



Valpey Fisher Corporation



PRODUCT SELECTION GUIDE

Timing Modules | Precision Crystal Oscillators | Hi-Rel / COTS Oscillators

ABOUT VALPEY FISHER

Valpey Fisher Corporation (AMEX:VPF) is a world-leading technology company specializing in low noise timing solutions. From discrete high precision crystal oscillators to highly integrated, low noise timing modules, Valpey Fisher offers its customers a broad array of frequency control products to meet their precision timing needs. Valpey Fisher's products provide the essential timing signals needed in advanced applications including cellular base stations, broadband datacom infrastructure, avionics instrumentation, homeland security equipment, and military defense systems.

Valpey Fisher's unique value to its customers is its ability to provide innovative frequency control design technology, characterized by extremely low phase noise, jitter, and power consumption coupled with high frequency, high reliability, and small size.

Since 1931, Valpey Fisher has cultivated longstanding and trusting relationships with many of the world's major original equipment manufacturers (OEMs) as well as small and emerging businesses throughout the industry.

Valpey Fisher is an ISO9001:2000 approved organization with its corporate headquarters located in a 32,000 square foot research, engineering and manufacturing facility in Hopkinton, MA.

Historical Timeline

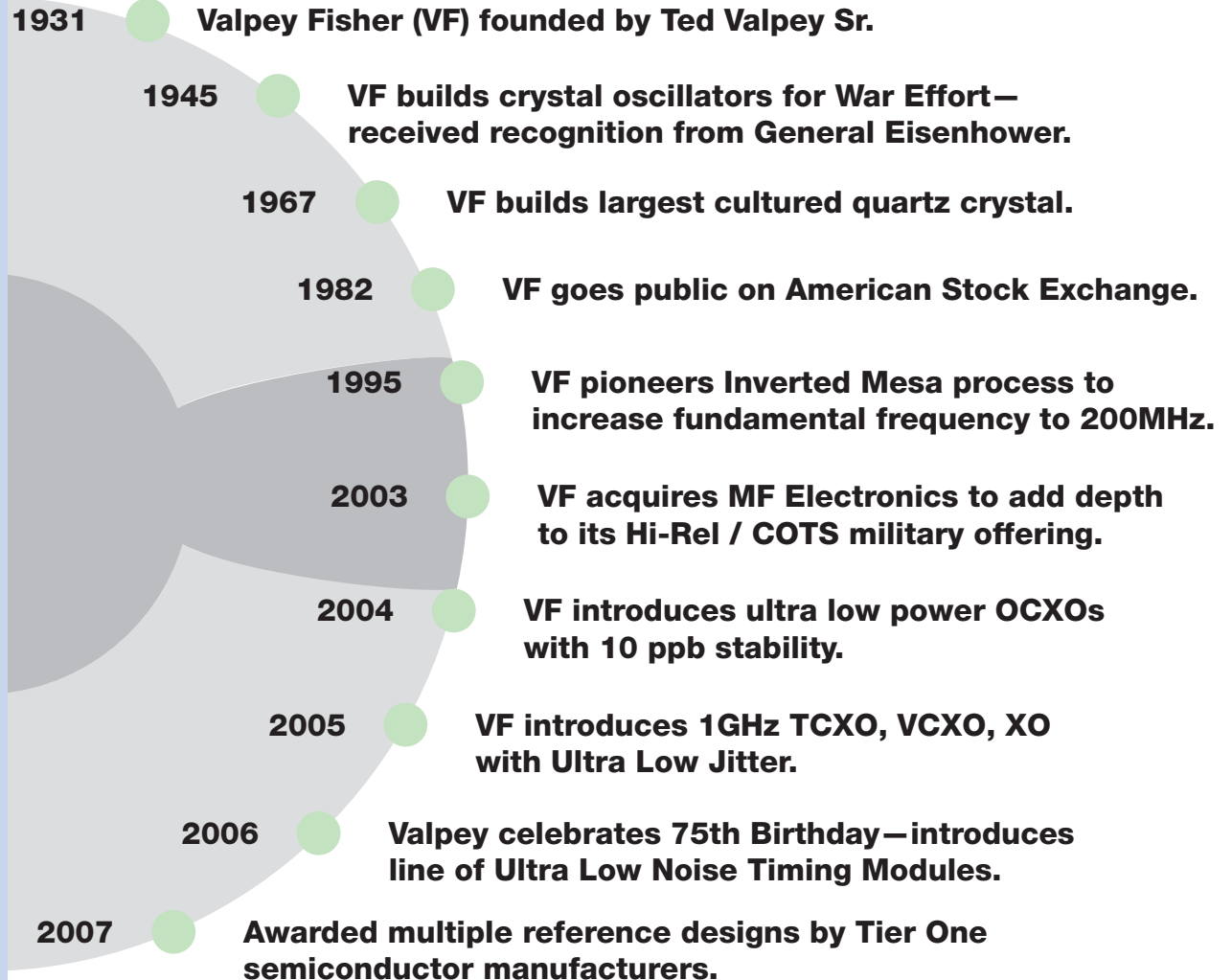
- 
- 1931** Valpey Fisher (VF) founded by Ted Valpey Sr.
 - 1945** VF builds crystal oscillators for War Effort—received recognition from General Eisenhower.
 - 1967** VF builds largest cultured quartz crystal.
 - 1982** VF goes public on American Stock Exchange.
 - 1995** VF pioneers Inverted Mesa process to increase fundamental frequency to 200MHz.
 - 2003** VF acquires MF Electronics to add depth to its Hi-Rel / COTS military offering.
 - 2004** VF introduces ultra low power OCXOs with 10 ppb stability.
 - 2005** VF introduces 1GHz TCXO, VCXO, XO with Ultra Low Jitter.
 - 2006** Valpey celebrates 75th Birthday—introduces line of Ultra Low Noise Timing Modules.
 - 2007** Awarded multiple reference designs by Tier One semiconductor manufacturers.

