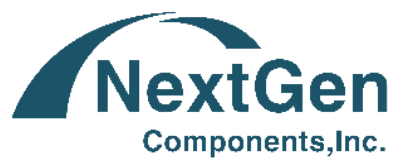


DATA SHEET 2022

-CRYSTALS OSCILLATORS



- **MHZ SMD OSCILLATOR**
- **MHZ THRU HOLE OSCILLATOR**
- **KHZ SMD OSCILLATOR**



MHZ SMD OSCILLATOR

MAIN FEATURE

- Wide Frequency range • 1.8V, 2.5V and 3.3Voption
- Industry standard option

RFQ

Request For Quotation

NEW

APPLICATION

- PDA, PND, DSC, Smart phone, WiLAN, Bluetooth and more



L1.6*W1.2*H0.70mm

STANDARD SPECIFICATION

Parameter	Value			Unit	Condition	
	Min.	Type	Max.			
Supply Voltage	-	3.3	-	V	or Specify 1.8V/2.5V	
Frequency Range	1		80	MHz	or Specify	
Overall Freq. Tolerance	-	±50		ppm	or Specify	
Operating Temp. Range	0	-	70	°C	see p/n guide or Specify	
Output	VOH	90%	-	V	@90% x VDD	
	VOL	-	-	10%	V	@10% x VDD
	Load	-	15	-	pF	see p/n guide or Specify
Enable/Disable Function	-	Tri-State	-		@ Control via pin 1 or see p/n guide	
Symmetry	40	-	60		see p/n guide or Specify	
Startup Time	-	-	10	ms		
Supply Current	-	-	2	mA	Subject to different frequency range	
Rise/ Fall time	-	-	10	ns		
Storage Temperature Range	-55	-	125	°C		
Aging per year	-	±5		ppm		

PART NUMBER GUIDE

Example: COM1131BDH03TLF-XX-24M000

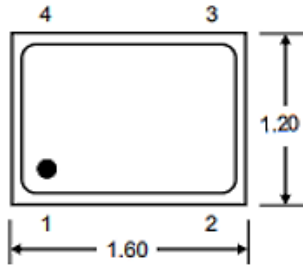
COM11	3	1	B	D	H	03	T	LF	XX	-24M000
1	2	3	4	5	6	7	8	9	10	11

- 1) CM11: MHz SMD Oscillator, 4 pads, L1.6*W1.2*H0.70mm
- 2) 3: Supply Voltage, 3: 3.3V; 2: 2.5V; 1: 1.8V
- 3) 1: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 4) B: Overall Frequency tolerance, A-+/-25ppm; B: +/-50ppm; C: +/-100ppm; J-+/-20ppm or Specify
- 5) D: Operating Temp. Range, D-0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 6) H: Symmetry H: 40/60; I: 45/55
- 7) 03: Output Load: 01: 1-10TTL//15pF; 03:HCMOS//15pF; 04: HCMOS//30pF; 05: HCMOS//50pF or Specify
- 8) T: Packed in Tape/Reel, 3000pcs/Reel
- 9) LF: RoHS Complaint
- 10) XX: Internal Control Code- 2 letter or digits ; Blank: N/A
- 11) 24M000: Frequency Range 24.000MHz or specify

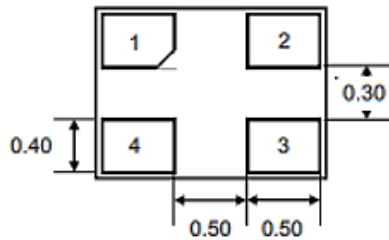
MHZ SMD OSCILLATOR

DIMENSION (Unit: mm)

Top View



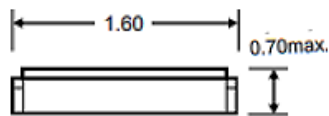
Bottom View



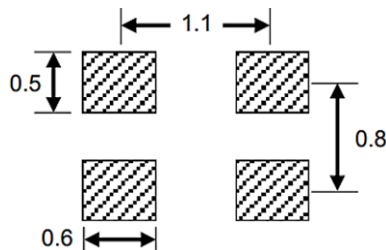
Pin Function

- #1 Enable (Tri-State)/ Disable
- #2 Ground
- #3 Output
- #4 VDD

Side View



Solder Pattern for reference



MHZ SMD OSCILLATOR

MAIN FEATURE

- Wide Frequency range • 1.8V, 2.5V and 3.3Voption
- Industry standard option

APPLICATION

- PDA, PND, DSC, Smart phone, WiLAN, Bluetooth and more

RFQ

Request For Quotation

NEW



L2.0*W1.6*H0.90mm

STANDARD SPECIFICATION

Parameter	Value			Unit	Condition	
	Min.	Type	Max.			
Supply Voltage	-	3.3	-	V	or Specify 1.8V/2.5V	
Frequency Range	1.00		80.00	MHz	or Specify	
Overall Freq. Tolerance	-	±50		ppm	or Specify	
Operating Temp. Range	0	-	70	°C	see p/n guide or Specify	
Output	VOH	90%	-	V	@90% x VDD	
	VOL	-	-	10%	V	@10% x VDD
	Load	-	15	-	pF	see p/n guide or Specify
Enable/Disable Function	-	Tri-State	-		@ Control via pin 1 or see p/n guide	
Symmetry	40	-	60		see p/n guide or Specify	
Startup Time	-	-	10	ms		
Supply Current	-	-	5	mA	Subject to different frequency range	
Rise/ Fall time	-	-	10	ns		
Storage Temperature Range	-55	-	125	°C		
Aging per year	-	±5		ppm		

PART NUMBER GUIDE

Example: COM2131BDH03TLF-24M000

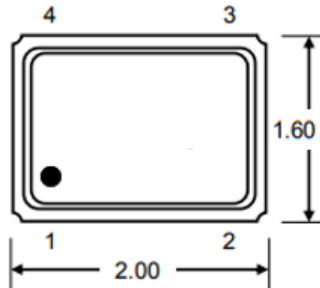
COM21	3	1	B	D	H	03	T	LF	XX	-24M000
1	2	3	4	5	6	7	8	9	10	11

