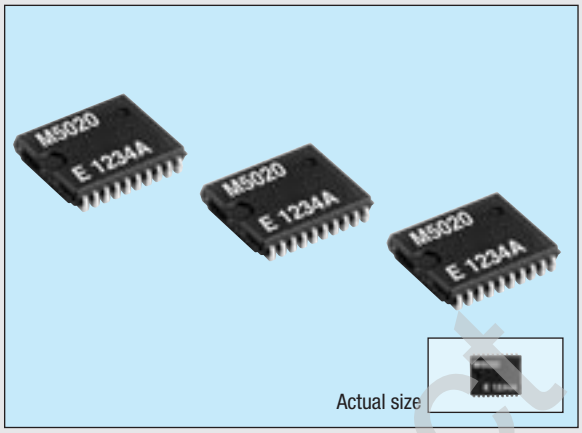
32 kHz + PLL OSCILLATOR

MG-5020JE

Product number (please refer to page 4)

Q33M22JExxxxx00

- Built-in 32.768 kHz crystal unit allows adjustment-free.
- 32.768 kHz clock frequency output.
- 48.005120MHz PLL oscillation frequency output.
- Support low current consumption mode by deviding power supply of 32.768 kHz and PLL oscillation cuircuit.
- Supply voltage : 32.768 kHz oscillation 1.8 V - 3.6 V, PLL oscillation 2.7 V - 3.6 V.
- SOJ-20pin package.
- Available for lead (Pb)-free soldering.
- Available for lead (Pb)-free terminal.



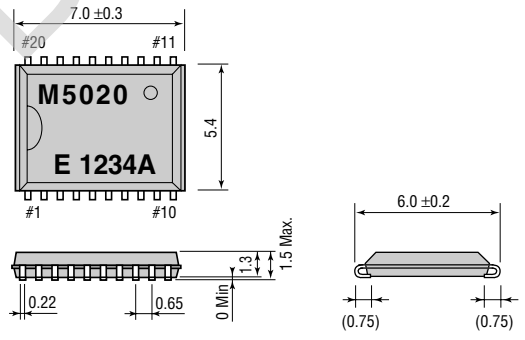
■ Specifications (characteristics)

Item		Symbol	Specifications	Remarks
Output frequency range		f_0	32.768 kHz	Out 32 k pin
		f_{OUT}	48.005120 MHz	OUT pin
Power source voltage	Max. supply voltage	V_{DD}-GND	-0.3 V to +4.5 V	
	Operating voltage	V_{DD}	2.7 V to 3.6 V	PLL Output
		V_{BK}	1.8 V to 3.6 V	32 kHz Output
Temperature range	Storage temperature	T_{STG}	-55 °C to +125 °C	Stored as bare product after unpacking
	Operating temperature	T_{OPR}	-40 °C to +85 °C	No condensation
Frequency stability		$\Delta f/_0$	5 ±23 x 10^{-6}	Ta = +25 °C, V_{DD} = 3.0 V
Current consumption 1 (PLL Stopping)		I_{OP1}	3 µA	V_{DD} = 1.8 V to 3.6 V, $\overline{PWD}$ = GND, OUT 32 k = no load condition
Current consumption 2 (PLL Working)		I_{OPP}	15 mA	V_{DD} = 2.7 V to 3.6 V, $\overline{PWD}$ = "H", OUT = no load condition
Duty		t_W / t	40 % to 60 %	Vth = 50 % V_{DD}
"H" output voltage 1		V_{OH}	V_{DD} -0.4 V Min.	I_{OH} = 100 µA (OUT 32 kHz), 4.0 mA (OUT)
"L" output voltage 1		V_{OL}	0.4 V Max.	I_{OL} = -100 µA (OUT 32 kHz), -4.0 mA (OUT)
condition (fan out)		C_L	15 pF Max.	OUT 32 k pin, OUT pin
"H" input voltage 1		V_{IH}	0.8 V_{DD} to V_{DD} +0.2	$\overline{PWD}$ pin
"L" input voltage 1		V_{IL}	GND -0.2 to 0.2 V_{DD}	
Output rise time		t_R	5.0 ns Max.	20 % → 80 % V_{DD}, OUT pin
Output fall time		t_F	5.0 ns Max.	80 % → 20 % V_{DD}, OUT pin
Jitter		pj	150 ps	V_{DD} = 2.7 V to 3.6 V
Oscillation start up time		t_{STA1}	3 s Max.	Ta = +25 °C, V_{DD} = 0 → 1.8 V to 3.6 V
		t_{STAP}	0.1 s	VDD = 0 → 2.7 V to 3.6 V, $\overline{PWD}$ = LOW → High
Aging		fa	±5 x 10^{-6} / year Max.	Ta = +25 °C, V_{DD} = 3.0 V, First year

1 Please contact us for inquiries about the available frequency.

■ External dimensions

(Unit: mm)



No.	Pin terminal	Function	No.	Pin terminal	Function
1	OUT 32 k	32.768 kHz output	20	N.C.	OPEN
2	N.C.	OPEN	19	N.C.	OPEN
3	V_{DD1}	32.768 kHz oscillation power supply	18	N.C.	OPEN
4	GND	GND	17	N.C.	OPEN
5	N.C.	OPEN	16	N.C.	OPEN
6	N.C.	OPEN	15	N.C.	OPEN
7	$\overline{PWD}$	Control PLL oscillation (STOP)	14	N.C.	OPEN
8	N.C.	OPEN	13	N.C.	OPEN
9	N.C.	OPEN	12	N.C.	OPEN
10	V_{DD2}	supply	11	OUT	PLL output

Metal may be exposed on the top or bottom of this product. This won't affect any quality, reliability or electrical spec.