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# Seam Sealing Crystal 7050



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## Electrical Specification

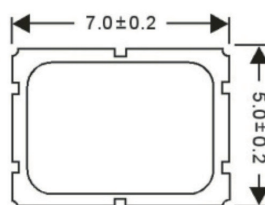
Item	Unit	7050
Dimensions ( L x W x H )	mm	7.0 x 5.0 x 1.2
Nominal Frequency (Fundamental)	MHz	6 ~ 40
Nominal Frequency (3'rd overtone)		40 ~ 125
Frequency Tolerance at 25 deg.C	ppm	+/-10 Max or Specify
Frequency Stability Vs. Temperature	ppm	+/-10 Max or Specify
Load Capacitance	pF	8,10,16, or Specify
Operating Temperature Range	°C	-40 ~ 85
Drive Level	uW	100 typ.
Shunt Capacitance	pF	5.0 max.
Aging ( First year)	ppm	+/-3.0 max.

## Equivalent Series Resistance(ESR)

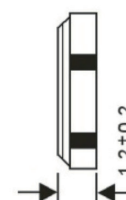
Fundamental	3'rd overtone
6~8 MHz 80Ω Max	30~40 MHz 100Ω Max
8~11 MHz 60Ω Max	40~50 MHz 80Ω Max
11~14 MHz 50Ω Max	50~125 MHz 90Ω Max
14~50 MHz 40Ω Max	

## Mechanical

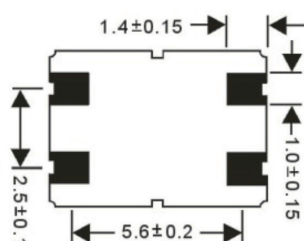
Front View



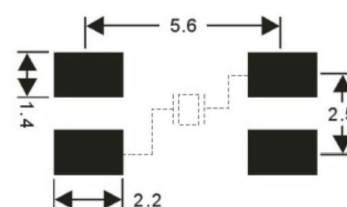
Side View



Bottom View



Pad Pattern



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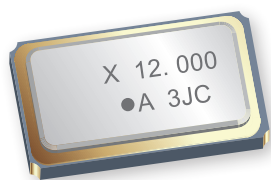
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# Seam Sealing Crystal 6035



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## Electrical Specification

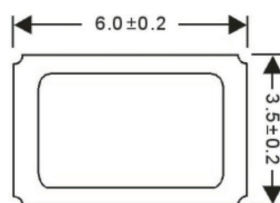
Item	Unit	6035
Dimensions ( L x W x H )	mm	6.0 x 3.5 x 1.1
Nominal Frequency (Fundamental)	MHz	8 ~ 50
Nominal Frequency (3'rd overtone)		30 ~ 125
Frequency Tolerance at 25 deg.C	ppm	+/-10 Max or Specify
Frequency Stability Vs. Temperature	ppm	+/-10 Max or Specify
Load Capacitance	pF	8,10,16, or Specify
Operating Temperature Range	°C	-40 ~ 85
Drive Level	uW	100 typ.
Shunt Capacitance	pF	5.0 max.
Aging ( First year)	ppm	+/-3.0 max.

## Equivalent Series Resistance(ESR)

Fundamental	3'rd overtone
8~12MHz 80Ω Max	30~40 MHz 100Ω Max
12~16MHz 60Ω Max	40~50 MHz 80Ω Max
16~50MHz 40Ω Max	50~125 MHz 50Ω Max

## Mechanical

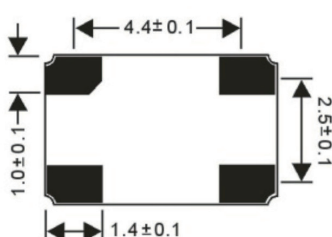
Front View



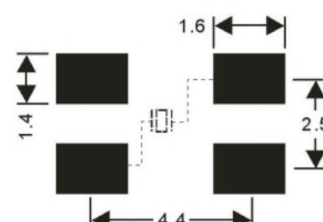
Side View



Bottom View



Pad Pattern



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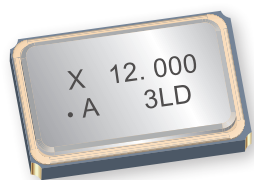
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# Seam Sealing Crystal 5032



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## Electrical Specification

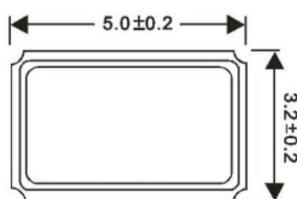
Item	Unit	5032
Dimensions ( L x W x H )	mm	5.0 x 3.2 x 0.8
Nominal Frequency (Fundamental)	MHz	8 ~ 54
Nominal Frequency (3'rd overtone)		40 ~ 125
Frequency Tolerance at 25 deg.C	ppm	+/-10 Max or Specify
Frequency Stability Vs. Temperature	ppm	+/-10 Max or Specify
Load Capacitance	pF	8,10,16, or Specify
Operating Temperature Range	°C	-40 ~ 85
Drive Level	uW	100 typ.
Shunt Capacitance	pF	5.0 max.
Aging ( First year)	ppm	+/-3.0 max.

## Equivalent Series Resistance(ESR)

Fundamental	3'rd overtone
8~11 MHz 80Ω Max 12~54 MHz 40Ω Max	40~60 MHz 100Ω Max 60~125 MHz 80Ω Max

## Mechanical

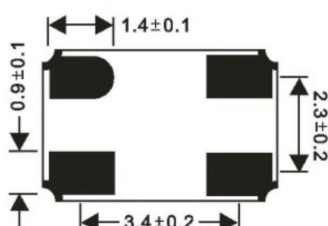
Front View



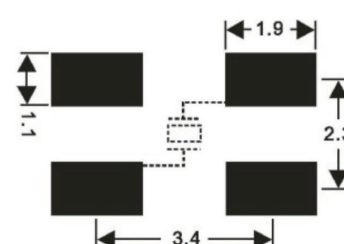
Side View



Bottom View



Pad Pattern



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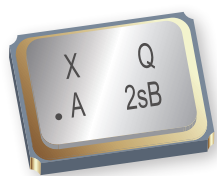
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# Seam Sealing Crystal 1210



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## Electrical Specification

Item	Unit	1210
Dimensions ( L x W x H )	mm	1.2 x 1.0 x 0.30
Nominal Frequency (Fundamental)	MHz	36~54
Frequency Tolerance at 25 deg.C	ppm	+/-15 Max or Specify
Frequency Stability Vs. Temperature	ppm	+/-15 Max or Specify
Load Capacitance	pF	8,10,16, or Specify
Operating Temperature Range	°C	-40 ~ 85
Drive Level	uW	50 typ.
Shunt Capacitance	pF	3.0 max.
Aging ( First year)	ppm	+/-3.0 max.

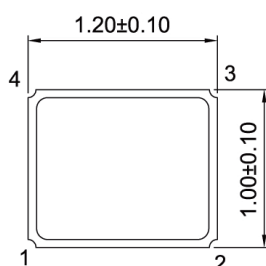
## Equivalent Series Resistance(ESR)

Fundamental

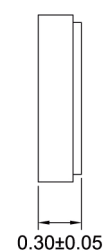
36~54 MHz 150Ω Max

## Mechanical

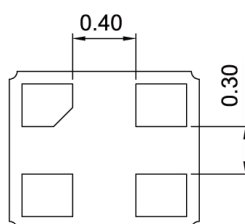
Front View



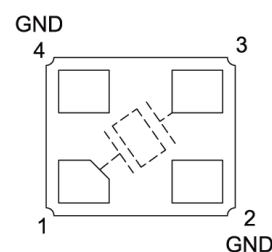
Side View



Bottom View



Pad Pattern



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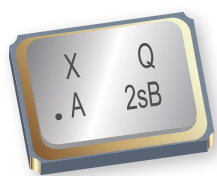
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# Seam Sealing Crystal 3225



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## Electrical Specification

Item	Unit	3225
Dimensions ( L x W x H )	mm	3.2 x 2.5 x 0.7
Nominal Frequency (Fundamental)	MHz	10~ 64
Frequency Tolerance at 25 deg.C	ppm	+/-10 Max or Specify
Frequency Stability Vs. Temperature	ppm	+/-10 Max or Specify
Load Capacitance	pF	8,10,16, or Specify
Operating Temperature Range	°C	-40 ~ 85
Drive Level	uW	100 typ.
Shunt Capacitance	pF	3.0 max.
Aging ( First year)	ppm	+/-3.0 max.

## Equivalent Series Resistance(ESR)

### Fundamental

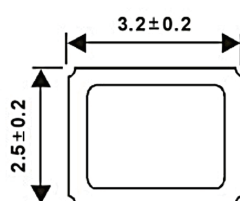
10~16 MHz 100Ω Max

16~20 MHz 80Ω Max

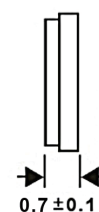
20~64 MHz 60Ω Max

## Mechanical

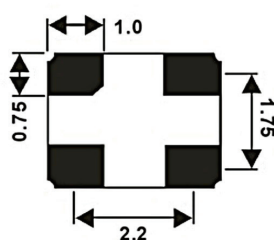
Front View



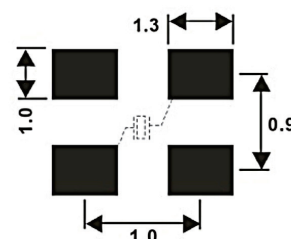
Side View



Bottom View



Pad Pattern



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# Seam Sealing Crystal 2520



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## Electrical Specification

Item	Unit	2520
Dimensions ( L x W x H )	mm	2.5 x 2.0 x 0.6
Nominal Frequency (Fundamental)	MHz	12 ~ 54
Frequency Tolerance at 25 deg.C	ppm	+/-10 Max or Specify
Frequency Stability Vs. Temperature	ppm	+/-10 Max or Specify
Load Capacitance	pF	8,10,16, or Specify
Operating Temperature Range	°C	-40 ~ 85
Drive Level	uW	100 typ.
Shunt Capacitance	pF	3.0 max.
Aging ( First year)	ppm	+/-3.0 max.