- 1) CM21: MHz SMD Oscillator, 4 pads, L2.0*W1.6*H0.90mm
- 2) 3: Supply Voltage, 3: 3.3V; 2: 2.5V; 1: 1.8V
- 3) 1: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 4) B: Overall Frequency tolerance, A:+/-25ppm; B: +/-50ppm; C: +/-100ppm; J:+/-20ppm or Specify
- 5) D: Operating Temp. Range, D-0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 6) H: Symmetry H: 40/60; I: 45/55
- 7) 03: Output Load: 01: 1-10TTL//15pF; 03:HCMOS//15pF; 04: HCMOS//30pF; 05: HCMOS//50pF or Specify
- 8) T: Packed in Tape/Reel, 3000pcs/Reel
- 9) LF: RoHS Complaint
- 10) XX: Internal Control Code- 2 letter or digits ; Blank: N/A
- 11) 24M000: Frequency Range 24.000MHz or specify

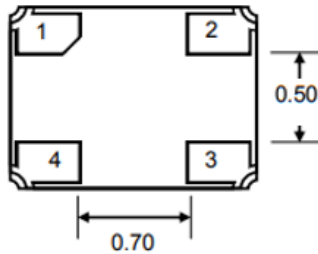
MHZ SMD OSCILLATOR

DIMENSION (Unit: mm)

Top View



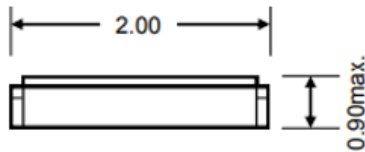
Bottom View



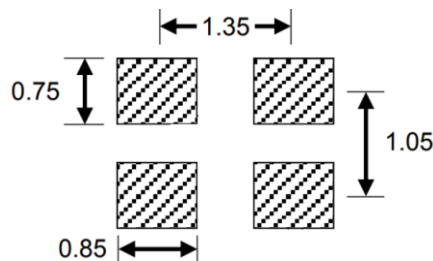
Pin Function

- #1 Enable (Tri-State)/ Disable
- #2 Ground
- #3 Output
- #4 VDD

Side View



Solder Pattern for reference



MHZ SMD OSCILLATOR

MAIN FEATURE

- Wide Frequency range • 1.8V, 2.5V and 3.3Voption
- Industry standard option

APPLICATION

- PDA, PND, DSC, Smart phone, WiLAN, Bluetooth and more

RFQ

Request For Quotation



L2.5*W2.0*H1.0mm

STANDARD SPECIFICATION

Parameter	Value			Unit	Condition	
	Min.	Type	Max.			
Supply Voltage	-	3.3	-	V	see p/n guide or Specify	
Frequency Range	1.00		150.00	MHz	see p/n guide or Specify	
Overall Freq. Tolerance	-	±50		ppm	see p/n guide or Specify	
Operating Temp. Range	0	-	70	°C	see p/n guide or Specify	
Output	VOH	90%	-	V	@90% x VDD	
	VOL	-	-	10%	V	@10% x VDD
	Load	-	15	-	pF	see p/n guide or Specify
Enable/Disable Function	-	Tri-State	-		@ Control via pin 1 or see p/n guide	
Symmetry	40	-	60		see p/n guide or Specify	
Startup Time	-	-	10	ms		
Supply Current	-	-	15	mA	Subject to different frequency range	
Rise/ Fall time	-	-	10	ns		
Storage Temperature Range	-55	-	125	°C		
Aging per year	-	±5		ppm		

PART NUMBER GUIDE

Example: COM2231BDH03TLF-24M000

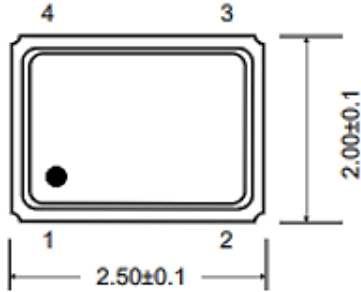
COM22	3	1	B	D	H	03	T	LF	XX	-24M000
1	2	3	4	5	6	7	8	9	10	11

- 1) CM22: MHz SMD Oscillator, 4 pads, L2.5*W2.0*H1.0mm
- 2) 3: Supply Voltage, 3: 3.3V; 2: 2.5V; 1: 1.8V
- 3) 1: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 4) B: Overall Frequency tolerance, A: +/-25ppm; B: +/-50ppm; C: +/-100ppm; J: +/-20ppm or Specify
- 5) D: Operating Temp. Range, D: 0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 6) H: Symmetry H: 40/60; I: 45/55
- 7) 03: Output Load: 01: 1-10TTL//15pF; 03: HCMOS//15pF; 04: HCMOS//30pF; 05: HCMOS//50pF or Specify
- 8) T: Packed in Tape/Reel, 3000pcs/Reel
- 9) LF: RoHS Compliant
- 10) XX: Internal Control Code- 2 letter or digits ; Blank: N/A
- 11) 24M000: Frequency Range 24.000MHz or specify

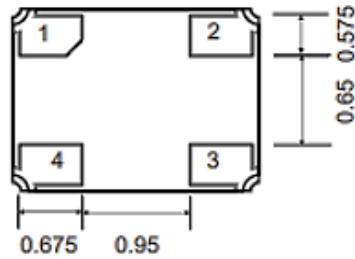
MHZ SMD OSCILLATOR

DIMENSION (Unit: mm)

Top View



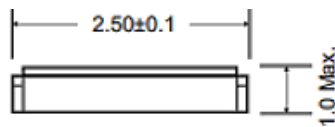
Bottom View



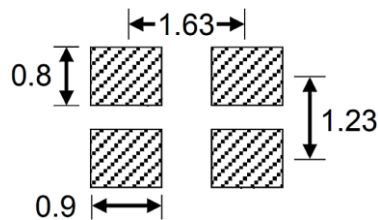
Pin Function

- #1 Enable (Tri-State)/ Disable
- #2 Ground
- #3 Output
- #4 VDD

Side View



Solder Pattern for reference



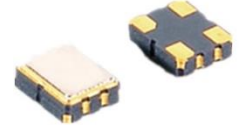
MHZ SMD OSCILLATOR

MAIN FEATURE

- Wide Frequency range • 1.8V, 2.5V and 3.3Voption
- Industry standard option

RFQ

Request For Quotation



L3.2*W2.5*H1.2mm

APPLICATION

- PDA, PND, DSC, Smart phone, WiLAN, Bluetooth and more

STANDARD SPECIFICATION

Parameter	Value			Unit	Condition	
	Min.	Type	Max.			
Supply Voltage	-	3.3	-	V	see p/n guide or Specify	
Frequency Range	1.00		150.00	MHz	see p/n guide or Specify	
Overall Freq. Tolerance	-	±50		ppm	see p/n guide or Specify	
Operating Temp. Range	0	-	70	°C	see p/n guide or Specify	
Output	VOH	90%	-	-	V	@90% x VDD
	VOL	-	-	10%	V	@10% x VDD
	Load	-	15	-	pF	see p/n guide or Specify
Enable/Disable Function:	-	Tri-State	-		@ Control via pin 1 or see p/n guide	
Symmetry	40	-	60		see p/n guide or Specify	
Startup Time	-	-	10	ms		
Supply Current	-	-	15	mA	Subject to different frequency range	
Rise/ Fall time	-	-	10	ns		
Storage Temperature Range	-55	-	125	°C		
Aging per year	-	±5		ppm		

