux from P.C. Boards. We suggest you use only solutions compatible with materials such as Lexan, Phenolic, Magnet Wire, Silver and

Gold. P.C. Boards should only be cleaned on the side being flow soldered. When it is necessary to clean both sides of the P.C. Board it is suggested that sockets or hermetically-sealed relays be used.

V23054
V23154
V23162

General Purpose Relays

V23054, V23154, and V23162 Continued

Ordering Data

The Relay Part Number consists of 3 blocks:

V	2	3	1	5	4	—	D	0	4	2	1	—	B	1	1	0
I							II						III			

Block I: Relay Type Number: See Table 1

II: Digit 1 — Enclosure/Terminal Code: See Table 1
2 - 5 — Coil Number: See Table 2

III: Contact Code: See Table 1

Example:	V23154-D Dust covered plug-in DC relay in 4-pole size	0421- with 700Ω 24VDC coil	B110 4 PDT single 2 Amp contacts
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TABLE 1

Relay Type And Standard Contacts*

Type	Enclosure	Terminal	Contact	Silver 2 Amp	Gold 0.2 Amp	Silver 5 Amp
V23154-C	Dust Cover	Plug-in	2 PDT	B104	B604	W089
V23154-D			4 PDT	B110	B610	W075
V23054-E			6 PDT	B133	B633	W090
V23154-M	Hermetically Sealed	PC	2 PDT	B104	B604	W089
V23154-N			4 PDT	B110	B610	W075
V23162-A			2 PDT	B104	B604	W589
V23162-B			4 PDT	B110	B610	W575

*Other contact materials and configurations are available on request.

TABLE 2

Coil Data

Coil Number		Nom. VDC	Coil Resistance in Ω @ 20°C		Must Operate** in V @ 20°C			Max. Cont. V
2 + 4 PDT	6 PDT		2 + 4 PDT	6 PDT	2 PDT	4 PDT	6 PDT	
0412	0012	6	52	70	2.1	3.3	4.4	13
0417	0017	12	185	270	4.2	6.6	8.7	25
0421	0021	24	700	1050	8.9	14	13	50
0426	0026	48	2500	3800	18	27	36	94
0403	0004	115	15000	9200	48	76	54	145

**Must Operate figures are for single contacts only. Add 40 % for bifurcated contacts. Coil Resistance tolerance ±10%, except 48V and over. Other coils available on request.

TABLE 3

Coil Derating Factors

Ambient Temp. °C	20°	30°	40°	50°	60°	70°	80°
Must Operate Voltage Factor	1.0	1.05	1.09	1.13	1.17	1.215	1.255
Max. Continuous Voltage Factor	1.0	0.93	0.86	0.79	0.705	0.615	0.5

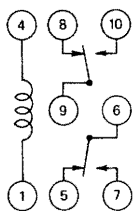
When operating relays at temperatures above 20°C ambient coil derating factors for Must Operate and Maximum Continuous Voltage must be calculated to obtain the permissible operating voltage range of the relay.

Example: V23154-D0421-B110

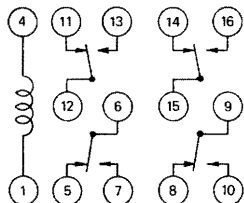
Must Operate Voltage at 20°C is 14 volts. At 70°C this voltage multiplied by the factor 1.215 equals 17 volts.

Wiring Diagram

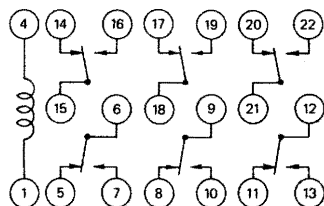
2 PDT



4 PDT



6 PDT



Sockets and Retainers

For relays up to	Sockets		Retainers
	Solder terminals	P.C. terminals	
2 PDT	V23154-Z1005	V23154-Z1001	V23154-Z1021
4 PDT	V23154-Z1006	V23154-Z1002	V23154-Z1022
6 PDT	V23154-Z1015	V23154-Z1028	V23154-Z1034

