Dow-Key Microwave  •  www.dowkey.com  •  800.266.3695

RF Characteristics

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<tr>
<td>12-18</td>
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<tr>
<td>*18-26.5</td>
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<td>55</td>
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<tr>
<td>*26.5-40</td>
<td>1.90</td>
<td>55</td>
<td>0.80</td>
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</table>

* Performance varies depending on selected options.

Specifications

Operating Voltage (across temperature range):
- 12 Vdc (11-14 Vdc)
- 24 Vdc (20-28 Vdc)
- 28 Vdc (24-32 Vdc)

Coil Current (max. @ nom. Vdc & 25°C)*:
- 12 Vdc 195 mA
- 24 Vdc 125 mA
- 28 Vdc 95 mA

Switching Time:
15 ms maximum

Operating Temperature:
-25°C to +65°C (Standard)
-55°C to +85°C (Extended “T” Option)

Mechanical Life Cycles*:
1,000,000 minimum
5,000,000 minimum (“U” Option)

Vibration, Operating:
10G RMS, 20-2000 Hz

Mechanical Shock, Non-Operating:
30G, 1/2 Sine, 11 ms

Nominal Weight*:
1.4 oz. (40 g.)

* Performance and weight varies depending on selected options. Values listed are for Standard 401 Failsafe model.

Part Number Selector

401 J - 2 2 08 02 A - ROHS

Special Options
- A = High Power
- I = Immersion Seal
- J = ‘D’ Connector
- K = 26.5 GHz
- S = Epoxy Seal
- T = -55°C to +85°C
- U = 5M Life Cycles
- Y = 40 GHz

Actuator
- 2 = Failsafe
- 6 = Failsafe with Suppression Diode

Coil Voltage
- 2 = 12 Vdc
- 3 = 28 Vdc
- 8 = 24 Vdc

Connectors
- 08 = SMA Female
- 11 = 2.9 mm (K)

Indicators
- 02 = No Indicators*

Circuit Options
- A = TTL High
- L = TTL Low

* Declared only with Circuit Options

TTL option includes suppression diode. Other options may be available and all combinations may not be possible. Please consult with factory.
Specifications

Operating Voltage (across temperature range):
- 12 Vdc (11-14 Vdc)
- 24 Vdc (20-28 Vdc)
- 28 Vdc (24-32 Vdc)

Coil Current (max. @ nom. Vdc & 25°C)*:
- 12 Vdc: 230 mA
- 24 Vdc: 135 mA
- 28 Vdc: 115 mA

Switching Time:
15 ms maximum

Operating Temperature:
- -25°C to +65°C (Standard)
- -55°C to +85°C (Extended “T” Option)

Mechanical Life Cycles*:
- 1,000,000 minimum
- 5,000,000 minimum (“U” Option)

Vibration, Operating:
10G RMS, 20-2000 Hz

Mechanical Shock, Non-Operating:
30G, 1/2 Sine, 11 ms

Nominal Weight*:
1.4 oz. (40 g.)

* Performance and weight varies depending on selected options. Values listed are for Standard 401 Latching model.

Part Number Selector

401 J 4 08 02 A ROHS

Special Options
A = High Power
I = Immersion Seal
J = 'D' Connector
K = 26.5 GHz
S = Epoxy Seal
T = -55°C to + 85°C
U = 5M Life Cycles
Y = 40 GHz

Actuator
3 = Pulse Latching
4 = Latching Self Cutoff
7 = Pulse Latching with Suppression Diode

Coil Voltage
2 = 12 Vdc
3 = 28 Vdc
8 = 24 Vdc

Connectors
08 = SMA Female
11 = 2.9 mm (K)

Indicators
02 = No Indicators*
32 = Indicators

Circuit Options
A = TTL High
L = TTL Low

* Declared only with Circuit Options

TTL option includes suppression diode. Other options may be available and all combinations may not be possible. Please consult with factory.
401 | Electrical Schematics

01 401 Failsafe

02 401 Failsafe TTL

03 Logic Truth Table

FAILSAFE TTL - SCH #2

<table>
<thead>
<tr>
<th>RF PATH</th>
<th>INDICATOR PATH</th>
<th>LOGIC INPUT &quot;A&quot;</th>
<th>LOGIC INPUT &quot;B&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>NC-COM</td>
<td>NC-COM</td>
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<td>NO-COM</td>
<td>NO-COM</td>
<td>1</td>
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</tbody>
</table>