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II PRECISION CRYSTAL OSCILLATORS

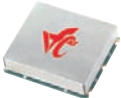
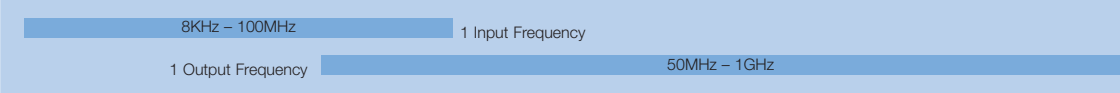



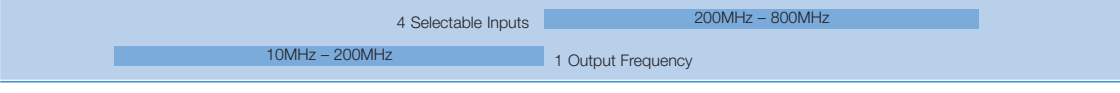
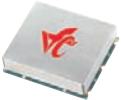
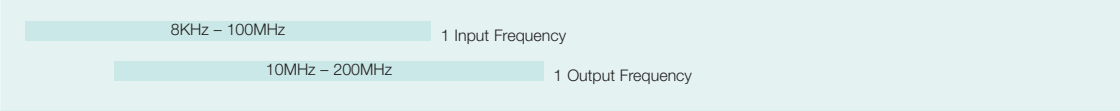
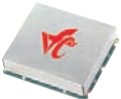
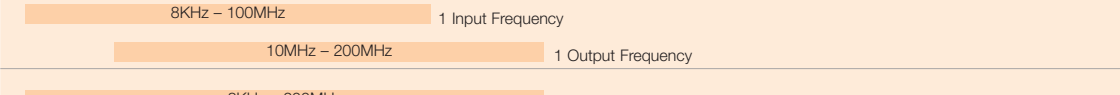
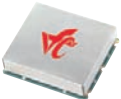
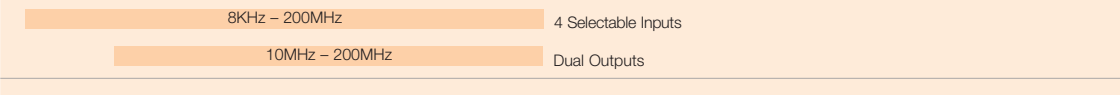
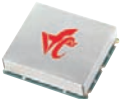
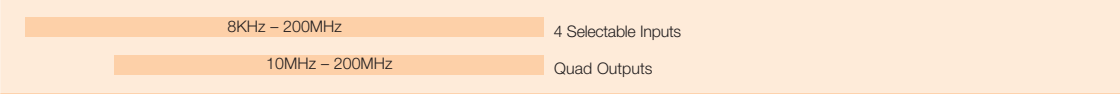
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|----------------------------------------------------------|-----|
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III HI-REL/COTS OSCILLATORS (XO/VCXO)

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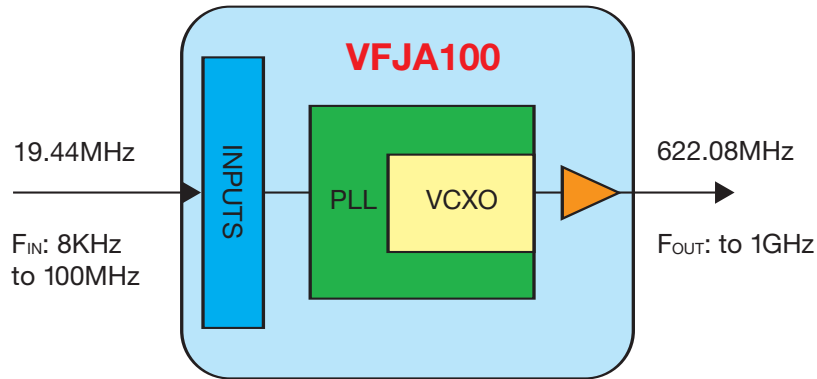
PRODUCT SELECTION GUIDE

| | PRODUCT SERIES | OUTPUT | SUPPLY VOLTAGE | FREQUENCY RANGE (MHz) | | | | | | | | | | JITTER RMS 12KHz to 20MHz |
|---------------|-------------------------------------------------------------------------------------------------------|-----------------------|----------------|--------------------------------------------------------------------------------------|-------|-------|-------|--------|--------|--------|--------|--------|--------|------------------------------|
| | | | | 1KHz | 10MHz | 20MHz | 50MHz | 100MHz | 200MHz | 300MHz | 400MHz | 600MHz | 800MHz | |
| PECL / LVPECL |  VFJA100 | PECL 25.4 X 22.0 | 5.0V 3.3V |  | | | | | | | | | | <0.2ps |
| |  NEW VFJA400 | LVPECL 19.5 x 15.5 | 3.3V |  | | | | | | | | | | <0.2ps |
| |  NEW VFJA401 | LVPECL 19.5 x 15.5 | 3.3V |  | | | | | | | | | | <0.2ps |
| SINE |  VFJA120 | SINE 25.4 x 22.0 | 5.0V 3.3V |  | | | | | | | | | | <0.15ps |
| CMOS |  VFJA130 | CMOS 25.4 x 22.0 | 5.0V 3.3V |  | | | | | | | | | | <0.18ps |
| |  NEW VFJA432 | CMOS 19.5 x 15.5 | 3.3V |  | | | | | | | | | | <0.18ps |
| |  NEW VFJA434 | CMOS 19.5 x 15.5 | 3.3V |  | | | | | | | | | | <0.18ps |

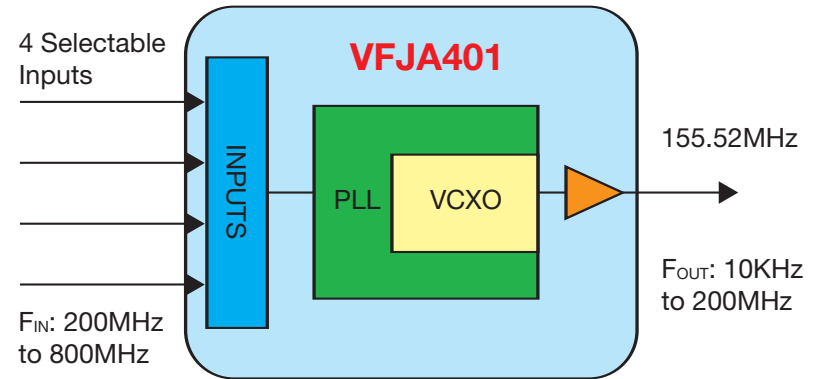
Limited product offering shown. Please visit www.valpeyfisher.com for our full line of Jitter Attenuators.

