



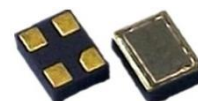
- *MHz SMD Oscillators*
- *MHz Thru Hole Oscillators*
- *KHz SMD Oscillators*
- *MHz Thru Hole OCXO*
- *MHz SMD VCXO*
- *MHz SMD TCXO*

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

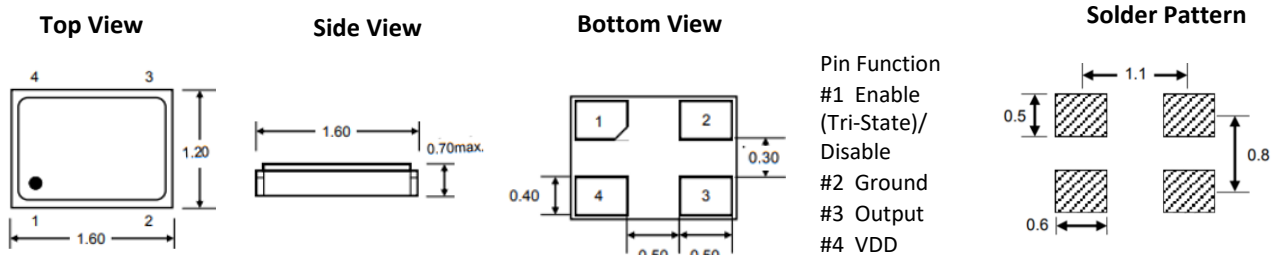


L1.6*W1.2*H0.70mm

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	

DIMENSION (+/-0.1mm)



PART NUMBER GUIDE

Example: TGS COM1131BDH03TLF-24M000

[Part Number and Part Code Structure](#)

TGS	COM11	3 1	B D H	03	T	LF XX	-24M000
1	2	3 4	5 6 7	8	9	10 11	12

- 1) TGS: Company Code
- 2) COM11: MHz SMD Oscillator, 4 pads, L1.6*W1.2*H0.70mm
- 3) 3: Supply Voltage, 3: 3.3V; 2: 2.5V; 1: 1.8V
- 4) 1: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 5) B: Overall Frequency tolerance, A-+/-25ppm; B: +/-50ppm; C: +/-100ppm; J-+/-20ppm or Specify
- 6) D: Operating Temp. Range, D-0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 7) H: Symmetry H: 40/60; I: 45/55
- 8) 03: Output Load: 01: 1-10TTL//15pF; 03:HCMOS//15pF; 04: HCMOS//30pF; 05: HCMOS//50pF or Specify
- 9) T: Packed in Tape/Reel, 3000pcs/Reel
- 10) LF: RoHS Complaint 11) XX: Internal Control Code- 2 letter or digits ; Blank: N/A
- 12) 24M000: Frequency Range 24.000MHz or specify

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

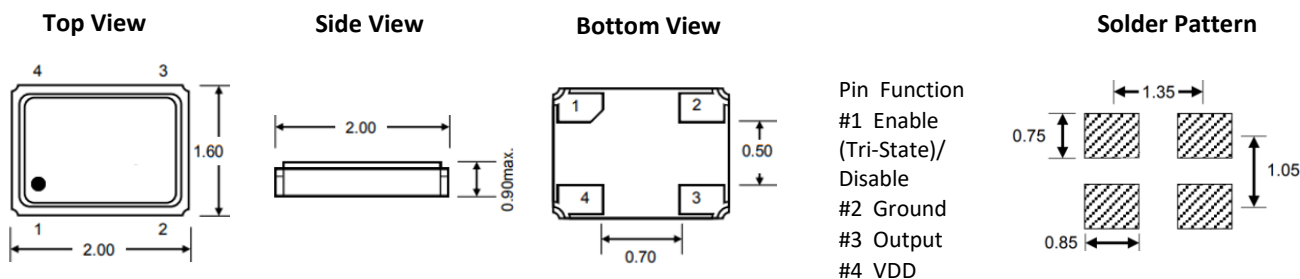


L2.0*W1.6*H0.90mm

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	

DIMENSION (+/-0.1mm)



PART NUMBER GUIDE

Example: TGS COM2131BDH03TLF-24M000

[Part Number and Part Code Structure](#)

TGS	COM21	3 1	B D H	03	T	LF XX	-24M000
1	2	3 4	5 6 7	8	9	10 11	12

- 1)TGS: Company Code
- 2) COM21: MHz SMD Oscillator, 4 pads, L2.0*W1.6*H0.90mm
- 3) 3: Supply Voltage, 3: 3.3V; 2: 2.5V; 1: 1.8V
- 4) 1: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 5) B: Overall Frequency tolerance, A-+/-25ppm; B: +/-50ppm; C: +/-100ppm; J-+/-20ppm or Specify
- 6) D: Operating Temp. Range, D-0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 7) H: Symmetry H: 40/60; I: 45/55
- 8) 03: Output Load: 01: 1-10TTL//15pF; 03:HCMOS//15pF; 04: HCMOS//30pF; 05: HCMOS//50pF or Specify
- 9) T: Packed in Tape/Reel, 3000pcs/Reel
- 10) LF: RoHS Complaint 11) XX: Internal Control Code- 2 letter or digits ; Blank: N/A
- 12) 24M000: Frequency Range 24.000MHz or specify

TGS Crystals Ltd. reserves the right to make changes to the product(s) and or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

MAIN FEATURE

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

APPLICATION

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

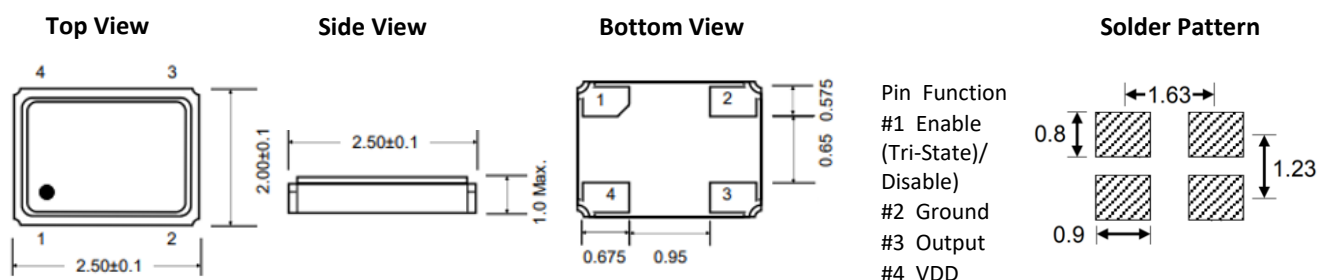


L2.5*W2.0*H1.0mm

STANDARD SPECIFICATION

Parameter		Value			Unit	Condition
		Min.	Type	Max.		
Supply Voltage		-	3.3	-	V	see p/n guide or Specify
Frequency Range		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	

