



#### ELECTRICAL SPECIFICATIONS

PARAMETER	SYMBOL	CONDITION	VALUE			UNIT
			Min.	Typ.	Max.	
Frequency Range*	$f_o$		10		100	MHz
Supply Voltage	$V_s$	$V_s \pm 5\%$	4.75	5.0	5.25	V
			11.40	12.0	12.60	
Power Consumption	$P_s$	Steady state, @ 25°C			2.4	W
	$P_{s,w}$	During warm-up, @ 25°C			6.0	
Warm-up Time	$t_w$	$V_s, T_a = +25^\circ\text{C}$ , within $\pm 100\text{ppb}$ of final frequency with reference after 1 hour on			3	min
Frequency Calibration	$\Delta f/f_o$	$T_a = +25^\circ\text{C}$ , after 15mins power on ref. to nominal frequency	-100		+100	ppb
Frequency Stability vs. Temperature*	$\Delta f/f_o (T_a)$	Measurement referenced to $(f_{\text{max}} + f_{\text{min}})/2$ . See Table	-5		+5	ppb
Frequency Stability vs. Supply Voltage	$\Delta f/f_o (\Delta V_{CC})$	$T_a = 25^\circ\text{C}$ , $V_s \pm 5\%$ , load = 15pF	-50		+50	ppb
Frequency Stability vs. Load Variation	$\Delta f/f_o (\Delta I)$	$T_a = 25^\circ\text{C}$ , $V_s$ , load = 15pF $\pm 5\%$	-20		+20	ppb
Aging, after 30 days of operation*	$\Delta f/\Delta t_y$	8 years	-10		+10	ppb
Operating Temperature Range*		See Table 1	-40		+85	°C
Storage Temperature Range	$T_{(\text{stg})}$		-55		+80	°C
Short Term Stability		$\tau = 1\text{s}$			5E-13	-
Control Voltage Range	5V	$V_c$	0		4.5	V
	12V		0		10	
Frequency Pulling Range			-2		+2	ppm
Linearity			-10		+10	%

\*Not all Frequency- Stability vs. Temperature -Aging-Phase Noise combinations are available. Please consult factory

\*\*The above Specification is an example for 100.000MHz, 5V

### PHASE NOISE

PARAMETER	SYMBOL	CONDITION	VALUE		UNIT
			5V	12V	
			Min.	Typ. / Nom.*	Max.
@10 Hz Offset	$\mathcal{E} (\Delta f)$		-103	-103	dBc/Hz
@100 Hz Offset	$\mathcal{E} (\Delta f)$		-135	-135	dBc/Hz
@1 kHz Offset	$\mathcal{E} (\Delta f)$		-160	-162	dBc/Hz
@10 kHz Offset	$\mathcal{E} (\Delta f)$		-173	-178	dBc/Hz
@100 kHz Offset	$\mathcal{E} (\Delta f)$		-178	-182	dBc/Hz

### CMOS OUTPUT CHARACTERISTICS

PARAMETER	SYMBOL	CONDITION	VALUE			UNIT
			Min.	Typ.	Max.	
Output Levels	VOH/VOL	V <sub>CC</sub> = 5.0V, load = 15pF		3.8/0.5		V
Duty Cycle	DC	load = 15pF		45/55		%
Rise/Fall Time	t <sub>r</sub> /t <sub>f</sub>	10% ~ 90% V <sub>out</sub>			5	ns
Load				15		pF

### SINE-WAVE OUTPUT CHARACTERISTICS

PARAMETER	SYMBOL	CONDITION	VALUE			UNIT
			Min.	Typ.	Max.	
Output Levels	5V		-2			dBm
	12V		-4			dBm
Harmonics			-25			dBc
Spurious					-70	dBc
Load				50		$\Omega$

Table 1

TEMPERATURE RANGE °C	FREQUENCY STABILITY (ppb)				
	50	75	100	300	500
0 ~ +55	Y	Y	Y	Y	Y
-10 ~ +60	C	Y	Y	Y	Y
-20 ~ +70	-	C	Y	Y	Y
-40 ~ +70	-	-	C	Y	Y
-40 ~ +85	-	-	-	C	Y