PRODUCT SELECTION GUIDE

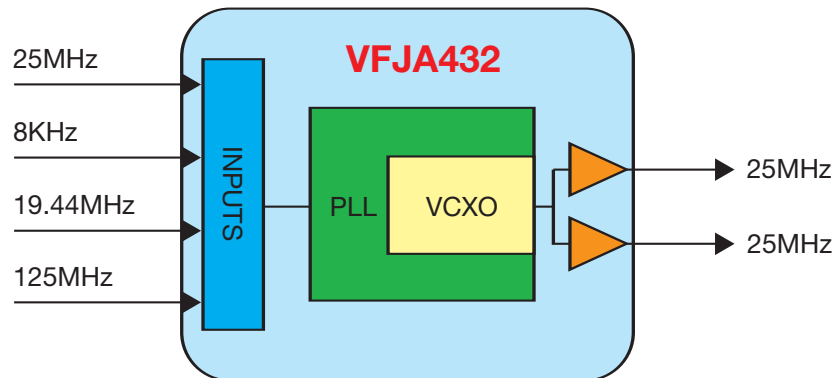
Jitter Attenuator for SONET/SDH/ATM



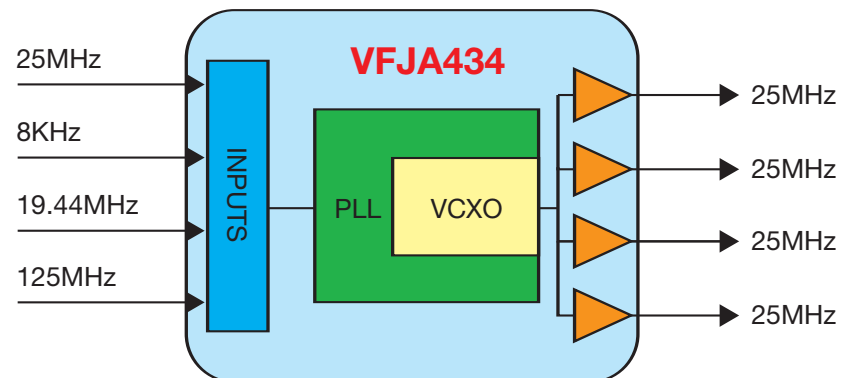
Jitter Attenuator with Quad Selectable Input Frequency



Dual Output Jitter Attenuator for Synchronizing Ethernet Networks

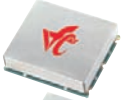

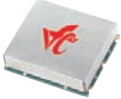
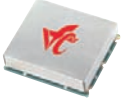

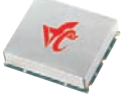
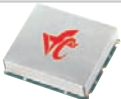


Quad Output Jitter Attenuator for Synchronizing Ethernet Networks





PRODUCT SELECTION GUIDE

FREQUENCY TRANSLATORS

| | PRODUCT SERIES | OUTPUT | SUPPLY VOLTAGE | FREQUENCY RANGE (MHz) | | | | | | | | | | | JITTER RMS 12KHz to 20MHz |
|---------------|--------------------------------------------------------------------------------------------|-----------------------|----------------|------------------------------------------------------------------------------------------------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|------------------------------|
| | | | | 1KHz | 10MHz | 20MHz | 50MHz | 100MHz | 200MHz | 300MHz | 400MHz | 600MHz | 800MHz | 1.0GHz | |
| PECL / LVPECL |  VFFT100 | PECL 25.4 X 22.0 | 5.0V 3.3V | 8KHz – 250MHz 1 Input Frequency 1 Output Frequency 50MHz – 1GHz | | | | | | | | | | | <0.3ps |
| |  VFFT110 | LVPECL 19.5 x 17.0 | 3.3V | 10KHz – 800MHz 1 Input Frequency 4 Selectable Outputs 300MHz – 1.5GHz | | | | | | | | | | | <1.0ps |
| |  VFFT200 | LVPECL 19.5 x 20.5 | 3.3V | 8KHz – 200MHz 1 Input Frequency 50MHz – 200MHz 1 Output Frequency w/10ppm Holdover | | | | | | | | | | | <1.0ps |
| |  VFFT400 | LVPECL 19.5 x 17.0 | 3.3V | 8KHz – 180MHz 4 Input Frequencies 10MHz – 200MHz 4 Output Frequencies 50MHz Range | | | | | | | | | | | <1.0ps |
| |  VFFT401 | LVPECL 19.5 x 17.0 | 3.3V | 100MHz – 800MHz 4 Input Frequencies 4 Output Frequencies 100MHz Range 400MHz – 1.5GHz | | | | | | | | | | | <1.0ps |
| SINE |  VFFT120 | SINE 25.4 x 22.0 | 5.0V 3.3V | 8KHz – 180MHz 1 Input Frequency 10MHz – 200MHz 1 Output Frequency | | | | | | | | | | | <0.18ps |
| CMOS |  VFFT130 | CMOS 25.4 x 22.0 | 5.0V 3.3V | 8KHz – 180MHz 1 Input Frequency 10MHz – 200MHz 1 Output Frequency | | | | | | | | | | | <0.20ps |