DIMENSION (+/-0.1mm)



PART NUMBER GUIDE

Example: TGS COM2231BDH03TLF-24M000

[Part Number and Part Code Structure](#)

TGS	COM22	3 1	B D H	03	T	LF XX	-24M000
1	2	3 4	5 6 7	8	9	10 11	12

- 1) TGS: Company Code
- 2) COM22: MHz SMD Oscillator, 4 pads, L2.5*W2.0*H1.0mm
- 3) 3: Supply Voltage, 3: 3.3V; 2: 2.5V; 1: 1.8V; 5: 5.0V
- 4) 1: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 5) B: Overall Frequency tolerance, A: +/-25ppm; B: +/-50ppm; C: +/-100ppm; J: +/-20ppm or Specify
- 6) D: Operating Temp. Range, D: 0~70 °C; E: -10 ~+60 °C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 7) H: Symmetry H: 40/60; I: 45/55
- 8) 03: Output Load: 01: 1-10TTL//15pF; 03: HCMOS//15pF; 04: HCMOS//30pF; 05: HCMOS//50pF or Specify
- 9) T: Packed in Tape/Reel, 3000pcs/Reel
- 10) LF: RoHS Complaint 11) XX: Internal Control Code- 2 letter or digits ; Blank: N/A
- 12) 24M000: Frequency Range 24.000MHz or specify

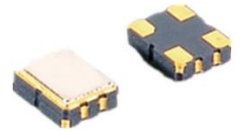
TGS Crystals Ltd. reserves the right to make changes to the product(s) and or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

MAIN FEATURE

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

APPLICATION

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

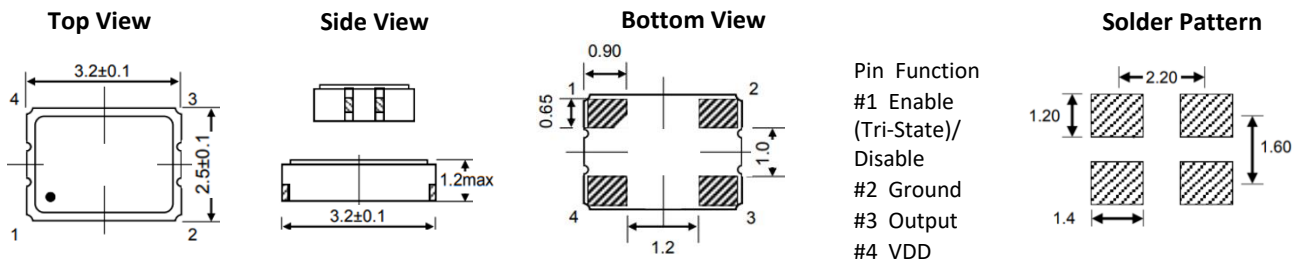


L3.2*W2.5*H1.2mm

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	

DIMENSION (+/-0.1mm)



PART NUMBER GUIDE

Example: TGS COM3231BDH03TLF-24M000

[Part Number and Part Code Structure](#)

TGS	COM32	3 1	B D H	03	T	LF XX	-24M000
1	2	3 4	5 6 7	8	9	10 11	12

- 1) TGS: Company Code
- 2) COM32: MHz SMD Oscillator, 4 pads, L3.2*W2.5*H1.2mm
- 3) 3: Supply Voltage, 3: 3.3V; 2: 2.5V; 1: 1.8V; 5: 5.0V
- 4) 1: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 5) B: Overall Frequency tolerance, A: +/-25ppm; B: +/-50ppm; C: +/-100ppm; J: +/-20ppm or Specify
- 6) D: Operating Temp. Range, D: 0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 7) H: Symmetry H: 40/60; I: 45/55
- 8) 03: Output Load: 01: 1-10TTL//15pF; 03: HCMOS//15pF; 04: HCMOS//30pF; 05: HCMOS//50pF or Specify
- 9) T: Packed in Tape/Reel, 3000pcs/Reel
- 10) LF: RoHS Complaint
- 11) XX: Internal Control Code- 2 letter or digits ; Blank: N/A
- 12) 24M000: Frequency Range 24.000MHz or specify

TGS Crystals Ltd. reserves the right to make changes to the product(s) and or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

MAIN FEATURE

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

APPLICATION

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



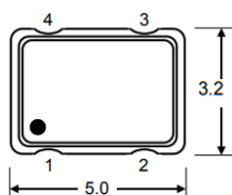
L5.0*W3.2*H1.3mm

STANDARD SPECIFICATION

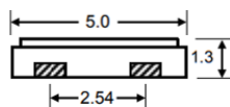
Parameter		Value			Unit	Condition
		Min.	Type	Max.		
Supply Voltage		-	3.3	-	V	see p/n guide or Specify
Frequency Range		1.00		125.00	MHz	see p/n guide or Specify
Overall Freq. Tolerance		-	±50		ppm	see p/n guide or Specify
Operating Temp. Range		0	-	70	°C	see p/n guide or Specify
Output	VOH	90%	-	-	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	

DIMENSION (+/-0.1mm)

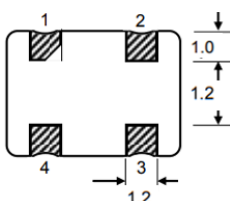
Top View



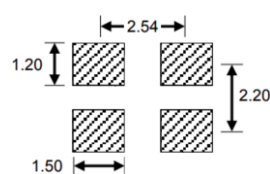
Side View



Bottom View



Solder Pattern



Pin Function

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

PART NUMBER GUIDE

Example: TGS COM5331BDH03TLF-24M000

[Part Number and Part Code Structure](#)

