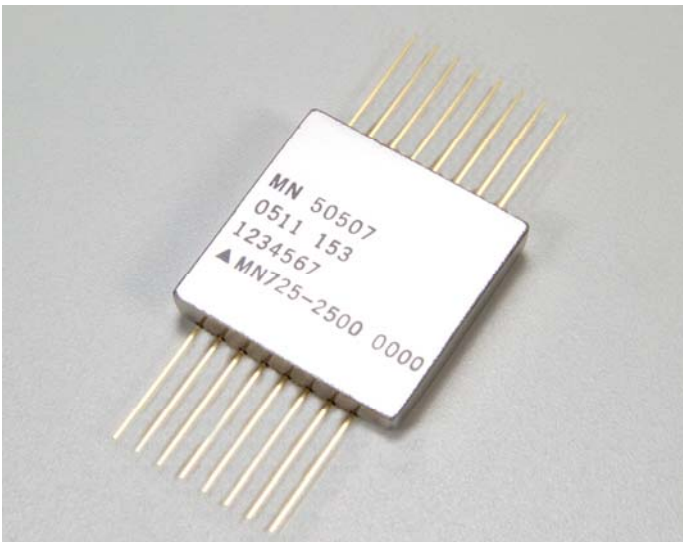


## Voltage Controlled SAW Oscillator MN725-2500.0000



The MN725-2500.0000 Voltage Controlled SAW Oscillator (VCSO) is a member of Spectrum Microwave MN725 series of high performance low noise SAW oscillators designed for the military applications.

The hermetic kovar package and rugged hybrid construction provide low vibration sensitivity and performance over a wide operating temperature range.

The highly repeatable and linear tuning range makes the MN725 family of VCSOs ideal for phase locked applications.

The design is based upon a fundamental VCSO in the 375 MHz to 750 MHz frequency range that is frequency multiplied by 4 to provide output frequencies in the 1500 MHz to 3000 MHz range.

### FEATURES

- Low phase Noise
  - -97 dBc/Hz at 1 kHz
- Low vibrations sensitivity
  - $2 \times 10^{-9}$  per g
- Hermetic Kovar package
  - 1.0" x 1.0" x .2" SMT
- -55°C to 100°C operating range
- Rugged design for military applications

### APPLICATIONS

- Phase Lock Loops
- Local Oscillators
- Low Noise Clocks
- Clock recovery

### DESCRIPTION

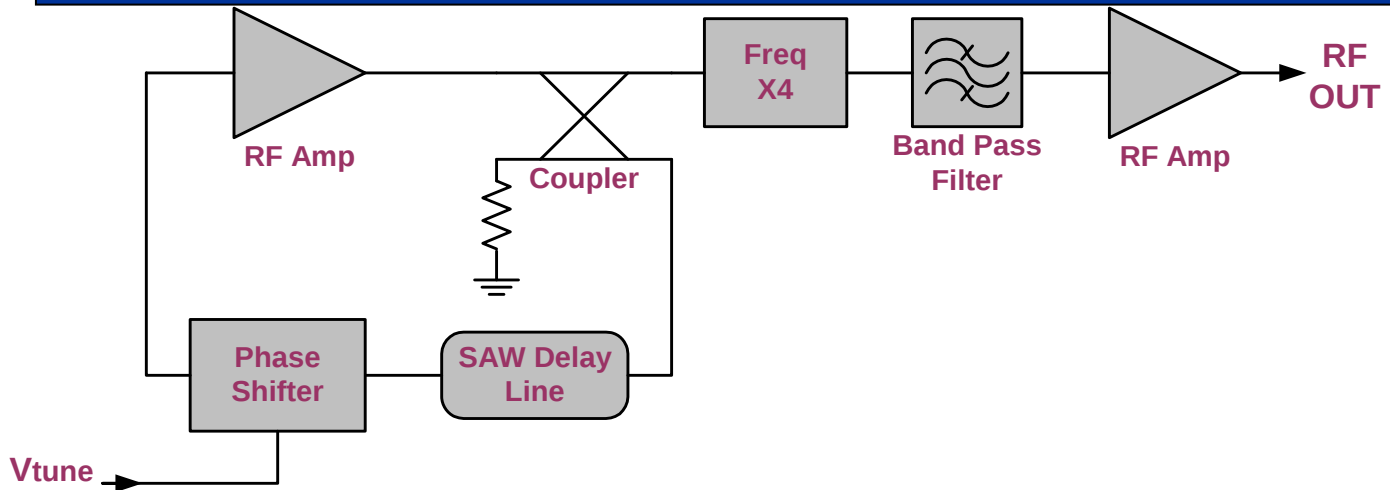
Operating Temperature: -55°C to 100°C  
Storage Temperature: -55°C to 125°C  
Power Supply Voltage: 13V  
Tuning Voltage: -2V to +6 V

