

# " OCXO " [ Oven Controlled Crystal Oscillators ]

**OC32T**

Square Wave

**OC32E**

True Sine Wave

Best stability

± 5.0 ppb

Standard  
OCXO Series

DIP

3.3V

5.0V

Min.

5 MHz

Max.

40 MHz

## Applications

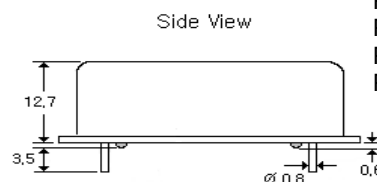
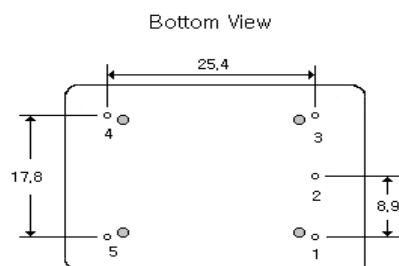
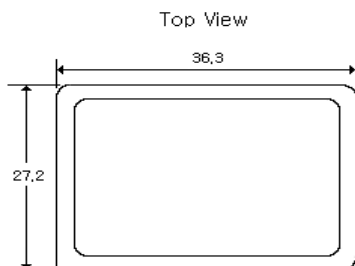
- OC32\_ ( 36.3 \* 27.2 \* 12.7 mm)
- Full Size 5 pin dip full metal package
- +3.3V , +5.0V Supply Voltages
- Voltage control ( Electronic Frequency Tuning ) is standard .



## General Specifications ( at+25°C and specified input voltage )

Output Waveform		Square wave. Waveform code is " T "		True Sine Wave. Waveform code is " E "			
Supply Voltage		+3.3 V	+5.0 V	+3.3 V	+5.0 V		
Supply Voltage range , " Voltage code "		+3.3V ± 5% , " 3 "	+5.0V ± 5% , " 5 "	+3.3V ± 5% , " 3 "	+5.0V ± 5% , " 5 "		
Frequency Range		5 ~ 40.0 MHz Standard Frequency : 10.0 MHz		5 ~ 40.0 MHz Standard Frequency : 10.0 MHz			
Initial Calibration Tolerance		± 100 ppb ( max. )	± 100 ppb ( max. )	± 100 ppb ( max. )	± 100 ppb ( max. )		
		Vcon = +1.65 V	Vcon = +2.5 V	Vcon = +1.65 V	Vcon = +2.5 V		
Type of Crystal Cut Used		" SC - cut " crystal or " IT - cut " crystal					
Frequency Stability		vs Temperature ( refer to +25°C )					
		± 3 ppb ( max. ) over 0°C to +70°C					
		± 5.0 ppb ( max. ) over -30°C to +70°C					
		± 10 ppb ( max. ) over -40°C to +85°C					
vs Voltage Change		± 0.5ppb ( max. ) , for a ± 5% input voltage change .					
		vs Warm-up time (+25°C)		10 minute max. Within ± 10 ppb of its reference frequency.			
vs Aging		± 0.5 ppb max./after 30 days ; ± 50 ppb max./first year ; ± 300 ppb max.over 10 years.					
Voltage Control On pin 1 (EFC)		Freq. Deviation Range		± 0.5 ppm min, ± 2 ppm max. Reference to fo at +25°C and over operating temperature range.			
		Control Voltage Range		+1.65V ± 1.65V    +2.5V ± 2.5V			
( Electronic Freq. Tuning )		Transfer Function					
		Positive : Increasing control voltage increases output frequency .					
		Input Impedance		50 K ohms min.			
EFC Linearity		± 10 % ( max. )					
Power		Power Dissipation ( at +25°C )					
		1.3 Watts max. at steady-state; 850 mA max. at turn-on.					
Output		Output Level ( for True Sine )		+8 dBm ( typ. ) , +10 dBm ( max. )			
		Harmonic ( for True Sine )		-30 dBc ( min. )			
		Spurious ( for True Sine )		-60 dBc ( min. )			
		Load		15pF    50 Ω			
		Output Logic High ( V <sub>OH</sub> )		+2.4 V ( min. )    ---			
		Output Logic Low ( V <sub>OL</sub> )		+ 0.4 V ( max. )    ---			
		Duty Cycle ( V <sub>DD</sub> )		50 % ± 5% @ +1.4V			
		Rise and Fall Time		7 nsec. ( max. ) ( 20% → 80% of waveform )			
		Phase Noise Offset [ 10.0 MHz ] ( typical )		10 Hz		100 Hz	
-120 dBc				-135 dBc			
		1 KHz		10 KHz			
		-145 dBc		-150 dBc			

## Outline Dimensions ( Unit : ±0.2 mm )



Pin Connections :  
 Pin 1 : Voltage Control  
 Pin 2 : Not Connected  
 Pin 3 : V<sub>DD</sub>  
 Pin 4 : Output  
 Pin 5 : Ground

# " OCXO " [ Oven Controlled Crystal Oscillators ]

Square wave " OC \_ T "

Clipped Sine Wave " OC \_ S "

True Sine Wave " OC \_ E "

