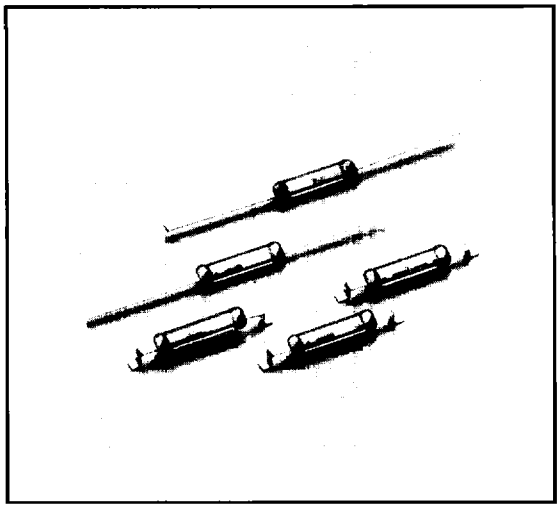
# MINI-DYAD®

## 10mm Reed Switch



## DESCRIPTION

CP Clare's Mini-DYAD Reed Switch is designed for general reed switch usage and miniature proximity sensing applications. The Mini-DYAD has a glass length of only 10mm long, a superior hermetic glass-to-metal seal, sputtered ruthenium contacts and super flexible leads. The Mini's contact blade is designed to give low and stable contact resistance and the highest current carrying capability in its size class.

The Mini-DYAD is also available as the world's smallest dry reed SMT switch. With the available carrier tape, it is perfect for automated SMT assembly. The rectangular glass body and wide, flat, preformed leads mean the Mini won't fall over during SMT assembly. Besides the standard SMT, other formations are available upon request.

## FEATURES

- Small size
- SMT compatible
- Lowest contact resistance of its size class
- 2.0 amp carry current
- Strong rugged seal
- Sputtered ruthenium contacts
- Solder-plated or oxide-free weldable leads
- Hermetically sealed contacts
- Fast switching speed — up to 500 Hz

## APPLICATIONS

- Security
  - Proximity sensing
  - Smoke alarms
- Automotive
  - Level sensor
  - Lamp current sensor
- Telecom
  - Hook switch
  - Antenna switching
- Industrial
  - Level sensors
  - Flow sensors

## RATINGS

| Parameter | Min | Typ | Max | Units |
|---|---|---|---|---|
| Contact Rating | | | 10 | Watts |
| Contact Resistance | | 70 | | mΩ |
| Carry Current | | | 2 | Amps |
| Switching Voltage | | | 200 | VDC |
| Isolation Voltage between contacts | 250 | 300 | | VDC |

(See detailed specifications for more information.)

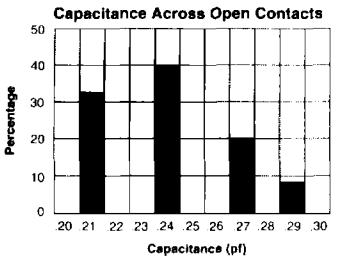
*CPCLS001*

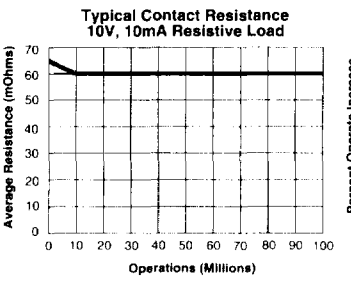
CP Clare Corporation • Reed Relay Products • 15 John L. Dietsch Blvd. • North Attleboro, MA 02763 • Tel: (508) 643-9990 • Fax: (508) 643-9991