TGS	COM53	3 1	B D H	03	T	LF XX	-24M000
1	2	3 4	5 6 7	8	9	10 11	12

- 1) TGS: Company Code
- 2) COM53: MHz SMD Oscillator, 4 pads, L5.0*W3.2*H1.3mm
- 3) 3: Supply Voltage, 3: 3.3V; 2: 2.5V; 1: 1.8V; 5: 5.0V
- 4) 1: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 5) B: Overall Frequency tolerance, A: +/-25ppm; B: +/-50ppm; C: +/-100ppm; J: +/-20ppm or Specify
- 6) D: Operating Temp. Range, D: 0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 7) H: Symmetry H: 40/60; I: 45/55
- 8) 03: Output Load: 01: 1-10TTL//15pF; 03: HCMOS//15pF; 04: HCMOS//30pF; 05: HCMOS//50pF or Specify
- 9) T: Packed in Tape/Reel, 3000pcs/Reel
- 10) LF: RoHS Complaint
- 11) XX: Internal Control Code- 2 letter or digits ; Blank: N/A
- 12) 24M000: Frequency Range 24.000MHz or specify

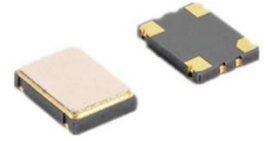
TGS Crystals Ltd. reserves the right to make changes to the product(s) and or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

MAIN FEATURE

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

APPLICATION

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

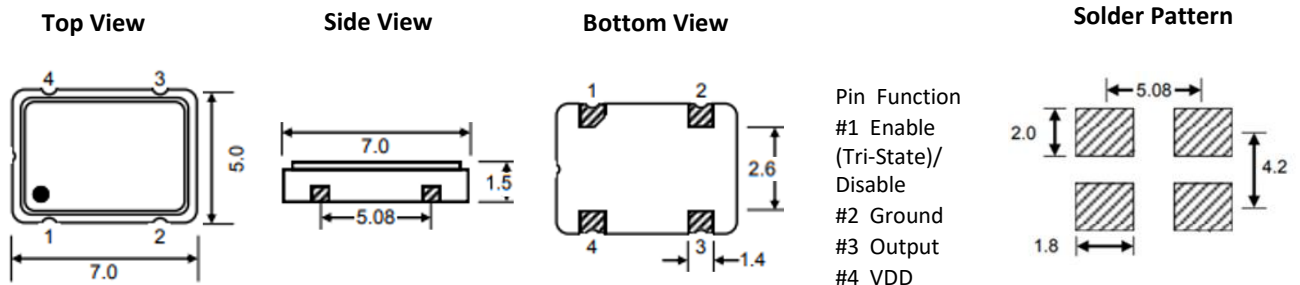


L7.0*W5.0*H1.5mm

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	

DIMENSION (+/-0.1mm)



PART NUMBER GUIDE

Example: TGS COM7531BDH03TLF-24M000

Part Number and Part Code Structure

TGS	COM75	3 1	B D H	03	T	LF XX	-24M000
1	2	3 4	5 6 7	8	9	10 11	12

- 1) TGS: Company Code
- 2) COM75: MHz SMD Oscillator, 4 pads, L7.0*W5.0*H1.5mm
- 3) 3: Supply Voltage, 3: 3.3V; 2: 2.5V; 1: 1.8V; 5: 5.0V
- 4) 1: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 5) B: Overall Frequency tolerance, A: +/-25ppm; B: +/-50ppm; C: +/-100ppm; J: +/-20ppm or Specify
- 6) D: Operating Temp. Range, D: 0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 7) H: Symmetry H: 40/60; I: 45/55
- 8) 03: Output Load: 01: 1-10TTL//15pF; 03: HCMOS//15pF; 04: HCMOS//30pF; 05: HCMOS//50pF or Specify
- 9) T: Packed in Tape/Reel, 1000pcs/Reel
- 10) LF: RoHS Complaint
- 11) XX: Internal Control Code- 2 letter or digits ; Blank: N/A
- 12) 24M000: Frequency Range 24.000MHz or specify

TGS Crystals Ltd. reserves the right to make changes to the product(s) and or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

MAIN FEATURE

- Low cost, Short Lead time and Wide Frequency range
- 1.8V, 2.5V, 3.3V, 5.0V option • Industry standard option

APPLICATION

- IT Applications and more • Telecommunications



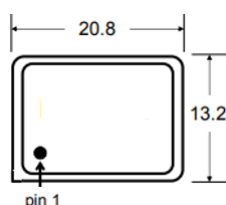
L20.8*W13.2*H5.08mm

STANDARD SPECIFICATION

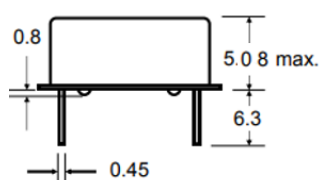
Parameter		Value			Unit	Condition
		Min.	Type	Max.		
Supply Voltage		-	5.0	-	V	see p/n guide or Specify
Frequency Range		1.00		155.00	MHz	see p/n guide or Specify
Overall Freq. Tolerance		-	±50		ppm	see p/n guide or Specify
Operating Temp. Range		-40	-	+85	°C	see p/n guide or Specify
Output	VOH	90%	-	-	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	

DIMENSION (+/-0.1 mm)

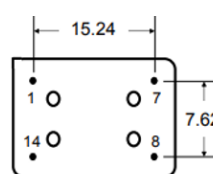
Top View



Side View



Bottom View



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

PART NUMBER GUIDE

Example: TGS CO1451BGI05 BLFXX- 48M000

Part Number and Part Code Structure

TGS	CO14	5	1	B	G	I	05	B	LF	XX	-48M000
1	2	3	4	5	6	7	8	9	10	11	12

- 1)TGS: Company Code
- 2) CO14: MHz Thru Hole Oscillator, Full size, L20.8*W13.2*H5.08mm
- 3) 5: Supply Voltage, 5: 5.0V; 3: 3.3V; 2: 2.5V; 1: 1.8V 4) 1: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 5) B: Overall Frequency tolerance, A: +/-25ppm; B: +/-50ppm; C: +/-100ppm; J: +/-20ppm or Specify
- 6) G: Operating Temp. Range, D: 0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 7) I: Symmetry H: 40/60; I: 45/55
- 8) 05: Output Load: 01: 1-10TTL//15pF; 03:HCMOS//15pF; 04: HCMOS//30pF; 05: HCMOS//50pF or Specify
- 9) B: Packed in Plastic Tube, 25pcs/Tube for CO14 series
- 10) LF: RoHS Complaint 11) XX: Internal Control Code- 2 letter or digits ; Blank: N/A
- 12) 48M000: Frequency Range 48.000MHz or specify