PART NUMBER GUIDE

Example: COM3231BDH03TLF-24M000

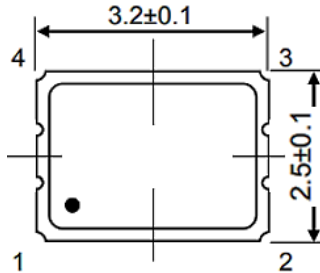
COM32	3	1	B	D	H	03	T	LF	XX	-24M000
1	2	3	4	5	6	7	8	9	10	11

- 1) CM32: MHz SMD Oscillator, 4 pads, L3.2*W2.5*H1.2mm
- 2) 3: Supply Voltage, 3: 3.3V; 2: 2.5V; 1: 1.8V
- 3) 1: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 4) B: Overall Frequency tolerance, A-+/-25ppm; B: +/-50ppm; C: +/-100ppm; J-+/-20ppm or Specify
- 5) D: Operating Temp. Range, D-0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 6) H: Symmetry H: 40/60; I: 45/55
- 7) 03: Output Load: 01: 1-10TTL//15pF; 03:HCMOS//15pF; 04: HCMOS//30pF; 05: HCMOS//50pF or Specify
- 8) T: Packed in Tape/Reel, 3000pcs/Reel
- 9) LF: RoHS Complaint
- 10) XX: Internal Control Code- 2 letter or digits ; Blank: N/A
- 11) 24M000: Frequency Range 24.000MHz or specify

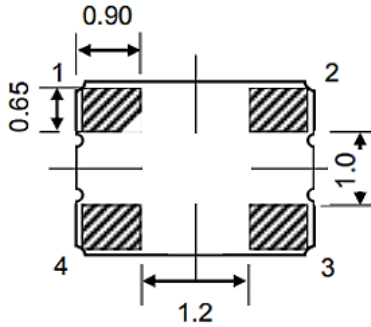
MHZ SMD OSCILLATOR

DIMENSION (Unit: mm)

Top View



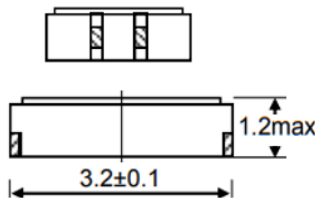
Bottom View



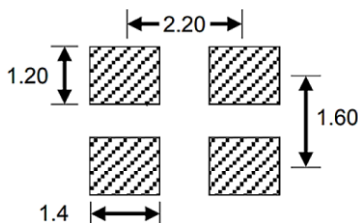
Pin Function

- #1 Enable (Tri-State)/ Disable
- #2 Ground
- #3 Output
- #4 VDD

Side View



Solder Pattern for reference



MHZ SMD OSCILLATOR

MAIN FEATURE

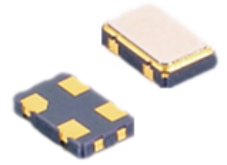
- Wide Frequency range • 1.8V, 2.5V, 3.3V, 5.0V option

APPLICATION

- PDA, PND, DSC, Smart phone, WiLAN, Bluetooth and more

RFQ

Request For Quotation



L5.0*W3.2*H1.3mm

STANDARD SPECIFICATION

Parameter	Value			Unit	Condition	
	Min.	Type	Max.			
Supply Voltage	-	3.3	-	V	see p/n guide or Specify	
Frequency Range	1.00		125.00	MHz	see p/n guide or Specify	
Overall Freq. Tolerance	-	±50		ppm	see p/n guide or Specify	
Operating Temp. Range	0	-	70	°C	see p/n guide or Specify	
Output	VOH	90%	-	V	@90% x VDD	
	VOL	-	-	10%	V	@10% x VDD
	Load	-	15	-	pF	see p/n guide or Specify
Enable/Disable Function:	-	Tri-State	-		@ Control via pin 1 or see p/n guide	
Symmetry	40	-	60		see p/n guide or Specify	
Startup Time	-	-	10	ms		
Supply Current	-	-	15	mA	Subject to different frequency range	
Rise/ Fall time	-	-	10	ns		
Storage Temperature Range	-55	-	125	°C		
Aging per year	-	±5		ppm		

PART NUMBER GUIDE

Example: COM53 31BGH03 TLF-24M000

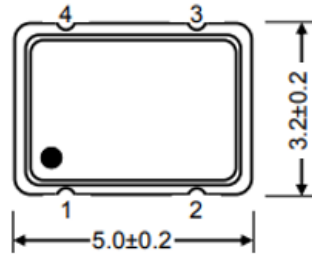
COM53	3	1	B	G	H	03	T	LF	XX	- 24M000
1	2	3	4	5	6	7	8	9	10	11

- 1) COM53: KHz SMD Oscillator, 4 pads, L5.0*W3.2*H1.3mm
- 2) 3: Supply Voltage, 5: 5.0V; 3: 3.3V; 2: 2.5V; 1: 1.8V
- 3) 1: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 4) B: Overall Frequency tolerance, A:+/-25ppm; B: +/-50ppm; C: +/-100ppm; J:+/-20ppm or Specify
- 5) G: Operating Temp. Range, D:0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 6) H: Symmetry H: 40/60; I: 45/55
- 7) 03: Output Load: 01: 1-10TTL//15pF; 03:HCMOS//15pF; 04: HCMOS//30pF; 05: HCMOS//50pF or Specify
- 8) T: Packed in Tape/Reel, 1000pcs/Reel
- 9) LF: RoHS Compliant
- 10) XX: Intenal Control Code, 2 letter or digits; Blank: N/A
- 11) 24M000: Frequency Range 24.000MHz or specify

