OX-601

Oven Controlled Crystal Oscillator

Features

- 4-Pin SMD package
- Fast warm-up
- Frequency Range, 10 MHz to 40 MHz
- Standard freq: 10, 12.8, 20, 24.576, 25, 30.72 MHz,
- High Relability (based on fully intergrated Design)
- Low Power

Applications

- Base stations (5G & 4G)
- Test equipment
- Small Cell
- Military communication equipment
- Stratum 3
- SyncE; 1588

Performance Specifications

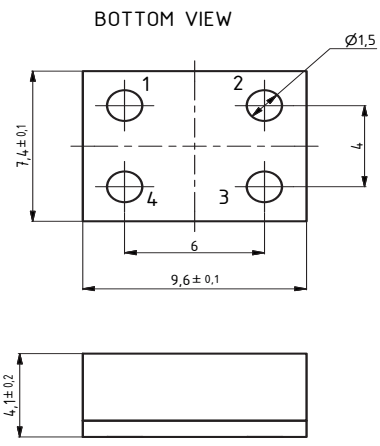
Frequency Stabilities[1] 10 to 40 MHz						
Parameter	Min	Typical	Max	Units	Condition	
vs. operating temperature range (referenced to +25°C)	-20 -10 -20		+20 +10 +20	ppb ppb ppb	-40 to +85°C -40 to +85°C -40 to +95°C	Options[5]
slope	-2		+2	ppb/°C	@ Temp stab. +-10ppb	
Initial tolerance vs. supply voltage change vs. load change vs. aging / day vs. aging / year vs. aging / 10 years	-0.5 -10 -10 -5 500 -3	 ±3 ±2 ±2	+0.5 +10 +10 +5 +500 3	ppm ppb ppb ppb ppb ppm	at time of shipment, nominal EFC V_S ±5% static Load ±5% static after 30 days of operation after 30 days of operation after 30 days of operation	
Holdover drift			5	ppb	over 24 hours, constant temperature (<±1°C) ; after 30 days continous opperation	
Start up time			200	msec		
Warm-up time			3	minutes	to ±50ppb of final frequency (1 hour reading) @ +25°C	
Loop bandwith for wander generation compliance	3			mHz	MTIE compliant with GR-1244 Fig 5-5 TDEV compliant with GR- 1244 Fig 5-4 ; measurement setup: oscillator stabilized 24 hours at Constant Temperature (±1°C, still air), data collected over 100,000 seconds at 1 second intervals (-3dB cutoff, 1st order high pass loop filter)	

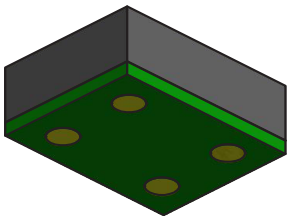
Performance Specifications

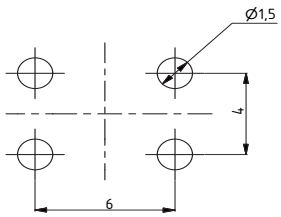
Parameter	Min	Typical	Max	Units	Condition	
Supply Voltage (Vs)						
Supply voltage (standard)	3.135	3.3	3.465	VDC		
Power consumption		1.3	1.5	Watts	during warm-up	
		0.65	0.8	Watts	steady state @ +25°C	
RF Output						
Signal [standard]		LVHCMOS				
Load		15		pF		
Signal Level (Vol)			0.4	VDC	with Vs=3.3V and 15pF Load	
Signal Level (Voh)	2.97	3.3		VDC	with Vs=3.3V and 15pF Load	
Duty Cycle	45		55	%	@ (Voh-Vol)/2	
Ron		26.5		Ω		
Roff		22		Ω		
Frequency Tuning (EFC)						
Tuning Range		Fixed OCXO; No adjust				Option[5]
Tuning Range	±3		±8	ppm	not available for all frequencies	
Linearity		10%				
Tuning Slope		Positive				
Control Voltage Range	0.0	1.4	2.8	VDC		
Additional Parameters						
Phase Noise[3]		-99 -125 -145 -155 -160	-90 -120 -140 150 -155	dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz	10 Hz 100 Hz 1 kHz 10 kHz 100kHz	@ 20MHz
Weight			1.0	g		
Processing & Packing		Handling & Processing Note				
Absolute Maximum Ratings						
Supply voltage (Vs)			3.8	V	with Vs=3.3 VDC	
Output Load			50	pF		
Operable Temperature Range	-40		+95	°C		
Storage Temperature Range	-40		+125	°C		

