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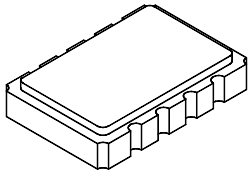
OP4011B

719.734 MHz Optical Timing Clock



SMC-08

- ***Quartz SAW Stabilized and Filtered "Diff Sine" Technology***
- ***Fundamental-Mode Oscillation at 719.734 MHz***
- ***Voltage Tunable for Phase Lock Loop Operations***
- ***Optical Timing Reference for Forward Error Correction Applications***
- ***Complies with Directive 2002/95/EC (RoHS)***

The output of this device is generated and filtered by narrowband quartz SAW elements at 719.734 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 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.

Absolute Maximum Ratings

Rating	Value	Units
DC Suppy Voltage	0 to 5.5	Vdc
Tuning Voltage	0 to 5.5	Vdc
Case Temperature	-55 to 100	°C

Electrical Characteristics

Characteristic		Sym	Notes	Minimum	Typical	Maximum	Units
Operating Frequency	Absolute Frequency	f_O	1, 9		719.734		MHz
	Tuning Frequency Range		2		±100		ppm
	Tuning Voltage Range		1	0		+3	V
	Tuning Linearity		1, 8		±3%		
	Modulation Bandwidth				50		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	@100 Hz offset				-75		dBc/Hz
	@1 kHz offset				-105		dBc/Hz
	@10 kHz offset				-125		dBc/Hz
	Noise Floor				-155		dBc/Hz
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 1 MHz to ½ f_O on		3		12		ps_{P-P}
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 Ambient Temperature		T_C	1, 3	-40		+85	°C
Lid Symbolization (YY=Year, WW=Week)		RFM OP4011B 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.

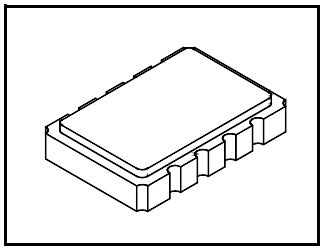
NOTES:

1. Unless otherwise noted, all specifications include any combination of load VSWR, VCC, and TC. In addition, Q and $\overline{Q}$ are terminated into 50 Ω loads to ground.
2. Customer useful tune range in excess of what part requires 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 $\overline{Q}$ and 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.

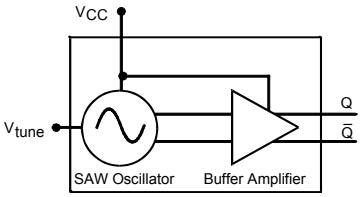
OP Performance Curves and Applicati

See the OP4005B Data Sheet for typical OP performance curves and application information.

SMC-8 8-Terminal Surface Mount Case



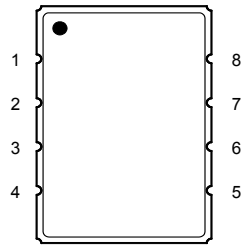
BLOCK DIAGRAM



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