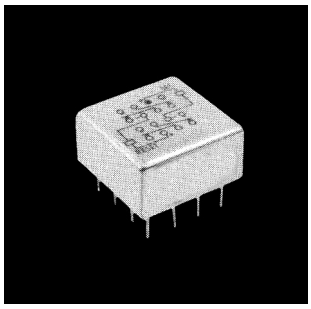
Four Pole, Magnetic Latching, 2 Amps and Less

.150 Grid-space Magnetic Latching Relays

Type 3SBM (4PDT)

Product Facts

- **Low profile… only 0.32 inches high**
- **Internal diode for coil transient suppression available**
- **Qualified to MIL-R-39016/31**
- **Suitable for low pulse operation — 2 ms at rated voltage**



The Type 3SBM relay adds magnetic latching capability to the popular and growing family of .150-grid relays. This relay has memory in that the contact positions do not change when coil power is removed. Switching is accomplished by applying power to the applicable coil (dual coil) or with the applicable polarity (single coil). The low switching power requirements are further enhanced by its ability to operate from capacitor discharge or other pulses or through its own contacts from batteries or similarly limited supplies.

Electrical Characteristics

Operate Sensitivity—
Single-coil form, 100 mW,
Dual-coil form, 180 mW

Contact Arrangement—
4-pole double-throw (4C)

Contact Ratings —
DC resistive — 2 amps at 28 volts
DC inductive — 0.5 amp at 28 volts, 200 mH
AC resistive — 0.5 amp at 115 volts (enclosure isolated from ground, or enclosure and movable contact at same potential)
AC — 0.125 amp at 115 volts (enclosure at line potential with respect to movable contact)
Low-level — 50 µA at 50 mV
Peak AC or DC

Contact Resistance —
0.050 ohms max.;
0.150 ohms after life tests

Life —
100,000 operations at rated loads listed;
1,000,000 operations at low-level loads

Operating Characteristics

Operate Time — 4 ms max.

Release Time — 4 ms max.

Contact Bounce — 1.5 ms

Dielectric Strength —
500 volts rms at sea level;
350 volts rms at 70,000 feet and above

Insulation Resistance —
1,000 megohms min. over temperature range

Environmental Characteristics

Vibration — 30 G, 55 to 3,000 Hz

Shock — 150 G at 11 ms

Temperature — -65°C to +125°C

See page 1-62 for Mounting Forms, Terminals and Circuit Diagrams.

Coil Table (All Values DC)*

Coil Code Letter	SINGLE COIL, SENSITIVITY 1, (100 mW)			
	Coil Resistance @ 25C (Ohms) ± 10%	Maximum Set-Reset Values		Suggested Source Volts‡
		Calibration Code 5 Voltage (Volts)	Calibration Code 6 Current (mA)	
N	57	2.4	42	3.6– 8.5
R	256	5.1	20	7.6–18
T	830	9.1	11	14–32
V	1700	13.0	7.7	20–46
W	3250	18.0	5.5	28–63

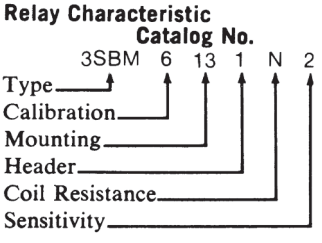
Coil Code Letter	DUAL COIL, SENSITIVITY CODE 2, (180 mW)			
	Coil Resistance @ 25C (Ohms) ± 10%	Maximum Set-Reset Values		Suggested Source Volts‡
		Calibration Code 5 Voltage (Volts)	Calibration Code 6 Current (mA)	
H	10	1.4	135	2.0– 3.7
N	37	2.6	70	3.8– 7.2
R	145	5.2	35	7.6–14.5
T	450	9.0	20	14–25
V	975	13.5	13.5	20–35
W	2140	20.0	9.2	30–54

*Values listed are factory test and inspection values. User should allow for meter variations.
†Applicable over the operating temperature range in circulating air.

Ordering Instructions

Type 3SBM relays can be ordered by specifying the correct catalog number. This number is derived by choosing the proper CODE for each of the six relay characteristics in the order in which the codes are listed.

Example: The relay selected in this example is a dual coil, current calibrated, four-hole end bracket mounting, solder hook header, 37 ohms coil resistance, and 180 mW sensitivity. By choosing the proper code for each of these relay characteristics, the catalog number is identified as 3SBM6131N2. The letter R following sensitivity code indicates relay received 5000 operation miss-test. Ex. 3SBM6131N2R.



* The part number example shown on this page is for catalog items. For a list of specific QPL part numbers, please see the index in Section 15.

