



### Features

- Small size
- SMT-compatible
- Easily formed leads
- Sputtered ruthenium contacts
- Hermetically sealed contacts
- Fast switching speed — up to 500Hz
- Wide range of available magnetic sensitivities
- Superior mechanical strength
- Enhanced for better auto placement

### Applications

- Security
  - Proximity sensing
  - Smoke alarms
- Automotive
  - Level sensor
  - Lamp current sensor
- Relays

### 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.

	CM5
<b>Part #</b>	Coil-1
<b>Coil Definition</b>	NARM1 CTC01
<b>Coil Resistance</b>	1200Ω
<b>Number of Turns</b>	5,000
<b>Wire Size</b>	0.0399mm (AWG 46)
<b>Bobbin Diameter (inside cell)</b>	3.96mm
<b>Winding Length</b>	10.4mm

<sup>(1)</sup> Consult factory for test procedure.

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.

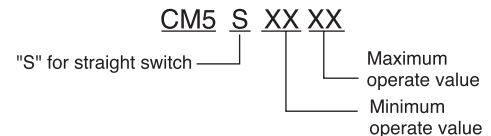
The longitudinal axis of the test coil and the test switch shall be vertical.

### Description

Clare's Molded Ultra-Mini DYAD™ is well suited for small, signal switching applications. The small size lends itself to surface mountable applications; working well on higher density PC boards. The Molded Ultra-Mini DYAD™ has sputtered ruthenium contacts and an extraordinary seal strength achieved by a patented laser sealing of the leads. In low level or dry switching environments, switches typically exceed 1 billion operations. In addition, the molding process provides a solid plastic outer shell. This plastic shell provides superior mechanical strength, eliminates concerns over handling glass switches, and provides an ideal solution for high speed, automated assembly environments.

### Ordering Information

A complete part number is represented by the digits to the right. For example, CM5S1030 is a MOLDED ULTRA-MINI DYAD™ with a minimum operate value of 10NI and a maximum of 30NI. Refer to the switch operating specification charts for available ranges. Special ranges are available upon request.



Surface Mount Molded Ultra-Mini DYAD  
Refer to operating characteristics table for complete part number.

### Molded Ultra-Mini DYAD™

Part #	Operate Range (NI) <sup>1</sup>
CM5S1015	10 to 15
CM5S1020	10 to 20
CM5S1030	10 to 30
CM5S1520	15 to 20
CM5S1525	15 to 25
CM5S2025	20 to 25

### Molded Ultra-Mini DYAD™ Surface Mount

Part #	Operate Range (NI) <sup>1,2,3</sup>
CM5-2319	10 to 15
CM5-2315	10 to 20
CM5-2376	10 to 30
CM5-2325	15 to 20
CM5-2341	15 to 25
CM5-2378	20 to 25

<sup>1</sup> Tolerance = ± 1.5NI

<sup>2</sup> Full Blade Sensitivity

<sup>3</sup> Surface Mount Switches are packaged 3,000 parts per reel

## CM5

## Absolute Maximum Ratings (@ 25° C)

Parameter	Min	Typ	Max	Units
Switching Voltage CM5 - Molded Ultra Mini-DYAD™	-	-	175	Volts
Switching Current CM5 - Molded Ultra Mini-DYAD™	-	-	0.25	Amps
Carry Current CM5 - Molded Ultra Mini-DYAD™	-	-	0.50	Amps
Switching Frequency CM5 - Molded Ultra Mini-DYAD™	-	-	500	Hz
Contact Resistance CM5 - Molded Ultra Mini-DYAD™	-	-	300	mΩ

(See detailed specifications for more information.)

Absolute Maximum Ratings are stress ratings. Stresses in excess of these ratings can cause permanent damage to the device. Functional operation of the device at these or any other conditions beyond those indicated in the operational sections of this data sheet is not implied. Exposure of the device to the absolute maximum ratings for extended period may degrade the device and effect its reliability.