"0" = 0.0V–0.8V  
"1" = 2.4V–5.5V

SELF CUTOFF TTL - SCH #6

<table>
<thead>
<tr>
<th>RF PATH</th>
<th>INDICATOR PATH</th>
<th>LOGIC INPUT &quot;A&quot;</th>
<th>LOGIC INPUT &quot;B&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>JC-J1</td>
<td>COM-1</td>
<td>1</td>
<td>0</td>
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<tr>
<td>JC-J2</td>
<td>COM-2</td>
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<td>1</td>
</tr>
</tbody>
</table>

"0" = 0.0V–0.8V  
"1" = 2.4V–5.5V

04 401 Pulse

05 401 Self Cutoff

06 401 Self Cutoff TTL
**RF Characteristics**

<table>
<thead>
<tr>
<th>Frequency GHz</th>
<th>VSWR (max)</th>
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<tbody>
<tr>
<td>DC-1</td>
<td>1.15</td>
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<tr>
<td>8-12.4</td>
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<td>60</td>
<td>0.50</td>
</tr>
</tbody>
</table>

Performance applies to N, BNC, and TNC type connectors. Consult with factory for SC-type connectors.

---

**Specifications**

**Operating Voltage (across temperature range):**
- 12 Vdc (11-14 Vdc)
- 24 Vdc (20-28 Vdc)
- 28 Vdc (24-32 Vdc)

**Coil Current (max. @ nom. Vdc & 25°C):**
- 12 Vdc 275 mA
- 24 Vdc 155 mA
- 28 Vdc 115 mA

**Switching Time:**
20 ms maximum

**Operating Temperature:**
- -25°C to +65°C (Standard)
- -55°C to +85°C (Extended “T” Option)

**Mechanical Life Cycles:**
1,000,000 minimum

**Vibration, Operating:**
10G RMS, 20-2000 Hz

**Mechanical Shock, Non-Operating:**
30G, 1/2 Sine, 11 ms

**Nominal Weight:**
9.0 oz. (255 g.)

*Performance and weight varies depending on selected options. Values listed are for Standard 402 Failsafe model.*

---

**Part Number Selector**

- **402**
- **J**
- **2 2 01 02 A**
- **ROHS**

**Special Options**
- **A** = High Power
- **I** = Immersion Seal
- **J** = ‘D’ Connector
- **P** = Power Connector
- **S** = Epoxy Seal
- **T** = -55°C to + 85°C

**Actuator**
- 2 = Failsafe

**Coil Voltage**
- 2 = 12 Vdc
- 3 = 28 Vdc
- 8 = 24 Vdc

**Connectors**
- 01 = N Female
- 02 = BNC Female
- 03 = TNC Female
- 53 = SC Female*

**Indicators**
- 02 = No Indicators**
- 32 = Indicators

**Circuit Options**
- **A** = TTL High
- **L** = TTL Low

**** Declared only with Circuit Options

* Consult Dow-Key for dimensions

---

**ROHS**

---

**TTL option includes suppression diode. Other options may be available and all combinations may not be possible. Please consult with factory.**
Specifications

Operating Voltage (across temperature range):
- 12 Vdc (11-14 Vdc)
- 24 Vdc (20-28 Vdc)
- 28 Vdc (24-32 Vdc)

Coil Current (max. @ nom. Vdc & 25°C)*:
- 12 Vdc 320 mA
- 24 Vdc 180 mA
- 28 Vdc 135 mA

Switching Time:
- 20 ms maximum

Operating Temperature:
- -25°C to +65°C (Standard)
- -55°C to +85°C (Extended “T” Option)

Mechanical Life Cycles*:
- 1,000,000 minimum

Vibration, Operating:
- 10G RMS, 20-2000 Hz

Mechanical Shock, Non-Operating:
- 30G, 1/2 Sine, 11 ms

Nominal Weight*:
- 9.0 oz. (255 g.)

* Performance and weight varies depending on selected options. Values listed are for Standard 402 Latching model.

Mechanical

RF Characteristics

<table>
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Performance applies to N, BNC, and TNC type connectors. Consult with factory for SC-type connectors.