General Purpose Relays

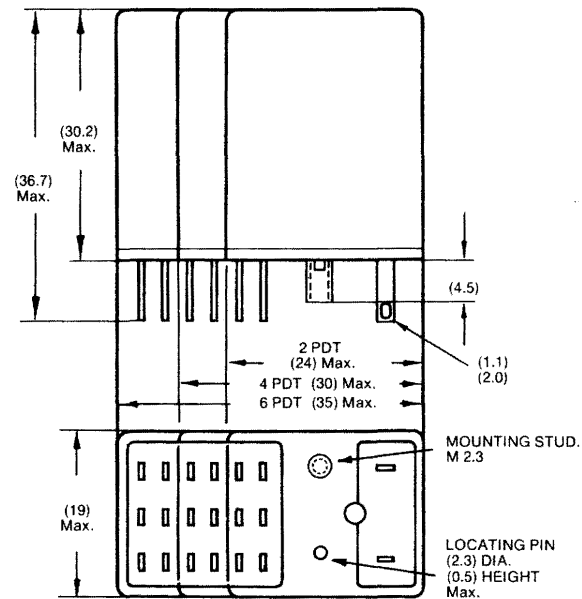
V23054
V23154
V23162

V23054, V23154, and V23162 Continued

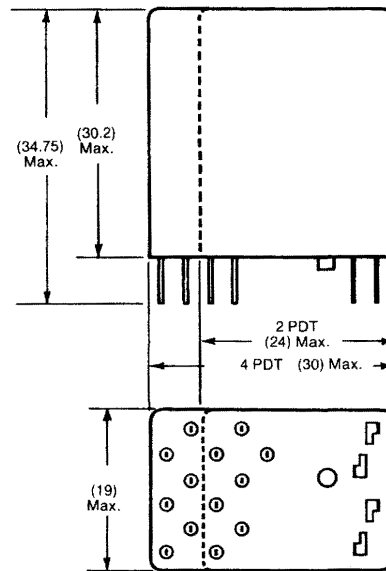
Mechanical Outlines

Note: All dimensions shown are in mm, unless otherwise noted.

Plug-in Terminals



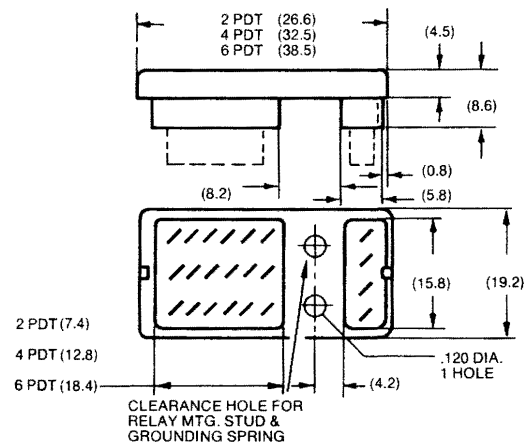
Printed Circuit Terminals



Board layout identical to socket below

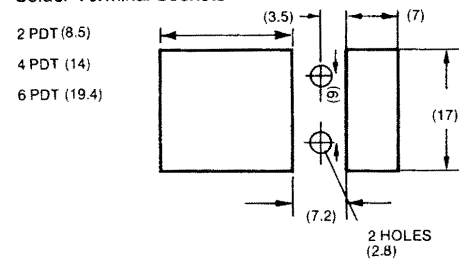
Sockets

Solder Terminal

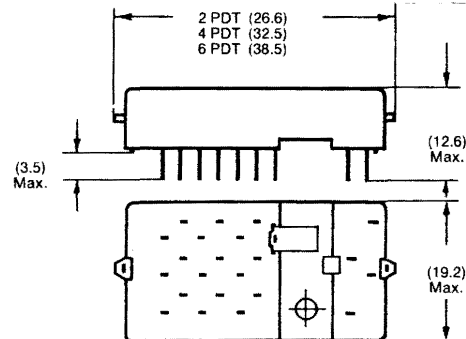


Chassis Cutout

Solder Terminal Sockets

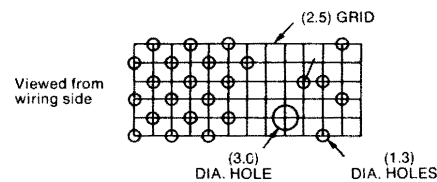


Printed Circuit Terminal



Printed Circuit Board

Grid Layout for Pins



a) Hole for mechanical armature actuation if required
 b) Hole for fixing socket with 3-48 screw if required

SIEMENS