LAPIS Semiconductor   ML62Q1000 Series Matching data

SII

◆Specification for Quartz Crystal

	VT-200F	SC-32S
Nominal Frequency	32.768kHz	32.768kHz
Frequency Tolerance	$+/-20 \times 10^{-6}$	$+/-20 \times 10^{-6}$
Load capacitance：CL	6pF/12.5pF	6pF～12.5pF
Motional Resistance：R1	50kΩmax	70kΩmax
Absolute Maximum Drive Level	1.0μW max	1.0μW max
Dimensions（Thickness: Max.Value）	$\phi 2$	3.2×1.5×0.85mm

SC-32S

VT-200F
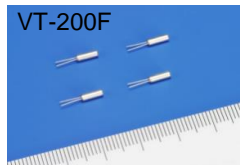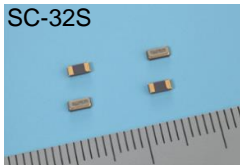
RECOMMENDED SOLDERING PATTERN

1.8
1.0   1.5   1.0
SC-32S   Unit: mm
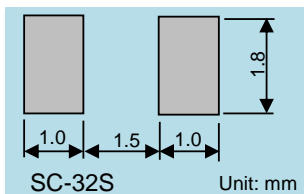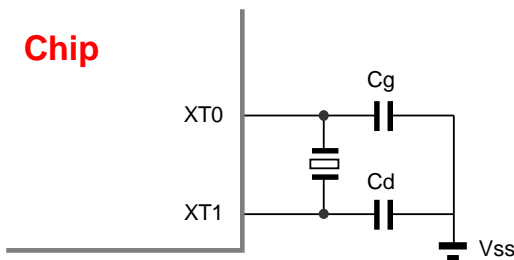
Please contact us for another circuit matching data.

◆Qualification item for Oscillation circuit characteristics

Chip

XT0
Cg
Cd
XT1
Vss

No	Items	Symbol	Recommendation
1	Negative Resistance	RL	
2	Oscillation allowance	M	more than 5 times of R1Max
3	Absolute Maximum Drive Level	D.L	SC-32S： 1μW VT-200F： 1μW

◆Approximate expression for Circuit load capacitance

Co
32kHz_IN
XT0
32kHz_OUT
XT1
Cg   Cd
Vss
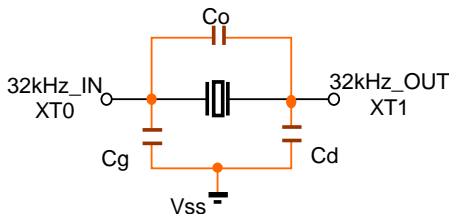
$CL = Cg \times Cd / (Cg + Cd) + Cs$ (pF)

Cos : 32kHz_IN-32kHz_OUT Stray capacitance
Cgs : 32kHz_IN-Vss Stray capacitance
Cds : 32kHz_OUT-Vss Stray capacitance

◆Notes for the design of Circuit board
    Please keep the wiring short and place Quartz Crystal, Condensor, and Resistance
    close as possible to Lapis microcontroller. In order to prevent interference with other signal lines,
    do not provide other signal lines, please do not provide other signal lines on the crystal
    mounting part (bottom surface).

◆Circuit matching constant for Oscillation circuit

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TECHNOLOGY

Oscillation mode	32kHz Quartz crystal			External condensor		Oscillation Characteristics			Supply
	Product	R1Max. （kΩ）	CL （pF）	Cg （pF）	Cd （pF）	RL （kΩ）	M （Times）	D.L （μW）	Vdd（V）
Tough mode	SC-32S	70	6	11	11	-1,064	15	0.01	3.3
				10	10	-1,164	17	0.01	3.3
	VT-200F	50	12.5	22	22	-427	9	0.04	3.3
Normal mode	SC-32S	70	6	9	9	-734	11	0.01	3.3
	VT-200F	50	12.5	22	22	-257	5	0.03	3.3
Low current consumption mode	SC-32S	70	6	9	9	-514	7	0.01	3.3
	VT-200F	50	6	9	9	-504	10	0.01	3.3

◆Notes

The above evaluation results are reference values　evaluated in the specific sample,
and the contents are not guaranteed.
Please note that in the actual circuit board, the value of the external element capacitance
and the characteristics may change depending on the difference in stray capacitance and so on.