Part Number Selector

402 Latching | N, BNC, TNC, SC

- DC-2 GHz
- DC-6 GHz
- DC-12.4 GHz
- Medium/High Power
- 1M Life Cycles

RF Characteristics

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Part Number Selector

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Part Number Selector

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- DC-6 GHz
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Part Number Selector

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Part Number Selector

402 Latching | N, BNC, TNC, SC

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Performance applies to N, BNC, and TNC type connectors. Consult with factory for SC-type connectors.

Part Number Selector

402 Latching | N, BNC, TNC, SC

- DC-2 GHz
- DC-6 GHz
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- 1M Life Cycles

RF Characteristics

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Performance applies to N, BNC, and TNC type connectors. Consult with factory for SC-type connectors.
402 | Electrical Schematics

01 402 Failsafe

Optional Indicators

NO  COM  NC

02 402 Failsafe TTL

Optional Indicators

NO  COM  NC

TTL CONTROL

FAILSAFE TTL - SCH #2

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
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<td>NC–COM</td>
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</tr>
<tr>
<td>NO–COM</td>
<td>NO–COM</td>
<td>1</td>
</tr>
</tbody>
</table>

“0” = 0.0V–0.8V
“1” = 2.4V–5.5V

03 Logic Truth Table

<table>
<thead>
<tr>
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<th>INDICATOR PATH</th>
<th>LOGIC INPUT &quot;A&quot;</th>
<th>LOGIC INPUT &quot;B&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>IN–1</td>
<td>COM–1</td>
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<td>0</td>
</tr>
<tr>
<td>IN–2</td>
<td>COM–2</td>
<td>0</td>
<td>1</td>
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</table>

“0” = 0.0V–0.8V
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04 402 Pulse

Optional Indicators

1  C  2

POS 1  COM  POS 2

05 402 Self Cutoff

Optional Indicators

1  C  2

POS 1  COM  POS 2

SELF CUT OFF

06 402 Self Cutoff TTL

Optional Indicators

1  C  2

POS 1  COM  POS 2

TTL CONTROL

FAILSAFE TTL - SCH #2

Optional Indicators

1  IN  2

FAILSAFE TTL - SCH #2

Optional Indicators

1  IN  2

FAILSAFE TTL - SCH #2

Optional Indicators

1  IN  2

FAILSAFE TTL - SCH #2
SPDT or 2/3 521U Failsafe Unterminated/Terminated | SMA

- DC-18 GHz
- DC-26.5 GHz
- Low/Medium Power
- 5M Life Cycles

**RF Characteristics**

<table>
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<td>55</td>
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</tr>
</tbody>
</table>

* Performance varies depending on selected options.

**Specifications**

**Mechanical**

- **Operating Voltage (across temperature range):**
  - 12 Vdc (11-14 Vdc)
  - 24 Vdc (20-28 Vdc)
  - 28 Vdc (24-32 Vdc)

- **Coil Current (max. @ nom. Vdc & 25°C):**
  - 12 Vdc 450 mA
  - 24 Vdc 225 mA
  - 28 Vdc 200 mA

- **Switching Time:**
  - 15 ms maximum

- **Operating Temperature:**
  - -25°C to +65°C (Standard)
  - -55°C to +85°C (Extended “T” Option)

- **Mechanical Life Cycles:**
  - 5,000,000 minimum

- **Vibration, Operating:**
  - 10G RMS, 20-2000 Hz

- **Mechanical Shock, Non-Operating:**
  - 30G, 1/2 Sine, 11 ms

- **Nominal Weight:**
  - 2.5 oz. (71 g.)

* Performance and weight varies depending on selected options.

**Part Number Selector**

```
521 J U - 2 2 08 03 A - ROHS
```

- **Special Options**
  - I = Immersion Seal
  - J = ‘D’ Connector
  - K = 26.5 GHz
  - R = (+) Com
  - T = -55°C to +85°C

- **Actuator**
  - 2 = Failsafe
  - 6 = Failsafe with Suppression Diode

- **Coil Voltage**
  - 2 = 12 Vdc
  - 3 = 28 Vdc
  - 8 = 24 Vdc

- **Connectors**
  - 08 = SMA Female

- **Indicators**
  - 02 = No Indicators, Unterminated Ports
  - 03 = No Indicators, 2W Terminations

- **Circuit Options**
  - A = TTL High
  - L = TTL Low

**TTL option includes suppression diode. Other options may be available and all combinations may not be possible. Please consult with factory.**

521U-2X0803 Shown
For Electrical Schematic, see page # 1-12
521U Latching Unterminated/Terminated | SMA