## Equivalent Series Resistance(ESR)

### Fundamental

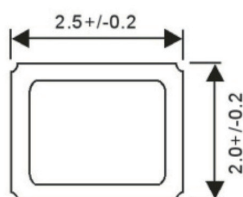
12~13 MHz 150Ω Max

14~30 MHz 100Ω Max

30~54 MHz 60Ω Max

## Mechanical

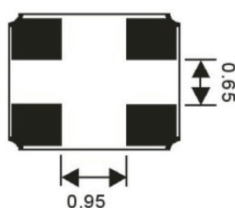
Front View



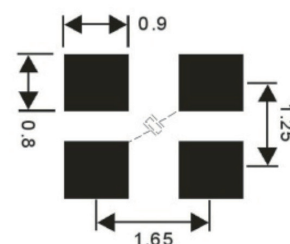
Side View



Bottom View



Pad Pattern



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# Seam Sealing Crystal 2016



AURUM INTERNATIONAL LTD.



## Electrical Specification

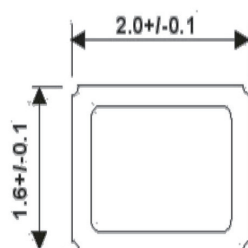
Item	Unit	2016
Dimensions ( L x W x H )	mm	2.0 x 1.6 x 0.5
Nominal Frequency (Fundamental)	MHz	16 ~ 54
Frequency Tolerance at 25 deg.C	ppm	+/-10 Max or Specify
Frequency Stability Vs. Temperature	ppm	+/-10 Max or Specify
Load Capacitance	pF	8,10,16, or Specify
Operating Temperature Range	°C	-40 ~ 85
Drive Level	uW	100 typ.
Shunt Capacitance	pF	3.0 max.
Aging ( First year)	ppm	+/-3.0 max.

## Equivalent Series Resistance(ESR)

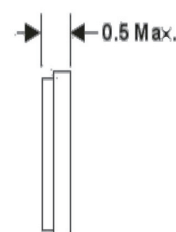
Fundamental
16~19.2 MHz 200Ω Max
19.2~30 MHz 100Ω Max
30~54 MHz 80Ω Max

## Mechanical

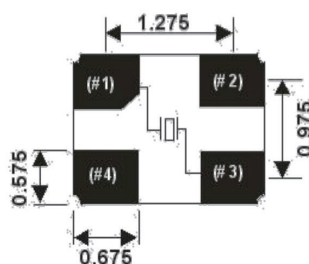
Front View



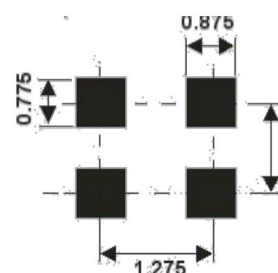
Side View



Bottom View



Pad Pattern



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# Seam Sealing Crystal 1612



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## Electrical Specification

Item	Unit	1612
Dimensions ( L x W x H )	mm	1.6 x 1.2 x 0.35
Nominal Frequency (Fundamental)	MHz	24~54
Frequency Tolerance at 25 deg.C	ppm	+/-10 Max or Specify
Frequency Stability Vs. Temperature	ppm	+/-10 Max or Specify
Load Capacitance	pF	8,10,16, or Specify
Operating Temperature Range	°C	-40 ~ 85
Drive Level	uW	100 typ.
Shunt Capacitance	pF	3.0 max.
Aging ( First year)	ppm	+/-3.0 max.

## Equivalent Series Resistance(ESR)

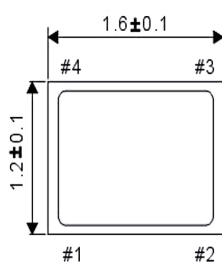
### Fundamental

24~30 MHz 100Ω Max

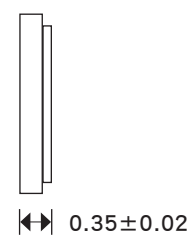
30~54 MHz 80Ω Max

## Mechanical

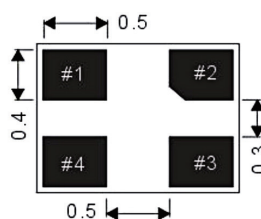
Front View



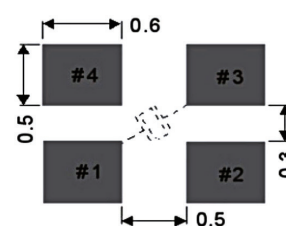
Side View



Bottom View



Pad Pattern



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# Temperature Sensing Crystal 2520



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## Electrical Specification

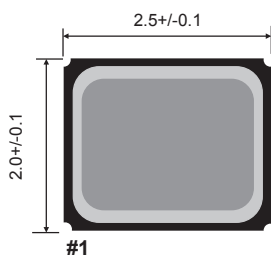
Item	Unit	2520
Dimensions ( L x W x H )	mm	2.5 x 2.0 x 1.0
Nominal Frequency (Fundamental)	MHz	16 ~ 54
Frequency Tolerance at 25 deg.C	ppm	+/-10 Max or Specify
Frequency Stability Vs. Temperature	ppm	+/-10 Max or Specify
Load Capacitance	pF	8,10,16, or Specify
Thermistor Resistance(25°C )	kΩ	100
Thermistor B-constant(25~50°C )		4250
Operating Temperature Range	°C	-40 ~ 85
Drive Level	uW	50 typ.
Shunt Capacitance	pF	3.0 max.
Aging ( First year)	ppm	+/-3.0 max.

## Equivalent Series Resistance(ESR)

16~30 MHz	100Ω Max
30~54 MHz	60Ω Max

## Mechanical

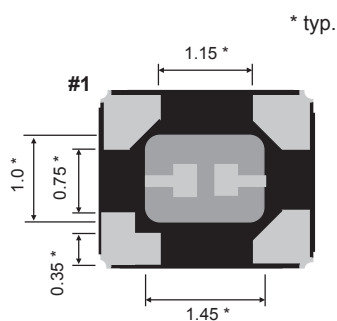
Front View



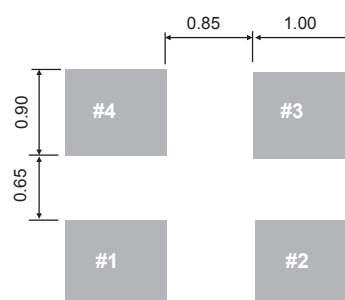
Side View



Bottom View



Pad Pattern



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# Temperature Sensing Crystal 2016



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## Electrical Specification

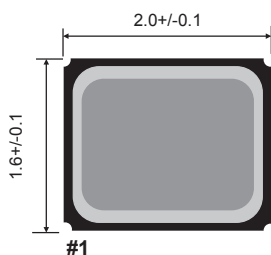
Item	Unit	2016
Dimensions ( L x W x H )	mm	2.0 x 1.6 x 0.8
Nominal Frequency (Fundamental)	MHz	19.2 ~ 54
Frequency Tolerance at 25 deg.C	ppm	+/-10 Max or Specify
Frequency Stability Vs. Temperature	ppm	+/-10 Max or Specify
Load Capacitance	pF	8,10,16, or Specify
Thermistor Resistance(25°C )	kΩ	100
Thermistor B-constant(25~50°C )		4250
Operating Temperature Range	°C	-40 ~ 85
Drive Level	uW	50 typ.
Shunt Capacitance	pF	3.0 max.
Aging ( First year)	ppm	+/-3.0 max.

## Equivalent Series Resistance(ESR)

19.2~30 MHz	100Ω Max
30~54 MHz	80Ω Max

## Mechanical

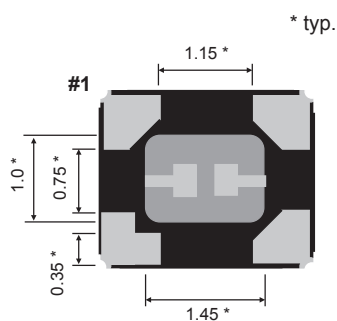
Front View



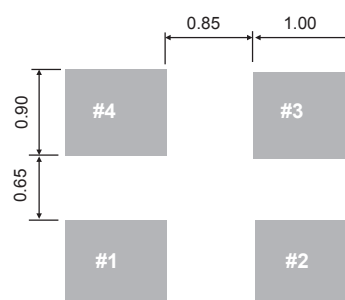
Side View



Bottom View



Pad Pattern



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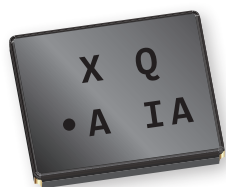
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# Glass Sealing Crystal 3225



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## Electrical Specification

Item	Unit	3225
Dimensions ( L x W x H )	mm	3.2 x 2.5 x 0.7
Nominal Frequency	MHz	10 ~ 54
Frequency Tolerance at 25 deg.C	ppm	+/-30 Max or Specify
Frequency Stability Vs. Temperature	ppm	+/-30 Max or Specify
Load Capacitance	pF	8,10, or Specify
Operating Temperature Range	°C	-10 ~ 70 or Specify
Drive Level	uW	100 typ.
Shunt Capacitance	pF	3.0 max.
Aging ( First year)	ppm	+/-3.0 max.

## Equivalent Series Resistance(ESR)

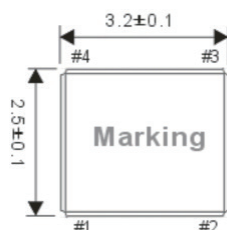
10~12 MHz 150Ω Max

12~16 MHz 100Ω Max

16~54 MHz 60Ω Max

## Mechanical

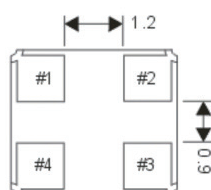
Front View



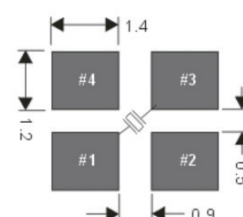
Side View



Bottom View



Pad Pattern



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# Glass Sealing Crystal 5032



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## Electrical Specification

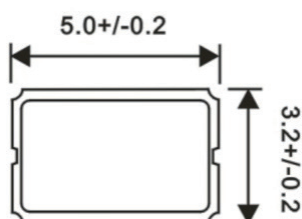
Item	Unit	5032
Dimensions ( L x W x H )	mm	5.0 x 3.2 x 1.2
Nominal Frequency	MHz	8 ~ 54
Frequency Tolerance at 25 deg.C	ppm	+/-30 Max or Specify
Frequency Stability Vs. Temperature	ppm	+/-30 Max or Specify
Load Capacitance	pF	8,10, or Specify
Operating Temperature Range	°C	-10 ~ 70 or Specify
Drive Level	uW	100 typ.
Shunt Capacitance	pF	5.0 max.
Aging ( First year)	ppm	+/-3.0 max.