Outline Drawing / Enclosure

G349







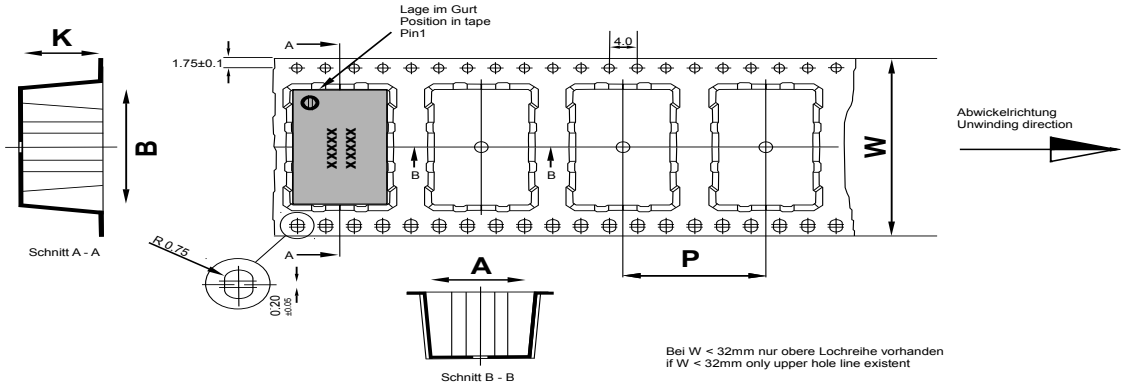
Recommended Pad Layout

OX-601	
Height "H"	cover material
4.1	plastic

Pin Connections	
1	I.C (Do not connect) / EFC (option)
2	Ground (Case)
3	RF Output
4	Supply Voltage Input

Dimensions in mm

Standard Shipping Method (OX-601)



Maßangaben in mm:	Dimension in mm:
A, B und K Maße von Bauelement abhängig	A, B und K are dependent uppon component dimensions
Fertigungstoleranzen entsprechen der DIN IEC 286-3	production tolerance complying DIN IEC 286-3

All dimensions in millimeters unless otherwise stated

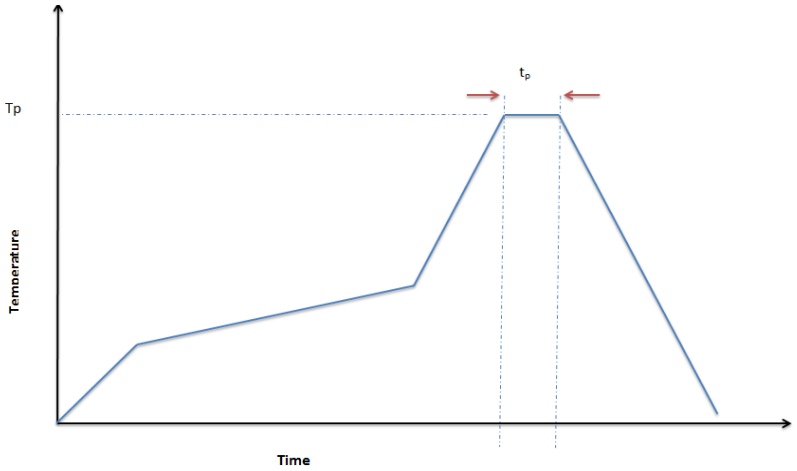
Enclosure Type	Tape Width W (mm)	Quantity per meter	Quantity per reel	Dimension P
OX-601 (4.1 mm)	24	83.3	850	12