- DC-18 GHz
- DC-26.5 GHz
- Low/Medium Power
- 5M Life Cycles

RF Characteristics

<table>
<thead>
<tr>
<th>Frequency</th>
<th>VSWR (max)</th>
<th>Isolation dB (min)</th>
<th>Ins. Loss dB (max)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC-1</td>
<td>1.10</td>
<td>85</td>
<td>0.10</td>
</tr>
<tr>
<td>1-4</td>
<td>1.15</td>
<td>80</td>
<td>0.15</td>
</tr>
<tr>
<td>4-8</td>
<td>1.20</td>
<td>70</td>
<td>0.20</td>
</tr>
<tr>
<td>8-12</td>
<td>1.30</td>
<td>65</td>
<td>0.30</td>
</tr>
<tr>
<td>12-18</td>
<td>1.35</td>
<td>60</td>
<td>0.35</td>
</tr>
<tr>
<td>*18-26.5</td>
<td>1.50</td>
<td>55</td>
<td>0.50</td>
</tr>
</tbody>
</table>

* Performance varies depending on selected options.

Specifications

Operating Voltage (across temperature range):
- 12 Vdc (11-14 Vdc)
- 24 Vdc (20-28 Vdc)
- 28 Vdc (24-32 Vdc)

Coil Current (max. @ nom. Vdc & 25°C)*:
- 12 Vdc 265 mA
- 24 Vdc 205 mA
- 28 Vdc 175 mA

Switching Time:
15 ms maximum

Operating Temperature:
- -25°C to +65°C (Standard)
- -55°C to +85°C (Extended “T” Option)

Mechanical Life Cycles*:
5,000,000 minimum

Vibration, Operating:
10G RMS, 20-2000 Hz

Mechanical Shock, Non-Operating:
30G, 1/2 Sine, 11 ms

Nominal Weight*:
2.5 oz. (71 g.)

* Performance and weight varies depending on selected options.

Part Number Selector

521 J U - 4 2 08 03 A - ROHS

Special Options
- I = Immersion Seal
- J = “D” Connector
- K = 26.5 GHz
- R = (+) Com
- T = -55°C to +85°C

Actuator
- 3 = Pulse Latching

Coil Voltage
- 2 = 12 Vdc
- 3 = 28 Vdc
- 8 = 24 Vdc

Connectors
- 08 = SMA Female

Indicators
- 02 = No Indicators, Unterminated Ports*
- 03 = No Indicators, 2W Terminations
- **32 = Indicators, Unterminated Ports
- **33 = Indicators, 2W Terminations

Circuit Options
- A = TTL High
- L = TTL Low
- ** Declared only with Circuit Options
- ** Offered with 1M Life Cycles 521-Series

TTL option includes suppression diode. Other options may be available and all combinations may not be possible. Please consult with factory.
521Y Failsafe Unterminated/Terminated | 2.9 mm (K)

RF Characteristics

<table>
<thead>
<tr>
<th>Frequency GHz</th>
<th>VSWR (max)</th>
<th>Isolation dB (min)</th>
<th>Ins. Loss dB (max)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC-6</td>
<td>1.30</td>
<td>80</td>
<td>0.30</td>
</tr>
<tr>
<td>6-12</td>
<td>1.40</td>
<td>70</td>
<td>0.40</td>
</tr>
<tr>
<td>12-18</td>
<td>1.50</td>
<td>65</td>
<td>0.50</td>
</tr>
<tr>
<td>18-26.5</td>
<td>1.70</td>
<td>60</td>
<td>0.70</td>
</tr>
<tr>
<td>26.5-40</td>
<td>1.80</td>
<td>55</td>
<td>0.80</td>
</tr>
</tbody>
</table>

Specifications

Operating Voltage (across temperature range):
12 Vdc (11-14 Vdc)
28 Vdc (24-32 Vdc)

Coil Current (max. @ nom. Vdc & 25°C)*:
12 Vdc 450 mA
24 Vdc 225 mA
28 Vdc 200 mA

Switching Time:
20 ms maximum

Operating Temperature:
-25°C to +65°C (Standard)
-55°C to +85°C (Extended “T” Option)

Mechanical Life Cycles*:
1,000,000 minimum

Vibration, Operating:
10G RMS, 20-2000 Hz

Mechanical Shock, Non-Operating:
30G, 1/2 Sine, 11 ms

Nominal Weight*:
2.5 oz. (71 g.)

