Technical Specification

OCXO

Customer Part Number	-
ACT Ordering Part Number	OX75-2000M-0070-PF
Product Description	15pF, HCMOS - OCXO
Nominal Frequency	20.000MHz
Package size	7.5 x 5.5 x 3.3mm
ACT internal code	D1
Product image	

Revision history

Revision	Description	Date	Author
1	First issue	21/10/2021	TP

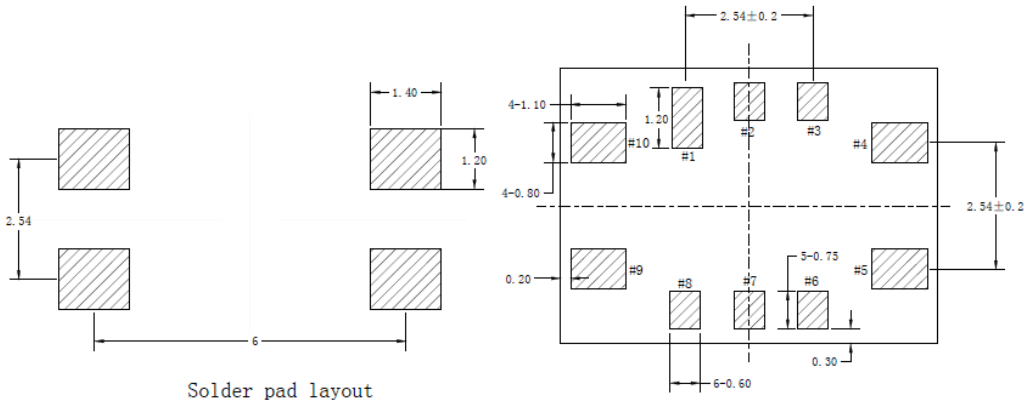
OCXO, HCMOS

- Small size surface mount package
- Excellent frequency vs stability

Output characteristics		
Parameter	**Specification**	**Remarks/Test condition**
Frequency range	20.0MHz	
Supply voltage	3.3V ± 5%	
Output waveform	HCMOS	
Output load	15pF	
Output voltage low	0.33V max	Vcc = 3.3V, Load = 15pF
Output voltage high	2.40V min	Vcc = 3.3V, Load = 15pF
Duty cycle	45%/55%	@50%
Rise/Fall time	5.0ns max	@25°C, 10%~90%
Startup time till valid waveform	15.0 msec max	Time until RF output waveform is within output level, duty cycle and rise/fall time spec
Frequency stability		
Vs Operating temperature	±0.1ppm	TA varied from -40°C ~ +95°C, measurement referenced to freq observed with fref = (fmax+fmin)/2, Vcc 3.3V, Load 15pF, temp variable speed less than 2°C/min
Initial frequency tolerance	±1.0ppm	Measurement referenced to frequency observed with +25°C , Vcc =3.3V and within 30 days after ex-works.
Frequency tolerance vs Supply voltage	±0.005ppm	@25°C, Vcc varied from 3.13V to 3.47V
Frequency tolerance vs Load	±0.01ppm	±10% load change measurement referenced to frequency observed with +25°C , Vcc =3.3V, load 15pF
Frequency vs temperature slope	±5.0ppb/°C	T ambient slope ±1 °C/min with any temperature window over operating temperature range. Includes also hysteresis effect. Slope measurement for device qualification as described in related note.
Day aging	±5.0ppb	25°C, Vcc = 3.3V and after 30 days of operation.
Overall Tolerance over 15 years	±4.6ppm	Over operating temperature range
Retrace accuracy	±0.025ppm	Cycle: 1st power on 1h, power off 15 min, 2nd power on. First reading 30 s after 2nd power on, referenced to last frequency reading immediately before power off, Temperature varied from -40°C to 95°C
Warm up Time	60 sec max	Time until RF output is within ±0.025ppm referenced to last frequency reading 1h after start up. Temperature varied from -40°C to 95°C
Warm-up power consumption	460 mA max	
Stable power consumption	230 mA max	@ 25°C