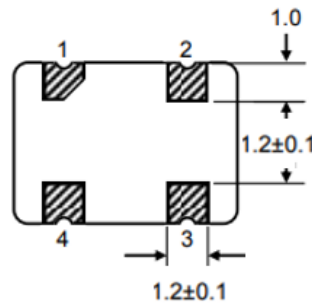
MHZ SMD OSCILLATOR

DIMENSION (Unit: mm)

Top View



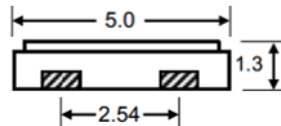
Bottom View



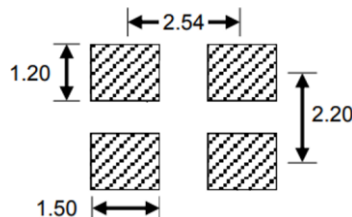
Pin Function

- #1 Enable(Tri-State)/Disable
- #2 Ground
- #3 Output
- #4 VDD

Side View



Solder Pattern for reference



MHZ SMD OSCILLATOR

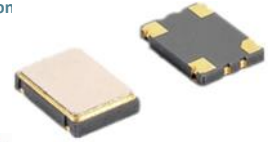
MAIN FEATURE

- Wide Frequency range • 1.8V, 2.5V, 3.3V, 5.0V option

APPLICATION

- PDA, PND, DSC, Smart phone, WiLAN, Bluetooth and more

RFQ
Request For Quotation



L7.0*W5.0*H1.5mm

STANDARD SPECIFICATION

Parameter	Value			Unit	Condition	
	Min.	Type	Max.			
Supply Voltage	-	3.3	-	V	see p/n guide or Specify	
Frequency Range	1.54		125.00	MHz	see p/n guide or Specify	
Overall Freq. Tolerance	-	±50		ppm	see p/n guide or Specify	
Operating Temp. Range	0	-	70	°C	see p/n guide or Specify	
Output	VOH	90%	-	-	V	@90% x VDD
	VOL	-	-	10%	V	@10% x VDD
	Load	-	15	-	pF	see p/n guide or Specify
Enable/Disable Function:	-	Tri-State	-		@ Control via pin 1 or see p/n guide	
Symmetry	40	-	60		see p/n guide or Specify	
Startup Time	-	-	10	ms		
Supply Current	-	-	80	mA	Subject to different frequency range	
Rise/ Fall time	-	-	10	ns		
Storage Temperature Range	-55	-	+125	°C		
Aging per year	-	±5		ppm		

PART NUMBER GUIDE

Example: COM75 31BGH03 TLF-24M000

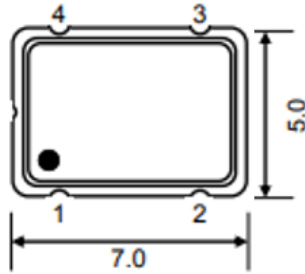
COM75	3	1	B	G	H	03	T	LF	XX	-24M000
1	2	3	4	5	6	7	8	9	10	11

- 1) COM75: MHz SMD Oscillator, 4 pads L7.0*W5.0*H1.5mm
- 2) 3: Supply Voltage, 5: 5.0V; 3: 3.3V; 2: 2.5V; 1: 1.8V
- 3) 1: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 4) B: Overall Frequency tolerance, A+/-25ppm; B: +/-50ppm; C: +/-100ppm; J+/-20ppm or Specify
- 5) G: Operating Temp. Range, D-0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 6) H: Symmetry H: 40/60; I: 45/55
- 7) 03: Output Load: 01: 1-10TTL//15pF; 03:HCMOS//15pF; 04: HCMOS//30pF; 05: HCMOS//50pF or Specify
- 8) T: Packed in Tape/Reel, 1000pcs/Reel
- 9) LF: RoHS Compliant
- 10) XX: Intenal Control Code, 2 letter or digits; Blank: N/A
- 11) 24M000: Frequency Range 24.000MHz or specify

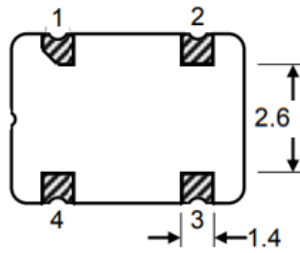
MHZ SMD OSCILLATOR

DIMENSION (Unit: mm)

Top View



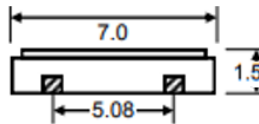
Bottom View



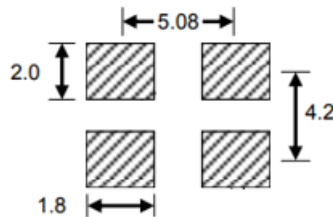
Pin Function

- #1 Enable(Tri-State)/Disable
- #2 Ground
- #3 Output
- #4 VDD

Side View



Solder Pattern for reference



MHZ THRU-HOLE OSCILLATOR

MAIN FEATURE

- Wide Frequency range • 1.8V, 2.5V, 3.3V, 5.0V option

APPLICATION

- IT Applications and more • Telecommunications

RFQ

Request For Quotation



L20.8*W13.2*H5.08m

STANDARD SPECIFICATION

Parameter	Value			Unit	Condition	
	Min.	Type	Max.			
Supply Voltage	-	5.0	-	V	see p/n guide or Specify	
Frequency Range	0.5		155.00	MHz	see p/n guide or Specify	
Overall Freq. Tolerance	-	±50		ppm	see p/n guide or Specify	
Operating Temp. Range	-40	-	+85	°C	see p/n guide or Specify	
Output	VOH	90%	-	V	@90% x VDD	
	VOL	-	-	10%	V	@10% x VDD
	Load	-	15	-	pF	see p/n guide or Specify
Enable/Disable Function:	-	Tri-State	-		@ Control via pin 1 or see p/n guide	
Symmetry	45	-	55		see p/n guide or Specify	
Startup Time	-	-	10	ms		
Supply Current	-	-	35	mA	Subject to different frequency range	
Rise/ Fall time	-	-	10	ns		
Storage Temperature Range	-55	-	+125	°C		
Aging per year	-	±5		ppm		