## Equivalent Series Resistance(ESR)

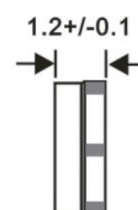
8~12 MHz 150Ω Max  
12~54 MHz 50Ω Max

## Mechanical

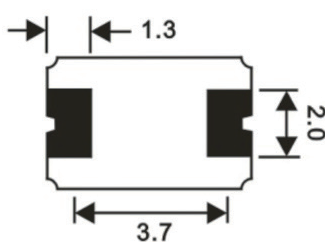
Front View



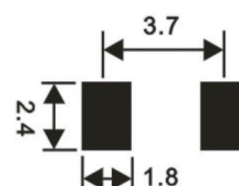
Side View



Bottom View



Pad Pattern



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# Glass Sealing Crystal 2520



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## Electrical Specification

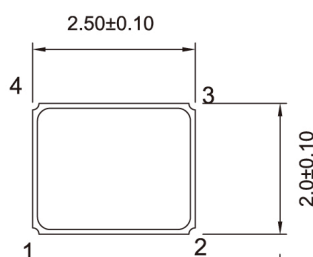
Item	Unit	2520
Dimensions ( L x W x H )	mm	2.5 x 2.0 x 0.75
Nominal Frequency	MHz	12 ~ 64
Frequency Tolerance at 25 deg.C	ppm	+/-30 Max or Specify
Frequency Stability Vs. Temperature	ppm	+/-30 Max or Specify
Load Capacitance	pF	8,10, or Specify
Operating Temperature Range	°C	-10 ~ 70 or Specify
Drive Level	uW	100 typ.
Shunt Capacitance	pF	3.0 max.
Aging ( First year)	ppm	+/-3.0 max.

## Equivalent Series Resistance(ESR)

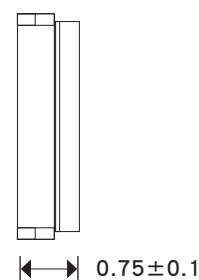
12~13 MHz	200Ω Max
13~16 MHz	150Ω Max
16~20 MHz	100Ω Max
20~27 MHz	80Ω Max
27~64 MHz	60Ω Max

## Mechanical

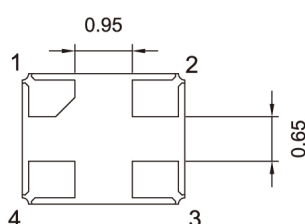
Front View



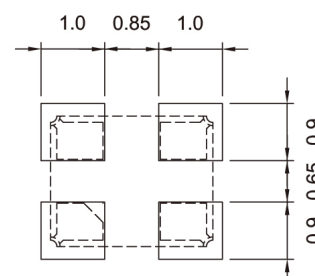
Side View



Bottom View



Pad Pattern



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# Metal Can 49/S Crystal

## HC-49S-20



### Electrical Specification

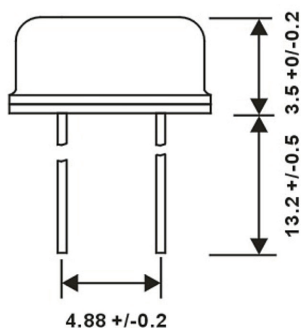
Item	Unit	HC-49S-20	
Dimensions ( L x W x H )	mm	11.0 x 4.5 x 3.5	
Nominal Frequency	MHz	Fundamental	3.2 ~ 35
		3'rd Overtone	30 ~ 100
Frequency Tolerance at 25 deg.C	ppm	+/-10 Max or Specify	
Frequency Stability Vs. Temperature	ppm	+/-10 Max or Specify	
Load Capacitance	pF	8,10,16, or Specify	
Operating Temperature Range	°C	-40 ~ 85	
Drive Level	uW	100 typ.	
Shunt Capacitance	pF	7.0 max.	
Aging ( First year)	ppm	+/-3.0 min.	

### Equivalent Series Resistance(ESR)

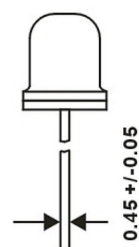
Fundamental	3'rd overtone
3.2~3.686 MHz 200Ω Max	
3.686~5 MHz 150Ω Max	
5~10 MHz 80Ω Max	30~50 MHz 80Ω Max
10~14 MHz 40Ω Max	50~100 MHz 60Ω Max
14~35 MHz 30Ω Max	

### Mechanical

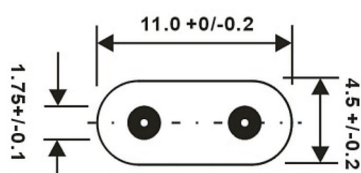
Front View



Side View



Bottom View



# Metal Can 49/S Crystal

## HC-49S-3S



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### Electrical Specification

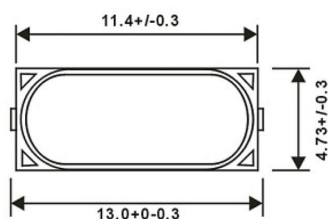
Item	Unit	HC-49S-3S	
Dimensions ( L x W x H )	mm	11.4 x 4.8 x 4.2	
Nominal Frequency	MHz	Fundamental	3.2 ~ 35
		3'rd Overtone	30 ~ 100
Frequency Tolerance at 25 deg.C	ppm	+/-10 Max or Specify	
Frequency Stability Vs. Temperature	ppm	+/-10 Max or Specify	
Load Capacitance	pF	8,10,16, or Specify	
Operating Temperature Range	°C	-40 ~ 85	
Drive Level	uW	100 typ.	
Shunt Capacitance	pF	7.0 max.	
Aging ( First year)	ppm	+/-3.0 min.	

### Equivalent Series Resistance(ESR)

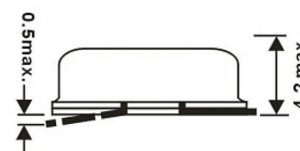
Fundamental	3'rd overtone
3.2~3.686 MHz 200Ω Max	
3.686~5 MHz 150Ω Max	
5~10 MHz 80Ω Max	
10~14 MHz 40Ω Max	
14~35 MHz 30Ω Max	
	30~50 MHz 80Ω Max
	50~100 MHz 60Ω Max

### Mechanical

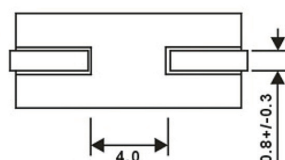
Front View



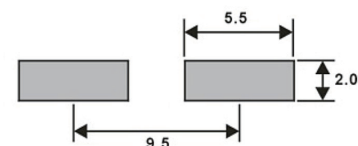
Side View



Bottom View



Pad Pattern



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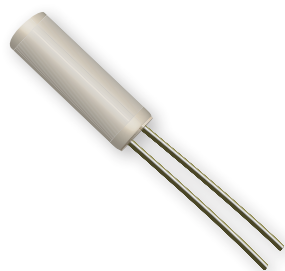
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# Mhz Cylinder Crystal Fork3080



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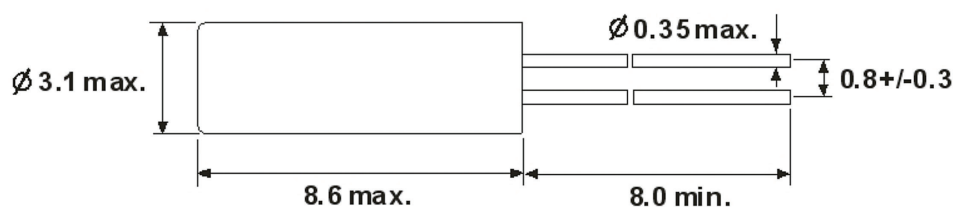
## Electrical Specification

Item	Unit	Fork3080
Dimensions ( D x L )	mm	Ø3.0 x 8.0
Nominal Frequency	MHz	Fundamental 3.2~ 35
		3'rd Overtone 30 ~ 100
Frequency Tolerance at 25 deg.C	ppm	+/-30 Max or Specify
Frequency Stability Vs. Temperature	ppm	+/-30 Max or Specify
Load Capacitance	pF	8,10,16, or Specify
Operating Temperature Range	°C	-20 ~ 70
Drive Level	uW	10 typ. / 100 max.
Shunt Capacitance	pF	5.0 max.
Aging ( First year)	ppm	+/-5.0 min.

## Equivalent Series Resistance(ESR)

Fundamental	3'rd overtone
3.2~3.686 MHz 200Ω Max	
3.686~5 MHz 150Ω Max	
5~10 MHz 80Ω Max	30~50 MHz 80Ω Max
10~14 MHz 40Ω Max	50~100 MHz 60Ω Max
14~35 MHz 30Ω Max	

## Mechanical



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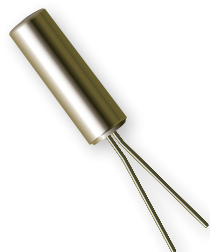
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# KHz Cylinder Crystal Fork2060



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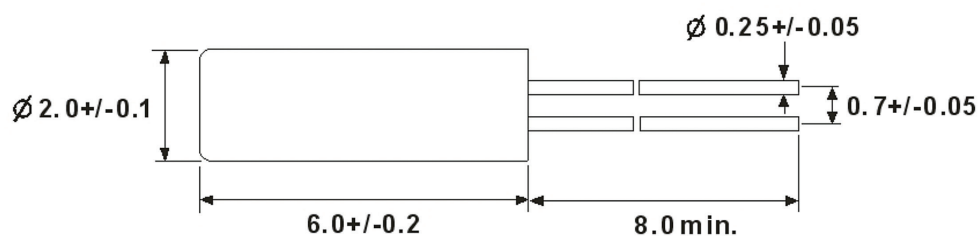
## Electrical Specification

Item	Unit	Fork2060
Dimensions ( D x L )	mm	Ø2.0 x 6.0
Nominal Frequency	KHz	30 ~ 200
Frequency Tolerance at 25 deg.C	ppm	+/-20 Max or Specify
Frequency Stability Vs. Temperature	ppm/°C ^2	-0.035
Load Capacitance	pF	6 , 7 , 9 , 12.5
Operating Temperature Range	°C	-20 ~ 70 / -40 ~ 85
Drive Level	uW	1.0 typ. / 3.0 max.
Shunt Capacitance	pF	1.5 typ.
Aging ( First year)	ppm	+/-5 max.

