INTELLIGENT INTERACTIVE SYNTHESIZER
SURFACE MOUNT MODEL: MTS2500-40110-10
WIDE BANDWIDTH
400 - 1100 MHz

FEATURES:
- Over an octave bandwidth tuning
- Small step size resolution
- Outstanding spectral purity
- High spurious rejection
- Fast lock settling time
- Easy programmable format
- Patented Rel-Pro® Technology
- RoHS Compliant
- Buffered Output

SPECIFICATIONS (Rev. B 04/18/11)

<table>
<thead>
<tr>
<th>Output Frequency</th>
<th>400 - 1100 MHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bandwidth</td>
<td>700 MHz</td>
</tr>
<tr>
<td>External Reference</td>
<td>10 MHz</td>
</tr>
<tr>
<td>Electrical Input</td>
<td>1 V p-p to 3.3 V p-p</td>
</tr>
<tr>
<td>Step Size</td>
<td>Programmable to 1 Hz</td>
</tr>
<tr>
<td>Bias Voltage</td>
<td></td>
</tr>
<tr>
<td>VCC1 (VCO)</td>
<td>+5 VDC @ 70 mA (Max.)</td>
</tr>
<tr>
<td>VCC2 (Analog)</td>
<td>+3.3 VDC @ 140 mA (Max.)</td>
</tr>
<tr>
<td>VCC3 (Digital)</td>
<td>+3.3 VDC @ 50 mA (Max.)</td>
</tr>
<tr>
<td>VCC4 (Converter)</td>
<td>+5 VDC @ 45 mA (Max.)</td>
</tr>
<tr>
<td>VCC5 (Converter Output)</td>
<td>+25 VDC</td>
</tr>
<tr>
<td>VCC6 (PLL)</td>
<td>+5 VDC @ 2 mA (Max.)</td>
</tr>
<tr>
<td>VCC7 (PLL)</td>
<td>+3.3 VDC @ 20 mA (Max.)</td>
</tr>
<tr>
<td>VCC8 (Vtune)</td>
<td>+25 VDC @ 5 mA (Max.)</td>
</tr>
<tr>
<td>Output Power</td>
<td>+8 dBm (Min.)</td>
</tr>
<tr>
<td>Spurious Suppression</td>
<td>50 dB (Typ.)</td>
</tr>
<tr>
<td>Harmonic Suppression</td>
<td>15 dB (Typ.)</td>
</tr>
</tbody>
</table>

Typical Phase Noise

<table>
<thead>
<tr>
<th>Offset</th>
<th>dBc/Hz.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 kHz</td>
<td>-105</td>
</tr>
<tr>
<td>10 kHz</td>
<td>-106</td>
</tr>
<tr>
<td>100 kHz</td>
<td>-115</td>
</tr>
</tbody>
</table>

Typical Settling Time

| Within 1 kHz | <3 mSec |
| Within 10 Hz | <6 mSec |

Output Impedance

50 Ohms (Nom.)

Operating Temperature Range

-20 to +70 ºC

Non-Operating Temperature Range

-40 to +85 ºC

Programming

See Application Note: AN7400

Programming Bus

Specify SPI or RS-232

Absolute Maximum Ratings

<table>
<thead>
<tr>
<th>Storage Temp. Range</th>
<th>-55 to +125 ºC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bias Voltage (+3.3 V)</td>
<td>+3.6 V</td>
</tr>
<tr>
<td>Bias Voltage (+5 V)</td>
<td>+5.5 V</td>
</tr>
<tr>
<td>DC Voltage Applied to RF Out</td>
<td>± 25 V</td>
</tr>
</tbody>
</table>

1 Reference input frequency can be factory programmed for requested common reference frequencies from 10 - 25 MHz. Unless otherwise specified, the reference frequency is factory programmed for 10 MHz.
2 If supply voltage from converter output is not used.
3 Time between latch enable (LE) high (after user command) and final output frequency.
4 Default bus (if unspecified) is SPI.
INTELLIGENT INTERACTIVE SYNTHESIZER
SURFACE MOUNT MODEL: MTS2500-40110-10
WIDE BANDWIDTH
400 - 1100 MHz

Package # 344

Port Configuration

Pin 3 - VCC 1 (VCO = +5 Vdc)
Pin 6 - RF Out
Pin 8 - VCC 2 (Analog = 3.3 Vdc)
Pin 9 - NC*
Pin 10 - NC*
Pin 11 - VCC 3 (Digital = 3.3 Vdc)
Pin 13 - Clock (SPI)
Pin 14 - Lock Detect (LD)
Pin 15 - MISO (SPI)

Pin 16 - Latch Enable (LE)
Pin 18 - Reset
Pin 19 - MOSI (SPI)
Pin 20 - RXD (RS-232)**
Pin 21 - TXD (RS-232)**
Pin 22 - Ref In
Pin 27 - VCC 4 (Converter = +5 Vdc)
Pin 28 - VCC 5 (Converter output = +25 Vdc)**
Pin 35 - GND*

Pin 39 - VCC 6 (PLL = +5 Vdc)
Pin 40 - VCC 7 (PLL = +3.3 Vdc)
Pin 44 - VCC 8 (Vtune = +25 Vdc)**
Pin 43, 45 - NC (No Connection)
All Others - Ground (1,2,4,5,7,12,17,23,24,25,26,29,30,31,32,33,34,36,37,38,39,42,46,47,48)

* Future expansion for modulation options (digital and analog).
** Connect together externally and bypass with shunt 10 uF, 35 V tantalum capacitor to ground. (For applications where an external well filtered 25 volts supply is available, leave pin 27 unconnected and apply the 25 volts directly to pin 44.)
*** Positive CMOS level (Unbuffered).
INTELLIGENT INTERACTIVE SYNTHESIZER
SURFACE MOUNT MODEL: MTS2500-40110-10
WIDE BANDWIDTH

400 - 1100 MHz

REFERENCE SIDEBAND SUPPRESSION

PERFORMANCE PLOTS
INTELLIGENT INTERACTIVE SYNTHESIZER
SURFACE MOUNT MODEL: MTS2500-40110-10
WIDE BANDWIDTH

400 - 1100 MHz

REFERENCE SIDEBAND SUPPRESSION

PERFORMANCE PLOTS
INTELLIGENT INTERACTIVE SYNTHESIZER
SURFACE MOUNT MODEL: MTS2500-40110-10
WIDE BANDWIDTH

400 - 1100 MHz

REFERENCE SIDEBAND SUPPRESSION

PERFORMANCE PLOTS
INTELLIGENT INTERACTIVE SYNTHESIZER
SURFACE MOUNT MODEL: MTS2500-40110-10
WIDE BANDWIDTH
400 - 1100 MHz

HARMONIC SUPPRESSION

REFERENCE SIDE BAND SUPPRESSION
INTELLIGENT INTERACTIVE SYNTHESIZER
SURFACE MOUNT MODEL: MTS2500-40110-10
WIDE BANDWIDTH

400 - 1100 MHz

REFERENCE SIDEBAND SUPPRESSION

PERFORMANCE PLOTS