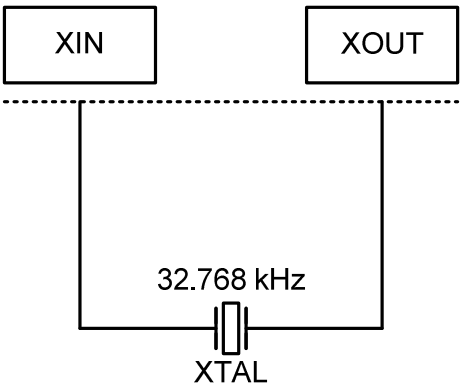
MICRO CRYSTAL SWITZERLAND

Pierce Oscillator

Design and Crystal Recommendations

Texas Instruments MSP430x2xx Family

MSP430x2xx Family



Oscillator Design Check

Test Conditions		
Power Supply Voltage V_{DD}	≥1.8	V
Load Capacitors	Integrated	pF
Oscillator Setting C_X	8.5	pF
Results		
Effective Load Capacitance	12.2	pF
Oscillation Allowance	500	kΩ
Oscillator Output Voltage AC	90	mV_{RMS}
Drive Level	0.030	µW
Startup Time	450	ms
Overtone Mode Suppression	Safe	----

Recommendation

Crystal						
Crystal Type		MS3V-T1R / CC7V-T1A				
Frequency		32.768				kHz
Load Capacitance C_L		9.0 or 12.5				pF
Tolerance		+/-20				ppm
Oscillator Settings						
Oscillator Setting	C_X	1	5.5	8.5	11	pF
XCAPx		0	1	2	3	----
Load Capacitance	C_L	5.0	9.0	12.5	14.5	pF

Remarks

Recommended setting: **C_X = 8.5 pF (XCAPx = 2)** **Corresponding crystal's C_L: 12.5 pF.**

Alternative setting: **C_X = 5.5 pF (XCAPx = 1)** **Corresponding crystal's C_L: 9.0 pF.**

The C_X: 1 pF and 11 pF settings are not recommended to use with quartz crystals.

C_X corresponds to parameter $C_{L,eff}$ (Integrated Effective Load Capacitance, LF mode).

Please find detailed information about MS3V-T1R, CC7V-T1A and all others crystal types at www.microcrystal.com.

In accordance with our policy of continuous development and improvement,
Micro Crystal reserves the right to modify specifications or design-recommendations without prior notice.
The recommendations stated above are based on measured-results, respecting the "oscillator design rules".
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