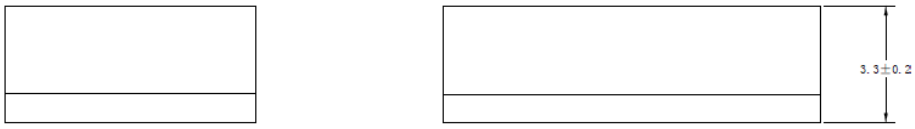
Phase noise (-40~+95°C)	Typical Phase noise	Max Phase noise
1Hz	-75 dBc/Hz	-65 dBc/Hz
10Hz	-110 dBc/Hz	-100 dBc/Hz
100Hz	-140 dBc/Hz	-130 dBc/Hz
1kHz	-160 dBc/Hz	-155 dBc/Hz
10kHz	-165 dBc/Hz	-160 dBc/Hz
100kHz	-165 dBc/Hz	-160 dBc/Hz
Environmental characteristics		
Operable working temperature	-40°C ~ +95°C	
Storage temperature	-55°C ~ +105°C	
Vibration	Amplitude 0.75mm; acceleration: 10g; 10Hz~500Hz; a cycle per 30 min, test for 2 hr in 3 directions(X,Y,Z), IEC 68-2-06 Test Fc.	
Shock	100g; 6ms; half sine wave (3 directions X,Y,X), IEC 68-2-27 test Ea/severity 50A	
ESD level	Human body model, class 2: 2000V to 4000V; ANSI/ESDA/JEDEC JS-001-2010	
	Machine model, class B: 200V to 400V; ANSI/ESDA/JEDEC JS-001-2010	
MSL	Level 3	

Mechanical dimensions and Pin functions and test circuits



Solder pad layout

Bottom view

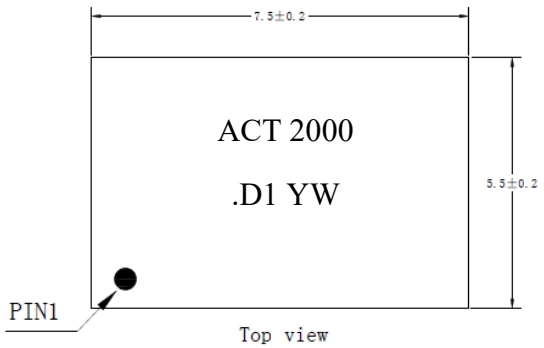


Right view

Front view

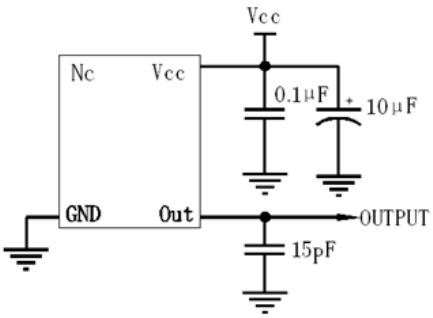
Pin Function

Pin	Function
1, 2, 3,6, 7, 8	NC
4	GND
5	OUTPUT
9	VCC
10	NC

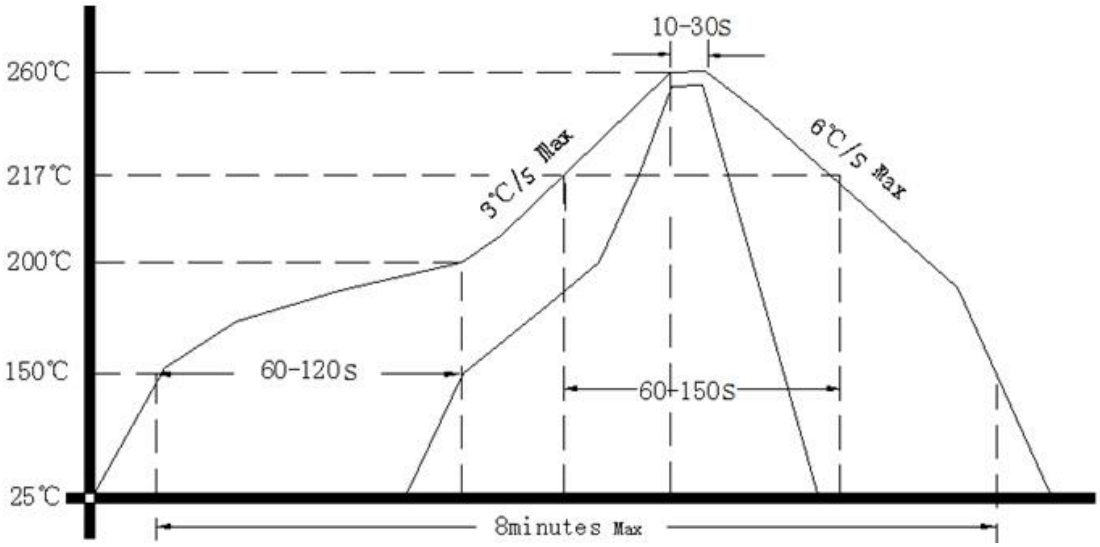


Top view

Mechanical dimensions and Pin functions and test circuits



Reflow soldering curve (RoHS)



Package: Tape & Reel (mm)