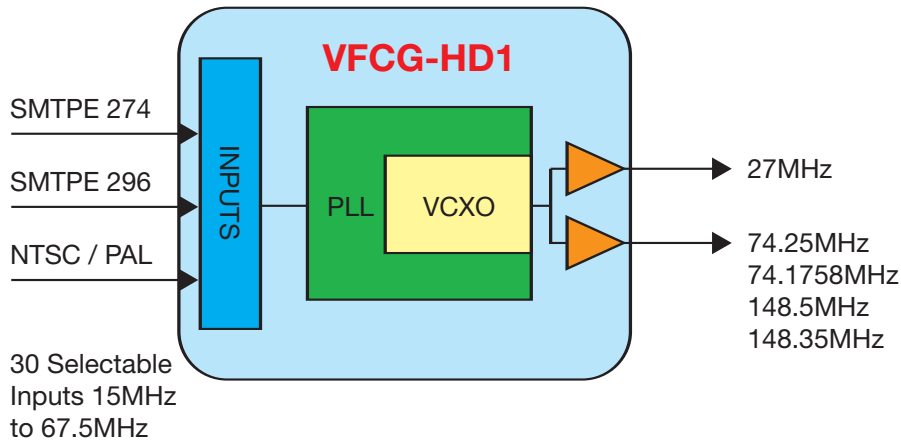
CLOCK GENERATORS

| | PRODUCT SERIES | OUTPUT | SUPPLY VOLTAGE | FREQUENCY RANGE (MHz) | | | | | | | | | | | JITTER RMS 12KHz to 20MHz |
|--|----------------------------------------------------------------------------------------------|-----------------------|----------------|----------------------------------------------------------------------------------------------------------------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|------------------------------|
| | | | | 1KHz | 10MHz | 20MHz | 50MHz | 100MHz | 200MHz | 300MHz | 400MHz | 600MHz | 800MHz | 1.0GHz | |
| |  VFCG100 | LVPECL 19.5 x 17.0 | 3.3V | 4 Selectable Output Frequencies 300MHz – 1.5GHz | | | | | | | | | | | <0.25ps |
| |  VFCG-HD1 | HCMOS 22 x 22 | 3.3V | 15MHz – 67.5MHz 30 Selectable Inputs 27MHz – 148.35MHz Outputs 27MHz and either 74.25MHz or 74.175MHz | | | | | | | | | | | <0.25ps |

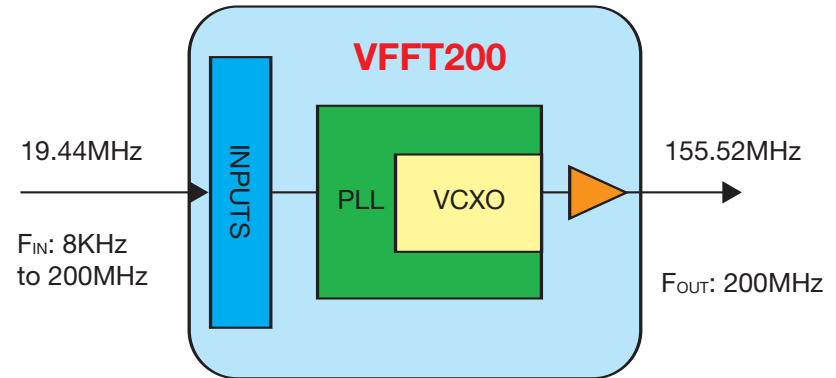
Limited product offering shown. Please visit www.valpeyfisher.com for our full line of Timing Modules.

PRODUCT SELECTION GUIDE

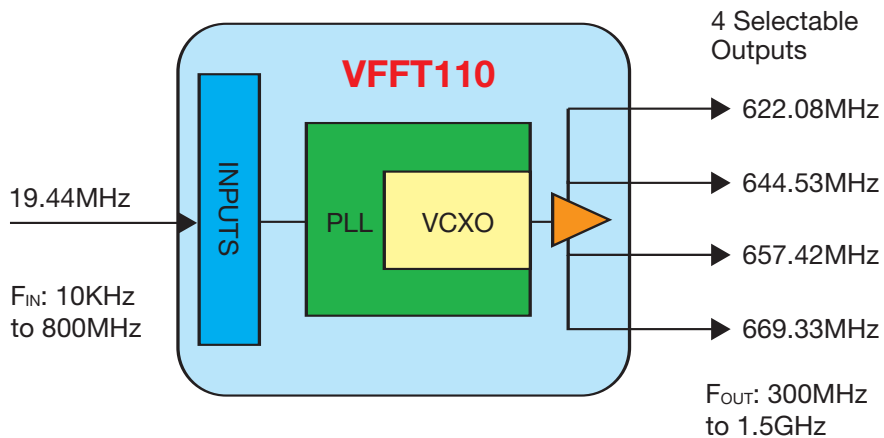
Synchronous Clock Generator for Standard & High Definition Video Broadcast



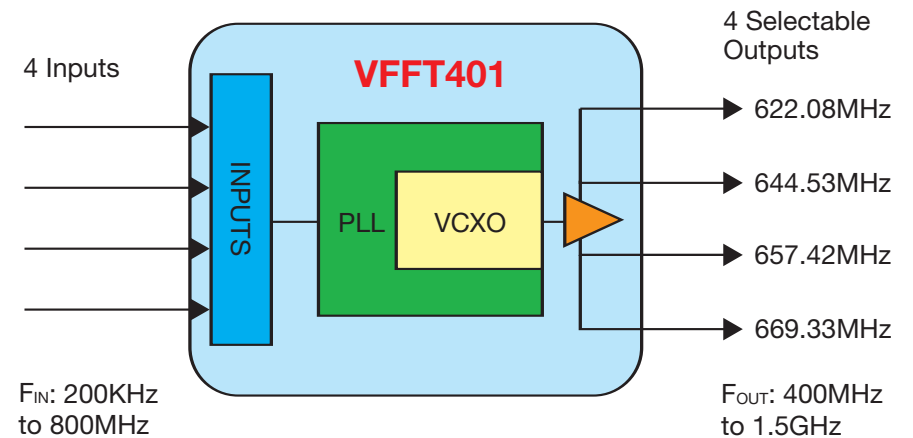
SONET Frequency Translator with 10ppm Automatic Holdover







