

# OCXO (Oven Controlled Crystal Oscillators)

## OC31T5A; OC31T5S Series

+5.0 V

HCMOS Square Wave



**MERCURY**  
Since 1973

Mercury OC31T is 36.2x27.2 mm 5 pin solder sealed metal package with 25.4x17.8 mm pin-to-pin spacing high stability low aging OCXO. Besides standard AT cut crystal, users can also choose SC cut crystal for better performance. 50 ohm load sine output is available as OC31E series.



### General Specifications

Output Wave Form			HCMOS square wave. Wave form code is “T”			
Frequency Range			1.0 MHz ~100.0 MHz			
Type of Crystal Cut Used			AT-cut. Use “A” for crystal code or SC-cut: use “S” for crystal code. Please refer to technical note TN031 for SC and AT-cut crystal comparison			
Supply Voltage (Vcc)			+5.0 V <sub>D.C</sub> ±5% (voltage code is “5”)			
Initial Calibration Tolerance			±0.05 ppm max. at time of shipment; Vcon = +2.5V, at +25°C			
Frequency Stability vs	Operating Temperature Range (custom spec. on request)		AT-cut crystal		SC-cut crystal	
			±0.03 ppm over -20°C to +70°C		±0.01 ppm over -20°C to +70°C	
			±0.05 ppm over -20°C to +70°C		±0.03 ppm over -20°C to +70°C	
			±0.1 ppm over -20°C to +70°C		±0.05 ppm over -20°C to +70°C	
	Aging		±0.05 ppm over -40°C to +85°C		±0.03 ppm over -40°C to +85°C	
			±0.1 ppm over -40°C to +85°C		±0.05 ppm over -40°C to +85°C	
			±0.5 ppm over -40°C to +85°C		±0.1 ppm over -40°C to +85°C	
Supply Voltage ±5% Variation		±20 ppb max.				
Load ±5% variation:		±20 ppb max.				
Warm-up time (at +25°C)		AT-cut: 3 minutes max. Within ±0.5 ppm of its reference frequency. SC-cut: 1 minute max. Within ±0.1 ppm of its reference frequency.				
Voltage Control on pin 1 (EFC) (Electronics Frequency Tuning)		Freq. Deviation Range		AT-cut: ±5 ppm typical SC-cut: ±0.7 ppm typical		
		Control Voltage Range		0.5 V to 4.5 V		
		Transfer Function		Positive: Increasing control voltage increases output frequency.		
		Input Impedance		100 K Ω min.	EFC Linearity	
Power	Power Dissipation (at +25°C)		Warm-up: 400 mA max. Steady-state: 200 mA max.			
Output	Wave From		HCMOS			
	Load (Fan out)		15 pF typical	Duty Cycle (measured at 50% Vcc)		50% ± 10%
	Output Voltage Logic High (V <sub>OH</sub> )		+4.5 V min.	Output Voltage Logic Low (V <sub>OL</sub> )		+0.5 max.
	Rise and Fall Time		5 nS max. (measured at 20% ÷ 80% of waveform)			
	Phase Noise	Offset	10 Hz	100 Hz	1 KHz	10 KHz
		10 MHz AT-cut XTAL	-110 dBc typ.	-135 dBc typ.	-150 dBc typ.	-155 dBc typ.
Storage Temperature			-40°C to +105°C			
Shock			2000 G's, 0.3 ms ½ sine			
Vibration			10 to 2000 Hz / 10 G's			

**MERCURY** [www.mercury-crystal.com](http://www.mercury-crystal.com)

Taiwan: TEL (886)-2-2406-2779, FAX (886)-2-2496-0769, e-mail: sales-tw@mercury-crystal.com

U.S.A.: TEL (1)-909-466-0427, FAX (1)-909-466-0762, e-mail: sales-us@mercury-crystal.com

