FEATURES

- Single Power Supply
- Broad Supply Voltage Operating Range
- Low Power Dissipation
- High Output Drive Capability

MK 50240 – 50% Output Duty Cycle
MK 50241 – 30% Output Duty Cycle
MK 50242 – 50% Output Duty Cycle

DESCRIPTION

The MK 50240 is one of a family of ion-implanted, P-channel MOS, synchronous frequency dividers.

Each output frequency is related to the others by a multiple 12√2 providing a full octave plus one note on the equal tempered scale.

Low threshold voltage enhancement-mode, as well as depletion-mode devices, are fabricated on the same chip allowing the MK 50240 family to operate from a single, wide tolerance supply. Depletion-mode technology also allows the entire circuit to operate on less than 600mW of power. The circuits are packaged in 16-pin dual in-line packages.

RFI emanation and feed-through is minimized by placing the input clock between the V_DD and V_SS pins. Internally the layout of the chip isolates the output buffer circuitry from the divisor circuit clock lines. Also, the output buffers limit the minimum rise-time under no load conditions to reduce the RF harmonic content of each output signal.

PIN CONNECTIONS

```
+15 V_SS  1 |  16  ÷ 478
CLOCK  2 |  15  ÷ 239
V_DD  3 |  14  ÷ 253
÷ 451  4 |  13  ÷ 268
÷ 426  5 |  12  ÷ 284
÷ 402  6 |  11  ÷ 301
÷ 379  7 |  10  ÷ 319
÷ 358  8 |   9  ÷ 338
```

```
V_SS  1 |  16  ÷ 426
CLOCK  2 |  15  ÷ 402
÷ 451  3 |  14  ÷ 358
÷ 379  4 |  13  ÷ 338
÷ 319  5 |  12  ÷ 284
÷ 301  6 |  11  ÷ 268
÷ 253  7 |  10  V_DD
÷ 239  8 |   9  NC
```
### ABSOLUTE MAXIMUM RATINGS

- Voltage on any pin relative to VSS: +0.3V to −20V
- Operating Temperature (Ambient): 0°C to 50°C
- Storage Temperature (Ambient): −40°C to 100°C

### RECOMMENDED OPERATING CONDITIONS

(0°C ≤ T_A ≤ 50°C)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>MIN</th>
<th>TYP</th>
<th>MAX</th>
<th>UNITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>V_{SS}</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>V</td>
</tr>
<tr>
<td>V_{DD}</td>
<td>−11.0</td>
<td>−15.0</td>
<td>−16.0</td>
<td>V</td>
</tr>
</tbody>
</table>

### ELECTRICAL CHARACTERISTICS

(0°C ≤ T_A ≤ 50°C; VSS = 0, VDD = −11 to −16V unless otherwise specified)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>MIN</th>
<th>TYP</th>
<th>MAX</th>
<th>UNITS</th>
<th>FIGURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>V_{IL}</td>
<td>0</td>
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<td>−1.0</td>
<td>V</td>
<td>FIG. 1</td>
</tr>
<tr>
<td>V_{IH}</td>
<td>V_{DD} + 1.0</td>
<td></td>
<td>V_{DD}</td>
<td>V</td>
<td></td>
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<tr>
<td>f_{i}</td>
<td>100</td>
<td>2000.240</td>
<td>2500</td>
<td>kHz</td>
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<td>t_{r}, t_{f}</td>
<td>30</td>
<td></td>
<td></td>
<td>nsec</td>
<td>FIG 1</td>
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<tr>
<td>t_{on}, t_{off}</td>
<td>200</td>
<td></td>
<td></td>
<td>nsec</td>
<td>FIG. 1</td>
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<tr>
<td>C_i</td>
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<td>10</td>
<td></td>
<td>pF</td>
<td></td>
</tr>
<tr>
<td>V_{OH}</td>
<td>V_{DD} + 1.5</td>
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<td>V_{DD}</td>
<td>V</td>
<td>FIG. 2</td>
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<tr>
<td>V_{OL}</td>
<td>V_{SS} − 1.0</td>
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<td>V_{SS}</td>
<td>V</td>
<td>FIG. 2</td>
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<td>t_{ro}, t_{fo}</td>
<td>250</td>
<td>2500</td>
<td></td>
<td>nsec</td>
<td>FIG. 3</td>
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<td>t_{on}, t_{off}</td>
<td>50</td>
<td></td>
<td></td>
<td>%</td>
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<td>37</td>
<td></td>
<td>mA</td>
<td>outputs unloaded</td>
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