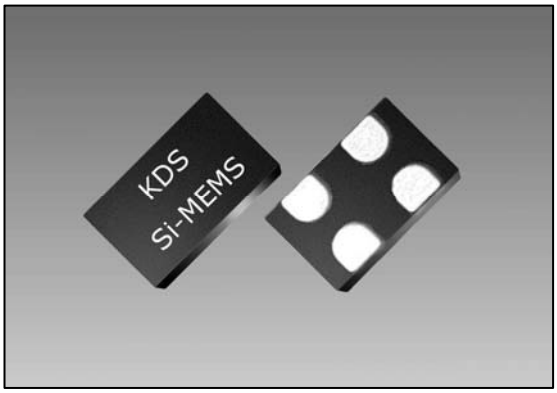
High Temperature MEMS Oscillator

KDS DAISHINKU CORP.

MO8918

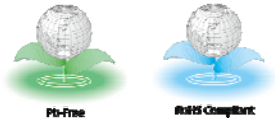


■Features

- ●Frequencies between 1 MHz to 110 MHz accurate 6 decimal places
- ●Industry-Standard packages:
  2.0 x 1.6, 2.5 x 2.0, 3.2 x 2.5, 5.0 x 3.2, 7.0 x 5.0 mm
- ●Excellent total frequency stability as low as ±20 x 10^{-6}
- ●Low power consumption of +3.5 mA typical at f = 20 MHz, Vdd = +1.8V

■Applications

- ●Industrial, medical, non AEC-Q100 automotive, avionics and other high temperature applications
- ●Industrial sensors, PLC, motor servo, outdoor networking equipment, medical video cam, asset tracking systems, etc



■Standard Specification

Item	Symbol	Min.	Typ.	Max.	Unit	Condition
Output Frequency Range	f	1	–	110	MHz	Refer to datasheet for exact list of supported frequencies
Supply Voltage	Vdd	+1.62	+1.8	+1.98	V	
		+2.25	+2.5	+2.75		
		+2.52	+2.8	+3.08		
		+2.7	+3.0	+3.3		
		+2.97	+3.3	+3.63		
		+2.25	–	+3.63		
Operating Temperature Range (ambient)	T_use	-40	–	+105	°C	Extended Industrial
		-40	–	+125		Automotive
Frequency Stability	F_stab	-20	–	+20	x10^{-6}	Inclusive of Initial tolerance at +25°C, 1st year aging at +25°C, and variations over operating temperature, rated power supply voltage and load (15 pF ± 10%).
		-25	–	+25		
		-30	–	+30		
		-50	–	+50		
Current Consumption	Idd	–	+3.8	+4.7	mA	No load condition, f = 20 MHz, Vdd = +2.8V, +3.0V or +3.3V
		–	+3.6	+4.5		No load condition, f = 20 MHz, Vdd = +2.5V
		–	+3.5	+4.5		No load condition, f = 20 MHz, Vdd = +1.8V
OE Disable Current	I_od	–	–	+4.5	mA	Vdd = +2.5V to +3.3V, OE = Low, Output in high Z state
		–	–	+4.3		Vdd = +1.8V, OE = Low, Output in high Z state
Standby Current	I_std	–	+2.6	+8.5	µA	Vdd = +2.8V to +3.3V, $\overline{ST}$ = Low, Output is weakly pulled down
		–	+1.4	+5.5		Vdd = +2.5V, $\overline{ST}$ = Low, Output is weakly pulled down
		–	+0.6	+4.0		Vdd = +1.8V, $\overline{ST}$ = Low, Output is weakly pulled down
Duty Cycle	DC	45	–	55	%	All Vdds
Output Low Voltage	V_{OL}	–	–	Vdd x 0.1	V	I_{OL} = +4.0 mA (Vdd = +3.0V or +3.3V) I_{OL} = +3.0 mA (Vdd = +2.8V or +2.5V) I_{OL} = +2.0 mA (Vdd = +1.8V)
Output High Voltage	V_{OH}	Vdd x 0.9	–	–	V	I_{OH} = -4.0 mA (Vdd = +3.0V or +3.3V) I_{OH} = -3.0 mA (Vdd = +2.8V or +2.5V) I_{OH} = -2.0 mA (Vdd = +1.8V)
Rise/Fall Time	Tr,Tf	–	1.0	2.0	ns	Vdd = +2.5V, +2.8V, +3.0V or +3.3V, 20% - 80%
		–	1.3	2.5		Vdd = +1.8V, 20% - 80%
		–	1.0	3.0		Vdd = +2.25V - +3.63V, 20% - 80%
Input Low Voltage	V_{IL}	–	–	Vdd x 0.3	V	Pin 1, OE or $\overline{ST}$
Input High Voltage	V_{IH}	Vdd x 0.7	–	–	V	Pin 1, OE or $\overline{ST}$
Startup Time	T_start	–	–	5.0	ms	Measured from the time Vdd reaches its rated minimum value
Enable/Disable Time	T_oe	–	–	130	ns	f = 110 MHz. For other frequencies, T_oe = 100 ns + 3 * cycles
Resume Time	T_resume	–	–	5.0	ms	Measured from the time $\overline{ST}$ pin crosses 50% threshold
RMS Period Jitter	T_jitt	–	1.6	2.5	ps	f = 75 MHz, Vdd = +2.5V, +2.8V, +3.0V or +3.3V
		–	1.9	3.0		f = 75 MHz, Vdd = +1.8V
Peak-topeak Period Jitter	T_pk	–	12	20	ps	f = 75 MHz, Vdd = +2.5V, +2.8V, +3.0V or +3.3V
		–	14	25		f = 75 MHz, Vdd = +1.8V
RMS Phase Jitter (random)	T_phj	–	0.5	0.8	ps	f = 75 MHz, Integration bandwidth = 900 kHz to 7.5 MHz
		–	1.3	2.0		f = 75 MHz, Integration bandwidth = 12 kHz to 20 MHz

Consult our sales representative for other specifications.