Reflow Profile

TP: max 250°C (@ solder joint, customer board level)
Tp: max: 10…40 sec

Additional Information:
This SMD oscillator has been designed for pick and place reflow soldering

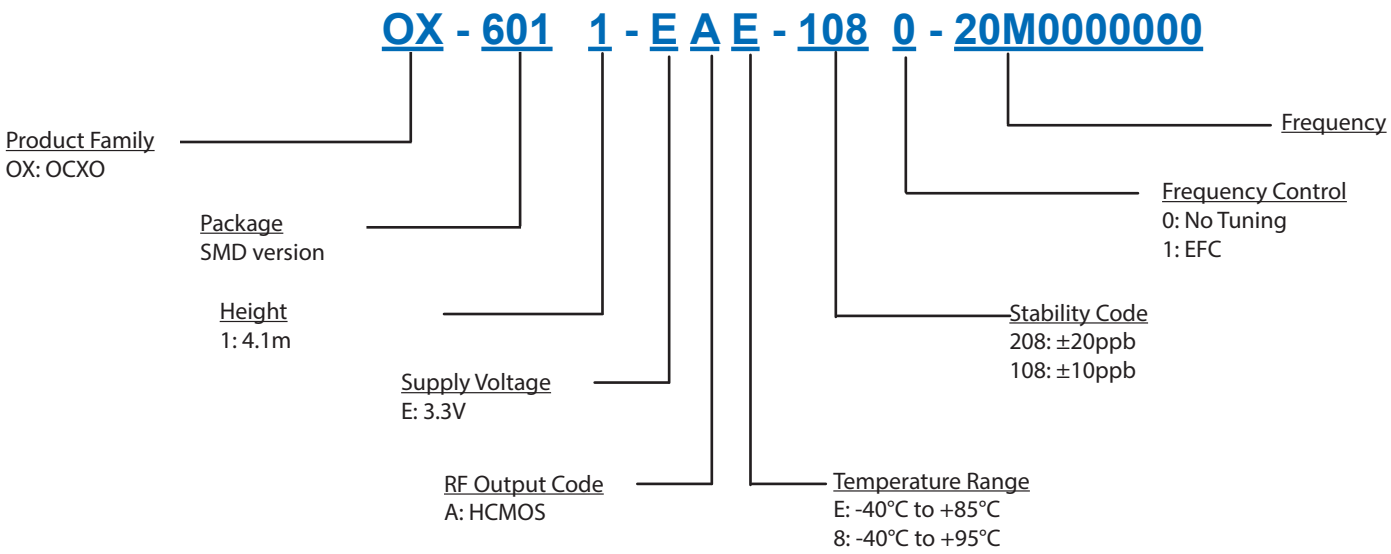
SMD oscillators must be on the top side of the PCB during the reflow process.



Additional Environmental Conditions

Parameter	Description
Temperature Cycling	JESD22-A104-D Cond.G - 500cycles -40/+125C;cycle time 30min
Vibration, Sine	MIL-STD-883 Meth 2007 Cond A - 20g 20-2000Hz 4x in each 3 axis 4min sweep time
Mechanical Shock	MIL-STD-202 Meth 213B Cond. F - 1500g 0,5ms 6 shocks in each direction
Solderability	J-STD-002C Cond. A, Trough hole device; Cond.B, SMD (correspond to MIL-STD-883 Meth 2003) - 255C (diving Time 5 0,5sec.) Dip&Look with 8h damp pre-treatment: solder wetting >95%
Solvent resistance	MIL-STD-883 Meth 2003) - 255C (diving Time 5 0,5sec.) Dip&Look with
ESD	8h damp pre-treatment: solder wetting >95%
Moisture Sensit.	JESD22-A113-B - only if > MSL 1
RoHS compliance	100% RoHS 6 compliant
Washable	non-washable device
High temp operating life(HTOL)	MIL-STD-202 Meth108A Cond C - 1000h @ 105C power on
Low temp operating life(LTOL)	IEC 60068-2-1 Cond. Ae - 1000h @ -40C power on

Ordering Information



Notes:

1. Contact factory for improved stabilities or additional product options. Not all options and codes are available at all frequencies.
2. Unless other stated all values are valid after warm-up time and refer to typical conditions for supply voltage, frequency control voltage, load, temperature (25°C).
3. Phase noise degrades with increasing output frequency.
4. Subject to technical modification.
5. Contact factory for availability.

