MECHANICALLY VARIABLE DELAY LINE
(SERIES 1509 & 1509J)

FEATURES
- Ideal for "Set and Forget" applications
- Multi-turn adjustment screw
  (1509: 20 turns, 1509J: 60 turns)
- Stackable for PC board economy
- Fits standard 14-pin DIP socket (1509)
- 20mil x 10mil flat leads (1509)
- #20 gauge leads (1509J)
- Resolution: As low as 0.15ns
- Dielectric breakdown: 50 Vdc
- Temperature coefficient: 200 PPM/°C

FUNCTIONAL DESCRIPTION
The 1509- and 1509J-series devices are mechanically variable, passive delay lines. The signal input (IN) is reproduced at the tap output (TAP), shifted by an amount which can be adjusted between 0 and \( T_D \), where \( T_D \) is the device dash number. The fixed output (OUT) reproduces the input, delayed by \( T_D \), and must be terminated to match the characteristic impedance of the line, which is given by the letter code that follows the dash number (See Table). The tap output is unbuffered. The 3dB bandwidth of the line is given by 0.35 / \( T_R \), where \( T_R \) is the rise time of the line (See Table).

DASH NUMBER SPECIFICATIONS

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Max Dly (ns)</th>
<th>TR (ns)</th>
<th>Imped (Ω)</th>
<th>RDC (Ω)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1509-05B</td>
<td>5</td>
<td>3</td>
<td>100</td>
<td>0.4</td>
</tr>
<tr>
<td>1509-20C</td>
<td>20</td>
<td>8</td>
<td>200</td>
<td>1.0</td>
</tr>
<tr>
<td>1509-20D</td>
<td>20</td>
<td>8</td>
<td>250</td>
<td>1.0</td>
</tr>
<tr>
<td>1509J-10B</td>
<td>10</td>
<td>4</td>
<td>100</td>
<td>0.8</td>
</tr>
<tr>
<td>1503J-40C</td>
<td>40</td>
<td>9</td>
<td>200</td>
<td>1.5</td>
</tr>
</tbody>
</table>

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PASSIVE DELAY LINE TEST SPECIFICATIONS

TEST CONDITIONS

INPUT:
Ambient Temperature: 25°C ± 3°C
Input Pulse: High = 3.0V typical
Low = 0.0V typical
Source Impedance: 50Ω Max.
Rise/Fall Time: 3.0 ns Max. (measured at 10% and 90% levels)
Pulse Width \((T_D \leq 75\text{ns})\): \(PW_{IN} = 100\text{ns}\)
Period \((T_D \leq 75\text{ns})\): \(PER_{IN} = 1000\text{ns}\)
Pulse Width \((T_D > 75\text{ns})\): \(PW_{IN} = 2 \times T_D\)
Period \((T_D > 75\text{ns})\): \(PER_{IN} = 10 \times T_D\)

NOTE: The above conditions are for test only and do not in any way restrict the operation of the device.

OUTPUT:
\(R_{\text{load}}\): 10MΩ
\(C_{\text{load}}\): 10pf
Threshold: 50% (Rising & Falling)

<table>
<thead>
<tr>
<th>Timing Diagram For Testing</th>
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<th>Test Setup</th>
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