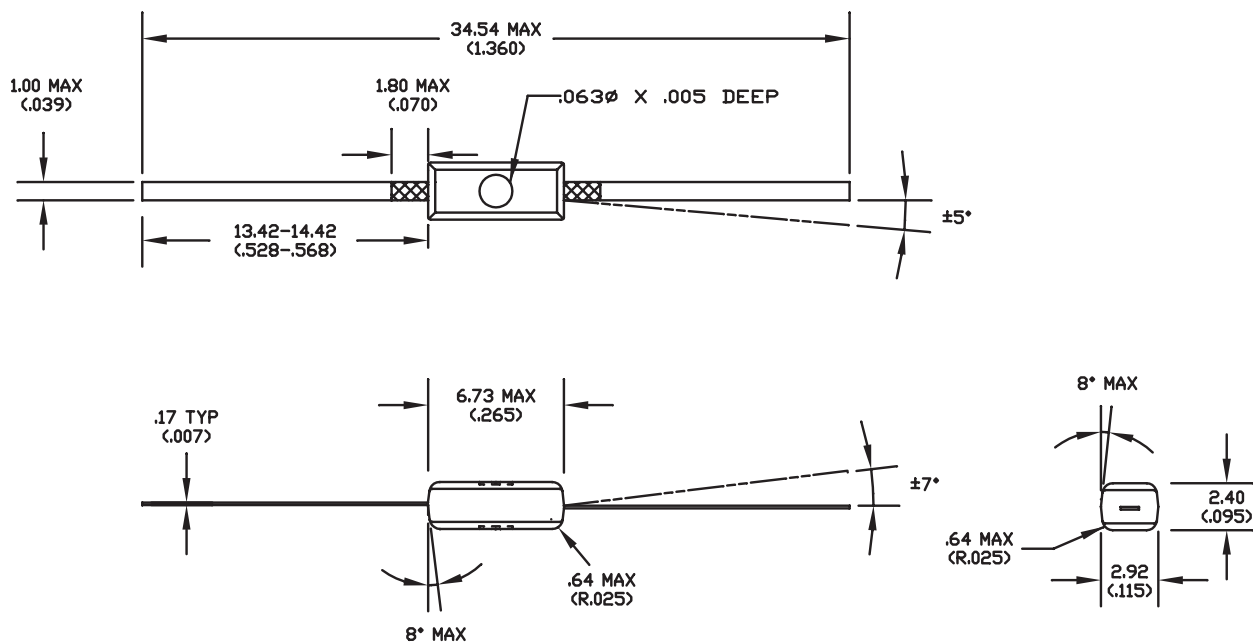
## Specifications

All parameters are at 25°C unless otherwise stated.

PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNITS
<b>Contact Ratings</b>						
Operate ampere turns range	Full Blade Tolerance = ± 1.5NI	AT	10	-	30	NI
Release ampere turns range	Full Blade Tolerance = ± 1.5NI	AT	5	-	30	NI
Switching Voltage	Max DC/PeakAC Resistive	V <sub>L</sub>	-	-	175	VDC
Switching Current	Max DC/PeakAC Resistive	I <sub>L</sub>	-	-	250	mAmps
Carry Current	Max DC/PeakAC Resistive	I <sub>C</sub>	-	-	0.5	Amps
Contact Rating	Max DC/PeakAC Resistive	-	-	-	5	VA
Life Expectancy	1V, 10mA Signal Level	-	-	1000	-	x10 <sup>6</sup> Ops
	10V, 10mA Low Level	-	-	500	-	-x10 <sup>6</sup> Ops
	50V, 100mA Telecom Load	-	-	2	-	x10 <sup>6</sup> Ops
	100V, 100mA Rated Loads	-	-	2	-	x10 <sup>6</sup> Ops
Static Contact Resistance	50mV, 10mA <sup>(1)</sup>	CR	-	120	300	Ω
Contact Material		-	-	Ru	-	-
<b>Switch Specifications</b>						
Insulation Resistance <sup>(2)</sup>	100V, 25°C, 40% RH	IR	10 <sup>9</sup>	10 <sup>11</sup>	-	Ω
Capacitance	Across Open Contacts	-	-	0.3	-	pF
Dielectric Strength <sup>(5)</sup>	Between Contacts	-	200	-	-	VDC/Peak AC
Operate Time, including bounce	At nominal coil voltage, 10Hz Square Wave	T <sub>OP</sub>	-	-	0.4	ms
Release Time	Zener-Diode Suppression <sup>(3)</sup>	T <sub>REL</sub>	-	-	0.1	ms
<b>Environmental Ratings</b>						
Storage Temperature		T <sub>A</sub>	-40	-	+125	°C
Operating Temperature		T <sub>O</sub>	-40	-	+125	°C
Soldering Temperature		-	-	-	+265	°C
Vibration	5Hz - 200Hz	G	-	-	20	-Gs
Shock	11±1ms, 1/2 Sine Wave	S	-	-	30	Gs
Shock - survivability	11±1ms, 1/2 Sine Wave	S	-	-	500	Gs

<sup>(1)</sup> Contact resistance measured with 4 terminal method, 1.1" between test leads<sup>(2)</sup> >10<sup>12</sup> Ω is available upon request<sup>(3)</sup> A 24V zener in series with a diode across the coil<sup>(4)</sup> Use caution not to exceed vibration resistance limits while ultrasonically cleaning. Contact Clare, Inc. Engineering for more details/ recommendations<sup>(5)</sup> 15 ampere turn minimum

### Mechanical Dimensions



#### NOTES:

1. SURFACE - MATTE FINISH VDI 18-21
2.  AREA NOT SUITABLE FOR SOLDERING

Dimensions  
mm  
inches



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Specification: PB-CM5-R1  
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