Quad Selectable Output Frequency Translator to 1.5GHz



Quad Selectable Output Frequency Translator to 1.5GHz



PRODUCT SELECTION GUIDE

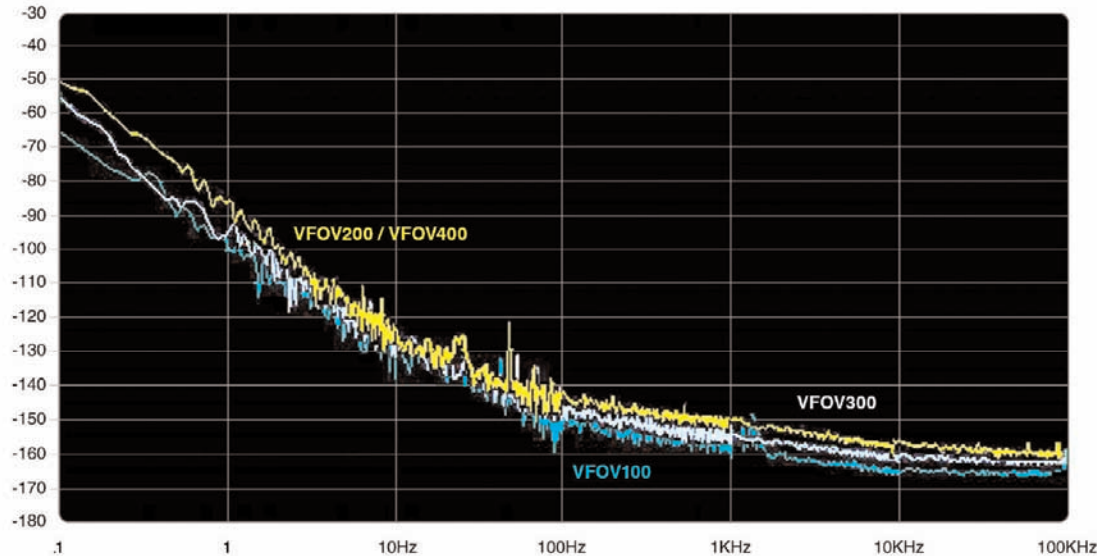
| | PRODUCT SERIES | OUTPUT | SUPPLY VOLTAGE | FREQUENCY RANGE (MHz) | | | | | POWER (25°C) | MAXIMUM STABILITY** | MAXIMUM OPERATING TEMPERATURE** | PHASE NOISE NOISE FLOOR (dBc/Hz) |
|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------|-----------|-----------------------|-------------------------|---------------|----|-----|--------|--------------|---------------------|---------------------------------|----------------------------------|
| | | | | 10MHz | 20 | 50 | 100 | 200MHz | | | | |
| Miniature, Ultra Stable OCXOs |  36.1mm x 27.2mm Europack | CMOS/SINE | 3.3V 5.0V 12.0V | 5MHz – 120MHz | | | | | 1.0W | ±5ppb | -40 to +85°C | -168 |
| | VFOV110 | | | 25MHz – 135MHz | | | | | | | | |
| | VFOV200 | | | 5MHz – 250MHz | | | | | | | | |
| |  25.4mm x 22.0mm | | | NEW VFOV300 | 8MHz – 100MHz | | | | | | | |
| Micro-Miniature, Ultra Low Power OCXOs |  14.3mm x 14.3mm | CMOS/SINE | 3.3V 5.0V | 5MHz – 250MHz | | | | | 0.12W | ±5ppb | -40 to +85°C | -165 |
| |  20.3mm x 14.0mm | CMOS/TTL | 3.3V 5.0V | 30MHz – 120MHz | | | | | 0.12W | ±5ppb | -40 to +85°C | -165 |

Limited product offering shown. For our complete line of OCXOs and detailed specifications, please visit www.valpeyfisher.com.

**Not all stabilities available with all temperature ranges.

PRODUCT SELECTION GUIDE

OCXO Phase Noise Comparison at 10MHz



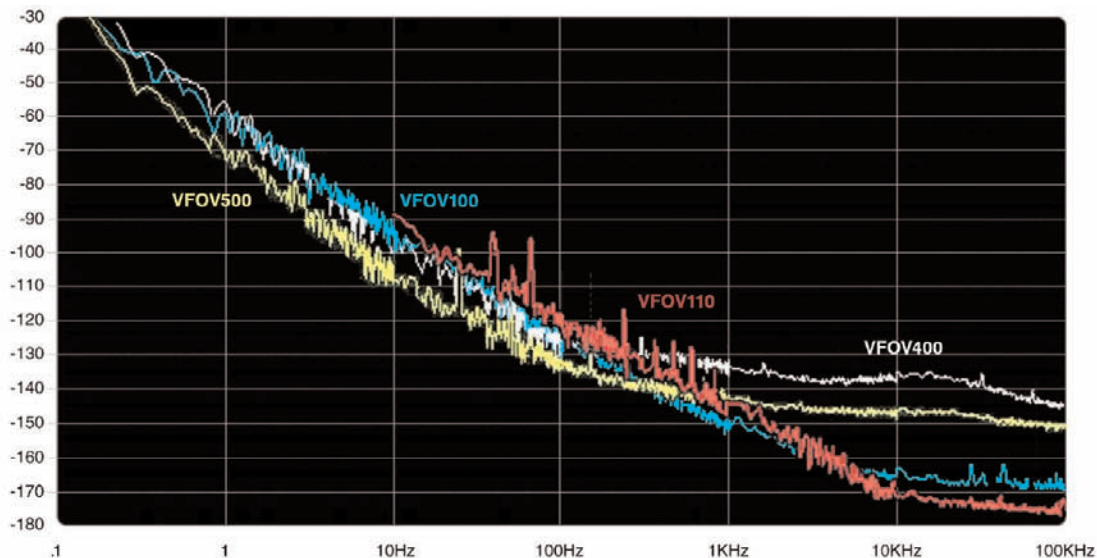
VFOV100 Ultra low noise performance is provided by using High Q fundamental SC cut crystals. Available up to 120MHz. For 100MHz see below.

VFOV200 is the industry's standard low noise SC cut OCXO. Available in very high frequencies incorporating an analog multiplier.

VFOV300 double oven is Stratum II compliant and is a suitable low cost replacement for Rubidium clocks and an excellent choice for GPS hold-over circuits. Ruggedized version available.

VFOV400 is the world's smallest, fastest warm up OCXO (<25sec.) and lowest power consumption (typ. 115mW). Available in very high frequencies incorporating an analog multiplier. For 100MHz see below.











OCXO Phase Noise Comparison at 100MHz



VFOV110 uses proprietary technology to achieve a superior noise floor at 10KHz matching the worlds best performance in a smaller 0.8"x1" SMD package and is very competitively priced. Applications include Wireless Point to point, ADC reference, RADAR and SATCOM.

