

## Reference Design

### Renesas UPD7800 family

UPD78F0485GK 8 bit MCU	
Frequency (MHz)	Up to 8
FRAM (KB)	Up to 32K
SRAM (KB)	Up to 1K
GPIO	51
Timers-16-bit/ 8-bit	1/2
Watchdog	Yes
Real-Time Clock	Yes
Brown Out Reset	Yes
Comparators	Yes
ADC	ADC 10
ADC Channels	8
Pin/ Package	64DIP/ 64QFP LQFP

FRAM is trademarks or registered trademarks of Ramtron International Corporation.  
Other brand name and product name belong to each company.

### Details of Matching Test

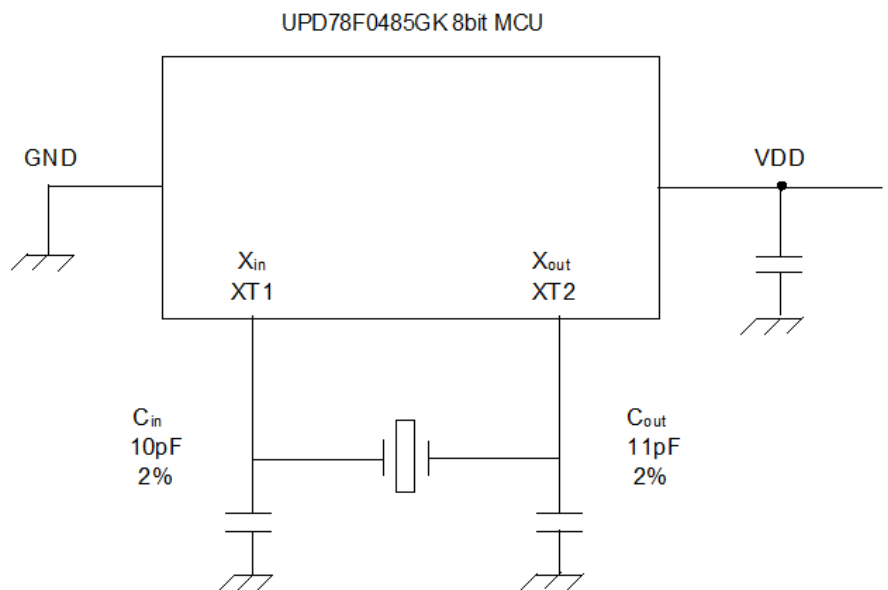
Test IC: UPD78F0485GK 8bit MCU

#### 1. Circuit Diagram

IC        UPD78F0485GK 8bit MCU  
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.