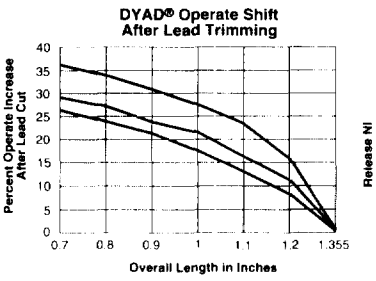
| Parameter[1] | Conditions | Symbol | Min | Typ | Max | Units |
|---|---|---|---|---|---|---|
| **Contact Ratings** | | | | | | |
| Operate ampere turns range | EIA/NARM 1 STD Coil | AT | 10 | | 30 | NI |
| Release ampere turns range | EIA/NARM 1 STD Coil | AT | 5 | | 30 | NI |
| Switching Voltage | Max DC/Peak AC Resist | VL | | | 200 | VDC |
| Switching Current | Max DC/Peak AC Resist | IL | | | 500 | mAmps |
| Carry Current | Max DC/Peak AC Resist | IC | | | 2.0 | Amps |
| Contact Rating | Max DC/Peak AC Resist | | | | 10 | Watts |
| Life Expectancy | 1V, 10mA Signal Level | | | 1000 | | $x10^6$ Ops |
| | 10V, 10mA Low Level | | | 500 | | $x10^6$ Ops |
| | 50V, 100mA Telecom Load | | | 300 | | $x10^3$ Ops |
| | 100V, 100mA Rated Loads | | | 300 | | $x10^3$ Ops |
| Static Contact Resistance | 50mV, 10mA[2] | CR | | 70 | 100 | mΩ |
| Dynamic Contact Resistance | 0.5V, 50mA at 100 Hz, 1.5 msec. | DCR | | 90 | 110 | mΩ |
| Contact Material (Sputtered) | | | | Ru | | |
| **Switch Specifications** | | | | | | |
| Insulation Resistance[3] | 100V, 25∞C, 40% RH | IR | $10^{11}$ | | | Ω |
| Capacitance | Across Open Contacts | | 0.2 | 0.3 | 0.4 | pF |
| Dielectric Strength | Between Open Contacts | | 250 | 300 | | VDC/Peak AC |
| Operate Time, including bounce | At 50% Overdrive, 30 Hz Square Wave | TOP | | | 0.5 | msec. |
| Release Time | Zener-Diode Suppression[4] | TREL | | | 0.1 | msec. |
| **Environmental Ratings** | | | | | | |
| Storage Temperature | | TA | -40 | | +125 | ∞C |
| Operating Temperature | | TO | -40 | | +125 | ∞C |
| Soldering Temperature | | | | | +265 | ∞C |
| Vibration Resistance | 1 Hz - 2000 Hz | G | | | 20 | Gs |
| Shock Resistance | Impulse | S | | | 50 | Gs |

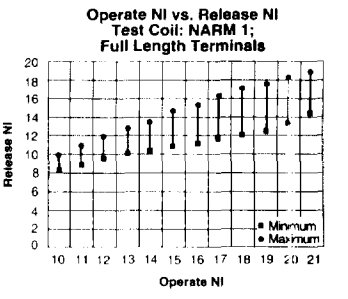
[1] All Parameters were tested at 25°C unless otherwise noted
[2] Contact resistance measured with 4 terminal method, 1.0" between test leads
[3] > $10^{12}$ Ω is available upon request
[4] A 24V zener in series with an 1N4148 diode across the coil

## PERFORMANCE GRAPHS



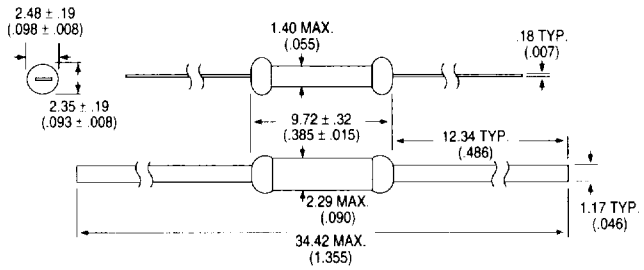



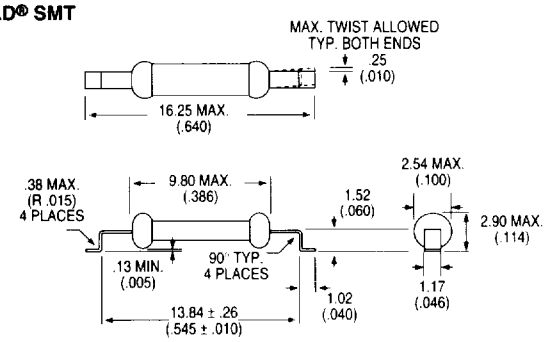
## MECHANICAL DIMENSIONS

mm (inches)

**MINI-DYAD®**




**MINI-DYAD® SMT**




All dimensions are typical unless otherwise noted.

## STANDARD TEST COIL

The magnetic force (expressed in NI, AT or Ampere Turns) required to cause the reed switch contacts to close is called the pull-in or operate value.

| | |
|---|---|
| Coil definition | EIA/NARM I Standard |
| Wire size | AWG 46 |
| Number of turns | 5000 ± 5 turns |
| Coil resistance | 1200 Ohms ± 10% |
| Recommended mounting conditions | Vertical, with the coil magnetic field opposing the local earth's magnetic field |

The reed switch shall be placed in the test coil with the gap centered in the core of the coil winding.
Test leads and their clips must be non-magnetic.
The longitudinal axis of the test coil and the test switch shall be vertical.

## ORDERING INFORMATION

A complete part number is represented by the digits below. For example, MN1S1030-0530 is a Mini-DYAD with solder-plated leads, minimum operate value of 10, maximum of 30 and minimum release value of 5, maximum of 30. The ranges available are listed below. Special ranges are available upon request.