VFOV500 is the world's smallest, fastest warm up OCXO (<35sec.) and lowest power consumption (typ. 115mW). Applications include SARSAT and portable test equipment. Very low phase noise fundamental mode crystal.

PRODUCT SELECTION GUIDE

| | PRODUCT SERIES | PACKAGE SIZE (mm) | SUPPLY VOLTAGE | FREQUENCY RANGE (MHz) | | | | | | | TEMP. STABILITY* (MAX) | OPERATING TEMPERATURE** | ROHS 6/6 |
|--------------|--------------------------------------------------------------------------------------------------------------------|-------------------|----------------|-------------------------|----|-----|-----|-----|-----|-----|------------------------|-------------------------|----------|
| | | | | 5 | 20 | 100 | 200 | 400 | 600 | 800 | | | |
| CLIPPED SINE |  VFTX300 | 3.2 x 2.5 | 3.0V 5.0V | 10MHz - 40MHz | | | | | | | ±1ppm | -40 to +85°C | x |
| |  VFTX301 | 5 x 3.2 | 3.0V 5.0V | 10MHz - 40MHz | | | | | | | ±1ppm | -40 to +85°C | x |
| |  VFTX302 | 5 x 7 | 3.3V 5.0V | 10MHz - 40MHz | | | | | | | ±1ppm | -40 to +85°C | x |
| |  VF720/VF721 | 11.4 x 9.6 | 3.3V 5.0V | 10MHz - 40MHz | | | | | | | ±2.5ppm | -30 to +75°C | x |
| CMOS |  NEW VFTX332 STRATUM III | 5 x 7 | 3.3V 5.0V | 5MHz - 26MHz | | | | | | | ±0.28ppm | -20 to +70°C | x |
| |  NEW VFTX160 STRATUM III | 25.4 x 22.0 | 3.3V | 10MHz - 200MHz | | | | | | | ±0.28ppm | 0 to +70°C | x |
| | VFTX130 | | | 30MHz - 180MHz | | | | | | | ±1.0ppm | 0 to +70°C | x |
| SINE |  VFTX120 | 25.4 x 22.0 | 3.3V | 30MHz - 180MHz | | | | | | | ±1.0ppm | 0 to +70°C | x |
| |  NEW VFTX150 STRATUM III | | | 10MHz - 200MHz | | | | | | | ±0.28ppm | -20 to +70°C | x |
| |  VFTX110 | 35.4 x 26.7 | 5.0V | 50MHz - 1000MHz | | | | | | | ±1.0ppm | 0 to +70°C | x |
| LVPECL |  NEW VFTX140 STRATUM III | 25.4 x 22.0 | 3.3V | 200MHz - 1000MHz | | | | | | | ±0.28ppm | 0 to +70°C | x |
| | VFTX100 | | 3.3V 5.0V | 200MHz - 1000MHz | | | | | | | ±1.0ppm | 0 to +70°C | x |

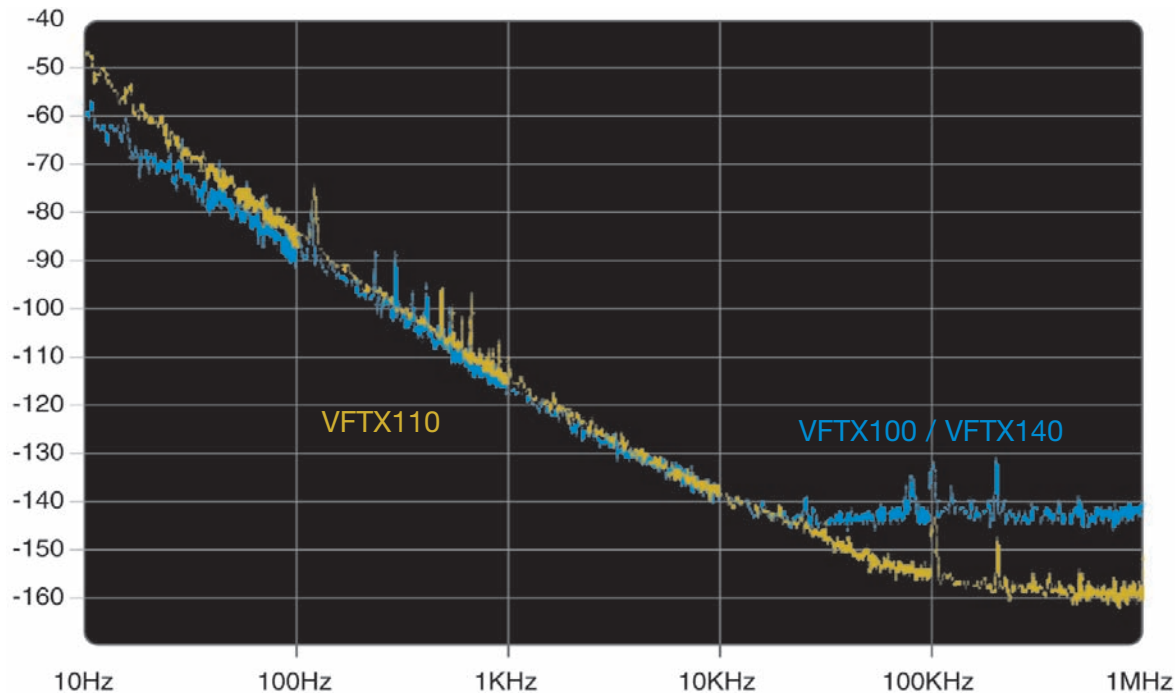
Limited product offering shown. For our complete line of TCXOs and detailed specifications, please visit www.valpeyfisher.com.

, - Other stability and operating temperature ranges available.



PRODUCT SELECTION GUIDE

622.08MHz Phase Noise











VFTX100 provides ultra low noise and stability in high frequency. Perfect for demanding optical applications Gigabit Ethernet and wireless reference.

VFTX110 provides ultra low noise and stability in high frequency. The high power Sine Wave output is perfect for RADAR and Wireless application where further frequency multiplication is required.

VFTX140 provides ultra low noise and STRATUM 3 stability in high frequency. An exceptional timing source for demanding optical applications with no need to implement any frequency multiplication.