PART NUMBER GUIDE

Example: CO1451BGH05 BLF-48M000

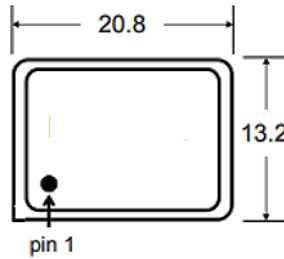
CO14	5	1	B	G	H	05	B	LF	XX	- 48M000
1	2	3	4	5	6	7	8	9	10	11

- 1) CO14: MHz Thru Hole Oscillator, Full size, L20.8*W13.2*H5.08mm
- 2) 5: Supply Voltage, 5: 5.0V; 3: 3.3V; 2: 2.5V; 1: 1.8V
- 3) 1: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 4) B: Overall Frequency tolerance, A:+/-25ppm; B: +/-50ppm; C: +/-100ppm; J:+/-20ppm or Specify
- 5) G: Operating Temp. Range, D:0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 6) H: Symmetry H: 40/60; I: 45/55
- 7) 05: Output Load: 01: 1-10TTL//15pF; 03:HCMOS//15pF; 04: HCMOS//30pF; 05: HCMOS//50pF or Specify
- 8) B: Package in Bulk, 25pcs/Plastic Tube
- 9) LF: RoHS Compliant
- 10) XX: Intenal Control Code, 2 letter or digits; Blank: N/A
- 11) 48M000: Frequency Range 48.000MHz or specify

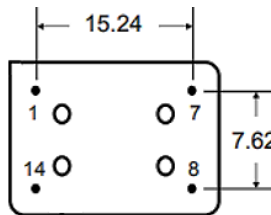
MHZ THRU- HOLE OSCILLATOR

DIMENSION (Unit: mm)

Top View



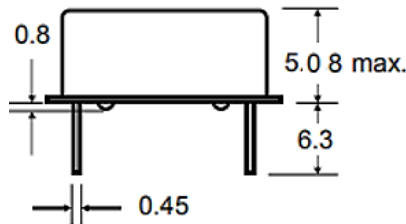
Bottom View



Pin Function

- #1 Enable(Tri-State) /Disable
- #7 Ground
- #8 Output
- #14 VDC

Side View



MHZ THRU-HOLE OSCILLATOR

MAIN FEATURE

- Wide Frequency range • 1.8V, 2.5V, 3.3V, 5.0V option

APPLICATION

- IT Applications and more • Telecommunications

RFQ

Request For Quotation



L13.2*W13.2*H5.08m

STANDARD SPECIFICATION

Parameter	Value			Unit	Condition	
	Min.	Type	Max.			
Supply Voltage	-	5.0	-	V	see p/n guide or Specify	
Frequency Range	0.5		155.00	MHz	see p/n guide or Specify	
Overall Freq. Tolerance	-	±50		ppm	see p/n guide or Specify	
Operating Temp. Range	-40	-	+85	°C	see p/n guide or Specify	
Output	VOH	90%	-	V	@90% x VDD	
	VOL	-	-	10%	V	@10% x VDD
	Load	-	15	-	pF	see p/n guide or Specify
Enable/Disable Function:	-	Tri-State	-		@ Control via pin 1 or see p/n guide	
Symmetry	45	-	55		see p/n guide or Specify	
Startup Time	-	-	10	ms		
Supply Current	-	-	35	mA	Subject to different frequency range	
Rise/ Fall time	-	-	10	ns		
Storage Temperature Range	-55	-	+125	°C		
Aging per year	-	±5		ppm		

PART NUMBER GUIDE

Example: CO851BGH05 BLF-48M000

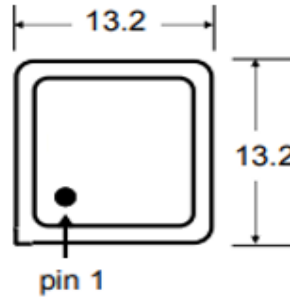
CO8	5	1	B	G	H	05	B	LF	XX	- 48M000
1	2	3	4	5	6	7	8	9	10	11

- 1) CO8: MHz Thru Hole Oscillator, Full size, L13.2*W13.2*H5.08mm
- 2) 5: Supply Voltage, 5: 5.0V; 3: 3.3V; 2: 2.5V; 1: 1.8V
- 3) 1: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 4) B: Overall Frequency tolerance, A: +/-25ppm; B: +/-50ppm; C: +/-100ppm; J: +/-20ppm or Specify
- 5) G: Operating Temp. Range, D: 0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 6) H: Symmetry H: 40/60; I: 45/55
- 7) 05: Output Load: 01: 1-10TTL//15pF; 03: HCMOS//15pF; 04: HCMOS//30pF; 05: HCMOS//50pF or Specify
- 8) B: Package in Bulk, 40pcs/Plastic Tube
- 9) LF: RoHS Compliant
- 10) XX: Intenal Control Code, 2 letter or digits; Blank: N/A
- 11) 48M000: Frequency Range 48.000MHz or specify

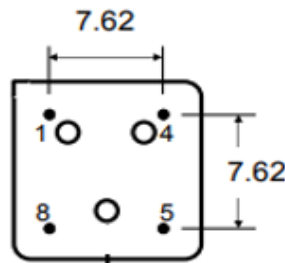
MHZ THRU-HOLE OSCILLATOR

DIMENSION (Unit: mm)

Top View



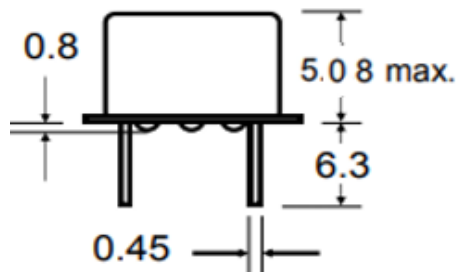
Bottom View



Pin Function

- #1 Enable(Tri-State)/Disable
- #4 Ground
- #5 Output
- #8 VDC

Side View



KHZ SMD OSCILLATOR

MAIN FEATURE

- 32.768KHz standard Frequency range • 1.8V, 2.5V, 3.3V, 5.0V option

RFQ

Request For Quotation



APPLICATION

- PDA, PND, DSC, Smart phone, WiLAN, Bluetooth and more



L2.0*W1.6*H0.80mm

STANDARD SPECIFICATION

Parameter	Value			Unit	Condition	
	Min.	Type	Max.			
Supply Voltage	-	3.3	-	V	see p/n guide or Specify	
Frequency Range	-	32.768	-	KHz		
Overall Freq. Tolerance	-	±50		ppm	see p/n guide or Specify	
Operating Temp. Range	-0	-	+70	°C	see p/n guide or Specify	
Output (HCMOS)	VOH	90%	-	-	V	@90% x VDD
	VOL	-	-	10%	V	@10% x VDD
	Load	-	15	-	pF	see p/n guide or Specify
Enable/Disable Function:	-	Tri-State	-		@ Control via pin 1 or see p/n guide	
Symmetry	40	-	60		see p/n guide or Specify	
Startup Time	-	-	10	ms		
Supply Current	-	-	240	µA		
Rise/ Fall time	-	-	200	ns		
Storage Temperature Range	-55	-	+125	°C		
Aging per year	-	±5		ppm		