* Performance and weight varies depending on selected options.

Part Number Selector

521 J Y - 2 2 11 03 A - ROHS

Special Options
I = Immersion Seal
J = ‘D’ Connector
T = -55°C to +85°C

Actuator
2 = Failsafe

Coil Voltage
2 = 12 Vdc
3 = 28 Vdc
8 = 24 Vdc

Connectors
11 = 2.9 mm

Indicators
02 = No Indicators, Unterminated Ports*
03 = No Indicators, 1W External Terminations
32 = Indicators, Unterminated Ports
33 = Indicators, 1W External Terminations

Circuit Options
A = TTL High
L = TTL Low

* Declared only with Circuit Options

TTL option includes suppression diode. Other options may be available and all combinations may not be possible. Please consult with factory.
521Y Latching Unterminated/Terminated | SMA

**Specifications**

- **Operating Voltage (across temperature range):**
  - 12 Vdc (11-14 Vdc)
  - 28 Vdc (24-32 Vdc)
- **Coil Current (typ. @ nom. Vdc & 25°C)*:**
  - 12 Vdc: 440 mA
  - 24 Vdc: 220 mA
  - 28 Vdc: 190 mA
- **Switching Time:**
  - 20 ms maximum
- **Operating Temperature:**
  - -25°C to +65°C (Standard)
  - -55°C to +85°C (Extended “T” Option)
- **Vibration, Operating:**
  - 10G RMS, 20-2000 Hz
- **Mechanical Life Cycles:**
  - 1,000,000 minimum
- **Nominal Weight:***
  - 2.5 oz. (71 g.)

* Performance and weight varies depending on selected options.

**Mechanical**

- **Frequency (GHz)**
- **VSWR (max)**
- **Isolation (dB) (min)**
- **Ins. Loss (dB) (max)**

<table>
<thead>
<tr>
<th>Frequency</th>
<th>VSWR (max)</th>
<th>Isolation (dB) (min)</th>
<th>Ins. Loss (dB) (max)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC-6</td>
<td>1.30</td>
<td>80</td>
<td>0.30</td>
</tr>
<tr>
<td>6-12</td>
<td>1.40</td>
<td>70</td>
<td>0.40</td>
</tr>
<tr>
<td>12-18</td>
<td>1.50</td>
<td>65</td>
<td>0.50</td>
</tr>
<tr>
<td>18-26.5</td>
<td>1.70</td>
<td>60</td>
<td>0.70</td>
</tr>
<tr>
<td>26.5-40</td>
<td>1.80</td>
<td>55</td>
<td>0.80</td>
</tr>
</tbody>
</table>

**RF Characteristics**

- **DC-40 GHz**
- **Low Power**
- **1M Life Cycles**

**Part Number Selector**

<table>
<thead>
<tr>
<th>Special Options</th>
<th>Actuator</th>
<th>Coil Voltage</th>
<th>Connectors</th>
<th>Indicators</th>
<th>Circuit Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>I = Immersion Seal</td>
<td>4 = Latching Self Cutoff</td>
<td>2 = 12 Vdc</td>
<td>11 = 2.9 mm</td>
<td>02 = No Indicators, Unterminated Ports*</td>
<td>A = TTL High</td>
</tr>
<tr>
<td>J = ‘D’ Connector</td>
<td>R = Common Positive</td>
<td>3 = 28 Vdc</td>
<td>8 = 24 Vdc</td>
<td>03 = No Indicators, 1W External Terminations</td>
<td>L = TTL Low</td>
</tr>
<tr>
<td>T = -55°C to +85°C</td>
<td></td>
<td></td>
<td></td>
<td>32 = Indicators, Unterminated Ports</td>
<td>33 = Indicators, 1W External Terminations</td>
</tr>
</tbody>
</table>

* Declared only with Circuit Options

521Y-421103A shown
For Electrical Schematic, see page # 1-12

TTL option includes suppression diode. Other options may be available and all combinations may not be possible. Please consult with factory.
01 521U/521Y Failsafe

02 521U/521Y Failsafe TTL

03 521U/521Y Self Cutoff

04 521U/521Y Self Cutoff TTL

05 521U/521Y Logic Truth Table

06 521U Unterminated

Note: Diagram shown as Failsafe Unterminated. Consult with factory for other options.