

## Additional Information



Resources


Accessories


Samples

Dimension in inch [mm]


## Description

The MATE-12B Reed Switch is a sub-miniature, normally open switch with a 12.70 mm long $\times 1.80 \mathrm{~mm}$ diameter ( 0.500 " $\times 0.071^{\prime \prime}$ ) glass envelope, capable of switching 200 Vdc at 10 W . It has high insulation resistance of $10^{12}$ Ohms minimum and low contact resistance of less than 100 milli-Ohms.

## Features \& Benefits

- Prolong operating life cycles
- Hermitically sealed
- Miniature normally open switch
- cULus recognition
- RoHS compliant
- Extending end product operating life and reliability, ideal for Automatic Test Equipment (ATE)

Suitable for various operating environment/application

- Saves PCB space and reduce overall weight for compact size and light weight end products
- Facilitates end product meeting/passing cULus test/ request
- Environment friendly


## Applications

- Reed Relay particularly for ATE application that requires long life
- Appliance applications that require long life and high reliability switch


## Agency Approvals

| Agency | Agency File Number | Ampere-Turns Range |
| :---: | :---: | :---: |
| $\mathbf{c} \mathbf{S}_{\text {us }}$ | E47258 | 8-25 AT |

Note: Contact Littelfuse for specific agency approval ratings.

## Switch Type

| Contact Form | Materials |
| :--- | :--- | :--- |
| A (SPST-NO) | Leads: Tin-plated Nickel Iron |
| Note: |  |
| SPST-NO $=$ Single pole, single-throw, normally open |  |

## MATE-12B Series <br> Long life > High Reliability > $12.7 \mathrm{~mm}>$ Sub-miniature

## Electrical Ratings

| Contact Type |  |  | Normally Open |
| :---: | :---: | :---: | :---: |
| Contact Rating ${ }^{1}$ |  | VA/Watt - max. | 10 |
| Voltage ${ }^{3}$ | Switching ${ }^{2}$ <br> Breakdown ${ }^{4}$ | Vdc - max. <br> Vac - max. <br> Vdc - min. | $\begin{aligned} & 200 \\ & 140 \\ & 250 \end{aligned}$ |
| Current ${ }^{3}$ | Switching ${ }^{2}$ <br> Carry | Adc - max. <br> Aac - max. <br> Adc - max | $\begin{gathered} 0.5 \\ 0.35 \\ 1.0 \end{gathered}$ |
| Resistance | Contact, Initial Insulation | $\begin{aligned} & \Omega-\text { max. } \\ & \Omega-\text { min. } \end{aligned}$ | $\begin{gathered} 0.100 \\ 10^{12} \end{gathered}$ |
| Capacitance | Contact | pF - typ. | 0.7 |
| Temperature | Operating Storage ${ }^{5}$ | $\begin{aligned} & { }^{\circ} \mathrm{C} \\ & { }^{\circ} \mathrm{C} \end{aligned}$ | $\begin{aligned} & -40 \text { to }+125 \\ & -65 \text { to }+125 \end{aligned}$ |

## Notes:

1. Contact rating - Product of the switching voltage and current should never exceed the power rating. Contact Littelfuse for additional load/life information
2. When switching inductive and/or capacitive loads, the effects of transient voltages and/or currents should be considered. Refer to Application Notes AN108A and AN107 for details.
3. Electrical Load Life Expectancy - Contact Littelfuse with voltage, current values along with type of load.
4. Breakdown Voltage - per MIL-STD-202, Method 301.
5. Storage Temperature - Long time exposure at elevated temperature may degrade soldarability of the leads.

## Product Characteristics

| Operating Characteristics |  |  |
| :---: | :---: | :---: |
| Operate Time ${ }^{1}$ |  | 0.6 ms - max. |
| Release Time ${ }^{1}$ |  | 0.2 ms - max. |
| Shock ${ }^{2}$ | $11 \mathrm{~ms} 1 / 2$ sine wave | 100 G - max. |
| Vibration ${ }^{2}$ | 50-2000 Hertz | 30 G - max. |
| Resonant Frequency |  | 6250 Hz - typ. |
| Magnetic Characteristics |  |  |
| Pull-In Range ${ }^{3}$ | Ampere Turns | 8-25 AT |
| Rating Sensitivity ${ }^{4}$ | Ampere Turns | 20 |
| Test Coil |  | L4989 |

## Notes:

1. Operate (including bounce)/Release Time - per EIA/NARM RS-421-A, diode suppressed coil (Coil II).
2. Shock and Vibration - per EIA/NARM RS-421-A and MIL-STD-202.
3. Pull-In Range - Contact Littelfuse for narrower AT ranges available.
4. Rating Sensitivity - The value at which contact ratings and operating characteristics are determined. Derating may be required below this value.
5. Custom modifications of forming and/or cutting of reed switches are available. Please contact Littelfuse.

Long life > High Reliability > $12.7 \mathrm{~mm}>$ Sub-miniature

Drop-out vs. Pull-In Chart


## Example:

10-20 Ampere turns Pull-In
5-15 Ampere turns Drop-Out
Note: The chart represents the range of Drop-Out, minimum to maximum for a given Pull-In value.

## Part Numbering System

MATE-12B-10-15

> Series
> AT Range
> $8-13$ AT
> $10-15$ AT
> $12-18$ AT
> $17-23$ AT
> $15-20$ AT $20-25$ AT

## Example:

10-15 AT product is MATE-12B-10-15
Note: These AT values are the before-modification values of the bare Reed Switch

## Life Expectancy

- $5 \mathrm{Vdc}, 20 \mathrm{~mA}, 100 \mathrm{~Hz}$ : Life $=100 \mathrm{M}$ cycles min
- $5 \mathrm{Vdc}, 40 \mathrm{~mA}, 200 \mathrm{~Hz}$ : Life $=150 \mathrm{M}$ cycles B10
- $1 \mathrm{Vdc}, 10 \mathrm{~mA}, 200 \mathrm{~Hz}$ Life $=1 \mathrm{~B}$ cycles min

Note: Life test details available upon request.

Packaging

| Packaging Option | Packaging Specification | Quantity |  <br> Packaging Code | Taping Width |
| :---: | :---: | :---: | :---: | :---: |
| Bulk | Bulk | 1000 | N/A | N/A |

