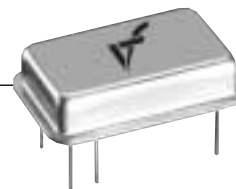


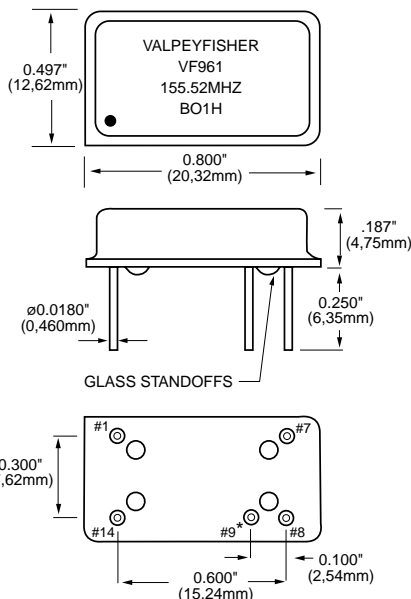
# VF960/VF961



## ECL/PECL Compatible Hybrid VCXO Standard 14 Pin DIP Package

### FEATURES

- No Frequency Multiplication is Used
- Very Low Phase Jitter
- Low Component Count
- Pullability ( $\pm 500$  ppm available)
- Temperature Range (-40°C to +85°C) Available
- Complementary Output Available
- Wide Frequency Range



All dimensions are typical unless otherwise specified.  
\* Pin 9 optional

VF960/961 FREQ.

FREQUENCY STABILITY	
Code	Specification
S	$\pm 20$ ppm
H	$\pm 25$ ppm (std.)

ABSOLUTE PULL RANGE (ppm)	
Code	Specification
C	$\pm 50$ ppm MIN. (std.)
XXX	up to 500 ppm (customer specified)

DUTY CYCLE	
Code	Specification
H	$\pm 5\%$
L	$\pm 10\%$ (std.)

LEAD CONFIGURATION	
Code	Specification
G	Gull Wing
H	Through Hole (std.)

INPUT VOLTAGE	
Code	Specification
L	3.3 Volt $\pm 5\%$ *
H	5.0 Volt $\pm 5\%$ (std.)

(\*VF961 Only)

OUTPUT	
Code	Specification
C	Complementary
L	4 pin pkg Single (std.)

OPERATIONAL TEMP. RANGE	
Code	Specification
0	0°C to +70°C (std.)
1	-40°C to +85°C

Example: VF960SHL-1CG-100-106.25MHz: Frequency Stability  $\pm 20$ ppm, Duty Cycle  $\pm 5\%$ , Input Voltage 3.3 Volt  $\pm 5\%$ , Operating Temperature -40°C to +85°C, Complementary Output (5-pin package), Gull Wing, APR  $\pm 100$ ppm, Frequency 106.25MHz.

Parameter	Symb	Condition	Min	Typ	Max	Unit	Note	
Absolute Max. Ratings	Input Break Down Voltage	Vcc-Vee	-5		7.0	V		
	Storage Temp.	Ts	-40		+85	°C		
	Control Voltage	Vc	-1.0		9.0	V		
Electrical	Frequency Range	F	10		200	MHz		
	Frequency Stability	$\Delta F/F$	Over Temp, Vcc			$\pm 25$	ppm	
	Input Voltage	Vcc Vee Vcc	PECL ECL LVPECL	4.75 -4.95 3.15	5.00 -5.20 3.30	5.25 -5.45 3.45		VF961 VF960 VF961L
	Input Current	Icc/Iee	50 Ohm Load			65	mA	
	Load	50 Ohm to Vcc-2V or Thevenin Equiv. Bias required						
	Duty Cycle		@50%	40	50	60	%	1
	Rise/Fall Time	Tr/Tf	20% to 80%			1.5	ns	
	Logic "1" Level	Voh	@Vcc = 5.0V @Vee = -5.2V @Vcc = 3.3V	4.04 -0.96 2.59		4.19 -0.81 2.74	V	PECL ECL LVPECL
	Logic "0" Level	Vol	@Vcc = 5.0V @Vee = -5.2V @Vcc = 3.3V	3.15 -1.85 1.45		3.25 -1.65 1.55	V	PECL ECL LVPECL
	Start-up Time	Ts			2	10	ms	
Phase Jitter		$1\sigma$			1	ps	fj>1KHz	
Modulation BW	fm	@ Vc = 2.5V	10			KHz	@-3db	
Input Impedance		fm<10KHz	50			KOhm		
Control Voltage	Vc	PECL ECL LVPECL	0.0 -5.0 0.0		5.0 0.0 3.3	V	2	
Absolute Pull Range	APR	Overall	$\pm 50$			ppm	3	
Deviation Slope		Monotonic, pos. Monotonic, neg. Monotonic, pos.		50 -50 75		ppm/V	PECL ECL LVPECL	
Linearity					$\pm 20$	%	4	
Setability (Vc for center freq)	Vc0	@25°C, Fnominal	2.00 -2.00 1.25	2.50 -2.50 1.65	3.00 -3.00 2.05	V	PECL ECL LVPECL	

Environmental and Mechanical	Operating Temperature Range	0°C to +70°C (-40°C to +85°C available)
	Mechanical Shock	Per MIL-STD-202, Method 213, Cond. E
	Thermal Shock	Per MIL-STD-883, Method 1011, Cond. A
	Vibration	Per MIL-STD-883, Method 2007, Cond. A
	Soldering Conditions	260°C, for 10s, Max.
	Hermetic Seal	Leak rate less than $5 \times 10^{-8}$ atm.cc/s of helium
Electrical Connections	Pin Out	Pin #1-Voltage Control Pin #7-Ground, Case (PECL)/-Vee(ECL) Pin #8-Output Pin #14-Vcc (PECL)/Case,Ground (ECL) Pin #9-Complementary Output (Optional)

- Notes:
1. Tighter duty cycle available.
  2. 0V to 5V control voltage available for Vcc 3.3V. Nominal control voltage is 2.5V and setability is  $\pm 0.5$ V in this case.
  3. Wider pullability available.
  4. 10% and 5% available.