## Equivalent Series Resistance(ESR)

45KΩ max

## Mechanical



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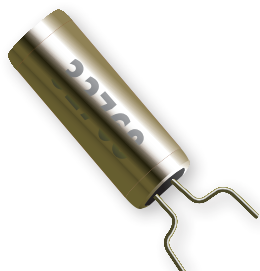
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# KHz Cylinder Crystal 2060SB



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## Electrical Specification

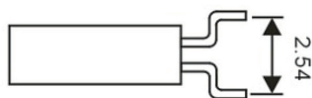
Item	Unit	Fork2060SB
Dimensions ( L x W x H )	mm	8.7 x 2.54 x 2.3
Nominal Frequency	KHz	30 ~ 200
Frequency Tolerance at 25 deg.C	ppm	+/-20 Max or Specify
Frequency Stability Vs. Temperature	ppm/°C ^2	-0.035
Load Capacitance	pF	6 , 7 , 9 , 12.5
Operating Temperature Range	°C	-20 ~ 70 / -40 ~ 85
Drive Level	uW	1.0 typ. / 3.0 max.
Shunt Capacitance	pF	1.5 typ.
Aging ( First year)	ppm	+/-5 max.

## Equivalent Series Resistance(ESR)

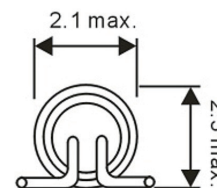
45KΩ max

## Mechanical

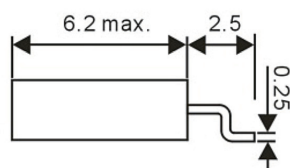
Front View



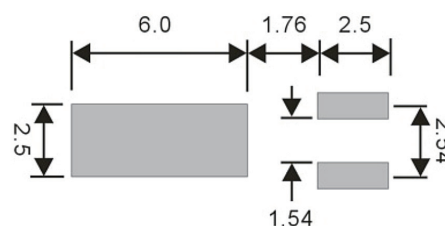
Side View



Bottom View



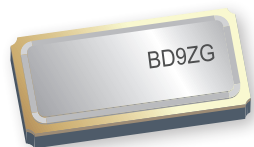
Pad Pattern



# 32.768KHz SMD Crystal 3215



AURUM INTERNATIONAL LTD.



## Electrical Specification

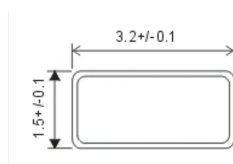
Item	Unit	3215
Dimensions ( L x W x H )	mm	3.2 x 1.5 x 0.8
Nominal Frequency	KHz	32.768
Frequency Tolerance at 25 deg.C	ppm	+/-20 Max or Specify
Frequency Stability Vs. Temperature	ppm/°C ^2	-0.03
Load Capacitance	pF	7 , 9 , 12.5
Operating Temperature Range	°C	-40 ~ 85
Drive Level	uW	0.5 max.
Shunt Capacitance	pF	1.5 typ.
Aging ( First year)	ppm	+/-3.0 min.

## Equivalent Series Resistance(ESR)

70KΩ max

## Mechanical

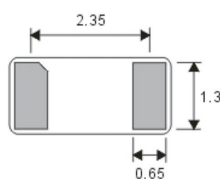
Front View



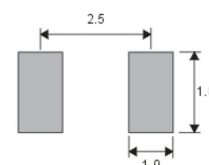
Side View



Bottom View



Pad Pattern

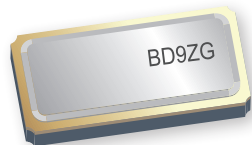




# 32.768KHz SMD Crystal 2012



AURUM INTERNATIONAL LTD.



## Electrical Specification

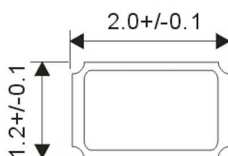
Item	Unit	2012
Dimensions ( L x W x H )	mm	2.0 x 1.2 x 0.6
Nominal Frequency	KHz	32.768
Frequency Tolerance at 25 deg.C	ppm	+/-20 Max or Specify
Frequency Stability Vs. Temperature	ppm/°C ^2	-0.03
Load Capacitance	pF	7 , 9 , 12.5
Operating Temperature Range	°C	-40 ~ 85
Drive Level	uW	0.5 max.
Shunt Capacitance	pF	1.2 typ.
Aging ( First year)	ppm	+/-3 min.

## Equivalent Series Resistance(ESR)

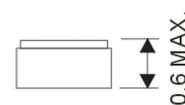
90KΩ max

## Mechanical

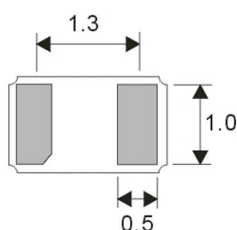
Front View



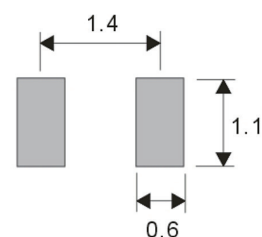
Side View



Bottom View



Pad Pattern



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# 32.768KHz SMD Crystal 1610



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## Electrical Specification

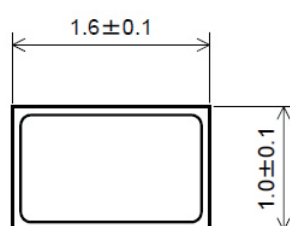
Item	Unit	X1610
Dimensions ( L x W x H )	mm	1.6 x 1.0 x 0.5
Nominal Frequency	KHz	32.768
Frequency Tolerance at 25 deg.C	ppm	+/-20 Max or Specify
Frequency Stability Vs. Temperature	ppm/°C ^2	-0.03
Load Capacitance	pF	12.5
Operating Temperature Range	°C	-40 ~ 85
Drive Level	uW	0.5 max.
Shunt Capacitance	pF	1.2 typ.
Aging ( First year)	ppm	+/-3 min.

## Equivalent Series Resistance(ESR)

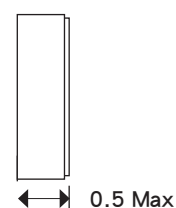
90KΩ max

## Mechanical

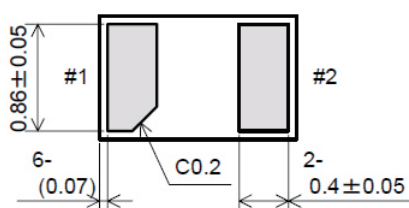
Front View



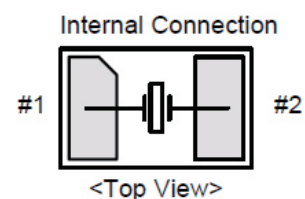
Side View



Bottom View



Pad Pattern



# 32.768KHz SMD Crystal 8038



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## Electrical Specification

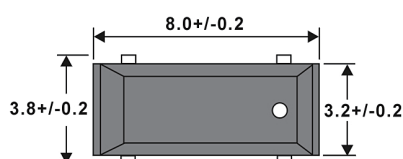
Item	Unit	8038
Dimensions ( L x W x H )	mm	8.0 x 3.8 x 2.5
Nominal Frequency	KHz	32.768
Frequency Tolerance at 25 deg.C	ppm	+/-20 Max or Specify
Frequency Stability Vs. Temperature	ppm/°C ^2	-0.03
Load Capacitance	pF	7 , 9 , 12.5
Operating Temperature Range	°C	-20 ~ 70
Drive Level	uW	1.0 typ. / 3.0 max.
Shunt Capacitance	pF	1.5 typ.
Aging ( First year)	ppm	+/-5 max.

## Equivalent Series Resistance(ESR)

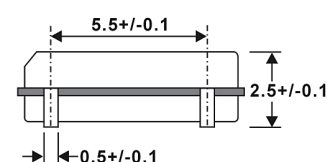
50KΩ max

## Mechanical

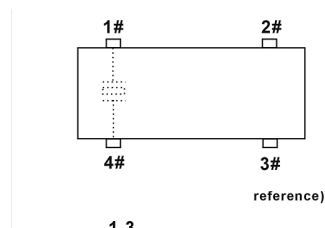
Front View



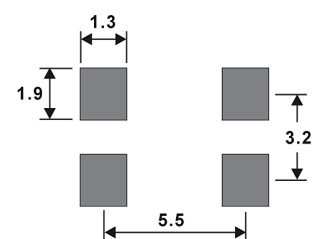
Side View



Bottom View



Pad Pattern



# 32.768KHz SMD Crystal 7015



AURUM INTERNATIONAL LTD.



## Electrical Specification

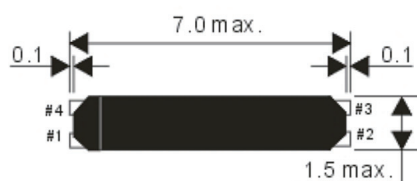
Item	Unit	7015
Dimensions ( L x W x H )	mm	7.0 x 1.5 x 1.4
Nominal Frequency	KHz	32.768
Frequency Tolerance at 25 deg.C	ppm	+/-20 Max or Specify
Frequency Stability Vs. Temperature	ppm/°C ^2	-0.03
Load Capacitance	pF	12.5
Operating Temperature Range	°C	-40 ~ 85
Drive Level	uW	1.0 max.
Shunt Capacitance	pF	1.2 typ.
Aging ( First year)	ppm	+/-3 max.