TGS Crystals Ltd. reserves the right to make changes to the product(s) and or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information

MAIN FEATURE

- Low cost, Short Lead time and Wide Frequency range
- 1.8V, 2.5V, 3.3V, 5.0V option • Industry standard option

APPLICATION

- IT Applications and more • Telecommunications



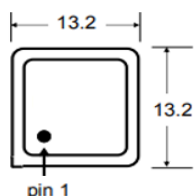
L13.2*W13.2*H5.08mm

STANDARD SPECIFICATION

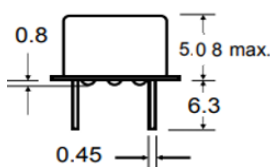
Parameter		Value			Unit	Condition
		Min.	Type	Max.		
Supply Voltage		-	5.0	-	V	see p/n guide or Specify
Frequency Range		1.00		155.00	MHz	see p/n guide or Specify
Overall Freq. Tolerance		-	±50		ppm	see p/n guide or Specify
Operating Temp. Range		-40	-	+85	°C	see p/n guide or Specify
Output	VOH	90%	-	-	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	

DIMENSION (+/-0.1 mm)

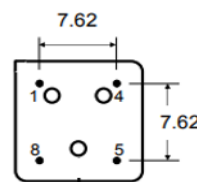
Top View



Side View



Bottom View



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

PART NUMBER GUIDE Example: TGS CO851BGI05 BLFXX- 48M000

Part Number and Part Code Structure

TGS	CO8	5	1	B	G	I	05	B	LF	XX	-48M000
1	2	3	4	5	6	7	8	9	10	11	12

- 1)TGS: Company Code
- 2) CO8: MHz Thru Hole Oscillator, Half size, L13.2*W13.2*H5.08mm
- 3) 5: Supply Voltage, 5: 5.0V; 3: 3.3V; 2: 2.5V; 1: 1.8V
- 4) 1: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 5) B: Overall Frequency tolerance, A+/-25ppm; B: +/-50ppm; C: +/-100ppm; J+/-20ppm or Specify
- 6) G: Operating Temp. Range, D-0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 7) I: Symmetry H: 40/60; I: 45/55
- 8) 05: Output Load: 01: 1-10TTL//15pF; 03:HCMOS//15pF; 04: HCMOS//30pF; 05: HCMOS//50pF or Specify
- 9) B: Packed in Plastic Tube, 40pcs/Tube for CO8 series
- 10) LF: RoHS Complaint
- 11) XX: Internal Control Code- 2 letter or digits ; Blank: N/A
- 12) 48M000: Frequency Range 48.000MHz or specify

TGS Crystals Ltd. reserves the right to make changes to the product(s) and or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information

MAIN FEATURE

- 32.768KHz standard • 1.8V, 2.5V, 3.3V and 5.0V option
- Industry standard option

APPLICATION

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

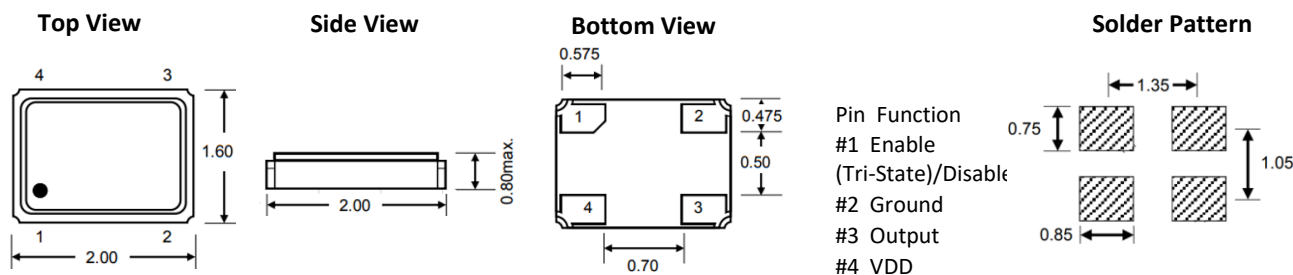
STANDARD SPECIFICATION

Parameter		Value			Unit	Condition
		Min.	Type	Max.		
Supply Voltage		-	3.3	-	V	see p/n guide or Specify
Frequency Range		-	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	



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

DIMENSION (+/-0.1mm)



PART NUMBER GUIDE

Example: TGS COK2131BDH03TLF-32K768

[Part Number and Part Code Structure](#)

TGS	COK21	3 1	B D H	03	T	LF XX	-32K768
1	2	3 4	5 6 7	8	9	10 11	12

- 1) TGS: Company Code
- 2) COK21: KHz SMD Oscillator, 4 pads, L2.0*W1.6*H0.80mm
- 3) 3: Supply Voltage, 3: 3.3V; 2: 2.5V; 1: 1.8V; 5: 5.0V
- 4) 1: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 5) B: Overall Frequency tolerance, A: +/-25ppm; B: +/-50ppm; C: +/-100ppm; J: +/-20ppm or Specify
- 6) D: Operating Temp. Range, D: 0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 7) H: Symmetry H: 40/60; I: 45/55
- 8) 03: Output Load: 03: HCMOS//15pF; 04: HCMOS//30pF; 05: HCMOS//50pF or Specify
- 9) T: Packed in Tape/Reel, 3000pcs/Reel
- 10) LF: RoHS Complaint
- 11) XX: Internal Control Code- 2 letter or digits ; Blank: N/A
- 12) 32K768: Frequency Range 32.76800KHz

TGS Crystals Ltd. reserves the right to make changes to the product(s) and or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

MAIN FEATURE

- 32.768KHz, standard • 1.8V, 2.5V ,3.3V and 5.0V option
- Industry standard option