Catalog 5-1773450-5
Revised 3-13

www.te.com

Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

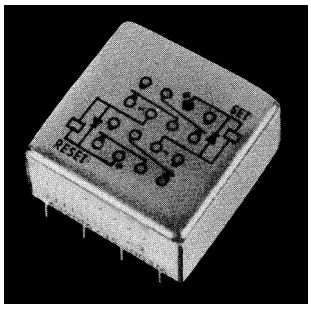
For additional support numbers please visit www.te.com

Four Pole, Magnetic Latching, 2 Amps and Less (Continued)

.150 Grid-space Hybrid Magnetic Latching Relays
Single Diode, Dual Diode
Type 3SBM (4PDT)

Product Facts

- **Low profile… only 0.32 inches high**
- **Suitable for pulse operation**
- **Qualified to MIL-R-39016/35**
- **Qualified to MIL-R-39016/36**



The dual coil version of the 3SBM magnetic latching relay is now available with coil transient suppression with or without blocking diodes for reverse polarity protection. This hybrid magnetic latching relay is an addition to the growing family of .150 grid relays. The diode method is employed to limit the back EMF generated when the coil circuit is opened in order to protect other circuit components such as semi-conductors. The contact load capabilities of the 3SBM as well as the memory feature of the latching function are both maintained.

Electrical Characteristics

Contact Arrangement—
4-pole double-throw (4C)

Operate Sensitivity—
Single-coil form, 100 mW,
Dual-coil form, 180 mW per coil

Contact Ratings —
DC resistive — 2 amps at 28 volts
DC inductive — 0.5 amp at 28 volts, 200 mH
AC resistive — 0.5 amp at 115 volts (enclosure isolated from ground, or enclosure and movable contact at same potential)
AC — 0.125 amp at 115 volts (enclosure at line potential with respect to movable contact)
Low-level — 50 µA at 50 mV
Peak AC or DC

Contact Resistance —
0.050 ohms max.;
0.150 ohms after life test

Life — 100,000 operations at rated loads listed; 1,000,000 operations at low-level loads

Operating Characteristics

Operate Time — 4 ms max.

Release Time — 4 ms max.

Contact Bounce — 1.5 ms

Dielectric Strength (Note 1) —
500 volts rms at sea level;
350 volts rms at 70,000 feet and above

Insulation Resistance (Note 1) —
1,000 megohms min. over temperature range

Environmental Characteristics

Vibration — 30 G, 55 to 3,000 Hz

Shock — 150 G at 11 ms

Temperature — -65°C to +125°C

Semiconductor Characteristics at 25°C

Max. Negative Transient — 1 volt

Breakdown Voltage — 100 Vdc min.

Max. Leakage Current —
1 µA @ 50 Vdc

Note 1: Tests for dielectric withstanding voltage and insulation resistance should be made with "coil terminals" shorted together to avoid unnecessary electrical stress to semiconductor elements.

See page 1-62 for Mounting Forms, Terminals and Circuit Diagrams.

Coil Table Single Diode (All Values DC)*

Coil Code Letter	Dual Coil, Sensitivity Code 5 (180 mW)			
	Coil Resistance @ 25C (ohms) ± 10%	MAX. SET—RESET VALUES		Suggested Source Volts†
		Calibration Code 5 Voltage (Volts)	Calibration Code 6 Current (mA)	
H	10	1.4	135	2.0- 3.7
N	37	2.6	70	3.8- 7.2
R	145	5.2	35	7.6-14.5
T	450	9.0	20	14-25
V	975	13.5	3.5	20-35
W	2140	20.0	9.2	30-54

Coil Table Dual Diode (All Values DC)*

Coil Code Letter	Dual Coil, Sensitivity Code 6 (180 mW)			
	Coil Resistance @ 25C (ohms) ± 10%**	MAX. SET—RESET VALUES		Suggested Source Volts†
		Calibration Code 5 Voltage (Volts)	Calibration Code 6 Current (mA)	
H	10	2.4	135	2.6- 4.1
N	37	3.6	70	3.8- 7.2
R	145	6.2	35	7.6-14.5
T	450	10.0	20	14.0-25.0
V	975	14.5	13.5	20.0-35.0
W	2140	21.0	9.2	30.0-45.0

*Values listed are factory test and inspection values. User should allow for meter variations.
†Applicable over the operating temperature range in circulating air.
**Coil resistance cannot be measured by conventional bridge.

Note: See page 1-60 for ordering instructions.

***** The part number example shown on this page is for catalog items. For a list of specific QPL part numbers, please see the index in Section 15.