Contact Information

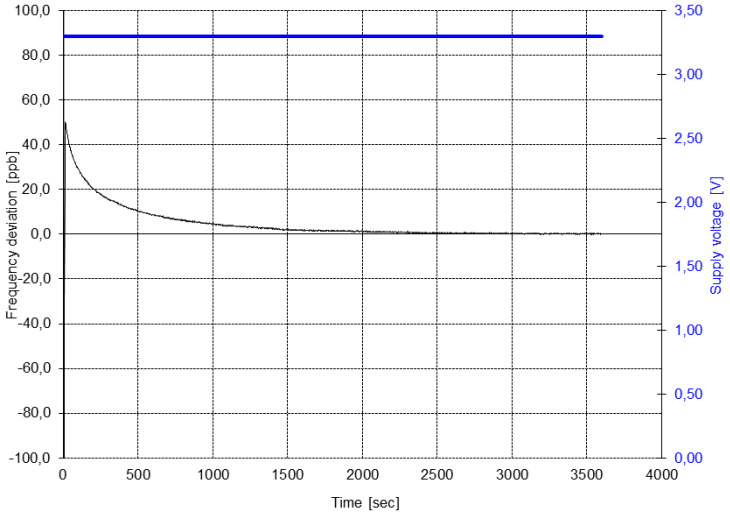
USA:
100 Watts Street
Mt Holly Springs, PA 17065
Tel: 1.717.486.3411
Fax: 1.717.486.5920

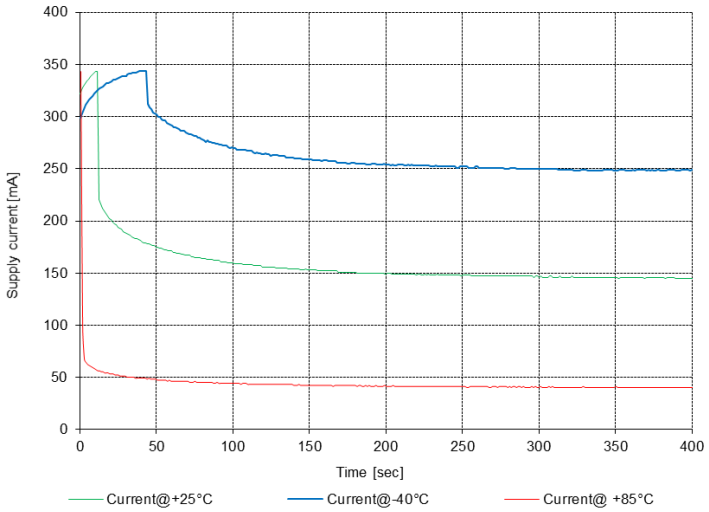
Europe:
Landstrasse
74924 Neckarbischofsheim
Germany
Tel: +49 (0) 7268.801.0
Fax: +49 (0) 7268.801.281