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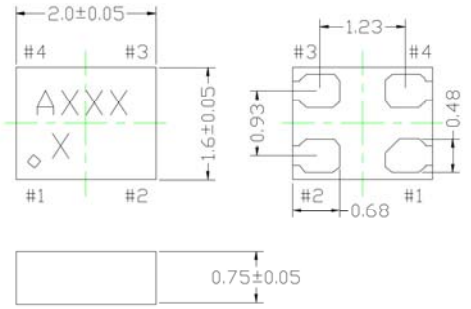
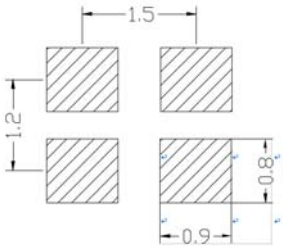
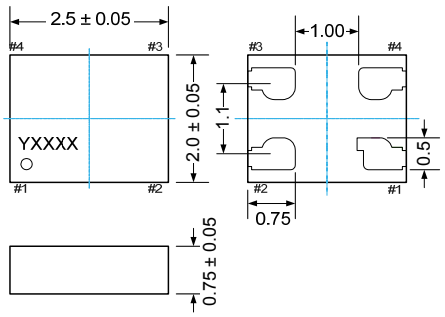
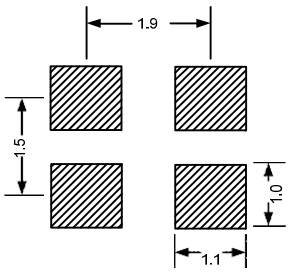
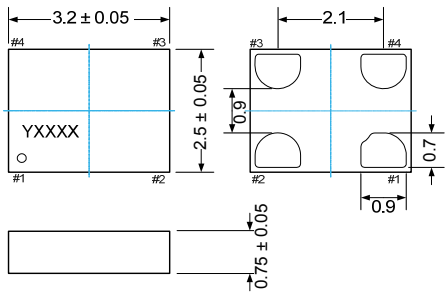
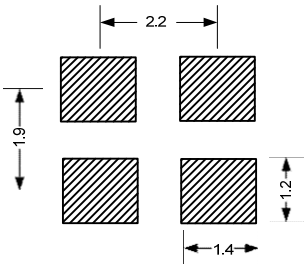
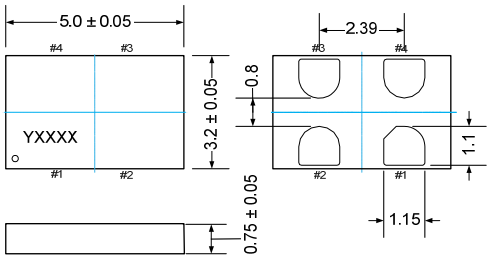
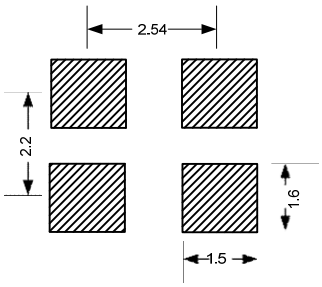
■Dimensions and Patterns

Package Size – Dimensions (Unit: mm)[1]	Recommended Land Pattern (Unit: mm)[2]
2.0 x 1.6 x 0.75 mm 	
2.5 x 2.0 x 0.75 mm 	
3.2 x 2.5 x 0.75 mm 	
5.0 x 3.2 x 0.75 mm 	

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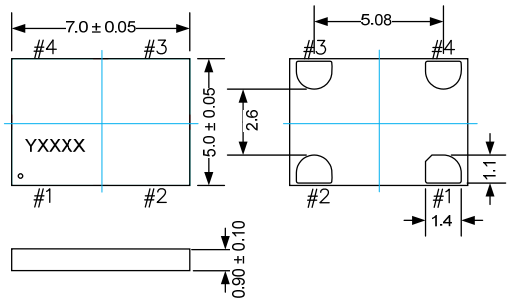
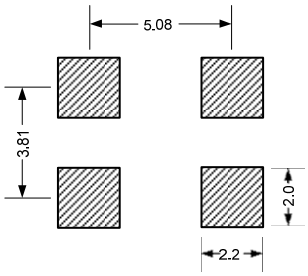
7.0 x 5.0 x 0.90 mm 	

Notes:

1. Top marking: Y denotes manufacturing origin and XXXX denotes manufacturing lot number. The value of “Y” will depend on the assembly location of the device.
2. A capacitor of value 0.1 µF between Vdd and GND is required.