

CMOS LOGIC HYBRID CRYSTAL CLOCK OSCILLATORS

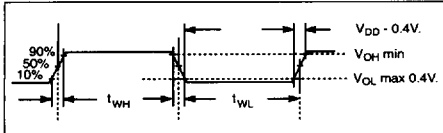
VF170 Series CMOS Hybrid Crystal Clock Oscillators

Valpey-Fisher's VF170 series designates a family of oscillators compatible with CMOS circuitry and offer a proven, low power consumption frequency source. These CMOS oscillators can be used with a wide range of supply voltages and can be specified to frequencies much lower than oscillators of other logic.

Specifications

Frequency Range	1 KHz to 12 MHz			
Output:	CMOS			
Symmetry	40/60 to 60/40% standard. 45/55 symmetry available. ($C_L = 15\text{pf}$ @ $V_O = \frac{1}{2}V_{DD}$) *1" Source Current: 120 μA *0" Sink Current: 360 μA			
Logic Voltage	V_{OH} (Logic "1") min V_{OL} (Logic "0") max	+5V 4.5 .5	+10V 9.0 1.0	+15V 13.5 1.5
Rise & Fall Times	1.000 KHz-3.999 MHz 4.000 MHz-7.999 MHz 8.000 MHz-12.000 MHz (10% to 90% V_{DD}) $C_L = 15\text{pf}$	100ns 55ns N/A	30ns 30ns 30ns	25ns 25ns 25ns
Input Current (max., unloaded)	1.000 MHz-3.999 MHz 4.000 MHz-5.999 MHz 6.000 MHz-7.999 MHz 8.000 MHz-12.000 MHz	5.5 mA 1.5 mA 2.0 mA N/A	14 mA 5 mA 6 mA 7.5 mA	25 mA 9.5 mA 12 mA 15 mA
Input Voltage	+5 to +15VDC, $\pm 10\%$			
Storage Temperature	-55°C to +125°C			
Package	See Oscillator Package Chart.			
Electrical Connections	PIN#1 N.C. PIN#14 +5VDC to +15VDC		PIN#7 Case GND PIN#8 Output	

VF170 Waveform



Type Numbers & Options

VF Type Number	Frequency Range	Stability (%)	Option	Operating Temperature Range (°C)		
				0 to +70 Standard	-40 to +85 Option 1	-55 to +125 Option 2
VF170	1.0 KHz to 12.0 MHz	0.0025	A	VF170A	VF170A-1	VF170A-2*
		0.005	B	VF170B	VF170B-1	VF170B-2
		0.01	Standard	VF170	VF170-1	VF170-2
		0.05	C	VF170C	VF170C-1	VF170C-2
		0.25	D	VF170D	VF170D-1	VF170D-2

* -55 to +105°C

VF270 Series Dual Output CMOS Hybrid Crystal Clock Oscillators

Valpey-Fisher's VF270 series of full-size CMOS oscillators designates two outputs from one device. These outputs are dependent in that one output is a binary divider of the other output. The oscillator utilizes a single crystal. Typical dividers are binary — 2, 4, 8, 16, ... 4,096. The specifications of these dual output CMOS oscillators is the same as those of Valpey-Fisher's VF170 series of single output oscillators.

Specifications

Frequency Range	1 KHz to 12 MHz			
Output:	CMOS			
Symmetry	40/60 to 60/40% standard. 45/55 symmetry available. ($C_L = 15\text{pf}$ @ $V_O = \frac{1}{2}V_{DD}$) *1" Source Current: 120 μA *0" Sink Current: 360 μA			
Logic Voltage	V_{OH} (Logic "1") min V_{OL} (Logic "0") max	+5V 4.5 .5	+10V 9.0 1.0	+15V 13.5 1.5
Rise & Fall Times	1.000 KHz-3.999 MHz 4.000 MHz-12.000 MHz (10% to 90% V_{DD}) $C_L = 15\text{pf}$	100ns 55ns	30ns 30ns	25ns 25ns

(continued)

VF270 (continued)

Specifications (cont.)