Vectron™ a Microchip company

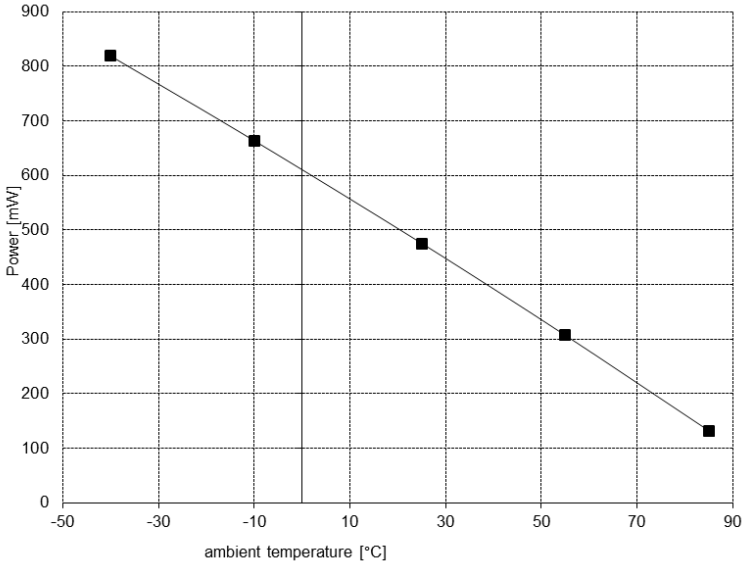
typical perforamce data

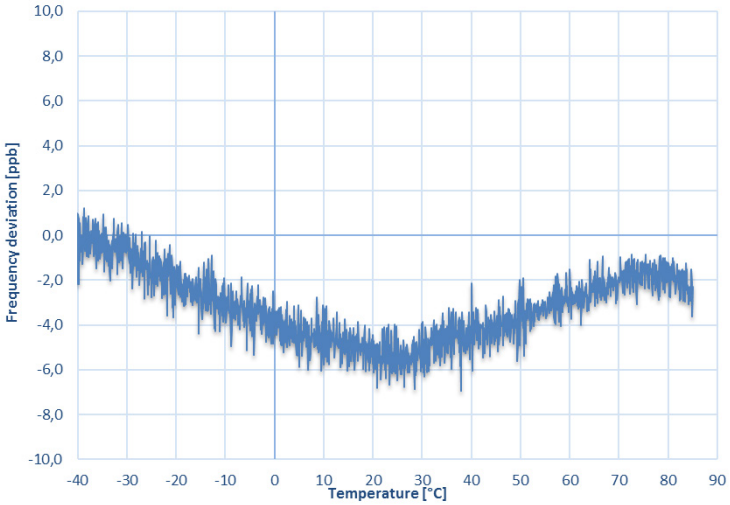
typical warm up (frequency vs. time)	typical current consumption during power on
@ OX-6011-EAE-1080-20M000	@ OX-6011-EAE-1080-20M000





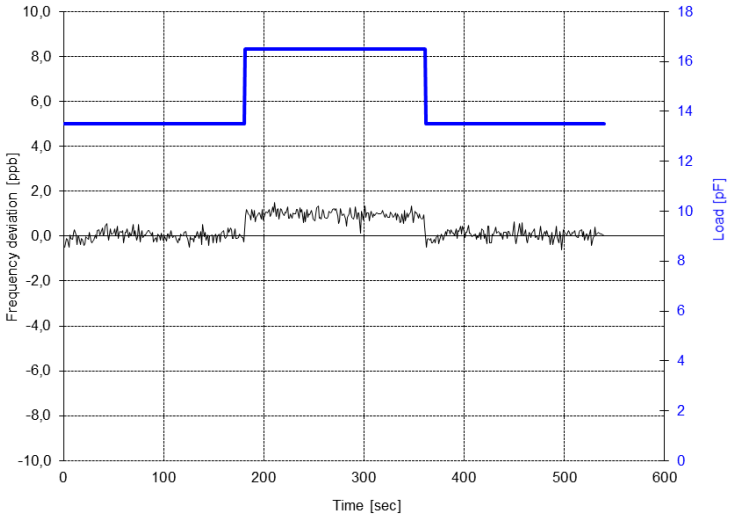
typical power consumption vs. operating temperauture	typical frequency vs. temperature stability
@ OX-6011-EAE-1080-20M000	@ OX-6011-EAE-1080-20M000

