

MAS1174

IC FOR 10.00 – 30.00 MHz VCXO

This is preliminary information on a new product under development. Micro Analog Systems Oy reserves the right to make any changes without notice.

Preliminary

- Low Power
- Wide Supply Voltage Range
- True Sine Wave Output
- Very High Level of Integration
- Electrically Trimmable
- Very Low Phase Noise
- Low Cost

DESCRIPTION

The MAS1174 is an integrated circuit well suited to build VCXO for mobile communication. The trimming is done by a serial bus and the calibration information is stored in an internal PROM. To build a VCXO only two additional components, a varactor

and a crystal are needed. The compensation method is fully analog. IC compensation work is continuous without generating any steps or other interferences.

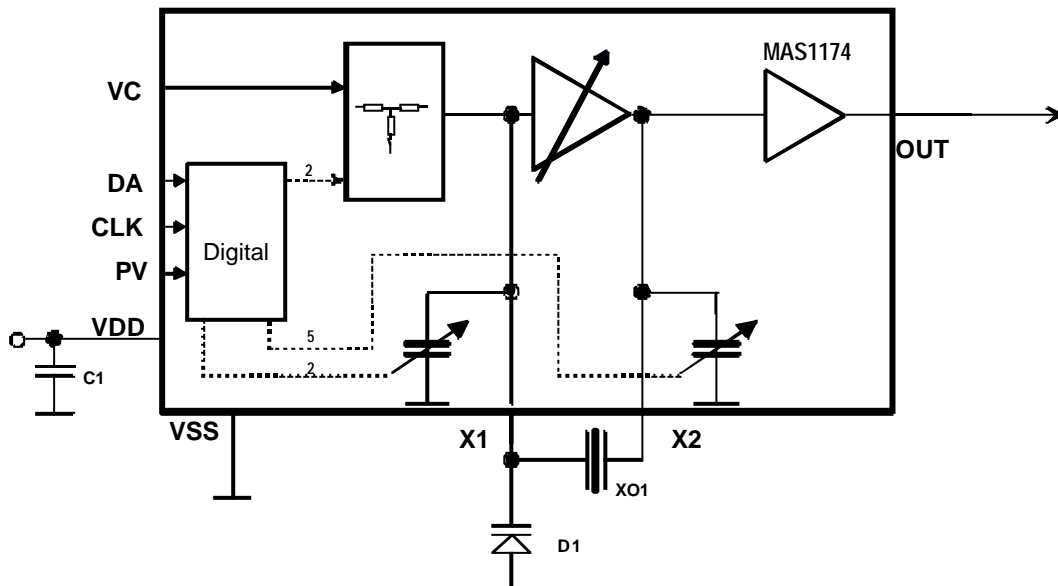
FEATURES

- Very small size
- Minor current draw
- Wide operating temperature range
- Phase noise <-130 dBc/Hz at 1 kHz offset

APPLICATIONS

- VCXO to mobile phones
- VCXO to other telecommunications systems

BLOCK DIAGRAM



PIN DESCRIPTION

Pin Description	Symbol	x-coordinate	y-coordinate
Power Supply Voltage	VDD	190	1048
Serial Bus Data Input	DA	394	1040
Serial Bus Clock Input	CLK	669	1040
Programming Input	PV	909	1044
Voltage Control Input	VC	183	228
Crystal Oscillator Output	X1	390	228
Power Supply Ground	VSS	587	245
Crystal/Varactor Oscillator Input	X2	801	228
Buffer Output	OUT	1009	228

Note: Because the substrate of the die is internally connected to VDD, the die has to be connected to VDD or left floating. Please make sure that VDD is the first pad to be bonded. Pick-and-place and all component assembly are recommended to be performed in ESD protected area.

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min	Max	Unit	Note
Supply Voltage	$V_{DD} - V_{SS}$	-0.3	6.0	V	
Input Voltage	V_{IN}	$V_{SS} - 0.3$	$V_{DD} + 0.3$	V	1)
Power Dissipation	P_{MAX}		100	mW	
Operating Temperature	T_{OP}	-35	85	°C	
Storage Temperature	T_{ST}	-40	120	°C	

Note: Not valid for programming pin PV.