Input Current (max., unloaded)	1.000 MHz-12.000 MHz	5.5 mA	14 mA	25 mA
	4.000 MHz-5.999 MHz	1.5 mA	5 mA	9.5 mA
	6.000 MHz-7.999 MHz	2.0 mA	6 mA	12 mA
	8.000 MHz-12.000 MHz	N/A	7.5 mA	15 mA
Input Voltage	+5 to +15VDC, $\pm 10\%$			
Storage Temperature	-55°C to +125°C			
Package	See Oscillator Package Chart.			
Electrical Connections	PIN#1 Output	PIN#7 Case GND		
	PIN#14 +5VDC2 to 15VDC	PIN#8 Output		

Type Numbers & Options

VF Type Number	Frequency Range	Stability (%)	Option	Operating Temperature Range (°C)		
				0 to +70 Standard	-40 to +85 Option 1	-55 to +125 Option 2
VF270	1.0 KHz to 12.0 MHz	0.0025	A	VF270A	VF270A-1	VF270A-2*
		0.005	B	VF270B	VF270B-1	VF270B-2
		0.01	Standard	VF270	VF270-1	VF270-2
		0.05	C	VF270C	VF270C-1	VF270C-2
		0.25	D	VF270D	VF270D-1	VF270D-2

* -55°C to +105°C

VF170-C Full-Size Series
Enable/Disable CMOS Hybrid
Crystal Clock Oscillators

Valpey-Fisher's VF170-C full-size (enable high) series of CMOS oscillators allows a user the option of setting an output state for the oscillator. This feature serves multiple purposes in a circuit, one of which is acting as a functional switch. The specifications of these enable/disable oscillators are the same as those of Valpey-Fisher's VF170 series CMOS oscillators.

Specifications

Frequency Range	1 KHz to 12 MHz			
Output:	CMOS			
Symmetry	40/60 to 60/40% standard. 45/55 symmetry available. ($C_L = 15\text{pf}$ @ $V_O = \frac{1}{2}V_{DD}$) "1" Source Current: 120 μA "0" Sink Current: 360 μA			
Logic Voltage	V_{OH} (Logic "1") min. V_{OL} (Logic "0") max.	+5V 4.5 .5	+10V 9.0 1.0	+15V 13.5 1.5
Rise & Fall Times	1.000 KHz-3.999 MHz 4.000 MHz-12.000 MHz (10% to 90% V_{DD}) $C_L = 15\text{pf}$	100ns 55ns	30ns 30ns	25ns 25ns
Input Current (max., unloaded)	1.000 MHz-3.999 MHz	5.5 mA	14 mA	25 mA
	4.000 MHz-5.999 MHz	1.5 mA	5 mA	9.5 mA
	6.000 MHz-7.999 MHz	2.0 mA	6 mA	12 mA
	8.000 MHz-12.000 MHz	N/A	7.5 mA	15 mA
Input Voltage	+5 to +15VDC, $\pm 10\%$			
Storage Temperature	-55°C to +125°C			
Package	See Oscillator Package Chart.			
Electrical Connections	PIN#1 N.C.	PIN#7 Case GND		
	PIN#14 +5VDC2 to 15VDC	PIN#8 Output		

VF170-C (continued)

Type Numbers & Options

VF Type Number	Frequency Range	Stability (%)	Option	Operating Temperature Range (°C)		
				0 to +70 Standard	-40 to +85 Option 1	-55 to +125 Option 2
VF170-C	1.0 KHz to 12.0 MHz	0.0025	A	VF170A-C	VF170A-1-C	VF170A-2-C*
		0.005	B	VF170B-C	VF170B-1-C	VF170B-2-C
		0.01	Standard	VF170-C	VF170-1-C	VF170-2-C
		0.05	C	VF170C-C	VF170C-1-C	VF170C-2-C
		0.25	D	VF170D-C	VF170D-1-C	VF170D-2-C

* -55°C to +105°C

**VF170G Series
VF270G Series, and
VF170-CG Series Gull Wing
CMOS Hybrid Crystal Clock
Oscillators**

Valpey-Fisher offers all the features of its full-size, dual output and enable/disable CMOS oscillators in surface mount packages. The leads on standard 14 pin full-size packages can be formed in a gull wing configuration to allow the user to get all the specifications available only in the full range of Valpey-Fisher's CMOS through-hole oscillators in a holder compatible with surface mount board assembly techniques. See the pages in this catalog on the VF170, VF270 and VF170-C series oscillators for complete specifications.

Recommended Solder Pad Layout