PRODUCT SELECTION GUIDE

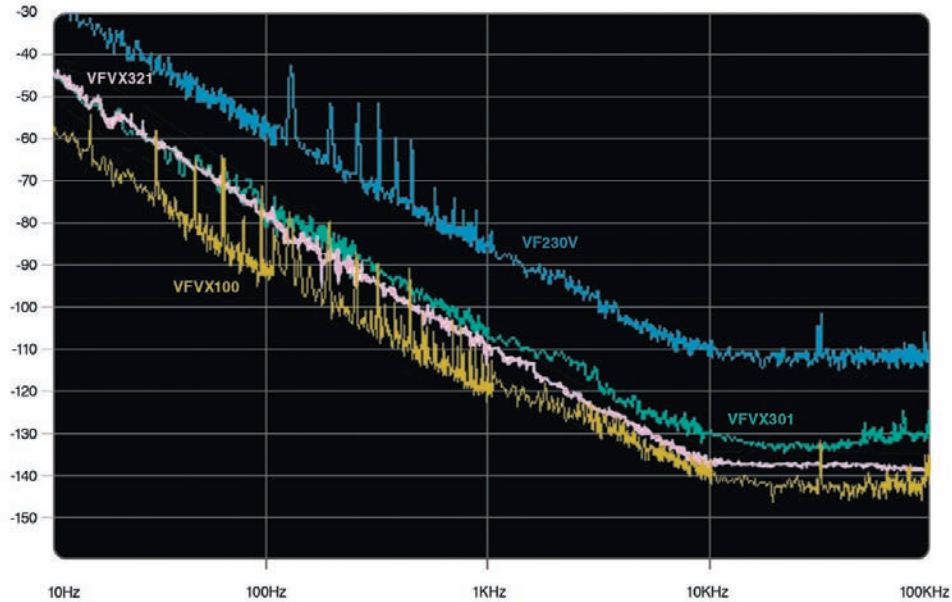
| | PRODUCT SERIES | PACKAGE SIZE (mm) | SUPPLY VOLTAGE | FREQUENCY RANGE (MHz) | | | | | | | JITTER RMS (12KHz ~ 20MHz) | APR (MIIN) | ROHS 6/6 |
|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------|----------------|-------------------------|----|-----|-----|-----|-----|-----------------|----------------------------|------------|----------|
| | | | | 1 | 50 | 100 | 200 | 300 | 400 | 600 | | | |
| CMOS |  VF194/VF294 | 5 x 7 | 3.3V | 1.5MHz – 160MHz | | | | | | | <0.4ps typical | ±50ppm | x |
| | 5.0V | | | | | | | | | | | | |
| | R3306 | 3.3V | 4MHz – 55MHz | | | | | | | <0.15ps typical | ±50ppm | x | |
| |  | 9 x 14 | 3.3V | 2MHz – 160MHz | | | | | | | <0.5ps typical | ±50ppm | x |
|  VFVX130 | 5.0V | | 19MHz – 200MHz | | | | | | | <0.2ps typical | ±35ppm | x | |
| LVPECL / LVDS |  VF230V | 5 x 7 | 3.3V | 750KHz – 800MHz | | | | | | | <5.0ps typical | ±150ppm | x |
| |  VFVX301 | | 2.5V | 38MHz – 640MHz | | | | | | | <0.4ps typical | ±150ppm | x |
| |  VFVX321 | | 3.3V | 60MHz – 800MHz | | | | | | | <0.2ps typical | ±100ppm | x |
| PECL/LVPECL |  VF596 JLEAD | 9 x 14 | 3.3V 5.0V | 19.44MHz – 200MHz | | | | | | | <0.5ps typical | ±50ppm | x |
| |  VFVX100 | | | 200MHz – 1000MHz | | | | | | | <0.2ps typical | ±35ppm | x |
| | VFVX110 | | | 200MHz – 1000MHz | | | | | | | <0.2ps typical | ±100ppm | x |
| | VFVX120 | | | 19MHz – 200MHz | | | | | | | <0.2ps typical | ±35ppm | x |

Limited product offering shown. For our complete line of VCXOs and detailed specifications, please visit www.valpeyfisher.com.



PRODUCT SELECTION GUIDE

VCXO Phase Noise Comparison at 622.08MHz PECL



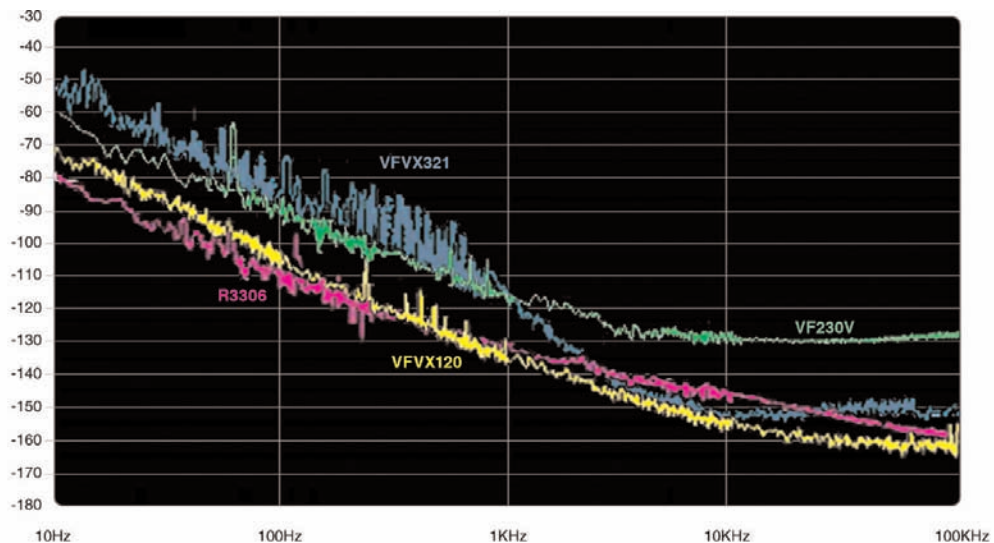
VFVX100 is the industry's lowest phase noise oscillator at 1GHz. An ideal choice for demanding optical applications requiring low jitter. Also the perfect choice to drive DDS circuits to achieve high frequency low noise RF output.

