AT&T Microelectronics

VCO-600 Voltage-Controlled SAW Oscillator (VCSO)

Description

The AT&T VCO-600 is a SAW-stabilized, voltage-controlled ECL oscillator that operates at the fundamental frequency of the internal SAW filter. This filter is a high-stability, high-Q quartz device which enables the circuit to achieve low-phase noise performance over a wide temperature range. The VCO-600 has output disable and test clock through features which improve on board testing. It is packaged in a 28-pin small-outline surface-mount ceramic package.

The VCO-600 is available with center frequencies between 155 MHz and 1.1 GHz, including the SONET/SDH and ATM frequencies of 155.52 MHz, 311.04 MHz, and 622.08 MHz. Typical uses of the VCO-600 are data retiming and synchronization as part of a phase-locked loop (PLL), as well as frequency translation and frequency synthesis.

Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit
Center Frequency	Fo	155	—	1100	MHz
Operation Temperature Range	T	–40	—	85	°C
Absolute Pull Range (APR)*					
Vc = 0.5 V	APR	–50	—	—	ppm from Fo
Vc = 4.5 V		+50	—	—	ppm from Fo
Total Pull Range (TPR)					
Vc = 0.5 V	TPR	—	–400	—	ppm from Fo
Vc = 4.5 V		—	+400	—	ppm from Fo
Supply Voltage	VEE	–4.5	–5.0	–5.5	V
Supply Current	IEE	45	55	70	mA
Output Voltage Levels†					
Output Logic Low	VOL	–1.95	—	–1.63	V
Output Logic High	VOH	–0.98	—	–0.75	V
Transition Times					
Rise Time	TRISE	100	250	400	ps
Fall Time	TFALL	100	250	400	ps
Frequency Stability (Vc = constant)	—	—	±150	—	ppm from Fo
Symmetry or Duty Cycle	SYM	45	49/51	55	%
Linearity (Vc = VEE to Vcc)	LIN	—	±3	±5	%
Control Voltage	Vc	VEE	—	Vcc	V
Control Voltage Modulation Bandwidth‡	BW	—	500	—	kHz
Control Voltage Input Impedance	RIN	8	10	12	kΩ
Spurious Output Suppression	—	–50	–60	—	dB

* A VCSO with an APR of ±50 ppm will track a ±50 ppm source over all operating conditions. APR can be expressed as follows: APR ≥ TPR – (Frequency variations due to variations in temperature, aging, power supply, load, and measurement).
† Output levels are standard 10K ECL, fully compatible with 100K ECL.
‡ The modulation bandwidth is a function of Fo of the VCO-600, or it can be adjusted by using an external capacitor.

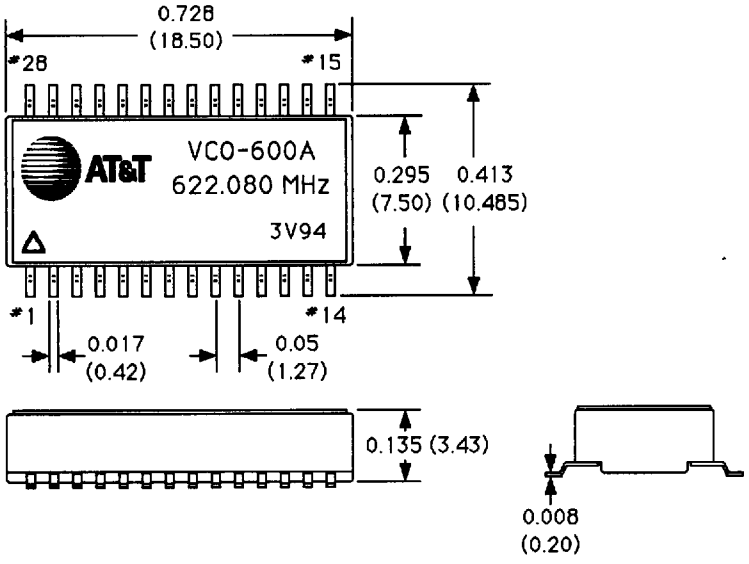
Mechanical Characteristics

Parameter	Description
Mechanical Shock	MIL-STD-883, Method 2002, Condition A.
Mechanical Vibration	MIL-STD-883, Method 2007, Condition A.
Solderability	MIL-STD-883, Method 2003.
Gross Leak Test	All units tested to MIL-STD-883, Method 1014.
Fine Leak Test	All units tested to MIL-STD-883, Method 1014.
Resistance to Solvents	MIL-STD-883, 2016.

Outline Diagram

VCO-600 Package

Dimensions are in inches and (millimeters).



PIN #	FUNCTION
2	VCC
4	Test clock input
5,6,7,8	No connect
10	VEE
12	VCC
17	Modulation BW Control
19	Voltage control
21	Output disable
23	Output clock
25	Output $\overline{\text{clock}}$
27	VCC
1,3,9,11,13	Case ground
14,15,16,18	Case ground
20,22,24,26	Case ground
28	Case ground

Ordering Information

Standard Frequency (MHz)*	Part Number
155.520	107040537
311.040	107012551
622.080	107012569

* Other specifications and frequencies may be available upon request. 3V94 is the date code and represents the month (3), week of the month (V = 5th week) and the year 19(94) of manufacture.