Technical Data of Ceramic Resonator

Type CSA2.00MG040
CST2.00MG040

Applied to μPD780032A

TOYAMA MURATA MANUFACTURING CO., LTD.
Product Engineering Service Section I
Engineering Service Department
Piezoelectric Components Group

<table>
<thead>
<tr>
<th>Approved by</th>
<th>Checked by</th>
<th>Checked by</th>
<th>Issued by</th>
<th>Issued Date</th>
<th>TCD No.</th>
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Test Circuit

IC: \( \mu \)PD780032A

V\(_{DD}(+5V)\)

\[ 
\begin{align*}
H: & 10, 24, 35, 36, 38 \\
L: & 9, 25 \sim 34, 39, 42
\end{align*} 
\]

Recommended Value

CERALOCK\textsuperscript{®}: CSA2.00MG040

\[ 
\begin{align*}
C1 &= 100 \, [pF] \\
C2 &= 100 \, [pF]
\end{align*} 
\]

{

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Appendixes

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### Comparison Table

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<tbody>
<tr>
<td>W03</td>
<td>4.97</td>
<td>-0.29</td>
<td>5.26</td>
<td>5.38</td>
<td>0.19</td>
<td>5.19</td>
<td>2002.406</td>
<td>0.254</td>
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<td>W05</td>
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Ref.
Performance described page 2 to 5 were measured with IC No. W15
## Frequency Correlation Data

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<tr>
<th>Sample No.</th>
<th>$\mu$PD780032A Fosc [kHz]</th>
<th>TC74HC0U4 Fosc [kHz]</th>
<th>Shift [%]</th>
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<tr>
<td>1</td>
<td>2002.410</td>
<td>2002.911</td>
<td>-0.0250</td>
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<td>2</td>
<td>2003.649</td>
<td>2004.108</td>
<td>-0.0229</td>
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<td>2003.494</td>
<td>-0.0209</td>
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<td>4</td>
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<td>5</td>
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<td>2002.871</td>
<td>-0.0202</td>
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<td>X</td>
<td>2002.867</td>
<td>2003.325</td>
<td>-0.0229</td>
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</tbody>
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**muRata Standard Circuit**

![Circuit Diagram](image)

Vdd = 5 [V]

- CERALOCK®: CSA2.00MG040
- C1 = 100 [pF]
- C2 = 100 [pF]
- Rf = 1 [Mohm]
- Rd = 680 [ohm]

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_Murata Manufacturing Co., Ltd._
Rise Time vs Vdd Characteristics (Ta: Variable, CERALOCK®: Vst. Worst Sample)
MODEL: CSA2.00MG040 with µPD78032A(W03)

- △ - Ta=40[°C]
- Θ - Ta=25[°C]
- × - Ta=85[°C]

Temperature Characteristics of Starting Voltage (CERALOCK®: Vst. Worst Sample)
MODEL: CSA2.00MG040 with µPD78032A(W03)

× - +8.0
× - +7.0
× - +6.0
× - +5.0
× - +4.0
× - +3.0
× - +2.0
× - +1.0
× - 0.0
× - -1.0
× - -2.0

Temperature [°C]
Rs vs Vdd Characteristics
MODEL: CSA2.00MG040 with uPD780032A

C1=C2=100[pF]
Rs vs C(C1=C2) Characteristics
MODEL: CSA2.00MG040 with uPD780032A

Vdd=+5.0V

Rs [Ω]

10000
1000
100
10

CL [pF]

1000