PART NUMBER GUIDE

Example: COK21 31BGH03 TLF-32K768

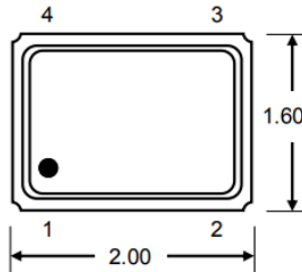
COK21	3	1	B	G	H	03	T	LF	XX	-32K768
1	2	3	4	5	6	7	8	9	10	11

- 1) COK21: KHz SMD Oscillator, 4 pads, L2.0*W1.6*H0.80mm
- 2) 3: Supply Voltage, 5: 5.0V; 3: 3.3V; 2: 2.5V; 1: 1.8V
- 3) 1: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 4) B: Overall Frequency tolerance, A+/-25ppm; B: +/-50ppm; C: +/-100ppm; J+/-20ppm or Specify
- 5) G: Operating Temp. Range, D-0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 6) H: Symmetry H: 40/60; I: 45/55
- 7) 03: Output Load: 01: 1-10TTL//15pF; 03: HCMOS//15pF; 04: HCMOS//30pF; 05: HCMOS//50pF or Specify
- 8) T: Packed in Tape/Reel, 3000pcs/Reel
- 9) LF: RoHS Compliant
- 10) XX: Intenal Control Code, 2 letter or digits; Blank: N/A
- 11) 32K768: Frequency Range 32.768KHz or specify

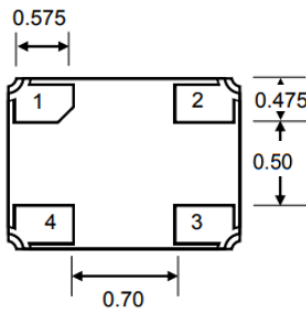
KHZ SMD OSCILLATOR

DIMENSION (Unit: mm)

Top View



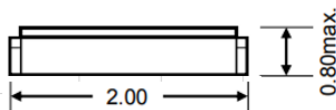
Bottom View



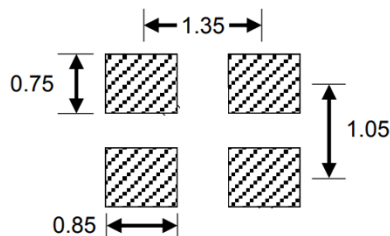
Pin Function

- #1 Enable(Tri-State)/Disable
- #2 Ground
- #3 Output
- #4 VDD

Side View



Solder Pattern for reference



KHZ SMD OSCILLATOR

MAIN FEATURE

- 32.768KHz standard Frequency range • 1.8V, 2.5V, 3.3V, 5.0V option

RFQ

Request For Quotation

APPLICATION

- PDA, PND, DSC, Smart phone, WiLAN, Bluetooth and more



L2.5*W2.0*H1.0mm

STANDARD SPECIFICATION

Parameter	Value			Unit	Condition	
	Min.	Type	Max.			
Supply Voltage	-	3.3	-	V	see p/n guide or Specify	
Frequency Range	-	32.768	-	KHz		
Overall Freq. Tolerance	-	±50		ppm	see p/n guide or Specify	
Operating Temp. Range	-0	-	+70	°C	see p/n guide or Specify	
Output (HCMOS)	VOH	90%	-	V	@90% x VDD	
	VOL	-	-	10%	V	@10% x VDD
	Load	-	15	-	pF	see p/n guide or Specify
Enable/Disable Function:	-	Tri-State	-		@ Control via pin 1 or see p/n guide	
Symmetry	40	-	60		see p/n guide or Specify	
Startup Time	-	-	10	ms		
Supply Current	-	-	240	µA		
Rise/ Fall time	-	-	200	ns		
Storage Temperature Range	-55	-	+125	°C		
Aging per year	-	±5		ppm		

PART NUMBER GUIDE

Example: COK22 31BGH03 TLF-32K768

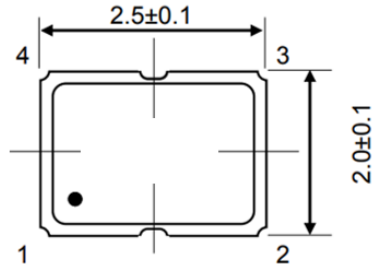
COK22	3	1	B	G	H	03	T	LF	XX	-32K768
1	2	3	4	5	6	7	8	9	10	11

- 1) COK22: KHz SMD Oscillator, 4 pads, L2.5*W2.0*H1.0mm
- 2) 3: Supply Voltage, 5: 5.0V; 3: 3.3V; 2: 2.5V; 1: 1.8V
- 3) 1: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 4) B: Overall Frequency tolerance, A:+/-25ppm; B: +/-50ppm; C: +/-100ppm; J:+/-20ppm or Specify
- 5) G: Operating Temp. Range, D:0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 6) H: Symmetry H: 40/60; I: 45/55
- 7) 03: Output Load: 01: 1-10TTL//15pF; 03: HCMOS//15pF; 04: HCMOS//30pF; 05: HCMOS//50pF or Specify
- 8) T: Packed in Tape/Reel, 3000pcs/Reel
- 9) LF: RoHS Compliant
- 10) XX: Intenal Control Code, 2 letter or digits; Blank: N/A
- 11) 32K768: Frequency Range 32.768KHz or specify