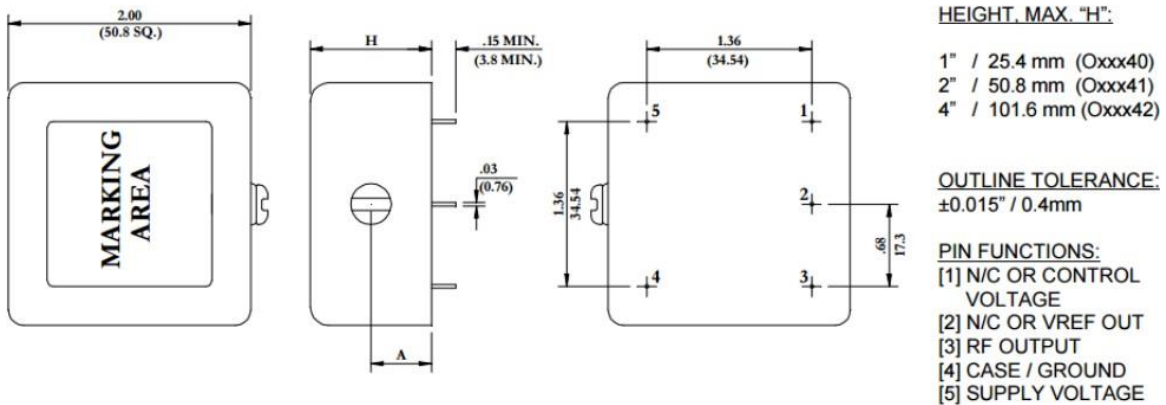
Table 2

PARAMETER		VALUE	UNIT
Steady State Current Consumption	5V	250	mA
	12V	120	mA
Peak Current Consumption During Warm-Up	5V	600	mA
	12	300	mA
Reference Voltage	5V	4.5	V
	12V	10	V

#### ENVIRONMENTAL MECHANICAL CONDITIONS

Storage temperature range	-55°C to +105°C
Drop Test	The test shall be carried out as the provisions of the IEC60028-2-32 test Ed. 10cm height, 3 times on hard board with thickness of 3cm
Bumping Test	Device are bumped to three mutually perpendicular axes at peak acceleration of 400m/s <sup>2</sup> , each 4000±10times, 6ms pulse duration time
Vibration Test	Frequency range: 1Hz-4Hz-100Hz-200Hz Acceleration: 0.0001g <sup>2</sup> /Hz-0.01g <sup>2</sup> /Hz-0.01g <sup>2</sup> /Hz-0.001g <sup>2</sup> /Hz Grms=1.15g Sweep time: 30 minutes (perpendicular axes each sweep time)
Mechanical Shock	100g, 6mS duration, 1/2 sine wave, 3 shocks each direction along 3 mutually perpendicular planes.
Thermal Shock	0.5h@-40°C, 0.5h@+85°C, Note: the changing time < 30 seconds, cycling for 100 times

#### MECHANICAL DIMENSIONS AND PIN FUNCTIONING



#### ■ PART NUMBERING SYSTEM

Prefix	Output Type	Control Voltage	Series	Revision	Temperature Range	Stability	Frequency	Supply Voltage
OSP	4: CMOS 6: SINE	1: No Control Voltage 5: Control Voltage	40:4000	A	First letter: Lowest Temperature, Second letter: Highest Temperature: From A=-55°C to Z=+70°C, Then: 1=+75°C, 2=+80°C, 3=+85°C... in 5°C Steps Example: HZ: -20°C to +70°C LZ: 0°C to +70°C D3: -40°C to +85°C	Value x 10E-2 in ppm  Example: 0.5= 5 ppb  1= 0.01 ppm	In MHz	5: 5.0 V 12: 12.0 V

**Example: OSP4540A-D3-1-100.000-5**

Prefix	Output Type	Electrical Control Voltage	Series	Revision	-	Temperature Range	-	Stability	-	Frequency	-	Supply Voltage
OSP	4	5	40	A	-	D3	-	1	-	100.000	-	5

Low Phase Noise OCXO OSP4000 Series, 50.8 x 50.8 mm, 100.000 MHz, CMOS output, No Control Voltage, ±0.01 ppm stability over -40 to +85°C, 5V