VFVX301 is a cost effective 5x7mm smd solution that meets OC48 and OC192 requirements. No multiplication is required to achieve your SONET frequencies.

VF230V is the industry's standard performance cost effective VCXO.

VFVX321 (PECL) is the latest offering from Valpey Fisher incorporating the newest low noise technology in a cost effective 5x7mm SMD package. An excellent choice when looking for a cost reduced alternative to SAW devices.

VCXO Phase Noise Comparison at 74.25MHz (3.3V)



VFVX120 provides the industry's best phase noise performance with wide pull options available.

VFVX321 (PECL) is the latest offering from Valpey Fisher incorporating the newest low noise technology in a cost effective 5x7mm SMD package. An excellent choice when looking for a cost reduced alternative to SAW devices.

R3306 (CMOS) series is an ideal low jitter VCXO for high definition broadcast video and optical applications.

VF230V is the industry's standard performance cost effective VCXO.




PRODUCT SELECTION GUIDE

| | PRODUCT SERIES | PACKAGE SIZE (mm) | SUPPLY VOLTAGE | FREQUENCY RANGE (MHz) | | | | | | | TEMP. STABILITY (TYP)* | OPERATING TEMPERATURE** |
|-----------|----------------|-------------------|----------------------|-------------------------|-------|-----|-----|-----|-----|-----|------------------------|-------------------------|
| | | | | 500KHz | 50MHz | 100 | 200 | 300 | 400 | 600 | | |
| CMOS | VFJC | 3.2 x 2.5 | 3.3V | 500KHz – 50MHz | | | | | | | ±25ppm | -40 to +85°C |
| | VFXO203 | | 1.8V 2.5V 3.3V | 800KHz – 110MHz | | | | | | | ±20ppm | -20 to +70°C |
| | VFGC | 5.0 x 3.2 | 3.3V 5.0V | 500KHz – 135MHz | | | | | | | ±25ppm | 0 to +70°C |
| | VF3 | 5 x 7 | 3.3V | 2MHz – 160MHz | | | | | | | ±20ppm | -40 to +85°C |
| | R1800 | 5 x 7 | 1.8V | 850KHz – 165MHz | | | | | | | ±25ppm | -0 to +70°C |
| CMOS | VFAC570 | 9 x 14 | 3.3V | 4MHz – 160MHz | | | | | | | ±50ppm | -55 to +125°C |
| | VF540 | | 5.0V | 2MHz – 130MHz | | | | | | | ± 50ppm | -55 to +125°C |
| PECL/LVDS | VF266 | 5 x 7 | 3.3V | 25MHz – 320MHz | | | | | | | ±20ppm | -40 to +85°C |
| | VF267 | | 2.5V | 25MHz – 320MHz | | | | | | | ±20ppm | -40 to +85°C |
| | VF230C | | 3.3V | 750KHz – 800MHz | | | | | | | ±20ppm | -40 to +85°C |
| | VFXO301 | | 2.5V 3.3V | 38MHz – 640MHz | | | | | | | ±20ppm | -40 to +85°C |
| | VFXO321 | | | 60MHz – 800MHz | | | | | | | ±20ppm | -40 to +85°C |
| | VFXO401 | | | 15MHz – 300MHz | | | | | | | ±20ppm | -40 to +85°C |
| | | | | | | | | | | | | |
| PECL | VFXO100 | 9 x 14 | 3.3V | 200MHz – 1000MHz | | | | | | | ±20ppm | -40 to +85°C |
| | VFXO110 | | | 19MHz – 200MHz | | | | | | | ±20ppm | -40 to +85°C |

Limited product offering shown. For our complete line of XOs and detailed specifications, please visit www.valpeyfisher.com.

*,** - Other stability and operating temperature ranges available.

PRODUCT SELECTION GUIDE

| | PRODUCT SERIES | PACKAGE SIZE (mm) | SUPPLY VOLTAGE | FREQUENCY RANGE (MHz) | | | | | | | STABILITY | OPERATING TEMPERATURE | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------|----------------|-------------------------|-----------------|----|----|-----|-----|-----|-----------|-----------------------|--------------|
| | | | | 500KHz | 1MHz | 20 | 50 | 100 | 200 | 400 | | | 800 |
| <div style="display: flex; flex-direction: column; align-items: center;"> <div style="background-color: #0070C0; color: white; padding: 5px; margin-bottom: 10px;">PECL / LVDS</div> <div style="background-color: #FFC000; padding: 10px; margin-bottom: 10px;">Hi-Rel</div> <div style="background-color: #FFC000; padding: 10px; margin-bottom: 10px;">CMOS</div> <div style="background-color: #FFC000; padding: 10px;">COTS</div> </div> |  | VFH230C | 5x7 | 3.3V | 750KHz - 800MHz | | | | | | | ±50ppm | -55 to 125°C |
| |  | VFH2321 | 5x7 | 1.8V | 850KHz - 165MHz | | | | | | | ±50ppm | -55 to 125°C |
| | | VFH2121 | | 3.3V 5.0V | 500KHz - 125MHz | | | | | | | ±50ppm | -55 to 125°C |
| | | T5321/T5421 | | 3.3V | 1MHz - 100MHz | | | | | | | ±50ppm | -55 to 125°C |
| | | T5621/T5721 | | 5.0V | 16MHz - 150MHz | | | | | | | ±50ppm | -55 to 125°C |
| |  | M5500 | 12.62 x 20.32 | 5.0V | 1Hz - 125MHz | | | | | | | ±75ppm | -55 to 125°C |
| | | M6306 VCXO | | | 1MHz - 35MHz | | | | | | | ±50ppm | -55 to 125°C |
| | | M1254/M3254 | | | 20KHz - 150MHz | | | | | | | ±250ppm | -55 to 200°C |
| |  | T1250/T3250 | 5x7 | 5.0V | 20KHz - 100MHz | | | | | | | ±250ppm | -55 to 200°C |
| | | T7250/T9250 | | 3.3V | 20KHz - 100MHz | | | | | | | ±250ppm | -55 to 200°C |

Limited product offering shown. For our complete line of Hi-Rel/COTS and detailed specifications, please visit www.valpeyfisher.com.



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