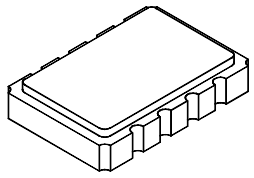
Preliminary

OP4006B

666.51 MHz Optical Timing Clock

- ***Quartz SAW Stabilized and Filtered "Diff Sine" Technology***
- ***Fundamental-Mode Oscillation at 666.51 MHz***
- ***Voltage Tunable for Phase Lock Loop Operations***
- ***Optical Timing Reference for Forward Error Correction Applications***

The output of this device is generated and filtered by narrowband quartz SAW elements at 666.51 MHz. The configuration of this clock is intended to provide a pure signal for optical timing applications in noisy signal environments. The Q/Qbar differential output swing of ±1 volt about 0 vdc has symmetry better than ±1% into loads from 40 ohms to 70 ohms; determined by customer application. The long term frequency accuracy is set by an external reference source allowing this device to complete a Phase Lock Loop design without the usual noise and jitter problems associated with PLL's.



SMC-08

Absolute Maximum Ratings

Rating	Value	Units
DC Suppy Voltage	0 to 5.5	VDC
Tune Voltage	0 to 6	VDC
Case Temperature	-55 to 100	°C

Electrical Characteristics

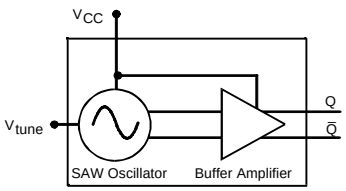
Characteristic		Sym	Notes	Minimum	Typical	Maximum	Units
Operating Frequency	Absolute Frequency	f_O	1, 9		666.51		MHz
	Tune Range		2	±100			ppm
	Tune Voltage		1	0		+3	VDC
	Tuning Linearity		1, 8		±3%		
	Tuning Sensitivity	df/dv	2, 10	140		300	ppm/V
	Modulation Bandwidth			125	265		kHz
Q and $\overline{Q}$ Output	Voltage into 50 Ω (VSWR≤1.2)	V_O	1,3	0.60		1.1	V_{P-P}
	Operating Load VSWR		1,3			2:1	
	Symmetry		3, 4, 5	49		51	%
	Harmonic Spurious		3, 4, 6			-30	dBc
	Nonharmonic Spurious		3, 4, 6, 7			-60	dBc
Phase Noise	dBc/Hz@100Hz offset				-75		dBc/Hz
	1kHz offset				-105		dBc/Hz
	10k offset				-125		
	Noise Floor				-155		
Q and $\overline{Q}$ Jitter	RMS Jitter		3, 4, 6, 7		2		PS_{P-P}
	No Noise on V_{CC}		3, 4, 6, 7		12		PS_{P-P}
	200 mV_{P-P} from 1MHz to ½ f_O on		3		12		PS_{P-P}
Input Impedence (Tuning Port)				1			KΩ
Output DC Resistance (between Q & $\overline{Q}$)			1, 3	50			KΩ
DC Power Supply	Operating Voltage	V_{CC}	1, 3	3.13	3.3, 5.0	5.25	VDC
	Operating Current	I_{CC}	1, 3			70	mA
Operating Case Temperature		T_C	1, 3	-40°C		+85°C	°C
Lid Symbolization (YY=Year, WW=Week)		RFM OP4006B YYWW					

CAUTION: Electrostatic Sensitive Device. Observe precautions for handling. COCOM CAUTION: Approval by the U.S. Department of Commerce is required prior to export of this device.

Notes:

1. Unless otherwise noted, all specifications include any combination of load VSWR, Vcc, and temperature, with Q and $\overline{Q}$ terminated into 50 ohm loads to ground (see typical test circuit).
2. Useful tuning range is in excess of what is required over temp, aging, pushing, pulling & accuracy.
3. The design, manufacturing process, and specifications of this device are subject to change without notice.
4. Only under the nominal conditions of 50 Ω load impedance with VSWR ≤ 1.2 and nominal power supply voltage.
5. Symmetry is defined as the pulse width (in percent of total period) measured at the 50% points of Q or $\overline{Q}$ (see timing definitions).
6. Jitter and other spurious outputs induced by externally generated electrical noise on V_{CC} or mechanical vibration are not included in this specification, except where noted. External voltage regulation and careful PCB layout are recommended for optimum performance.
7. Applies to period jitter of Q and $\overline{Q}$. Measurements are made with the Tektronix CSA803 signal analyzer with at least 1000 samples.
8. Linearity is a function of the percentage variation from a permitted linear deviation versus the amount of frequency tune range *(see linearity definition).*
9. One or more of the following United States patents apply: 4,616,197; 4,670,681; 4,760,352.

BLOCK DIAGRAM



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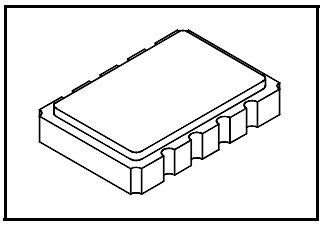
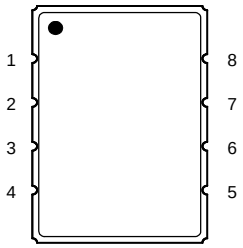
SMC-8 8-Terminal Surface Mount Case



Dimension	mm		Inches	
	MIN	MAX	MIN	MAX
A	13.46	13.97	0.530	0.550
B	9.14	9.66	0.360	0.380
C	1.93 Nominal		0.076 Nominal	
D	3.56 Nominal		0.141 Nominal	
E	2.24 Nominal		0.088 Nominal	
F	1.27 Nominal		0.050 Nominal	
G	2.54 Nominal		0.100 Nominal	
H	3.05 Nominal		0.120 Nominal	
J	1.93 Nominal		0.076 Nominal	
K	5.54 Nominal		0.218 Nominal	
L	4.32 Nominal		0.170 Nominal	
M	4.83 Nominal		0.190 Nominal	
N	0.50 Nominal		0.020 Nominal	

ELECTRICAL CONNECTIONS

Terminal Number	Connection
1	V_{CC}
2	Ground
3	Enable/Disable
4	Q Output
5	$\overline{Q}$ Output
6	Ground
7	
8	TUNE Input
LID	Ground



TOP VIEW