## Equivalent Series Resistance(ESR)

65KΩ max

## Mechanical

Front View



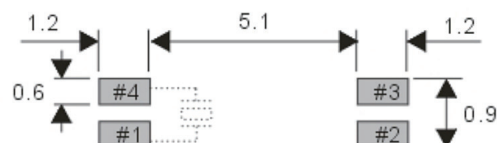
Side View



Bottom View



Pad Pattern



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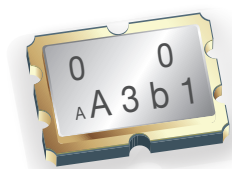
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# 32.768KHz Crystal Oscillator 3225



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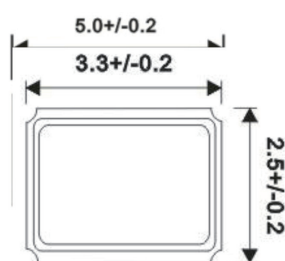


## Electrical Specification

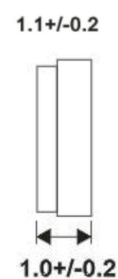
Item	Unit	3225
Dimensions ( L x W x H )	mm	3.2 x 2.5 x1.0
Center Frequency	KHz	32.768
Frequency stability over operating temperature	ppm	+/-20 Max or Specify
Operating Temperature Range	°C	-40 ~ 85
Supply voltage	V	1.8 / 2.5 / 3.3
Consumption current	uA	60 / 62 / 65
Start Time	mSec	2 Max
Duty cycle	%	45 / 55
Output Load type		CMOS
Standby function (tri-state)		Yes

## Mechanical

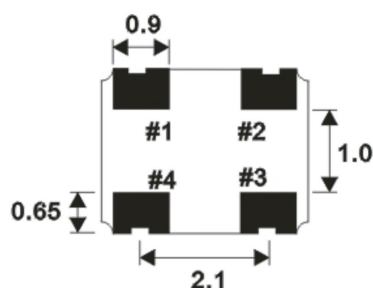
Front View



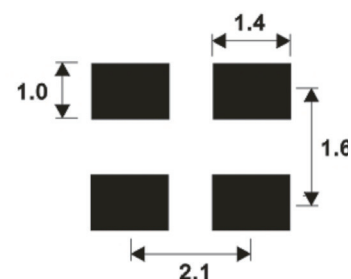
Side View



Bottom View



Pad Pattern



Pin #	Connection
#1	En. (+Vcc) / Dis. (GND)
#2	GND
#3	Output
#4	+Vcc

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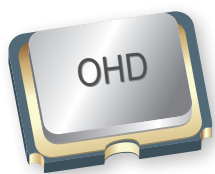
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# 32.768KHz Crystal Oscillator 2520



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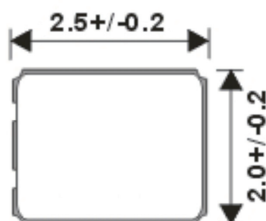


## Electrical Specification

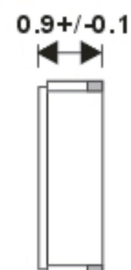
Item	Unit	2520
Dimensions ( L x W x H )	mm	2.5 x 2.0 x 0.9
Center Frequency	KHz	32.768
Frequency stability over operating temperature	ppm	+/-20 Max or Specify
Operating Temperature Range	°C	-40 ~ 85
Supply voltage	V	1.8 / 2.5 / 3.3
Consumption current	uA	60 / 62 / 65
Start Time	mSec	2 Max
Duty cycle	%	45 / 55
Output Load type		CMOS
Standby function (tri-state)		Yes

## Mechanical

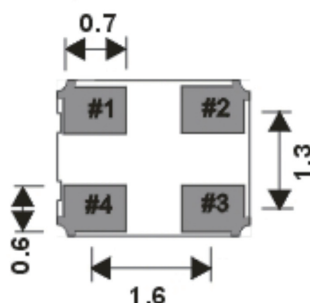
Front View



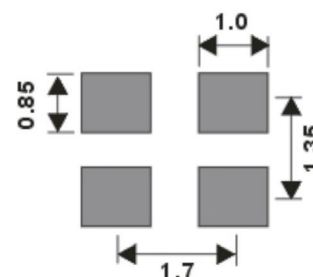
Side View



Bottom View



Pad Pattern



Pin #	Connection
#1	En. (+Vcc) / Dis. (GND)
#2	GND
#3	Output
#4	+Vcc

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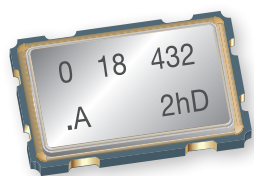
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# Crystal Oscillator-CMOS Output 5032



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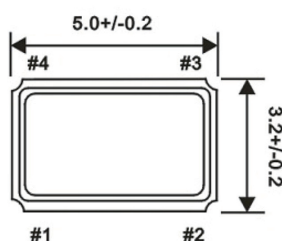


## Electrical Specification

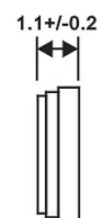
Item	Unit	5032
Dimensions ( L x W x H )	mm	5.0 x 3.2 x 1.1
Center Frequency	MHz	1 ~ 150
Frequency stability over operating temperature	ppm	+/-20 Max or Specify
Operating Temperature Range	°C	-40 ~ 85
Supply voltage	V	1.8 / 3.3 / 5.0
Consumption current	mA	10 min.
Start Time	mSec	2 Max
Duty cycle	%	45 / 55
Output Load type		CMOS/TTL
Period Jitter	pS	0.5/Low jitter type 1.0/MEMS type
Standby function (tri-state)		Yes

## Mechanical

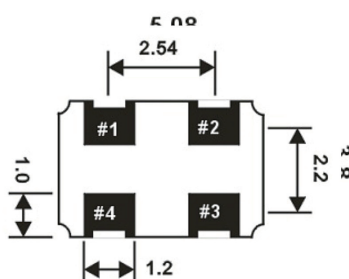
Front View



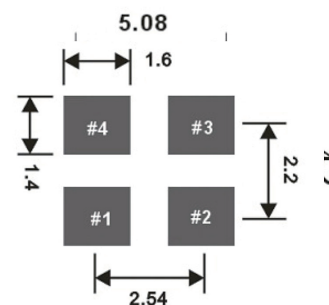
Side View



Bottom View



Pad Pattern



Pin #	Connection
#1	En. (+Vcc) / Dis. (GND)
#2	GND
#3	Output
#4	+Vcc

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# Crystal Oscillator-CMOS Output 3225



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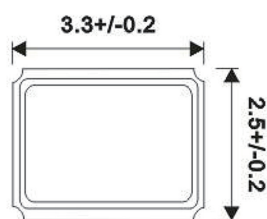


## Electrical Specification

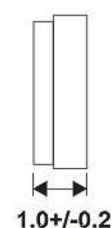
Item	Unit	3225
Dimensions ( L x W x H )	mm	3.2 x 2.5 x 1.0
Center Frequency	MHz	1 ~ 200
Frequency stability over operating temperature	ppm	+/-20 Max or Specify
Operating Temperature Range	°C	-40 ~ 85
Supply voltage	V	1.8 / 2.5/ 3.3
Consumption current	mA	6 min.
Start Time	mSec	2 Max
Duty cycle	%	45 / 55
Output Load type		CMOS
Period Jitter	pS	0.5/Low jitter type 1.0/MEMS type 40/Programmable type
Standby function (tri-state)		Yes

## Mechanical

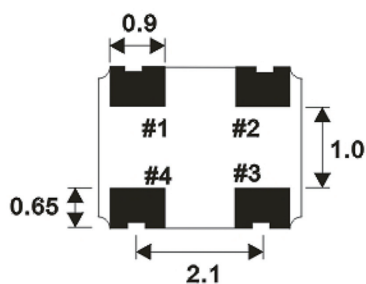
Front View



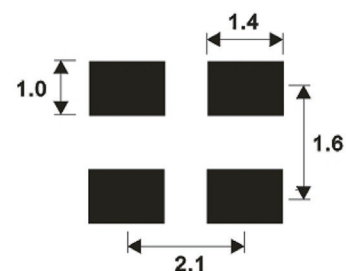
Side View



Bottom View



Pad Pattern



Pin #	Connection
#1	En. (+Vcc) / Dis. (GND)
#2	GND
#3	Output
#4	+Vcc

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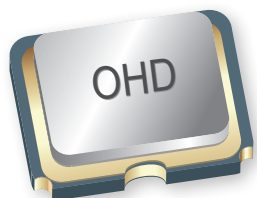
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# Crystal Oscillator-CMOS Output 2520



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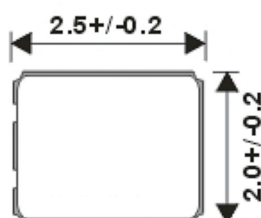


## Electrical Specification

Item	Unit	2520
Dimensions ( L x W x H )	mm	2.5 x 2.0 x 0.9
Center Frequency	MHz	1 ~ 200
Frequency stability over operating temperature	ppm	+/-20 Max or Specify
Operating Temperature Range	°C	-40 ~ 85
Supply voltage	V	1.8 /2.5/ 3.3
Consumption current	mA	6 min.
Start Time	mSec	2 Max
Duty cycle	%	45 / 55
Output Load type		CMOS
Period Jitter	pS	0.5/Low jitter type 1.0/MEMS type 40/Programmable type
Standby function (tri-state)		Yes

## Mechanical

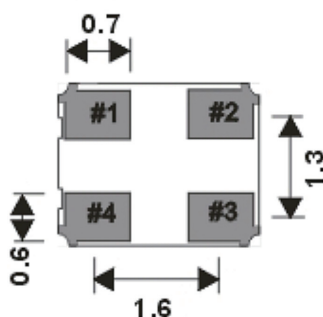
Front View



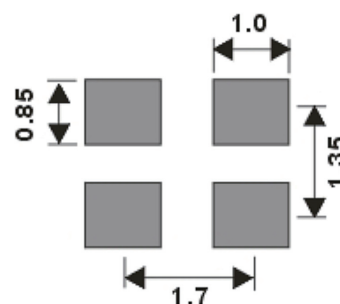
Side View



Bottom View



Pad Pattern



Pin #	Connection
#1	En. (+Vcc) / Dis. (GND)
#2	GND
#3	Output
#4	+Vcc

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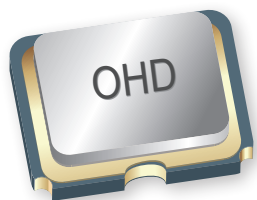
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# Crystal Oscillator-CMOS Output 2016



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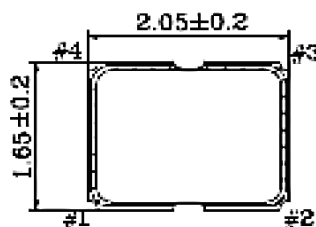


## Electrical Specification

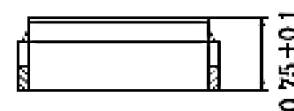
Item	Unit	2016
Dimensions ( L x W x H )	mm	2.0 x 1.6 x 0.75
Center Frequency	MHz	4 ~ 54
Frequency stability over operating temperature	ppm	+/-20 Max or Specify
Operating Temperature Range	°C	-40 ~ 85
Supply voltage	V	1.8 / 2.5/ 3.3
Consumption current	mA	6 min.
Start Time	mSec	2 Max
Duty cycle	%	45 / 55
Output Load type		CMOS
Period Jitter	pS	0.5
Standby function (tri-state)		Yes