APPLICATION

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

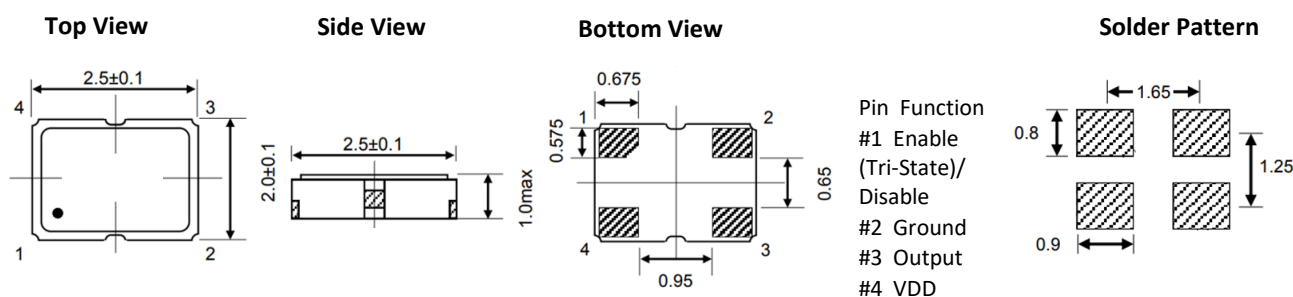


L2.5*W2.0*H1.0mm

STANDARD SPECIFICATION

Parameter		Value			Unit	Condition
		Min.	Type	Max.		
Supply Voltage		-	3.3	-	V	see p/n guide or Specify
Frequency Range		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		-	-	200	μA	
Rise/ Fall time		-	-	30	ns	
Storage Temperature Range		-55	-	+125	°C	
Aging per year		-	±5		ppm	

DIMENSION (+/-0.1mm)



PART NUMBER GUIDE

Example: TGS COK2231BDH03TLF-32K768

[Part Number and Part Code Structure](#)

TGS	COK22	3 1	B D H	03	T	LF XX	-32K768
1	2	3 4	5 6 7	8	9	10 11	12

- 1) TGS: Company Code
- 2) COK22: KHz SMD Oscillator, 4 pads, L2.5*W2.0*H1.0mm
- 3) 3: Supply Voltage, 3: 3.3V; 2: 2.5V; 1: 1.8V; 5: 5.0V
- 4) 1: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 5) B: Overall Frequency tolerance, A: +/-25ppm; B: +/-50ppm; C: +/-100ppm; J: +/-20ppm or Specify
- 6) D: Operating Temp. Range, D: 0~70 °C; E: -10 ~+60 °C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 7) H: Symmetry H: 40/60; I: 45/55
- 8) 03: 03: HCMOS//15pF; 04: HCMOS//30pF; 05: HCMOS//50pF or Specify
- 9) T: Packed in Tape/Reel, 3000pcs/Reel
- 10) LF: RoHS Complaint
- 11) XX: Internal Control Code- 2 letter or digits ; Blank: N/A
- 12) 32K768: Frequency Range 32.768KHz or Specify

TGS Crystals Ltd. reserves the right to make changes to the product(s) and or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

MAIN FEATURE

- 32.768KHz standard • 1.8V, 2.5V, 3.3V and 5.0V option
- Industry standard option

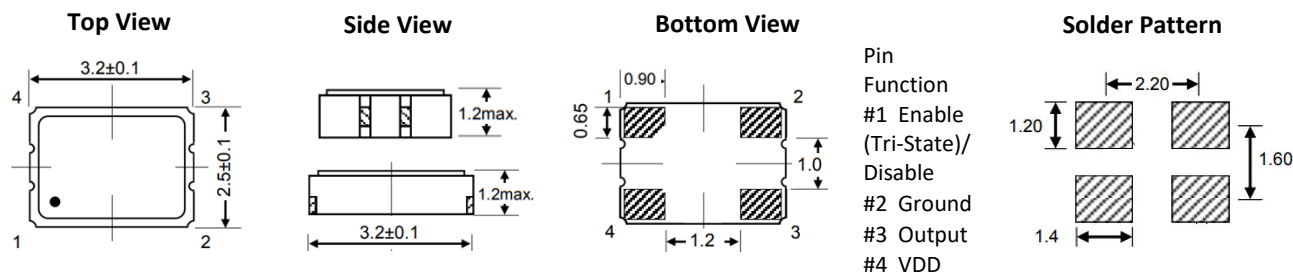
APPLICATION

- 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		-	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		-	-	2.0	mA	
Rise/ Fall time		-	-	10	ns	
Storage Temperature Range		-55	-	+125	°C	
Aging per year		-	±5		ppm	

DIMENSION (+/-0.1mm)



PART NUMBER GUIDE

Example: TGS COK3231BDH03TLF-32K768

[Part Number and Part Code Structure](#)

TGS	COK32	3 1	B D H	03	T	LF XX	-32K768
1	2	3 4	5 6 7	8	9	10 11	12

- 1) TGS: Company Code
- 2) COK32: KHz SMD Oscillator, 4 pads, L3.2*W2.5*H1.2mm
- 3) 3: Supply Voltage, 3: 3.3V; 2: 2.5V; 1: 1.8V; 5: 5.0V
- 4) 1: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 5) B: Overall Frequency tolerance, A: +/-25ppm; B: +/-50ppm; C: +/-100ppm; J: +/-20ppm or Specify
- 6) D: Operating Temp. Range, D: 0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 7) H: Symmetry H: 40/60; I: 45/55
- 8) 03: 03: HCMOS//15pF; 04: HCMOS//30pF; 05: HCMOS//50pF or Specify
- 9) T: Packed in Tape/Reel, 3000pcs/Reel
- 10) LF: RoHS Complaint
- 11) XX: Internal Control Code- 2 letter or digits ; Blank: N/A
- 12) 32K768: Frequency Range 32.768KHz

TGS Crystals Ltd. reserves the right to make changes to the product(s) and or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

MAIN FEATURE

- 32.768KHz standard • 1.8V, 2.5V, 3.3V and 5.0V option
- Industry standard option

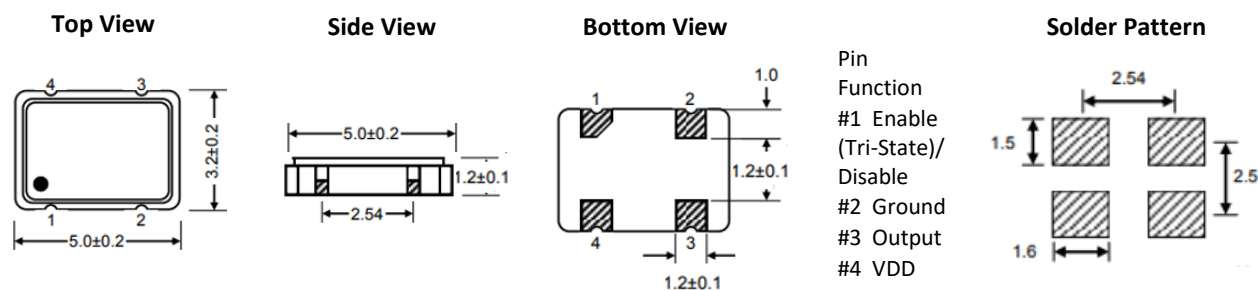
APPLICATION

- 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	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	