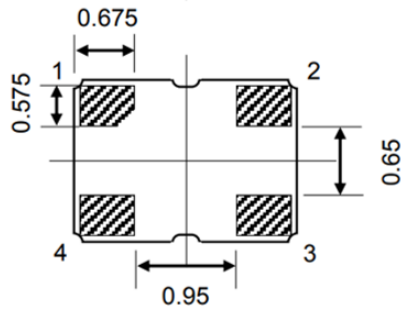
KHZ SMD OSCILLATOR

DIMENSION (Unit: mm)

Top View



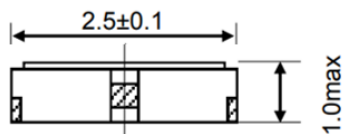
Bottom View



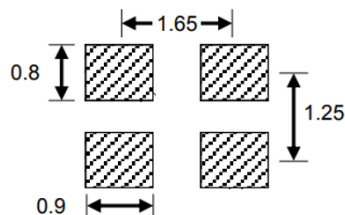
Pin Function

- #1 Enable(Tri-State)/Disable
- #2 Ground
- #3 Output
- #4 VDD

Side View



Solder Pattern for reference



KHZ SMD OSCILLATOR

MAIN FEATURE

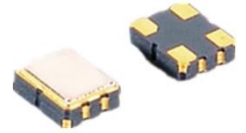
- 32.768KHz standard Frequency range • 1.8V, 2.5V, 3.3V, 5.0V option

RFQ

Request For Quotation

APPLICATION

- PDA, PND, DSC, Smart phone, WiLAN, Bluetooth and more



L3.2*W2.5*H1.0mm

STANDARD SPECIFICATION

Parameter	Value			Unit	Condition	
	Min.	Type	Max.			
Supply Voltage	-	3.3	-	V	see p/n guide or Specify	
Frequency Range	-	32.768	-	KHz		
Overall Freq. Tolerance	-	±50		ppm	see p/n guide or Specify	
Operating Temp. Range	-0	-	+70	°C	see p/n guide or Specify	
Output (HCMOS)	VOH	90%	-	-	V	@90% x VDD
	VOL	-	-	10%	V	@10% x VDD
	Load	-	15	-	pF	see p/n guide or Specify
Enable/Disable Function:	-	Tri-State	-		@ Control via pin 1 or see p/n guide	
Symmetry	40	-	60		see p/n guide or Specify	
Startup Time	-	-	10	ms		
Supply Current	-	-	240	µA		
Rise/ Fall time	-	-	200	ns		
Storage Temperature Range	-55	-	+125	°C		
Aging per year	-	±5		ppm		

PART NUMBER GUIDE

Example: COK32 31BGH03 TLF-32K768

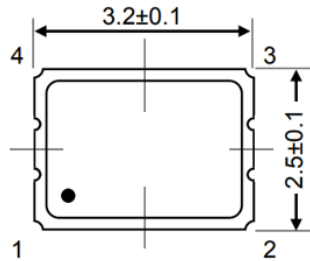
COK32	3	1	B	D	H	03	T	LF	XX	-32K768
1	2	3	4	5	6	7	8	9	10	11

- 1) COK32: KHz SMD Oscillator, 4 pads, L3.2*W2.5*H1.0mm
- 2) 3: Supply Voltage, 5: 5.0V; 3: 3.3V; 2: 2.5V; 1: 1.8V
- 3) 1: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 4) B: Overall Frequency tolerance, A+/-25ppm; B: +/-50ppm; C: +/-100ppm; J+/-20ppm or Specify
- 5) G: Operating Temp. Range, D-0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 6) H: Symmetry H: 40/60; I: 45/55
- 7) 03: Output Load: 01: 1-10TTL//15pF; 03: HCMOS//15pF; 04: HCMOS//30pF; 05: HCMOS//50pF or Specify
- 8) T: Packed in Tape/Reel, 3000pcs/Reel
- 9) LF: RoHS Compliant
- 10) XX: Intenal Control Code, 2 letter or digits; Blank: N/A
- 11) 32K768: Frequency Range 32.768KHz or specify

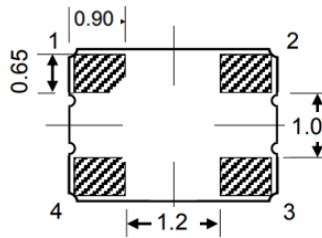
KHZ SMD OSCILLATOR

DIMENSION (Unit: mm)

Top View



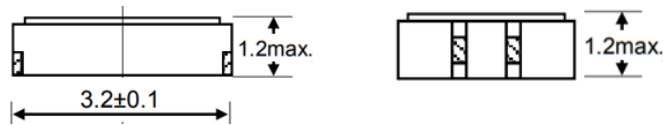
Bottom View



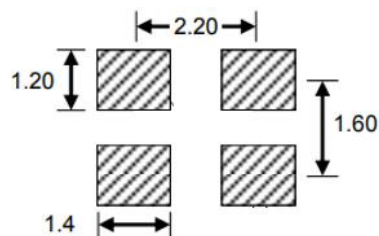
Pin Function

- #1 Enable(Tri-State)/Disable
- #2 Ground
- #3 Output
- #4 VDD

Side View



Solder Pattern
for reference



KHZ SMD OSCILLATOR

MAIN FEATURE

- 32.768KHz standard Frequency range • 1.8V, 2.5V, 3.3V, 5.0V option

RFQ

Request For Quotation



APPLICATION

- PDA, PND, DSC, Smart phone, WiLAN, Bluetooth and more



L5.0*W3.2*H1.2mm

STANDARD SPECIFICATION

Parameter	Value			Unit	Condition	
	Min.	Type	Max.			
Supply Voltage	-	3.3	-	V	see p/n guide or Specify	
Frequency Range	25.00	32.768	100.00	KHz	see p/n guide or Specify	
Overall Freq. Tolerance	-	±50		ppm	see p/n guide or Specify	
Operating Temp. Range	0	-	+70	°C	see p/n guide or Specify	
Output (HCMOS)	VOH	90%	-	V	@90% x VDD	
	VOL	-	-	10%	V	@10% x VDD
	Load	-	15	-	pF	see p/n guide or Specify
Enable/Disable Function:	-	Tri-State	-		@ Control via pin 1 or see p/n guide	
Symmetry	40	-	60		see p/n guide or Specify	
Startup Time	-	-	10	ms		
Supply Current	-	-	15	mA		
Rise/ Fall time	-	-	10	ns		
Storage Temperature Range	-55	-	+125	°C		
Aging per year	-	±5		ppm		

