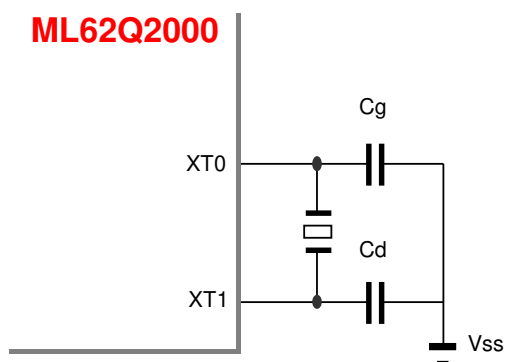


ROHM Semiconductor ML62Q2000Series Matching Data Details

◆Evaluation items and evaluation data of oscillation circuit characteristics

•Circuit Diagram

ML62Q2000



Evaluation item

No	Item	Symbol	Recommended condition
1	Negative resistance	RL	The value shall be at least 5 times the product R1 specification value.
2	Oscillation margin	M	
3	Drive Level	D.L	Within product specifications.
4	Oscillation start-up time	Ts	Within product specifications.

To ensure safe use by our customers,

We recommend an oscillation margin of 5 times or more.

•Product and recommended circuit constants

IC Type	Oscillation Mode	32kHz Crystal Unit			External Element			Supply voltage (V)	Oscillation characteristics			
		Product Name	R1Max. (kΩ)	CL (pF)	Rd (kΩ)	Cg (pF)	Cd (pF)		RL (kΩ)	M (Times)	D.L (μW)	Ts (sec)
ML62Q2000	Tough	VT-200	50	12.5	--	22	22	1.8	-715	14.3	0.06	0.76
								3.3	-745	14.9	0.06	0.76
								5.5	-795	15.9	0.06	0.71
		SSP-T7	50	12.5	--	27	22	1.8	-605	9.3	0.07	0.59
								3.3	-625	9.6	0.07	0.59
								5.5	-665	10.2	0.07	0.62
		SC-32S	70	12.5	--	27	22	1.8	-615	8.8	0.06	0.41
								3.3	-635	9.1	0.06	0.40
								5.5	-675	9.6	0.06	0.40
		SC-20S	70	9	--	18	22	1.8	-816	11.7	0.042	0.23
								3.3	-866	12.4	0.042	0.18
								5.5	-946	13.5	0.043	0.18
		SC-16S	90	9	--	22	22	1.8	-713	7.9	0.01	0.21
								3.3	-753	8.4	0.01	0.19
								5.5	-803	8.9	0.01	0.18

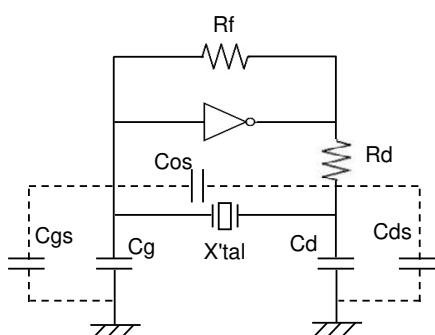
IC Type	Oscillation Mode	32kHz Crystal Unit			External Element			Supply voltage (V)	Oscillation characteristics			
		Product Name	R1Max. (kΩ)	CL (pF)	Rd (kΩ)	Cg (pF)	Cd (pF)		RL (kΩ)	M (Times)	D.L (μW)	Ts (sec)
ML62Q2000	STD	VT-200	50	12.5	--	22	22	1.8	-415	8.3	0.05	1.00
								3.3	-415	8.3	0.05	0.98
								5.5	-445	8.9	0.05	0.98
		SSP-T7	50	12.5	--	22	22	1.8	-405	6.2	0.04	0.88
								3.3	-435	6.7	0.05	0.88
								5.5	-445	6.8	0.05	0.88
		SC-32S	70	12.5	--	27	22	1.8	-355	5.1	0.049	0.65
								3.3	-365	5.2	0.051	0.65
								5.5	-375	5.4	0.053	0.59
		SC-20S	70	9	--	18	18	1.8	-586	8.4	0.032	0.26
								3.3	-586	8.4	0.032	0.24
								5.5	-616	8.8	0.032	0.24
		SC-16S	90	9	--	18	22	1.8	-453	5.0	0.053	0.28
								3.3	-463	5.1	0.053	0.28
								5.5	-493	5.5	0.053	0.27

IC Type	Oscillation Mode	32kHz Crystal Unit			External Element			Supply voltage (V)	Oscillation characteristics			
		Product Name	R1Max. (kΩ)	CL (pF)	Rd (kΩ)	Cg (pF)	Cd (pF)		RL (kΩ)	M (Times)	D.L (μW)	Ts (sec)
ML62Q2000	LP	VT-200	50	12.5	--	22	22	1.8	-405	8.1	0.03	1.12
								3.3	-415	8.3	0.03	1.15
								5.5	-445	8.9	0.03	1.15
		SSP-T7	50	12.5	--	22	22	1.8	-405	6.2	0.03	1.11
								3.3	-425	6.5	0.03	1.11
								5.5	-445	6.8	0.03	1.11
		SC-32S	70	12.5	--	27	22	1.8	-355	5.1	0.028	0.82
								3.3	-365	5.2	0.028	0.81
								5.5	-375	5.4	0.031	0.72
		SC-20S	70	7	--	12	12	1.8	-651	9.3	0.01	0.16
								3.3	-871	12.4	0.01	0.13
								5.5	-1071	15.3	0.01	0.13
		SC-16S	90	9	--	18	18	1.8	-533	5.9	0.034	0.21
								3.3	-563	6.3	0.034	0.21
								5.5	-593	6.6	0.034	0.18

IC Type	Oscillation Mode	32kHz Crystal Unit			External Element			Supply voltage (V)	Oscillation characteristics			
		Product Name	R1Max. (kΩ)	CL (pF)	Rd (kΩ)	Cg (pF)	Cd (pF)		RL (kΩ)	M (Times)	D.L (μW)	Ts (sec)
ML62Q2000	ULP	VT-200	50	12.5	--	18	22	1.8	-475	9.5	0.01	1.23
								3.3	-485	9.7	0.01	1.21
								5.5	-525	10.5	0.01	1.20
		SSP-T7	50	12.5	--	22	22	1.8	-395	6.1	0.01	1.34
								3.3	-395	6.1	0.01	1.39
								5.5	-435	6.7	0.01	1.39
		SC-32S	70	12.5	--	22	22	1.8	-405	5.8	0.005	0.55
								3.3	-425	6.1	0.005	0.49
								5.5	-445	6.4	0.006	0.49
		SC-20S	70	7	--	10	10	1.8	-411	5.9	0.005	0.13
								3.3	-491	7.0	0.005	0.09
								5.5	-611	8.7	0.006	0.09
		SC-16S	90	9	--	18	15	1.8	-613	6.8	0.01	0.16
								3.3	-633	7.0	0.01	0.14
								5.5	-683	7.6	0.01	0.12

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.

$$CL = Cg \times Cd / (Cg + Cd) + Cs \text{ (pF)}$$

Cs ≠Circuit stray capacitance

What is floating capacity?

Cos : 32kHz_IN-32kHz_OUT Stray capacitance

Cgs : 32kHz_IN-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.