DIMENSION (+/-0.1mm)



PART NUMBER GUIDE

Example: TGS COK5331BDH03TLF-32K768

[Part Number and Part Code Structure](#)

TGS	COK53	3 1	B D H	03	T	LF XX	-32K768
1	2	3 4	5 6 7	8	9	10 11	12

- 1) TGS: Company Code
- 2) COK53: KHz SMD Oscillator, 4 pads, L5.0*W3.2*H1.2mm
- 3) 3: Supply Voltage, 3: 3.3V; 2: 2.5V; 1: 1.8V; 5: 5.0V
- 4) 1: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 5) B: Overall Frequency tolerance, A: +/-25ppm; B: +/-50ppm; C: +/-100ppm; J: +/-20ppm or Specify
- 6) D: Operating Temp. Range, D: 0~70 °C; E: -10 ~+60 °C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 7) H: Symmetry H: 40/60; I: 45/55
- 8) 03: 03: HCMOS//15pF; 04: HCMOS//30pF; 05: HCMOS//50pF or Specify
- 9) T: Packed in Tape/Reel, 1000pcs/Reel
- 10) LF: RoHS Complaint
- 11) XX: Internal Control Code- 2 letter or digits ; Blank: N/A
- 12) 32K768: Frequency Range 32.768KHz or specify

TGS Crystals Ltd. reserves the right to make changes to the product(s) and or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

MAIN FEATURE

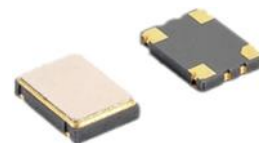
- 32.768KHz standard • 1.8V, 2.5V, 3.3V and 5.0V option
- Industry standard option

APPLICATION

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

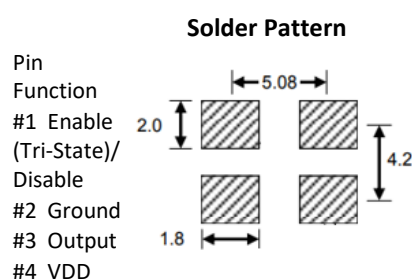
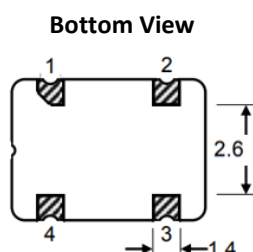
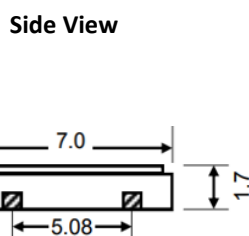
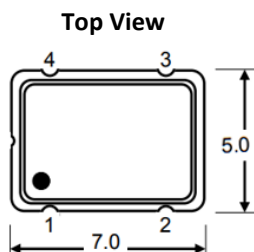
STANDARD SPECIFICATION

Parameter		Value			Unit	Condition
		Min.	Type	Max.		
Supply Voltage		-	3.3	-	V	see p/n guide or Specify
Frequency Range		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	



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

DIMENSION (+/-0.1mm)



PART NUMBER GUIDE

Example: TGS COK7531BDH03TLF-32K768

[Part Number and Part Code Structure](#)

TGS	COK75	3 1	B D H	03	T	LF XX	-32K768
1	2	3 4	5 6 7	8	9	10 11	12

- 1) TGS: Company Code
- 2) COK75: KHz SMD Oscillator, 4 pads, L7.0*W5.0*H1.7mm
- 3) 3: Supply Voltage, 3: 3.3V; 2: 2.5V; 1: 1.8V; 5: 5.0V
- 4) 1: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 5) B: Overall Frequency tolerance, A: +/-25ppm; B: +/-50ppm; C: +/-100ppm; J: +/-20ppm or Specify
- 6) D: Operating Temp. Range, D: 0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 7) H: Symmetry H: 40/60; I: 45/55
- 8) 03: Output Load: 03: HCMOS//15pF; 04: HCMOS//30pF; 05: HCMOS//50pF or Specify
- 9) T: Packed in Tape/Reel, 1000pcs/Reel
- 10) LF: RoHS Complaint 11) XX: Internal Control Code- 2 letter or digits ; Blank: N/A
- 12) 32K768: Frequency Range 32.768KHz or specify

TGS Crystals Ltd. reserves the right to make changes to the product(s) and or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