RECOMMENDED OPERATION CONDITIONS

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Supply Voltage	V_{DD}		2.7	2.8	5.5	V
Supply Current	I_{CC}	$V_{CC} = 2.8$ Volt			1.8	mA
Operable Temperature	T_C		-30		+85	°C

ELECTRICAL CHARACTERISTICS

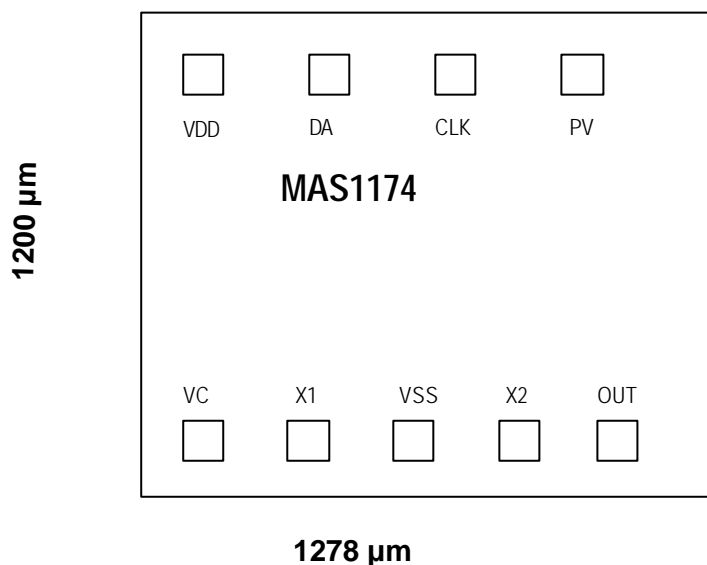
Parameter	Symbol	Min	Typ	Max	Unit	Note
Frequency range	f_o	10.00		30.00	MHz	
Voltage Control Range	V_C	0		Vdd		
Voltage Control Sensitivity	V_{CSSENS}		10..30		ppm/V	1)
Output Voltage (10k Ω // 10 pF)	V_{out}		1.0		Vpp	
Compensation CDAC1 (2 Bit)	C_{X1}	C10		C10 + 4.5	pF	2)
Compensation CDAC2 (4 Bit)	C_{X2}	C20		C20 + 18	pF	3)
Startup Time	T_{START}		2		ms	

Note 1: programmable by DN/DP

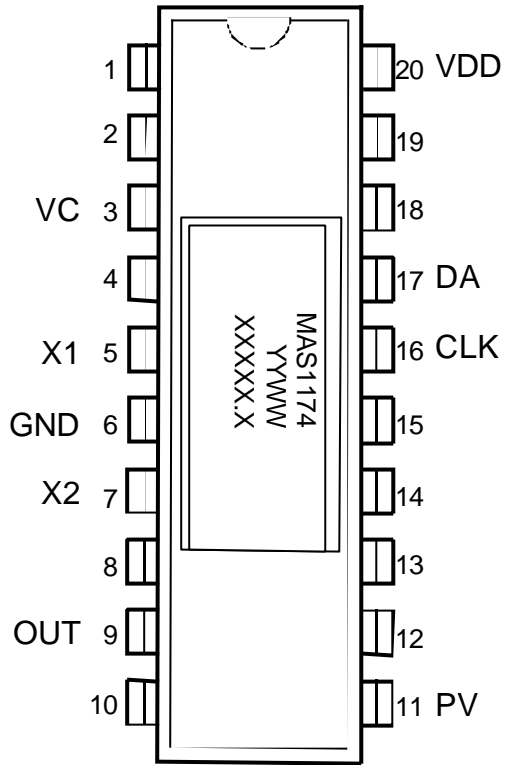
Note 2: typ C10 = 4.5 pF (varactor capacitance has to be added)

Note 3: typ C20 = 12.5 pF

IC OUTLINES



SAMPLES IN SB20 DIL PACKAGE



Top marking:
YYWW = Year, Week
XXXXX.X = Lot number

ORDERING INFORMATION

Product Code	Product	Package	Comments
MAS1174ATC1	IC FOR VCXO	Wafer, EWS tested	Die size 1200 x 1278 μm , wafer thickness 400 μm
MAS1174	IC FOR VCXO	SMD Package T.B.D.	

Please contact Micro Analog Systems Oy for other wafer thickness options.

LOCAL DISTRIBUTOR

MICRO ANALOG SYSTEMS OY CONTACTS

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