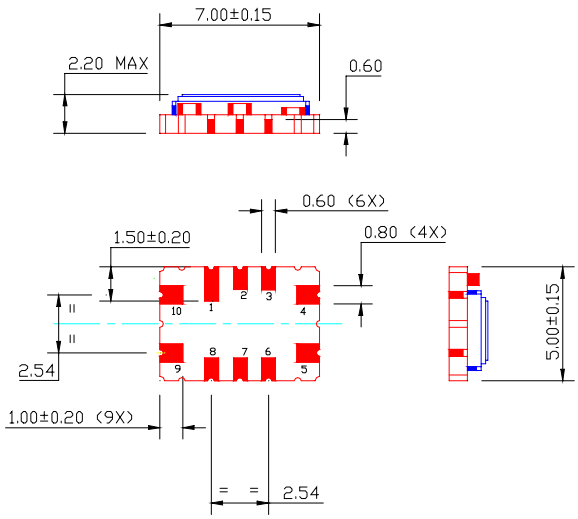
Oscillator Specification: E4150

Issue 2, 29th September 2005

Outline in mm



Pad Connections

1. Do not connect
2. NC
3. DC Coupled Output (do not connect)
4. GND
5. RF Output
6. NC
7. NC
8. Tri-State Control (Enable)*
9. Supply, +Vs
10. Do not connect

* leave unconnected if not required

Weight 170mg (typical)

Marking includes

C-MAC
Manufacturing identifier (xx)
Pad 1 / Static Sensitivity Identifier (Δ)
Abbreviated Part Number (4150)
Device date code (YW)
Serial Number (0000)

CMAC xx
Δ 4150YW0000

Electrical

Nominal Frequency, Fo	12.688375 MHz
Supply Voltage, Vs	3.3 V ± 10%
Input Current	≤ 4.0 mA
Output:	
Type	HCMOS
Load	15 pF
Vol	≤ 0.1 * Vs
Voh	≥ 0.9 * Vs
Duty cycle @ 50%	45% to 55%
Rise time, 10% to 90%	≤ 8 ns
Fall time, 90% to 10%	≤ 8 ns
Frequency Stability	
Calibration Tolerance at 25°C	≤ ± 0.5 ppm
Temperature, -40°C to 55°C	≤ ± 0.2 ppm [±(Fmax-Fmin)/2Fo]
Supply Voltage, ± 10%	≤ ± 0.1 ppm reference to frequency at 3.3V
Load, ± 5pF	≤ ± 0.1 ppm reference to frequency at 15 pF
Allan Variance (tau=100ms)	≤ 1.0 ppb

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Medium term stability specified and measured according to C/S T.001 – issue 3* (averaged over 18 measurements in 15 minute period, and following 15 minute power up period)

Mean Slope dF/dt	
Steady state conditions	≤ ± 1 ppb/min
During and 15 minutes after variable temperature conditions	≤ ± 2 ppb/min (dT/dt ≤ ± 5ºC / hour)
Residual dF from slope	≤ ± 3 ppb (dT/dt ≤ ± 5ºC / hour)

Reflow soldering	≤ ± 1.0 ppm
Ageing, first year	≤ ± 1.0 ppm
Ageing, 10 years	≤ ± 3.0 ppm

Tri-State

Pad 8 open circuit or ≥ 0.6Vs	Output Enabled
Pad 8 ≤ 0.2Vs	Output High impedance

In Tri-state mode, the output stage is disabled but the oscillator and compensation circuit are still active (Current consumption ≤ 1mA).

Phase Noise (typical values)	≤ -90 dBc/Hz at 10 Hz
	≤ -115 dBc/Hz at 100 Hz
	≤ -127 dBc/Hz at 1 kHz
	≤ -137 dBc/Hz at 10 kHz
	≤ -143 dBc/Hz at ≥ 100 kHz

Environmental:

Operating Temperature Range:	-40 to +55°C
Storage Temperature Range:	-55 to +125°C

Vibration	IEC 60068-2-6 Test Fc Procedure B4, 10-60Hz 1.5mm displacement, at 98.1 ms^{-2},30 minutes in each of three mutually perpendicular axes at 1 octave per minute
Shock	IEC 60068-2-27 Test Ea, 980ms-2 acceleration for 6ms duration, 3 shocks in each direction along three mutually perpendicular axes
Soldering	SMD product suitable for Convection Reflow soldering. Peak temperature 260°C. Maximum time above 220°C, 60 secs.
Solderability	MIL-STD-202, Method 208, Category 3
Marking	Laser Marked

* COSPAS SARSAT 406MHz distress beacons specification C/S T.001 Issue 3 – Revision 6 October 2004