**MN1 X XX XX - XX XX**

- MN1 — Model #
- X — Terminal finish: W = Weldable, S = Solder plated
- XX — Maximum operate value
- XX — Minimum operate value
- XX — Maximum release value
- XX — Minimum release value

## SURFACE MOUNT ORDERING INFORMATION

The standard surface mount packages are:

| Part # | Operate Range (NI) | Release Range (NI) |
|---|---|---|
| **SMT*** | | |
| **MN2285** | 15 to 20 | 5 to 20 |
| **MN2286** | 20 to 25 | 5 to 25 |
| **MN2287** | 25 to 30 | 5 to 30 |
| **MN2288** | 10 to 20 | 5 to 20 |
| **MN2289** | 15 to 25 | 5 to 25 |
| **MN2290** | 20 to 30 | 5 to 30 |

## STANDARD AMPERE TURN RANGES

| Part # | Operate Range (NI) | Release Range (NI) |
|---|---|---|
| **AXIAL** | | |
| **MN1 S1015-0515** | 10 to 15 | 5 to 15 |
| **MN1 S1020-0520** | 10 to 20 | 5 to 20 |
| **MN1 S1030-0530** | 10 to 30 | 5 to 30 |
| **MN1 S1520-0520** | 15 to 20 | 5 to 20 |
| **MN1 S1525-0525** | 15 to 25 | 5 to 25 |
| **MN1 S2025-0525** | 20 to 25 | 5 to 25 |

* The leads in surface mount packages are solder plated.

CP Clare
CORPORATION

## Worldwide Sales Offices

### NORTH AMERICA

**Illinois**
CP Clare Corporation
***North American Sales Office***
601B Campus Drive
Arlington Heights, IL 60004
Tel: +708-797-7000
Fax: +708-797-7023
Toll Free: 1-800-CP-CLARE

**California**
CP Clare Corporation
***Western Regional Sales***
10061 Talbert Avenue
Suite 210
Fountain Valley, CA 92708
Tel: +714-378-1212
Fax: +714-378-1210
Toll Free: 1-800-CPCLARE

**Canada**
CP Clare Canada Ltd.
***Northeastern Regional Sales and Canada***
3425 Harvester Road
Suite 202
Burlington, Ontario L7N 3N1
Tel: +905-333-9066
Fax: +905-333-1824
Toll Free: 1-800-CPCLARE

**North Carolina**
CP Clare Corporation
***Mid-Atlantic Regional Sales***
901-B Paverstone Drive
Raleigh, NC 27615
Tel: +919-518-2077
Fax: +919-518-2079
Toll Free: 1-800-CPCLARE

### EUROPE

**Benelux - Northern Europe and Rep Area**
CP Clare International N.V.
***European Sales Office***
Overhaamlaan 40
B-3700 Tongeren (Belgium)
Tel: +32-12-390400
Fax: +32-12-390419
Telex: 39020

**France**
CP Clare France s.a.r.l.
9/11, Rue Georges Enesco
F-94008 Creteil Cedex
Tel: +33-1-43991522
Fax: +33-1-43991524

**Germany**
CP Clare Elektronik GmbH
Müehlstrasse 12
D-71640 Ludwigsburg
Tel: +49-7141-90089
+49-7141-926972
Fax: +49-7141-90080

**Italy**
Clare Sales
C.L.A.R.E.s.a.s.
Via C. Colombo 10/A
20066 Melzo (Milano)
Tel: +39-2-95737160
Fax: +39-2-95738829

**Sweden**
Clare Sales
Comptronic AB
Box 167
S16329 Spånga
Tel: +46-862-10370
Fax: +46-862-10371

**United Kingdom**
Clare UK Sales
Marco Polo House
Cook Way
Bindon Road
Taunton, Somerset TA2 6BG
Tel: +44-1-823-352541
Fax: +44-1-823-352797

### ASIA PACIFIC

CP Clare Corporation
***Asian Sales Office***
Room N1016
Chia-Hsin Bldg. II
10/F, No. 96, Sec. 2
Chung Shan North Road
Taipei, Taiwan R.O.C.
Tel: +886-2-523-6368
Fax: +886-2-523-6369

### JAPAN

CP Clare Corporation
***Japanese Sales Office***
Tosei Building 5F
2-23-1, Ikebukuro, Toshima-KU
Tokyo 171
Tel: +81-03-3980-2212
Fax: +81-03-3980-2213

### CORPORATE HEADQUARTERS

CP Clare Corporation
430 Bedford Street
Lexington, MA 02173-1548
Tel: +617-863-8700
Fax: +617-863-8707

### BUSINESS UNIT

CP Clare Corporation
***Reed Relay Products***
15 John L. Dietsch Blvd.
North Attleboro, MA 02763
Tel: +508-643-9990
Fax: +508-643-9991



Specification No. MN1-1

3/96