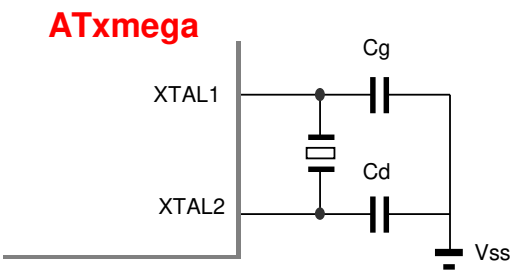
Microchip ATxmega Series Matching Data Details

◆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.

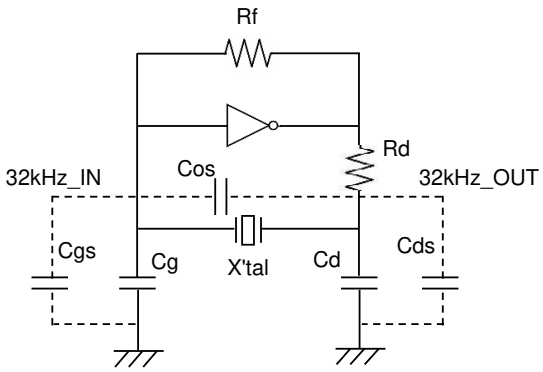
・Product and recommended circuit constants

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)
ATmega128 (CKOPT Disabled)	2V7	SSP-T7-F	65	7	9	9	-1,354	20.8
	3V3			7	9	9	-1,354	20.8
	5V5			7	10	10	-1,754	27.0
	2V7	SC-32S	70	7	9	9	-1,361	19.4
	3V3			7	9	9	-1,361	19.4
	5V5			7	10	10	-1,661	23.7
	2V7	SC-20S	70	7	9	9	-1,271	18.2
	3V3			7	9	9	-1,371	19.6
	5V5			7	10	10	-1,471	21.0
	2V7	SC-12S	90	7	9	9	-1,403	15.6
	3V3			7	9	9	-1,403	15.6
	5V5			7	12	12	-1,503	16.7

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)
ATxmega128A1	1V8	SSP-T7-F	65	7	5	5	-354	5.5
	2V7			7	5	5	-364	5.6
	3V3			7	5	5	-364	5.6
	1V8	SC-32S	70	7	5	5	-351	5.0
	2V7			7	5	5	-351	5.0
	3V3			7	5	5	-351	5.0
	1V8	SC-20S	70	7	5	5	-691	9.9
	2V7			7	5	5	-721	10.3
	3V3			7	5	5	-721	10.3
ATxmega256A3B	1V8	SSP-T7-F	65	7	9	9	-614	9.5
	2V7			7	9	9	-614	9.5
	3V3			7	9	9	-614	9.5
	1V8	SC-32S	70	7	9	9	-561	8.0
	2V7			7	9	9	-561	8.0
	3V3			7	9	9	-561	8.0
	1V8	SC-20S	70	7	9	9	-631	9.0
	2V7			7	9	9	-614	9.5
	3V3			7	9	9	-631	9.0
	1V8	SC-12S	90	7	9	9	-583	6.5
	2V7			7	9	9	-583	6.5
	3V3			7	9	9	-583	6.5

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 = Cg×Cd / (Cg + Cd) + Cs (pF)

Cs≒Circuit stray capacitance
What is floating capacity?
Cos : 32kHz_IN-32kHz_OUT Stray capacitance
Cgs : 32kHz_IN-Vss Stray capacitance
Cds : 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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