## Mechanical

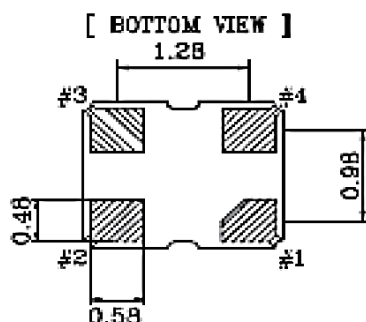
Front View



Side View



Bottom View



Pin #	Connection
#1	En. (+Vcc) / Dis. (GND)
#2	GND
#3	Output
#4	+Vcc

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# Crystal Oscillator-Differential Output 7050



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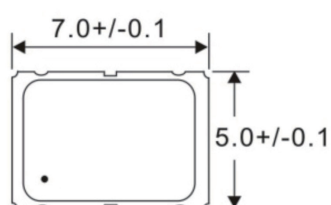


## Electrical Specification

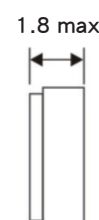
Item	Unit	7050	
Dimensions ( L x W x H )	mm	7.0 x 5.0 x 1.8	
Center Frequency	MHz	1 ~ 800	
Frequency stability over operating temperature	ppm	+/-20 Max or Specify	
Operating Temperature Range	°C	-40 ~ 85	
Supply voltage	V	2.5 / 3.3	
Supply current	mA	65 ~ 110	
Start-up Time	mSec	10 Max	
Symmetry	%	45 / 55	
Output Load	Ω	50	
Output Voltage	V	VoH	1.475 / 2.275
		VoL	1.095 / 1.68
Standby function (tri-state)		Yes	
Phase Jitter RMS (12KHz ~ 20MHz)	ps	0.3	

## Mechanical

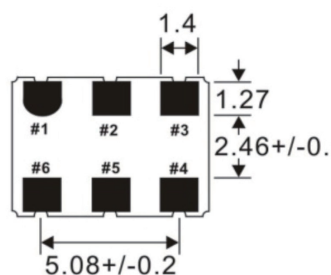
Front View



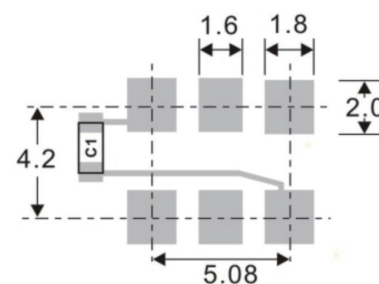
Side View



Bottom View



Pad Pattern



Pin#	Connection
1	Vcon
2	En.(+Vcc) / Dis. (GND)
3	Gnd
4	Q
5	QN
6	+Vcc

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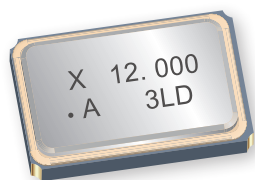
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# Crystal Oscillator-Differential Output 5032



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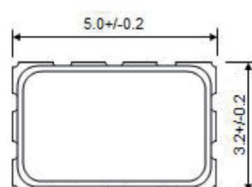


## Electrical Specification

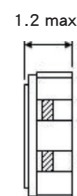
Item	Unit	5032	
Dimensions ( L x W x H )	mm	5.0 x 3.2 x 1.2	
Center Frequency	MHz	25 ~ 250	
Frequency stability over operating temperature	ppm	+/-20 Max or Specify	
Operating Temperature Range	°C	-40 ~ 85	
Supply voltage	V	2.5 / 3.3	
Supply current	mA	55 ~ 88	
Start-up Time	mSec	10 Max	
Symmetry	%	45 / 55	
Output Load	Ω	50	
Output Voltage	V	VoH	1.475 / 2.275
		VoL	1.095 / 1.68
Standby function (tri-state)		Yes	
Phase Jitter RMS (12KHz ~ 20MHz)	ps	0.3	

## Mechanical

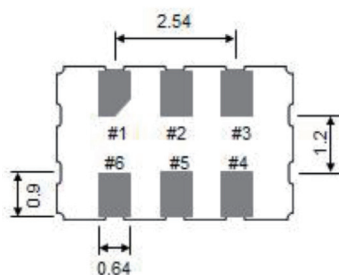
Front View



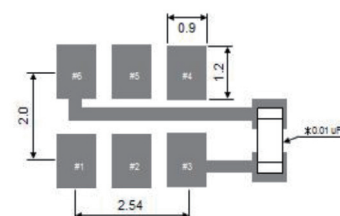
Side View



Bottom View



Pad Pattern



Pin#	Connection
1	Vcon
2	En.(+Vcc) / Dis. (GND)
3	Gnd
4	Q
5	QN
6	+Vcc

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# Crystal Oscillator-Differential Output 7050



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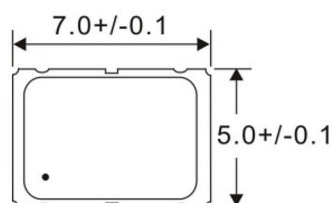


## Electrical Specification

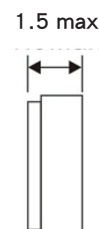
Item	Unit	7050	
Dimensions ( L x W x H )	mm	7.0 x 5.0 x 1.5	
Center Frequency	MHz	1 ~800	
Frequency stability over operating temperature	ppm	+/-20 Max or Specify	
Operating Temperature Range	°C	-40 ~ 85	
Supply voltage	V	2.5 / 3.3	
Supply current	mA	60 ~ 110	
Start-up Time	mSec	10 Max	
Symmetry	%	45 / 55	
Output Load	Ω	100	
Output Voltage	V	VoH	1.43 typ.
		VoL	1.1 typ.
Standby function (tri-state)		Yes	
Phase Jitter RMS (12KHz ~ 20MHz)	ps	0.3	

## Mechanical

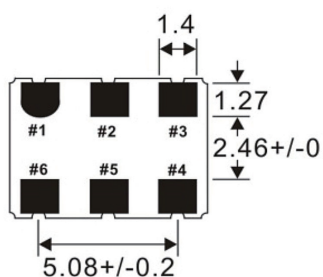
Front View



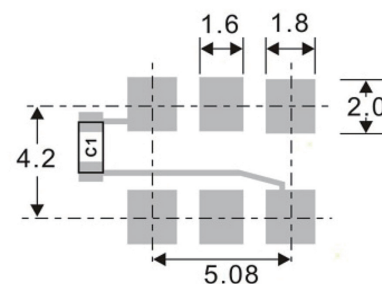
Side View



Bottom View



Pad Pattern



Pin#	Connection
1	Vcon
2	En.(+Vcc) / Dis. (GND)
3	Gnd
4	Q
5	QN
6	+Vcc

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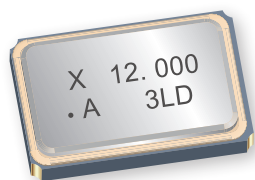
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# Crystal Oscillator-Differential Output 5032



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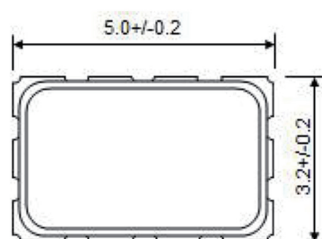


## Electrical Specification

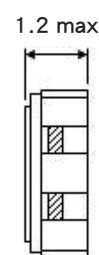
Item	Unit	5032	
Dimensions ( L x W x H )	mm	5.0 x 3.2 x 1.2	
Center Frequency	MHz	80 ~ 250	
Frequency stability over operating temperature	ppm	+/-20 Max or Specify	
Operating Temperature Range	°C	-40 ~ 85	
Supply voltage	V	2.5 / 3.3	
Supply current	mA	65 max	
Start-up Time	mSec	10 Max	
Symmetry	%	45 / 55	
Output Load	Ω	100	
Output Voltage	V	VoH	1.43 typ.
		VoL	1.1 typ.
Standby function (tri-state)		Yes	
Phase Jitter RMS (12KHz ~ 20MHz)	ps	0.3	

## Mechanical

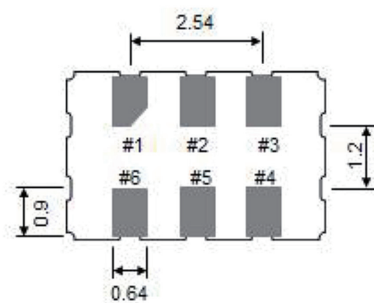
Front View



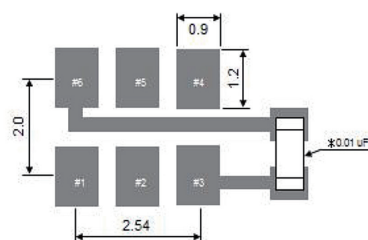
Side View



Bottom View



Pad Pattern



Pin#	Connection
1	Vcon
2	En.(+Vcc) / Dis. (GND)
3	Gnd
4	Q
5	QN
6	+Vcc

# TCXO Temperature Compensated Crystal Oscillator 7050



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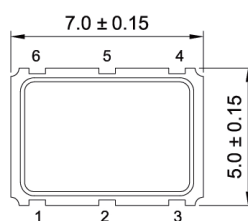


## Electrical Specification

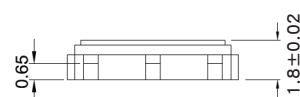
Series	Unit	7050
Dimensions ( L x W x H )	mm	7.0 x 5.0 x 1.8
Center Frequency	MHz	5~ 52
Frequency Tolerance (at 25+/-3 deg.C) after 2 times reflow	ppm	+/-2 max.
Frequency Satibility a, Vs. temperature b, Vs. supply voltage drift c, Vs. load drift d, Vs. Aging	ppm	a, 0.28 b, 0.50 c, 0.20 d, 1.00
Operating Temperature Range	°C	-40 ~ 85
Supply voltage	V	3.3 / 5.0
Consumption current CMOS Clipped sine	mA	6.0 3.5
Output Load type CMOS Clipped sine		15pF 10k Ohm // 10pF
Output Voltage Leve	Vp-p	0.8
Phase noise 100Hz 1K Hz 10K Hz	dBc/Hz	-120 -140 -148
Pulling range(VC-TCXO)	ppm	+/-5~+/-12
Start time	mSEC	2
Standby function (tri-state)	Vdd	0.7

