



# XR-2212

## Precision Phase-Locked Loop

### GENERAL DESCRIPTION

The XR-2212 is an ultra-stable monolithic phase-locked loop (PLL) system especially designed for data communications and control system applications. Its on board reference and uncommitted operational amplifier, together with a typical temperature stability of better than 20 ppm/°C, make it ideally suited for frequency synthesis, FM detection, and tracking filter applications. The wide input dynamic range, large operating voltage range, large frequency range, and ECL, DTL, and TTL compatibility contribute to the usefulness and wide applicability of this device.

### FEATURES

Quadrature VCO Outputs  
Wide Frequency Range 0.01 Hz to 300 kHz  
Wide Supply Voltage Range 4.5V to 20V  
DTL/TTL/ECL Logic Compatibility  
Wide Dynamic Range 2 mV to 3 Vrms  
Adjustable Tracking Range ( $\pm 1\%$  to  $\pm 80\%$ )  
Excellent Temp. Stability 20 ppm/°C, Typ.

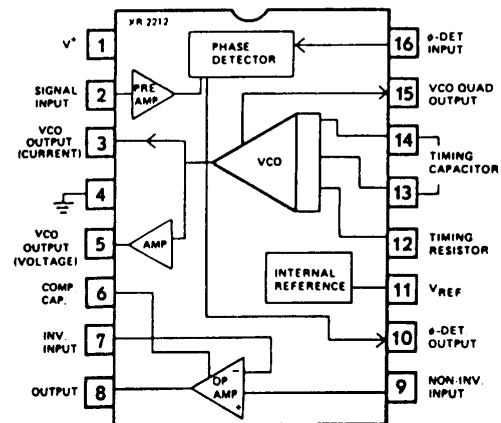
### APPLICATIONS

Frequency Synthesis  
Data Synchronization  
FM Detection  
Tracking Filters  
FSK Demodulation

### ABSOLUTE MAXIMUM RATINGS

Power Supply	18V
Input Signal Level	3 Vrms
Power Dissipation	
Ceramic Package:	750 mW
Derate Above $T_A = +25^\circ\text{C}$	6 mW/°C
Plastic Package:	625 mW
Derate Above $T_A = +25^\circ\text{C}$	5 mW/°C

### FUNCTIONAL BLOCK DIAGRAM



### ORDERING INFORMATION

Part Number	Package	Operating Temperature
XR-2212M	Ceramic	-55°C to +125°C
XR2212CN	Ceramic	0°C to +70°C
XR-2212CP	Plastic	0°C to +70°C
XR-2212N	Ceramic	-40°C to +85°C
XR-2212P	Plastic	-40°C to +85°C

### SYSTEM DESCRIPTION

The XR-2212 is a complete PLL system with buffered inputs and outputs, an internal reference, and an uncommitted op amp. Two VCO outputs are pinned out; one sources current, the other sources voltage. This enables operation as a frequency synthesizer using an external programmable divider. The op amp section can be used as an audio preamplifier for FM detection or as a high speed sense amplifier (comparator) for FSK demodulation. The center frequency, bandwidth, and tracking range of the PLL are controlled independently by external components. The PLL output is directly compatible with MOS, DTL, ECL, and TTL logic families as well as microprocessor peripheral systems.

The precision PLL system operates over a supply voltage range of 4.5 V to 20 V, a frequency range of 0.01 Hz to 300 kHz, and accepts input signals in the range of 2 mV to 3 Vrms. Temperature stability of the VCO is typically better than 20 ppm/°C.