PART NUMBER GUIDE

Example: COK53 31BGH03 TLF-32K768

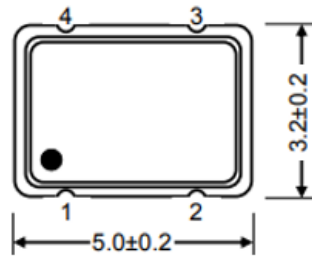
COK53	3	1	B	G	H	03	T	LF	XX	-32K768
1	2	3	4	5	6	7	8	9	10	11

- 1) COK53: KHz SMD Oscillator, 4 pads, L5.0*W3.2*H1.2mm
- 2) 3: Supply Voltage, 5: 5.0V; 3: 3.3V; 2: 2.5V; 1: 1.8V
- 3) 1: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 4) B: Overall Frequency tolerance, A+/-25ppm; B: +/-50ppm; C: +/-100ppm; J+/-20ppm or Specify
- 5) G: Operating Temp. Range, D-0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 6) H: Symmetry H: 40/60; I: 45/55
- 7) 03: Output Load: 01: 1-10TTL//15pF; 03: HCMOS//15pF; 04: HCMOS//30pF; 05: HCMOS//50pF or Specify
- 8) T: Packed in Tape/Reel, 1000pcs/Reel
- 9) LF: RoHS Compliant
- 10) XX: Internal Control Code, 2 letter or digits; Blank: N/A
- 11) 32K768: Frequency Range 32.768KHz or specify

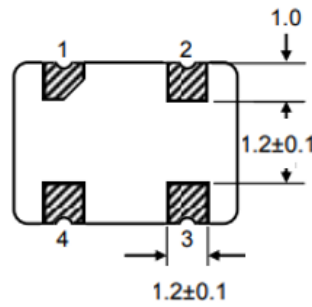
KHZ SMD OSCILLATOR

DIMENSION (Unit: mm)

Top View



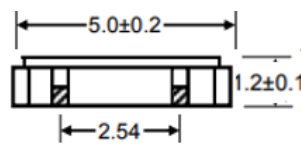
Bottom View



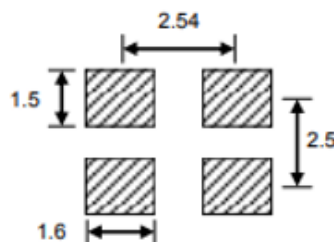
Pin Function

- #1 Enable(Tri-State)/Disable
- #2 Ground
- #3 Output
- #4 VDD

Side View



Solder Pattern for reference



KHZ SMD OSCILLATOR

MAIN FEATURE

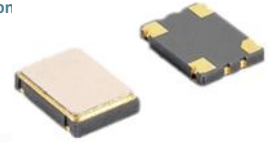
- 32.768KHz standard Frequency range • 1.8V, 2.5V, 3.3V, 5.0V option

APPLICATION

- PDA, PND, DSC, Smart phone, WiLAN, Bluetooth and more

RFQ

Request For Quotation



L7.0*W5.0*H1.7mm

STANDARD SPECIFICATION

Parameter	Value			Unit	Condition	
	Min.	Type	Max.			
Supply Voltage	-	3.3	-	V	see p/n guide or Specify	
Frequency Range	25.00	32.768	1000.0	KHz	see p/n guide or Specify	
Overall Freq. Tolerance	-	±50		ppm	see p/n guide or Specify	
Operating Temp. Range	0	-	+70	°C	see p/n guide or Specify	
Output (HCMOS)	VOH	90%	-	V	@90% x VDD	
	VOL	-	-	10%	V	@10% x VDD
	Load	-	15	-	pF	see p/n guide or Specify
Enable/Disable Function:	-	Tri-State	-		@ Control via pin 1 or see p/n guide	
Symmetry	40	-	60		see p/n guide or Specify	
Startup Time	-	-	10	ms		
Supply Current	-	-	15	mA		
Rise/ Fall time	-	-	10	ns		
Storage Temperature Range	-55	-	+125	°C		
Aging per year	-	±5		ppm		

PART NUMBER GUIDE

Example: COK75 31BGH03 TLF-32K768

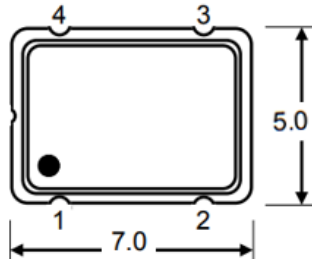
COK75	3	1	B	G	H	03	T	LF	XX	- 32K768
1	2	3	4	5	6	7	8	9	10	11

- 1) COK75: KHz SMD Oscillator, 4 pads L7.0*W5.0*H1.7mm
- 2) 3: Supply Voltage, 5: 5.0V; 3: 3.3V; 2: 2.5V; 1: 1.8V
- 3) 1: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 4) B: Overall Frequency tolerance, A-+/-25ppm; B: +/-50ppm; C: +/-100ppm; J-+/-20ppm or Specify
- 5) G: Operating Temp. Range, D-0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 6) H: Symmetry H: 40/60; I: 45/55
- 7) 03: Output Load: 01: 1-10TTL//15pF; 03: HCMOS//15pF; 04: HCMOS//30pF; 05: HCMOS//50pF or Specify
- 8) T: Packed in Tape/Reel, 1000pcs/Reel
- 9) LF: RoHS Compliant
- 10) XX: Intenal Control Code, 2 letter or digits; Blank: N/A
- 11) 32K768: Frequency Range 32.768KHz or specify

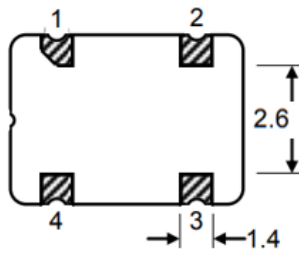
KHZ SMD OSCILLATOR

DIMENSION (Unit: mm)

Top View



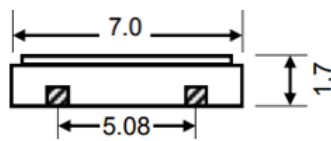
Bottom View



Pin Function

- #1 Enable(Tri-State)/Disable
- #2 Ground
- #3 Output
- #4 VDD

Side View



Solder Pattern for reference