**SPECIFICATIONS**

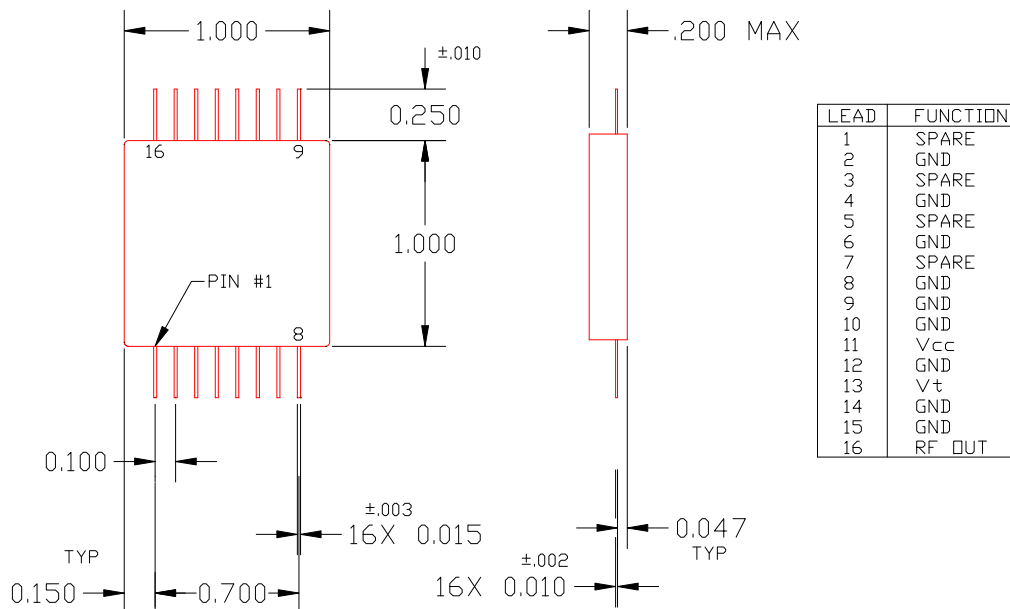
Specifications apply at  $V_{cc} = 8.0V$  and  $T_{case} = 25^{\circ}C$  unless otherwise specified

| Parameter                    | Minimum | Typical | Maximum | Units       | Notes                                              |
|------------------------------|---------|---------|---------|-------------|----------------------------------------------------|
| Center Frequency Range       |         | 2500    |         | MHz         | Other frequencies available (1500 MHz to 3000 MHz) |
| Tuning Range                 |         | 700     |         | ppm         | $V_{tune} = 0.0V$ to $5.0V$                        |
| $K_{vco}$                    |         | 140     |         | ppm/V       |                                                    |
| Tuning Linearity             | -5      |         | 5       | %           | Deviation from best linear fit                     |
| Output Power                 | 8       | 10      | 12      | dBm         | $-55^{\circ}C$ to $100^{\circ}C$                   |
| Harmonic Spurious            |         |         | -30     | dBc         |                                                    |
| Sub-harmonic Spurious        |         |         | -25     | dBc         |                                                    |
| Non-harmonic Spurious        |         |         | -60     | dBc         |                                                    |
| SSB Phase Noise              |         |         |         |             |                                                    |
| $\Delta f = 1 \text{ kHz}$   |         | -97     |         | dBc/Hz      |                                                    |
| $\Delta f = 10 \text{ kHz}$  |         | -120    |         | dBc/Hz      |                                                    |
| $\Delta f = 100 \text{ kHz}$ |         | -140    |         | dBc/Hz      |                                                    |
| $\Delta f = 1 \text{ MHz}$   |         | -148    |         | dBc/Hz      |                                                    |
| $\Delta f = 10 \text{ MHz}$  |         | -150    |         | dBc/Hz      |                                                    |
| $V_{cc}$                     | 7.6     | 8       | 8.4     | Volts       | Consult Factory for other available $V_{cc}$       |
| $I_{cc}$                     |         | 120     | 150     | mA          |                                                    |
| Operating Temperature        | -55     |         | 100     | $^{\circ}C$ | Case temperature                                   |