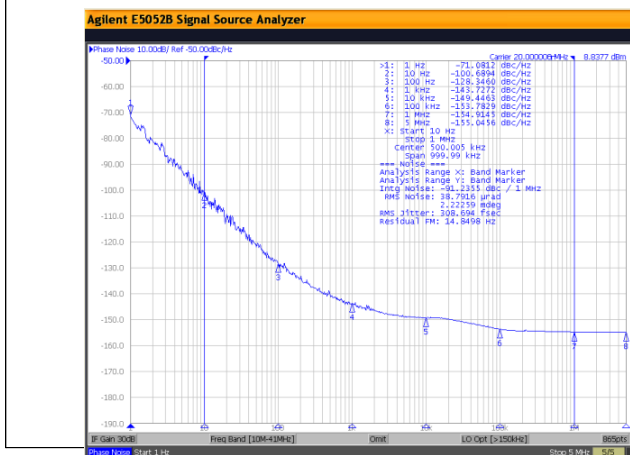
## Part Number Format and Example

	[ 1 ]	[ 2 ]	[ 3 ]	-	[ 4 ]	-	[ 5 ]	/	[ 6 ]
	Holder Type	Output Wave	Supply Voltage		Center Frequency		Frequency Stability		Operating Temp. Range
Examples	(1)	OC12	E	-	10.000	-	200	/	0+70
	(2)	OC18	E	-	100.000	-	100	/	-30+70
	(3)	OC51	S	-	10.000	-	30	/	-20+70
	(4)	OC14	T	-	5.000	-	10	/	-40+85

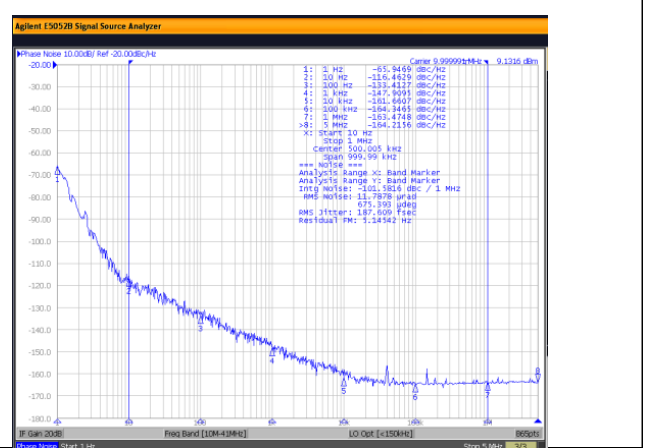
- Ex (1) : OC12E3 - 10.000 - 200 / 0+70 [ OC12 type , True Sine wave , 3.3V , 10.000MHz , ± 200ppb from 0°C to 70°C ]  
 Ex (2) : OC18E12 - 100.000 - 100 / -30+70 [ OC18 type , True Sine wave , 12V , 100.000MHz , ± 100ppb from -30°C to 70°C ]  
 Ex (3) : OC51S3 - 10.000 - 30 / -20+70 [ OC51 type , Clipped Sine Wave , 3.3V , 10.000MHz , ± 30 ppb from -20°C to 70°C ]  
 Ex (4) : OC14T5 - 5.000 - 10 / -40+85 [ OC14 type , Square Wave , 5.0V , 5.000MHz , ± 10 ppb from -40°C to 85°C ]

[ 1 ]	Holder Type " OC_ _ " stands for OCXO ,
[ 2 ]	" T " stands for Square Wave , " E " stands for True Sine Wave , " S " stands for Clipped Sine Wave ex 1 : OC14T, OC14 package, Square Wave output ; ex 2 : OC18E, OC18 package, True Sine wave ; ex 3 : OC51S, OC51 package, Clipped Sine Wave
[ 3 ]	Supply voltage , " 3 " for 3.3V D.C , " 5 " for 5.0V D.C , " 12 " for 12V D.C
[ 4 ]	Center Frequency in MHz
[ 5 ]	Frequency stability in ± _ ppb ; ex 1 : ±200ppb ---200 , ex 2 : ± 30ppb ---30 , ex 3 : ± 5ppb --- 5
[ 6 ]	Operating temperature range in °C ex 1 : 0 °C to 70°C ----- 0+70 ; ex 2 : -30 °C to 70°C ----- -30+70 ; ex 3 : -40 °C to 85°C ----- -40+85

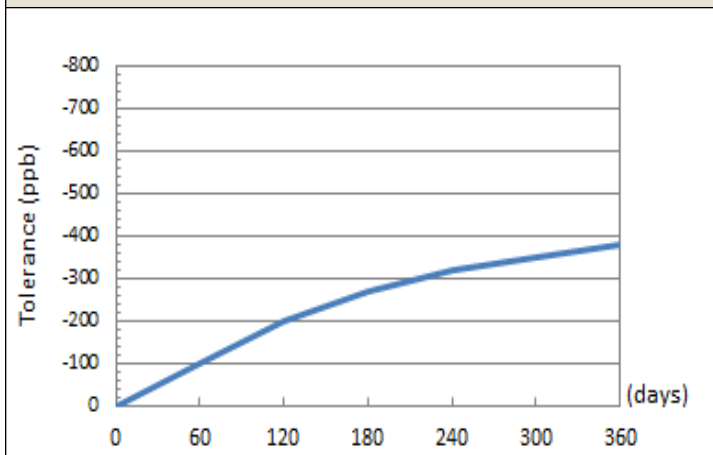
SSB Phase Noise : Clipped Sine Wave(OC51S-20.000)



SSB Phase Noise : Square wave(OC13T-10.000)



Aging : OC51S-20.000



Power Consumption vs Temperature (OC13T5-10.000)