## Mechanical

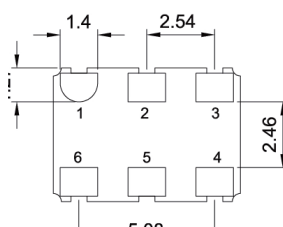
Front View



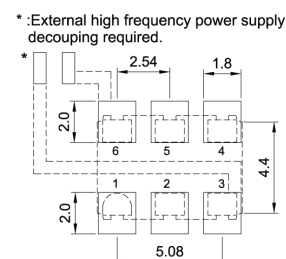
Side View



Bottom View



Pad Pattern



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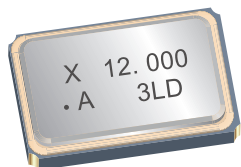
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# TCXO Temperature Compensated Crystal Oscillator

## 5032



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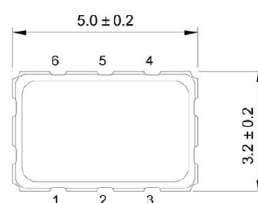


### Electrical Specification

Series	Unit	5032
Dimensions ( L x W x H )	mm	5.0 x 3.2 x 1.55
Center Frequency	MHz	10~ 40
Frequency Tolerance (at 25+/-3 deg.C) after 2 times reflow	ppm	+/-2 max.
Frequency Satibility a, Vs. temperature b, Vs. supply voltage drift c, Vs. load drift d, Vs. Aging	ppm	a, 0.05 b, 0.20 c, 0.20 d, 1.00
Operating Temperature Range	°C	-40 ~ 85
Supply voltage	V	3.3 / 5.0
Consumption current CMOS Clipped sine	mA	6.0 3.5
Output Load type CMOS Clipped sine		15pF 10k Ohm // 10pF
Output Voltage Leve	Vp-p	0.8
Phase noise 100Hz 1K Hz 10K Hz	dBc/Hz	-125 -145 -150
Pulling range(VC-TCXO)	ppm	+/-5~+/-10
Start time	mSEC	2
Standby function (tri-state)	Vdd	0.7

### Mechanical

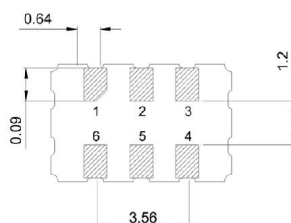
Front View



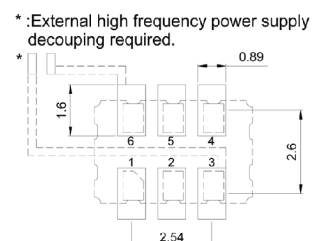
Side View



Bottom View



Pad Pattern



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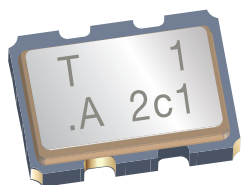


# TCXO Temperature Compensated Crystal Oscillator

## 3225



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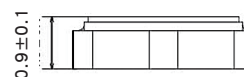
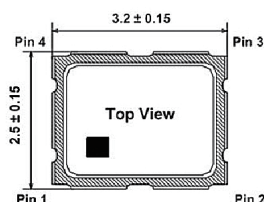
### Electrical Specification

Series	Unit	3225
Dimensions ( L x W x H )	mm	3.2 x 2.5 x 0.9
Center Frequency	MHz	13~ 52
Frequency Tolerance (at 25+/-3 deg.C)after 2 times reflow	ppm	+/-2 max.
Frequency Satibility a, Vs. temperature b, Vs.supply voltage drift c, Vs.load drift d, Vs.Aging	ppm	a, 0.50 b, 0.20 c, 0.20 d, 1.00
Operating Temperature Range	°C	-40 ~ 85
Supply voltage	V	1.8 / 2.5 / 3.0
Consumption current Clipped sine	mA	2.5 max
Output Load type Clipped sine		10k Ohm // 10pF
Output Voltage Leve	Vp-p	0.8
Phase noise 100Hz 1K Hz 10K Hz	dBc/Hz	-115 -135 -148
Pulling range(VC-TCXO)	ppm	+/-5min
Start time	mSEC	2
Standby function (tri-state)	Vdd	0.7

### Mechanical

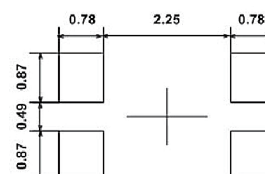
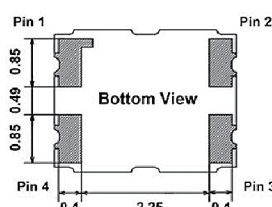
Front View

Side View



Bottom View

Pad Pattern



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# TCXO Temperature Compensated Crystal Oscillator 2520



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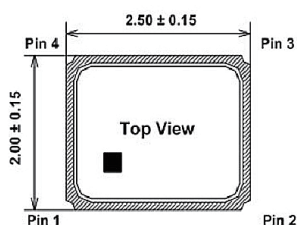


## Electrical Specification

Series	Unit	2520
Dimensions ( L x W x H )	mm	2.5 x 2.0 x 0.8
Center Frequency	MHz	13~ 52
Frequency Tolerance (at 25+/-3 deg.C)after 2 times reflow	ppm	+/-2 max.
Frequency Satibility a, Vs. temperature b, Vs.supply voltage drift c, Vs.load drift d, Vs.Aging	ppm	a, 0.50 b, 0.20 c, 0.20 d, 1.00
Operating Temperature Range	°C	-40 ~ 85
Supply voltage	V	1.8 / 2.5 / 3.0
Consumption current Clipped sine	mA	2.5 max
Output Load type Clipped sine		10k Ohm // 10pF
Output Voltage Leve	Vp-p	0.8
Phase noise 100Hz 1K Hz 10K Hz	dBc/Hz	-115 -135 -148
Pulling range (VC-TCXO)	ppm	+/-5min
Start time	mSEC	2
Standby function (tri-state)	Vdd	0.7

## Mechanical

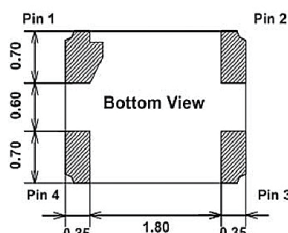
Front View



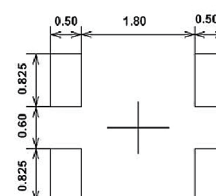
Side View



Bottom View



Pad Pattern



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# TCXO Temperature Compensated Crystal Oscillator 2016



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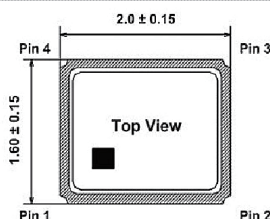


## Electrical Specification

Series	Unit	2016
Dimensions ( L x W x H )	mm	2.0 x 1.6 x 0.75
Center Frequency	MHz	26~ 52
Frequency Tolerance (at 25+/-3 deg.C)after 2 times reflow	ppm	+/-2 max.
Frequency Satibility a, Vs. temperature b, Vs.supply voltage drift c, Vs.load drift d, Vs.Aging	ppm	a, 0.50 b, 0.20 c, 0.20 d, 1.00
Operating Temperature Range	°C	-40 ~ 85
Supply voltage	V	1.8 / 2.5 / 3.0
Consumption current Clipped sine	mA	2.5 max
Output Load type Clipped sine		10k Ohm // 10pF
Output Voltage Leve	Vp-p	0.8
Phase noise 100Hz 1K Hz 10K Hz	dBc/Hz	-115 -135 -148
Pulling range(VC-TCXO)	ppm	+/-5min
Start time	mSEC	2
Standby function (tri-state)	Vdd	0.7

## Mechanical

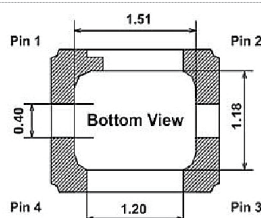
Front View



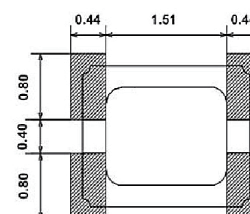
Side View



Bottom View



Pad Pattern



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# TCXO Temperature Compensated Crystal Oscillator

## 1612



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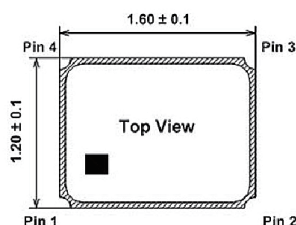


### Electrical Specification

Series	Unit	1612
Dimensions ( L x W x H )	mm	1.6 x 1.2 x 0.6
Center Frequency	MHz	26~ 52
Frequency Tolerance (at 25+/-3 deg.C) after 2 times reflow	ppm	+/-2 max.
Frequency Satibility a, Vs. temperature b, Vs. supply voltage drift c, Vs. load drift d, Vs. Aging	ppm	a, 0.50 b, 0.20 c, 0.20 d, 1.00
Operating Temperature Range	°C	-40 ~ 85
Supply voltage	V	1.8 / 2.5 / 3.0
Consumption current Clipped sine	mA	2.5 max
Output Load type Clipped sine		10k Ohm // 10pF
Output Voltage Leve	Vp-p	0.8
Phase noise 100Hz 1K Hz 10K Hz	dBc/Hz	-115 -135 -148
Pulling range(VC-TCXO)	ppm	+/-5min
Start time	mSEC	2
Standby function (tri-state)	Vdd	0.7

### Mechanical

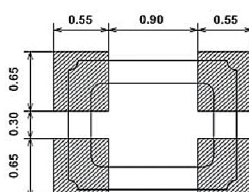
Front View



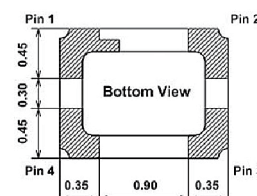
Side View



Bottom View



Pad Pattern



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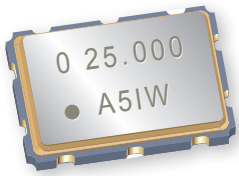
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# VCXO Voltage Controlled Crystal Oscillator-CMOS Output

## 7050



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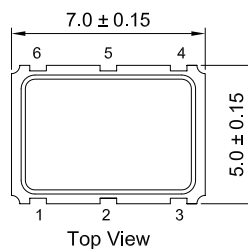


### Electrical Specification

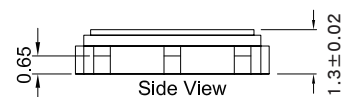
Series	7050	
Dimensions ( L x W x H )	mm	7.0 x 5.0 x 1.3
Center Frequency	MHz	10~ 200
Frequency Satibility	ppm	+/-25 Max
Operating Temperature Range	°C	-40 ~ 85
Supply voltage	V	3.3
Output Type		CMOS
Output Load	pF	15
Consumption current	mA	36 max
Linearity	%	10 max
Peroid Jitter (12KHz~20MHz)	pS	1.0 max
Pulling range	ppm	50 min
Start-up time	mSEC	10 max
Rise/Fall Time(10%VDD~90%VDD)	nS	5 max
Standby function (tri-state)		Yes

### Mechanical

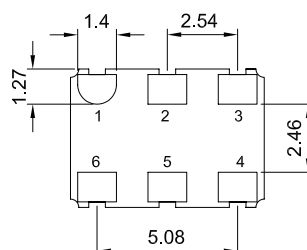
Front View



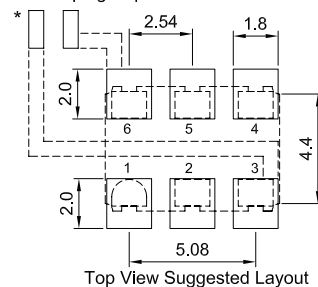
Side View



Bottom View



\* :External high frequency power supply decoupling required.



