

## Reference Design

### Microchip PIC 16

<b>PIC16F 1827/1828/1938</b>	
Frequency (MHz)	32
FRAM	7K/ 7K/ 28K
RAM	384/ 256/ 1024
EEPROM	256/ 256/ 256
Timers-16-bit/-8bit	1/ 4
Watchdog	Yes
Real-Time Clock	Yes
Brown Out Reset	Yes
UART/SPI	1/ 2
DMA	4
Comparators	Yes
ADC	ADC 12
ADC Channels	12/ 12/ 11
Pin/ Package	18/ 20/ 28

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Other brand name and product name belong to each company.

## Details of Matching Test

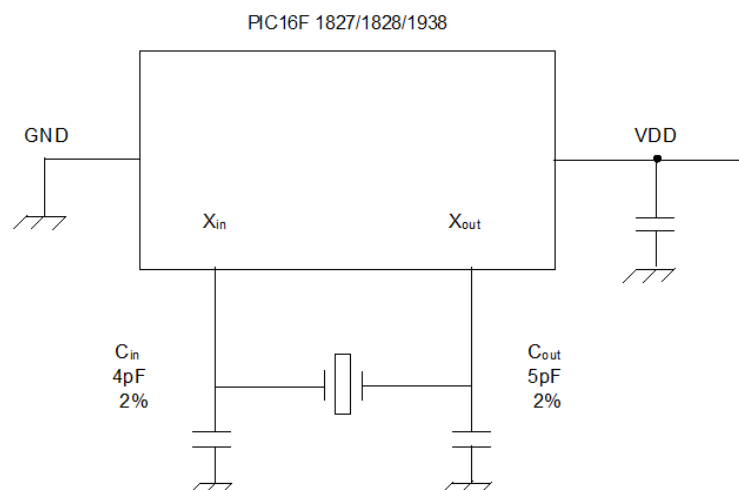
Test IC: PIC16F 1827/1828/1938

### 1. Circuit Diagram

IC PIC16F 1827/1828/1938  
VDD +3V

#### Geyer Crystal

Model: KX-327NHT  
Frequency: 32.768kHz  
Load capacitance: CL=7pF  
Part No.: 12.87147, 12.87148, 12.87153



## Note

- **Negative Resistance**  
The recommended oscillation margin based on empirical results which is necessary to ensure the oscillator's ability to start and maintain stable oscillation.
- **Drive Level**  
Electric-power or current level under the specified conditions of a crystal unit.  
If the specified maximum drive level of the crystal is exceeded, this may result in the occurrence of unstable oscillation and increase of equivalent series resistance (ESR).
- **Load capacitance**  
Effective series capacitance measured from the terminals of a crystal unit to the oscillation circuit and determined as a condition when using a crystal unit in an oscillation circuit.  
The operating frequency is determined by the electrical characteristics of a crystal unit and the load capacitance.

## Caution

The evaluation results above should be used as a reference during the crystal selection. Depending on the actual board layout, frequency used, and other related factors the circuit characteristics may differ, therefore selection of the crystal should be done based on evaluation results of the actual circuit board. Please contact us for recommendations of crystal specifications which will work best for your applications.