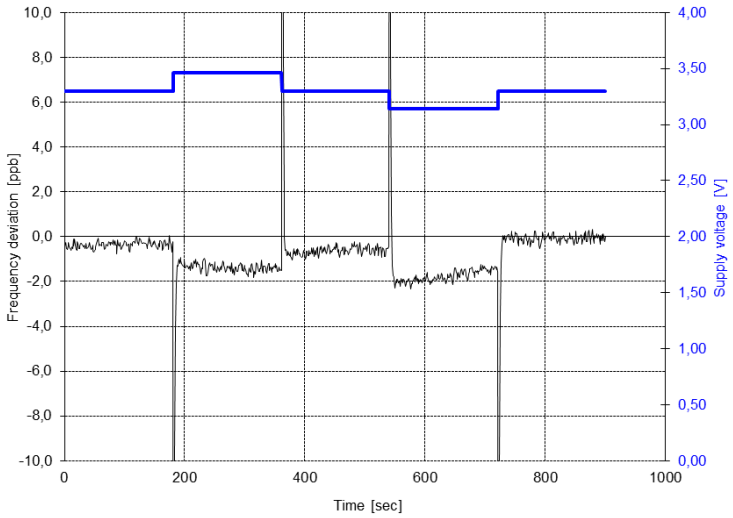




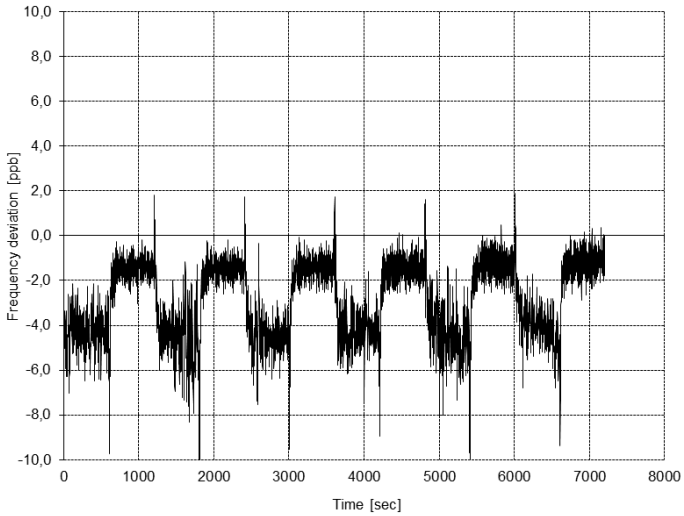
typical perforamce data

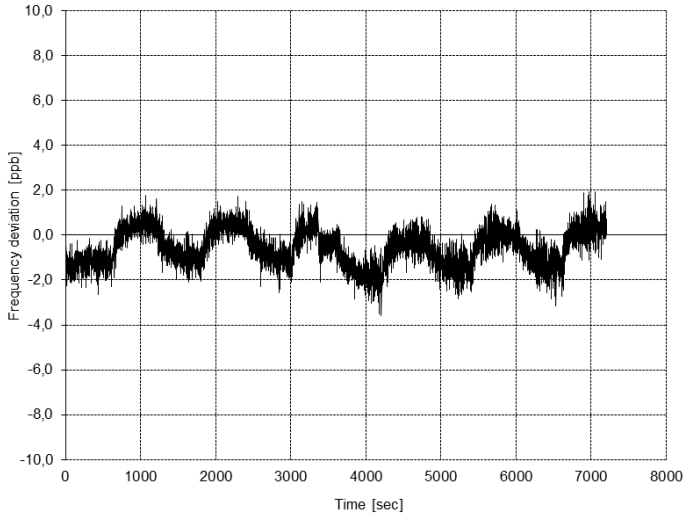
typical frequency vs. load change	typical frequeny vs. supply voltage
@ OX-6011-EAE-1080-20M000	@ OX-6011-EAE-1080-20M000





typical frequency. vs cycled airflow without additional cover	typical frequency. vs cycled airflow with additional cover
@ OX-6011-EAE-1080-20M000	@ OX-6011-EAE-1080-20M000





typical perforamce data

typical MTIE @ 3mHz loop Bandwidth	typical TDEV @ 3mHz loop Bandwidth
@ OX-6011-EAE-1080-20M000	@ OX-6011-EAE-1080-20M000