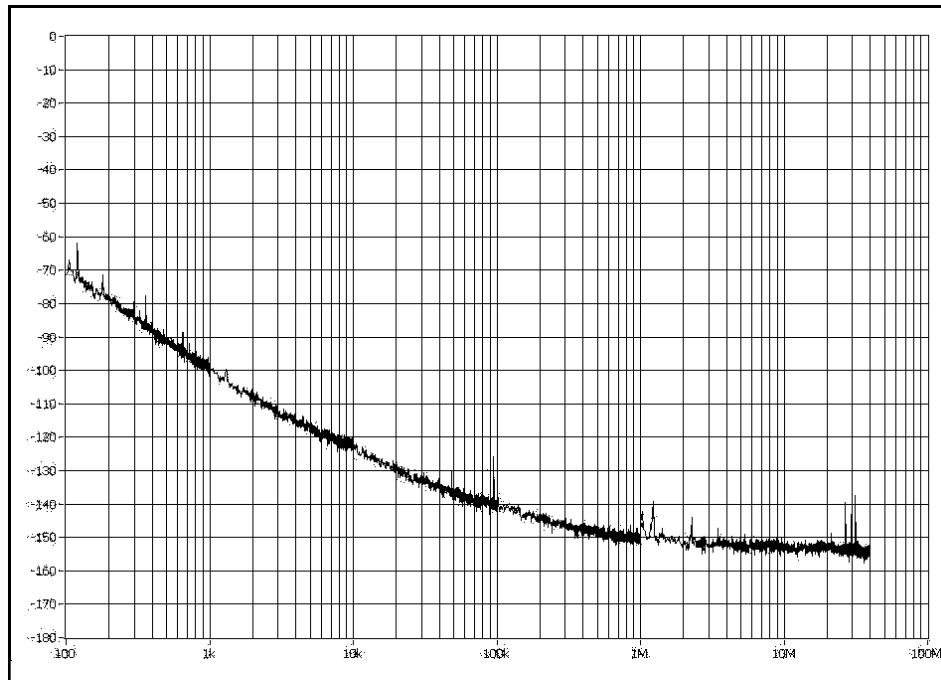
**BLOCK DIAGRAM**



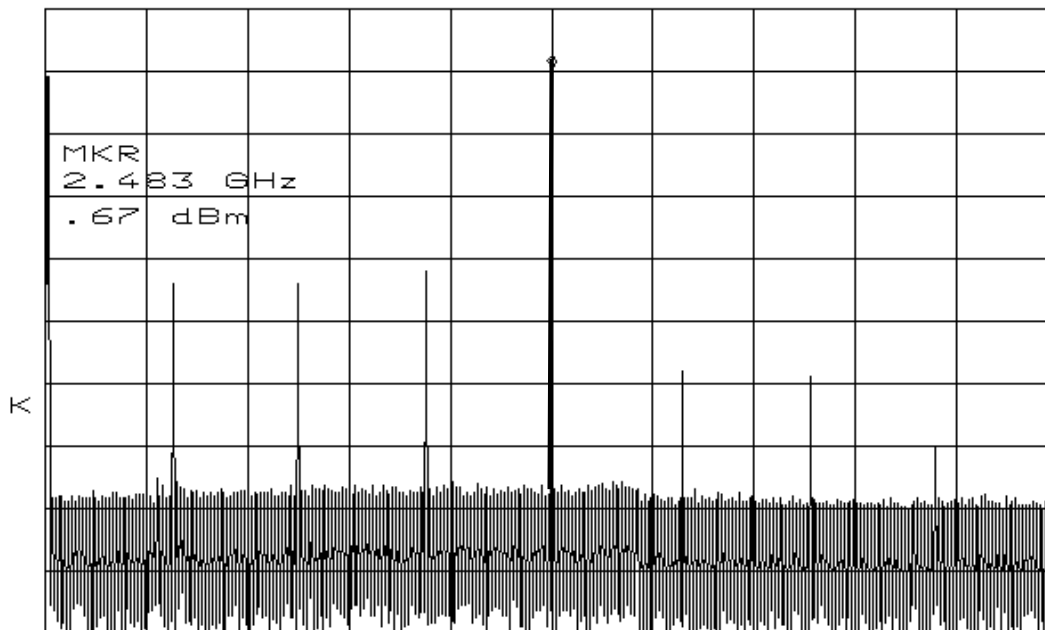
**OUTLINE DRAWING**



**PHASE NOISE and SPURIOUS DATA**



Typical MN725-2500.0000 SSB Phase Noise



MN725-2500.0000 Output Spectrum from 1 MHz to 5 GHz