Catalog 5-1773450-5
Revised 3-13

www.te.com

Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

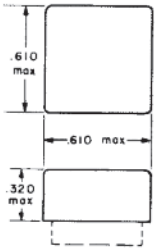
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

Four Pole, Magnetic Latching, 2 Amps and Less (Continued)

Mounting Forms (3SBM)

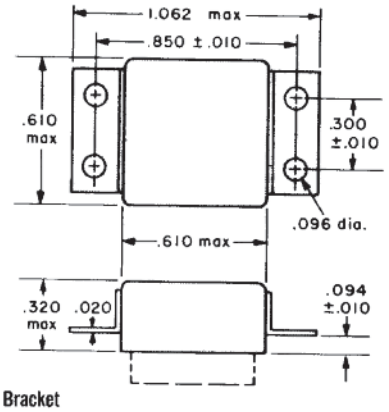
(Vibration note with each form is acceleration from 55 to 3000 Hz)



No Mount

Mounting Code	Vibration*
00	30g

*Assumes relay held securely by potting or other means.



End Bracket

Mounting Code	Vibration
13	30g

ALL DIMENSIONS IN INCHES

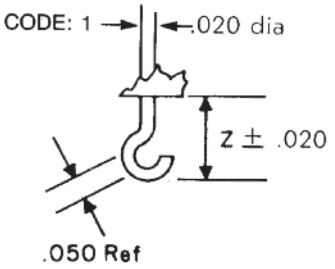
TOLERANCES Unless otherwise specified:	
Hundredths	±0.020
Thousandths	±0.005

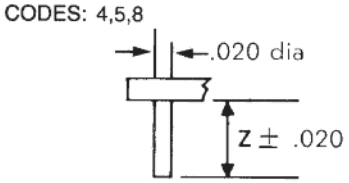
Header and Connection Diagrams

Dual Coil

When the SET coil is pulsed with plus polarity on the blue bead, the movable contacts take the position shown in the connection diagram. The contacts are transferred when the RESET coil is pulsed with plus polarity on the reset terminal. A new pulse of the SET coil with plus polarity on the blue bead will transfer the contacts back.

The contacts can also be transferred by applying a pulse of opposite polarity to the coil previously pulsed. However, this method requires slightly more power than the more normal form of operation described in the previous paragraph.

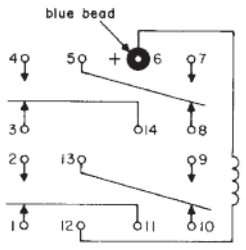




Header Types

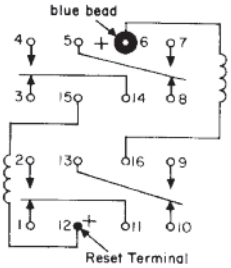
Type	Z Dimension	Header Code
Solder Hook	0.13	1
Straight Pin	0.12	8
Straight Pin (socket or PCB type)	0.19	4
Straight Pin	0.25	5

CODE 1

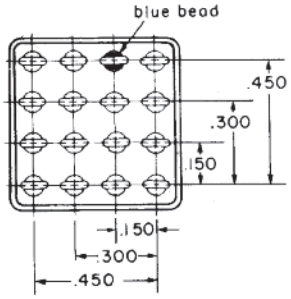


(Terminal numbers for reference only)

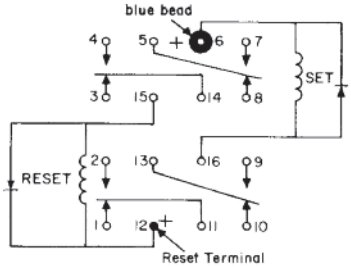
CODE 2



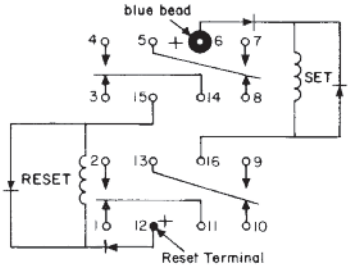
Terminal numbers for reference only



CODE 5
Single Diode



CODE 6
Dual Diode



Catalog 5-1773450-5
Revised 3-13

www.te.com

Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers please visit www.te.com

Unikeyic Electronics

Global Electronic Components Distributor

Click to view pricing, inventory, delivery, and lifecycle information:

TE Connectivity:

175977-2 1969656-1 CRGCQ2010J3K3 2310537-1 2834055-1 SBCHE64R7K 2-292161-3 1903112-2
3430B2F51RTDF 936348-1 CPF0402B37K4E1 MPT100C18RF RH73H2A40MKTN SBCHE154R7K
1-794222-0 1393431-1 141991-2 3631B101LL U5254-000005-030PA 2377783-2 2380312-2 650075-000
ROX05SJ18R TE50BR39J 2005330-1 3-1393225-0 917696-1 SMW73R0JT 1-962915-1 1743455-2