PAD FUNCTION:  
 1: CONTROL VOLTAGE  
 2: ENABLE CONTROL  
 3: GND  
 4: OUT  
 5: NC  
 6: VDD

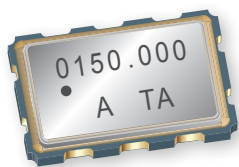
Units: mm

# VCXO Voltage Controlled Crystal Oscillator-CMOS Output

## 5032



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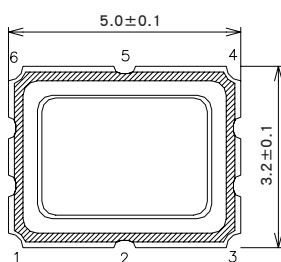


### Electrical Specification

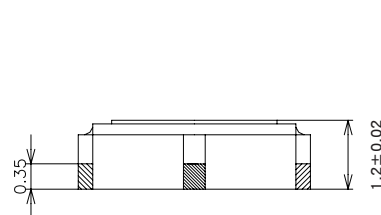
Series	5032	
Dimensions ( L x W x H )	mm	5.0 x 3.2 x 1.2
Center Frequency	MHz	50~ 200
Frequency Satibility	ppm	+/-25 Max
Operating Temperature Range	°C	-40 ~ 85
Supply voltage	V	3.3
Output Type		CMOS
Output Load	pF	15
Consumption current	mA	60 max
Linearity	%	10 max
Peroid Jitter (12KHz~20MHz)	pS	1.0 max
Pulling range	ppm	50 min
Start-up time	mSEC	10 max
Rise/Fall Time(10%VDD~90%VDD)	nS	5 max
Standby function (tri-state)		Yes

### Mechanical

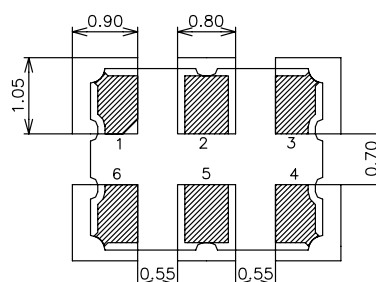
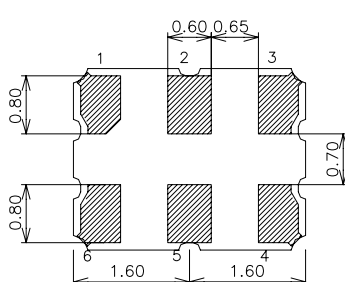
Front View



Side View



Bottom View

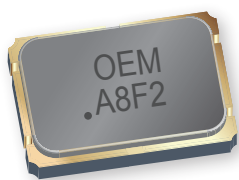


PAD FUNCTION:  
 1: CONTROL VOLTAGE  
 2: ENABLE CONTROL or NC  
 3: GND  
 4: OUT  
 5: NC  
 6: VDD  
 Units: mm

# VCXO Voltage Controlled Crystal Oscillator-CMOS Output 3225



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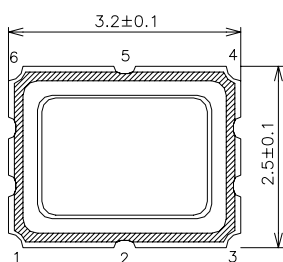


## Electrical Specification

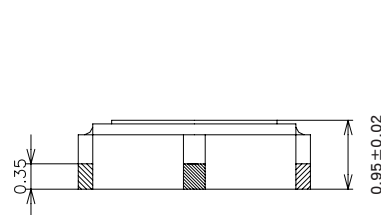
Series	3225	
Dimensions ( L x W x H )	mm	3.2 x 2.5 x 0.95
Center Frequency	MHz	50~ 200
Frequency Satibility	ppm	+/-25 Max
Operating Temperature Range	°C	-40 ~ 85
Supply voltage	V	3.3
Output Type		CMOS
Output Load	pF	15
Consumption current	mA	60 max
Linearity	%	10 max
Peroid Jitter (12KHz~20MHz)	pS	1.0 max
Pulling range	ppm	50 min
Start-up time	mSEC	10 max
Rise/Fall Time(10%VDD~90%VDD)	nS	5 max
Standby function (tri-state)		Yes

## Mechanical

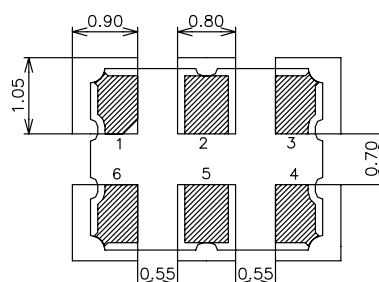
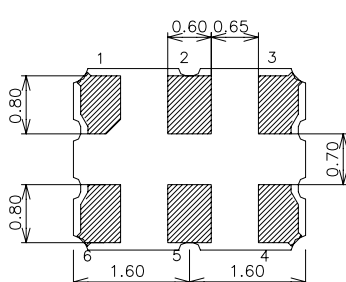
Front View



Side View



Bottom View



PAD FUNCTION:  
 1: CONTROL VOLTAGE  
 2: ENABLE CONTROL or NC  
 3: GND  
 4: OUT  
 5: NC  
 6: VDD  
 Units: mm

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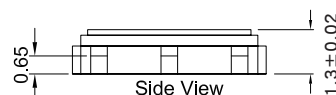
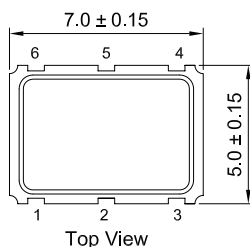
### Electrical Specification

Series	7050	
Dimensions ( L x W x H )	mm	7.0 x 5.0 x 1.8
Center Frequency	MHz	1~ 800
Frequency Satibility	ppm	+/-25 Max
Operating Temperature Range	°C	-40 ~ 85
Supply voltage	V	3.3
Output Type	LVPECL/LVDS	
Resistance Load (Termination connected to Vcc-2V)	ohm	
LVPECL		50
LVDS		100
Consumption current	mA	70 max
Linearity	%	10 max
Peroid Jitter (12KHz~20MHz)	pS	1.0 max
Pulling range	ppm	50 min
Start-up time	mSEC	10 max
Rise/Fall Time(10%VDD~90%VDD)	nS	1.0 max
Standby function (tri-state)	Yes	

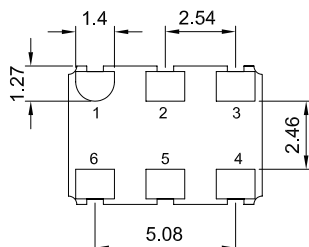
### Mechanical

Front View

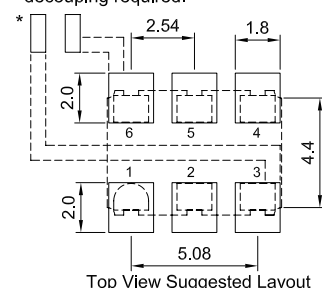
Side View



Bottom View



\* :External high frequency power supply decoupling required.



- PAD FUNCTION:
- 1: CONTROL VOLTAGE
  - 2: ENABLE CONTROL
  - 3: GND
  - 4: OUT
  - 5: NC
  - 6: VDD

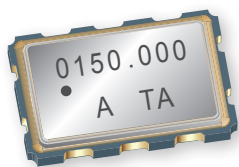
Units: mm



# VCXO Voltage Controlled Crystal Oscillator-Differential Output 5032



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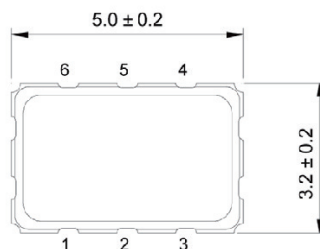


## Electrical Specification

Series		5032
Dimensions ( L x W x H )	mm	5.0 x 3.2 x 1.2
Center Frequency	MHz	50~ 200
Frequency Satibility	ppm	+/-25 Max
Operating Temperature Range	°C	-40 ~ 85
Supply voltage	V	3.3
Output Type		LVPECL/LVDS
Resistance Load (Termination connected to Vcc-2V)	ohm	
LVPECL		50
LVDS		100
Consumption current	mA	80 max
Linearity	%	10 max
Peroid Jitter (12KHz~20MHz)	pS	1.0 max
Pulling range	ppm	50 min
Start-up time	mSEC	10 max
Rise/Fall Time(10%VDD~90%VDD)	nS	1.0 max
Standby function (tri-state)		Yes

## Mechanical

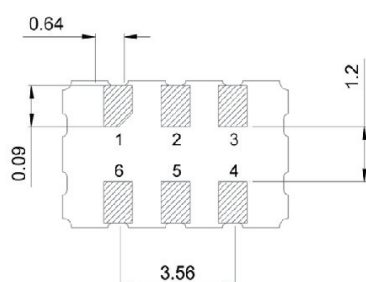
Front View



Side View

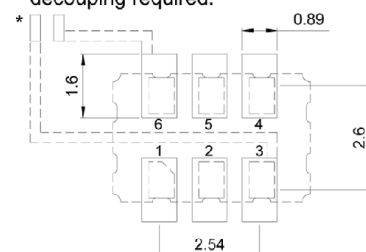


Bottom View



Pad Pattern

\*:External high frequency power supply decoupling required.



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