# OCXO (Oven Controlled Crystal Oscillators)

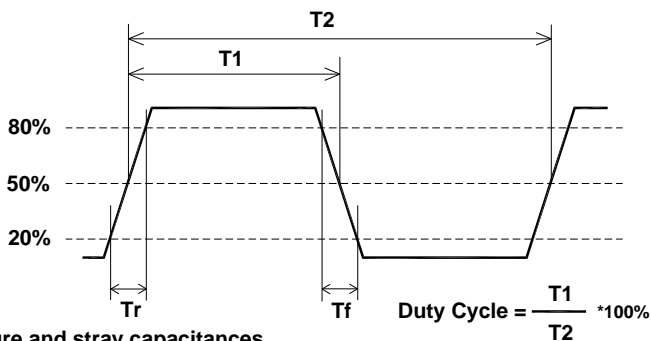
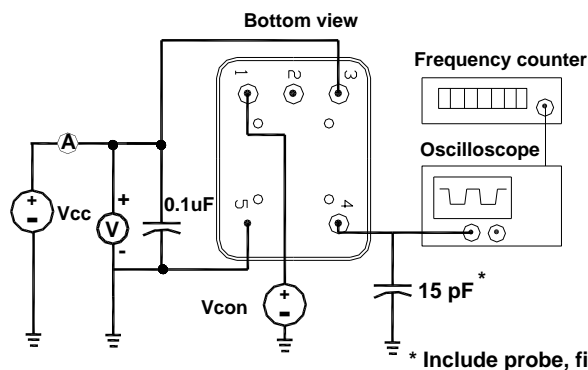
## OC31T5A; OC31T5S Series

**+5.0 V**  
**HCMOS Square Wave**



**MERCURY**  
Since 1973

### OC31T Test Circuit



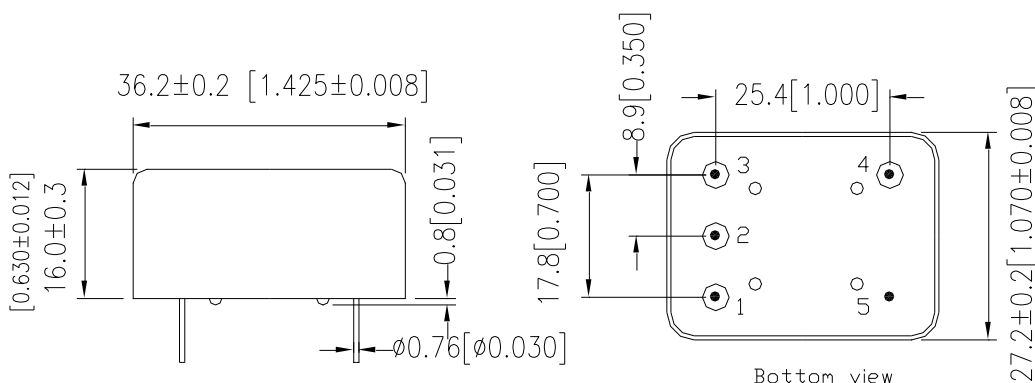
### OC31T Series Package Dimensions and Pin Connections:

unit mm

Pin 1: Voltage Control EFC  
Pin 4: RF Output

Pin 2: Reference Voltage Output  
Pin 5: Ground / Case

Pin 3: Supply Voltage



### Part Number Format and Example:

**Example:** OC31T5A-10.000-0.1/-20+70

OC31T5	A	—	10.000	—	0.1	/	-20+70
--------	---	---	--------	---	-----	---	--------

①	②	dash	③	Dash	④	slash	⑤
---	---	------	---	------	---	-------	---

①: OC31T5: OC31 series; "T" for CMOS Square wave; "5" for +5.0 V supply voltage

②: Crystal type. "A" for AT-cut crystal; "S" for SC-cut crystal ③: Frequency in MHz

④: Frequency stability in ppm ⑤: Operating temperature range in Celsius