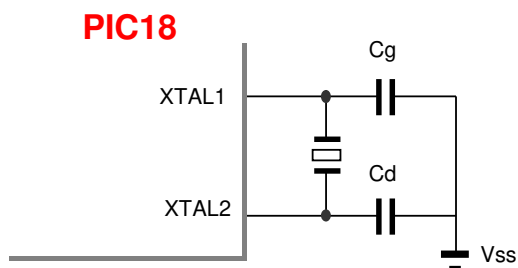


Microchip PIC18 Series Matching Data Details

◆Evaluation items and evaluation data of oscillation circuit characteristics

•Circuit Diagram



Evaluation item

No	Item	Symbol	Recommended conditions
1	Negative resistance	RL	The value shall be at least 5 times the product R1 specification value.
2	Oscillation margin	M	

To ensure safe use by our customers,
We recommend an oscillation margin of 5 times or more.

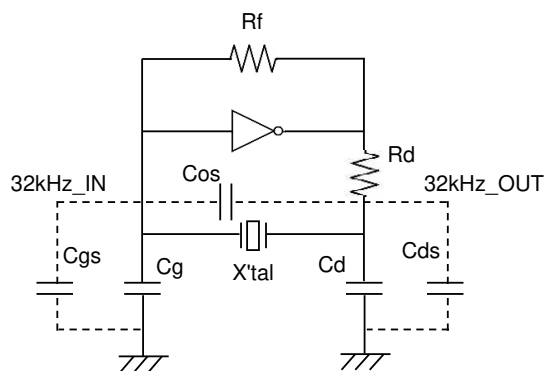
•Product and recommended circuit constants

IC Type	Power System	32kHz Crystal Unit			External element		Oscillation characteristics	
		Size (mm)	Product name	CL (pF)	Cg (pF)	Cd (pF)	RL (kΩ)	M (times)
PIC18F25Q10 Low power mode	1V8	SSP-T7-F	65	7	8	8	-474	7.3
	2V7			7	8	8	-474	7.3
	3V3			7	8	8	-494	7.6
	5V5			7	8	8	-554	8.5
	1V8	SC-32S	70	7	7	7	-511	7.3
	2V7			7	7	7	-511	7.3
	3V3			7	7	7	-531	7.6
	5V5			7	7	7	-591	8.4
	1V8	SC-20S	70	7	8	8	-441	6.3
	2V7			7	8	8	-471	6.7
	3V3			7	8	8	-471	6.7
	5V5			7	8	8	-501	7.2
	1V8	SC-12S	90	7	8	8	-453	5.0
	2V7			7	8	8	-463	5.1
	3V3			7	8	8	-473	5.3
	5V5			7	8	8	-523	5.8

IC Type	Power System	32kHz Crystal Unit			External element		Oscillation characteristics	
		Size (mm)	Product name	CL (pF)	Cg (pF)	Cd (pF)	RL (kΩ)	M (times)
PIC18F25Q10 High power mode	1V8	SSP-T7-F	65	12.5	18	18	-699	10.7
	2V7			12.5	18	18	-729	11.2
	3V3			12.5	18	18	-729	11.2
	5V5			12.5	18	18	-749	11.5
	1V8	SC-32S	70	12.5	18	18	-705	10.1
	2V7			12.5	18	18	-725	10.4
	3V3			12.5	18	18	-725	10.4
	3V3			12.5	18	18	-775	11.1
	1V8	SC-20S	70	12.5	18	18	-711	10.2
	2V7			12.5	18	18	-741	10.6
	3V3			12.5	18	18	-741	10.6
	5V5			12.5	18	18	-791	11.3
	1V8	SC-12S	90	7	7	7	-2,703	30.0
	2V7			7	7	7	-2,703	30.0
	3V3			7	7	7	-2,703	30.0
	5V5			7	7	7	-2,903	32.3

Please contact us for other products not listed above.

◆About circuit load capacitance



The oscillation circuit has stray capacitance.

The CL value is set considering stray capacitance.

$$CL = C_g \times C_d / (C_g + C_d) + C_s \text{ (pF)}$$

C_s ≡Circuit stray capacitance

What is floating capacity?

C_{os} : 32kHz_IN-32kHz_OUT Stray capacitance

C_{gs} : 32kHz_IN-Vss Stray capacitance

C_{ds} : 32kHz_OUT-Vss Stray capacitance

◆Circuit board design considerations

Place the crystal unit, capacitors, and resistors as close to the Chip as possible to shorten the wiring. To prevent interference with other signal lines, do not place other signal lines in the area where the crystal unit is mounted (underside).

The oscillation circuit design is described on our website.

In addition, please use our circuit matching service. For details, please contact our sales representatives or visit our website.

◆Caution

The above evaluation results are reference values evaluated on specific samples and

“IC manufacturer's evaluation board”,

They are subject to change depending on the customer's board design.

Please note that the capacitance values and characteristics of external elements

may vary depending on differences in stray capacitance and other factors in actual circuit boards.

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