MAIN FEATURE

- Ultra stable • Wide Temp. Range and Fast Warming-up

APPLICATION

- Base Stations • Instrumentations



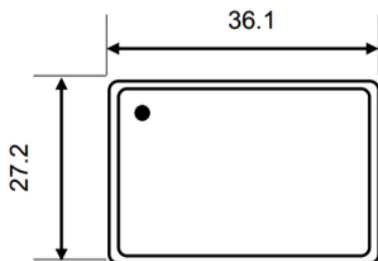
L36.0*W27.0*H13.0mm

STANDARD SPECIFICATION

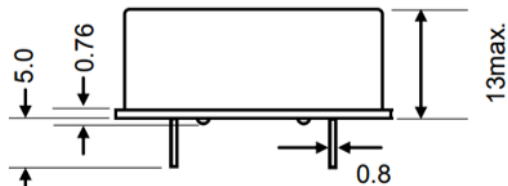
Parameter		Value			Unit	Condition	
		Min.	Type	Max.			
Supply Voltage		-	3.3	-	V	5.0V/12.0V or specify	
Power Consumption		-	-	5	W	During Warming-up	
		-	-	1.5	W	Steady @25°C & still Air	
Frequency Range		2.00~100.00			MHz	see P/N guide or specify	
Nominal Frequency		10.0/12.288/38.88			MHz		
Initial Frequency Tolerance		-	-	±100	ppb	@shipment, nominal EFC	
Freq. Stability Vs. Temp		-0.8	-	0.8	ppb	@-40°C ~+85°C	
Sine Wave	Output Level	7	-	-	dBm		
	Harmonica	-	-	-35	dBm		
	Spurious	-	-	-70	dBc		
	Load	-	50	-	Ω		
HCMOS	VOH	2.4	-	3.5	V	LVTTL Output, Load=15pf	
	VOL	0.4	-	0.5	V	LVTTL Output, Load=15pf	
	Duty Cycle	45	-	55	%	(VOH - VOL)/2	
	Rise/Fall Edge	-	-	6	ns	LVTTL Output, Load=15pf	
	Load	-	15	-	pF		
Short-term Stability(1S)		-	-	5×10 ⁻¹²		Test after 15 Min.	
Timing Accuracy		-	-	24	us	Test after 24 Us.	
Warm-up Time		-	-	10	Min.	At +25°C, with accuracy of ±5ppb	
Supply Sensitivity		-	-	±5	ppb	Vcc±5%	
Load Sensitivity		-	-	±5	ppb	Load±5%	
Aging per Day		-	-	±0.5	ppb	After 30 days of operation	
Aging per Year		-	-	±50	ppb	After 30 days of operation	
SSB Phase Noise @10MHz		-95	-	-	dBc/Hz	Offset 1Hz	@25°C
		-125	-	-		Offset 10Hz	
		-140	-	-		Offset 100Hz	
		-145	-	-		Offset 1KHz	
		-145	-	-		Offset 10KHz	
Control Voltage Range		0	-	5	V		
Frequency Turning Range		±125	-	±250	ppb	(Fixed frequency option available)	
Operating Temperature Range		-40		+85	°C	Or specify	
Storage Temperature Range		-55		+125	°C		

DIMENSION (+/-0.1mm)

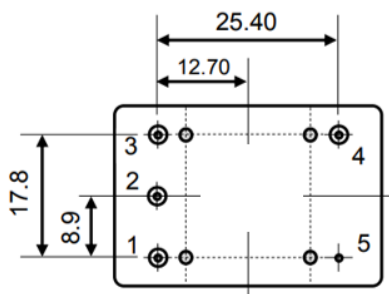
Top View



Side View



Bottom View



Pin Function

- #1 V con or NC
- #2 V ref (Ref. Voltage) or NC
- #3 VDC
- #4 Output
- #5 GND

PART NUMBER GUIDE

Example: TGS O362703DGS BLF-10M000

Part Number and Part Code Structure

TGS	O	3627	03	D	G S	B LF XX	-10M000
1	2	3	4	5	6 7	8 9 10	11

1) TGS: Company Code

2) O: OCXO

3) 3627 Holder type Outline: 3627: L36.0*W27.0*H13.0mm

4) 03: Supply Voltage: 12: 12 V; 05: 5.0V; 03:3.3V

5) D: Temperature Stability: D: ± 20 ppb; C: ± 10 ppb; B: ± 5 ppb; A: ± 3 ppb or specify

6) G: Operating Temp. Range: H: $-0 \sim 70$ °C; E: $-10 \sim +60$ °C; F: $-20 \sim +70$ °C; G: $-40 \sim +85$ °C or Specify

7) S: Output: S: Sine Wave; L: LVTTTL; H: HCMOS

8) B: Packed in Bulk

9) LF: RoHS Complaint

10) XX: Internal Control Code- 2 letter or digits ; Blank: N/A

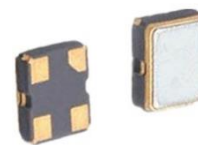
11) 10M000: Frequency Range in MHz 10.0000MHz or Specify

MAIN FEATURE

- Low Power Consumption • 1.8V, 2.5V and 3.3V option
- Industry standard option

APPLICATION

- Mobile, GPS and more

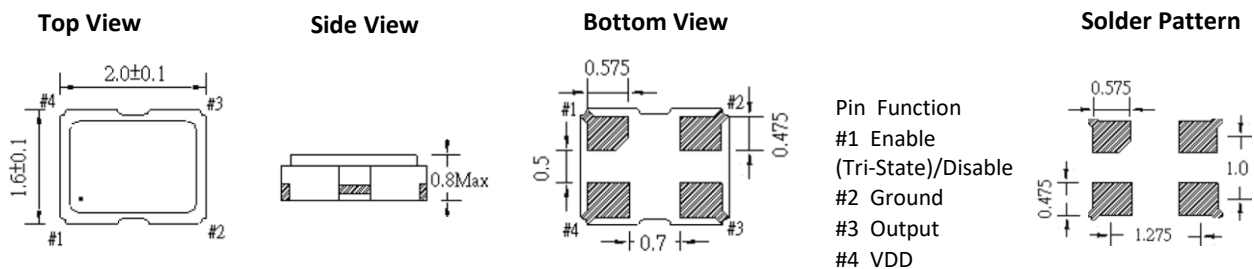


L2.0*W1.6*H0.80mm

STANDARD SPECIFICATION – CMOS Output

Parameter	Value			Unit	Condition
	Min.	Type	Max.		
Supply Voltage	-	3.3	-	V	+/-0.5% or Specify 1.8V/2.5V
Frequency Range	9.50		60.00	MHz	
Frequency Tolerance @25°C			±2.0	ppm	see p/n guide or Specify
Freq. Stability @Temp. Range	-	-	±2.5	ppm	see p/n guide or Specify
Operating Temp. Range	-40	-	85	°C	see p/n guide or Specify
Load	-	15	-	pF	@ CMOS output 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	
Rise/Fall Time	-	-	5	ns	
Supply Current	-	-	10	mA	
Phase Noise	-	-145		dBc/Hz	@10KHz offset
Storage Temperature Range	-55	-	+125	°C	
Aging per year	-	±2		ppm	

DIMENSION (mm)



PART NUMBER GUIDE

Example: TGS TM21T31A25GH03 TLF-26M000

[Part Number and Part Code Structure](#)

TGS	TM21T	3 1	A 25	G H 03	T	LF XX	-26M000
1	2	3 4	5 6	7 8 9	10	11 12	13

1) TGS: Company Code

2) TM21T: MHz SMD TCXO, CMOS Output, 4 pads, L2.0*W1.6*H0.80mm

3) 3: Supply Voltage, 3: 3.3V; 2: 2.5V; 1: 1.8V

4) 1: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A

5) A: Frequency tolerance, A+/-2.0ppm or Specify

6) 25: Frequency Stability vs Temp. range. 25: 2.5ppm or specify

7) G: Operating Temp. Range, D-0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify

8) H: Symmetry H: 40/60; I: 45/55

9) 03: Output Load: 03: CMOS//15pF or specify

10) T: Packed in Tape/Reel, 3000pcs/Reel

11) LF: RoHS Compliant

12) XX: Internal Control Code- 2 letter or digits ; Blank: N/A

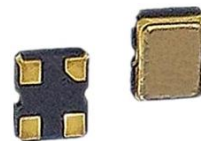
13) 26M000: Frequency Range 26.000MHz or specify

MAIN FEATURE

- Low Power Consumption • 1.8V, 2.5V and 3.3V option
- Industry standard option

APPLICATION

- Mobile, GPS and more

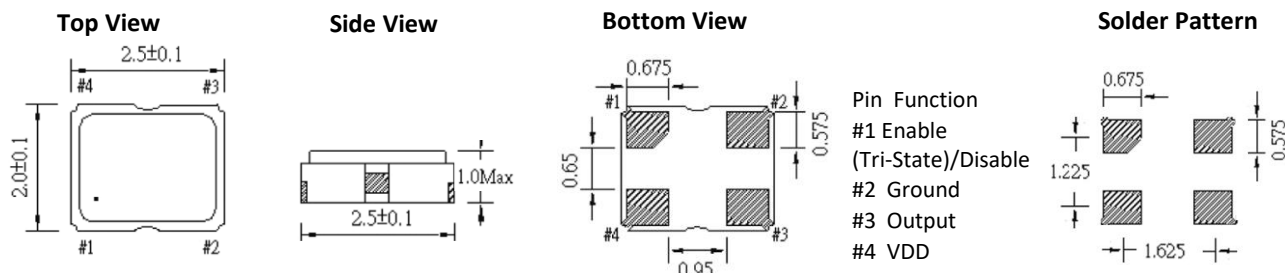


L2.5*W2.0*H1.0mm

STANDARD SPECIFICATION – CMOS Output

Parameter	Value			Unit	Condition
	Min.	Type	Max.		
Supply Voltage	-	3.3	-	V	+/-0.5% or Specify 1.8V/2.5V
Frequency Range	9.50		60.00	MHz	
Frequency Tolerance @25°C			±2.0	ppm	see p/n guide or Specify
Freq. Stability @Temp. Range	-	-	±2.5	ppm	see p/n guide or Specify
Operating Temp. Range	-40	-	85	°C	see p/n guide or Specify
Load	-	15	-	pF	@ CMOS output 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	
Rise/Fall Time	-	-	5	ns	
Supply Current	-	-	10	mA	
Phase Noise	-	-145		dBc/Hz	@10KHz offset
Storage Temperature Range	-55	-	+125	°C	
Aging per year	-	±2		ppm	

DIMENSION (mm)



PART NUMBER GUIDE

Example: TGS TM22T31A25GH03 TLF-26M000

[Part Number and Part Code Structure](#)

TGS	TM22T	3 1	A 25	G H 03	T	LF XX	-26M000
1	2	3 4	5 6	7 8 9	10	11 12	13

- 1) TGS: Company Code
- 2) TM22T: MHz SMD TCXO, CMOS Output, 4 pads, L2.5*W2.0*H1.0mm
- 3) 3: Supply Voltage, 3: 3.3V; 2: 2.5V; 1: 1.8V
- 4) 1: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 5) A: Frequency tolerance, A+/-2.0ppm or Specify
- 6) 25: Frequency Stability vs Temp. range. 25: 2.5ppm or specify
- 7) G: Operating Temp. Range, D-0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 8) H: Symmetry H: 40/60; I: 45/55
- 9) 03: Output Load: 03: CMOS//15pF or specify
- 10) T: Packed in Tape/Reel, 3000pcs/Reel
- 11) LF: RoHS Compliant
- 12) XX: Internal Control Code- 2 letter or digits ; Blank: N/A
- 13) 26M000: Frequency Range 26.000MHz or specify

TGS Crystals Ltd. reserves the right to make changes to the product(s) and or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

MAIN FEATURE

- Low Power Consumption • 1.8V, 2.5V and 3.3V option
- Industry standard option

APPLICATION

- Mobile, GPS and more

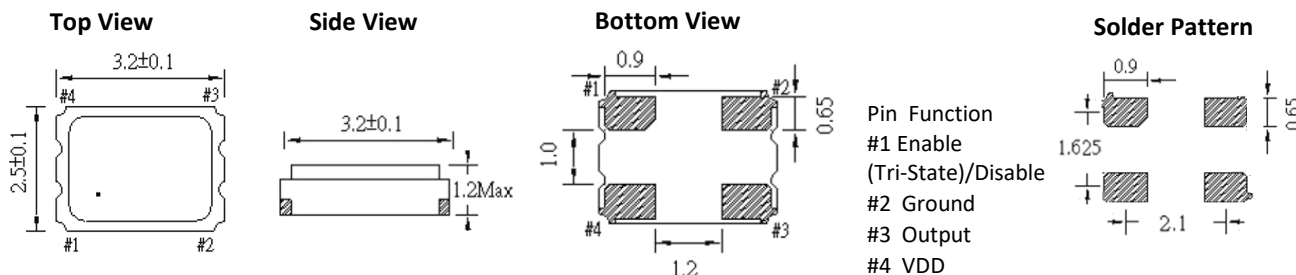


L3.2*W2.5*H1.2mm

STANDARD SPECIFICATION – CMOS Output

Parameter	Value			Unit	Condition
	Min.	Type	Max.		
Supply Voltage	-	3.3	-	V	+/-0.5% or Specify 1.8V/2.5V
Frequency Range	9.50		60.00	MHz	
Frequency Tolerance @25°C			±2.0	ppm	see p/n guide or Specify
Freq. Stability @Temp. Range	-	-	±2.5	ppm	see p/n guide or Specify
Operating Temp. Range	-40	-	85	°C	see p/n guide or Specify
Load	-	15	-	pF	@ CMOS output 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	
Rise/Fall Time	-	-	5	ns	
Supply Current	-	-	10	mA	
Phase Noise	-	-145		dBc/Hz	@10KHz offset
Storage Temperature Range	-55	-	+125	°C	
Aging per year	-	±2		ppm	

DIMENSION (mm)



PART NUMBER GUIDE

Example: TGS TM32T31A25GH03 TLF-26M000

Part Number and Part Code Structure

TGS	TM32T	3 1	A 25	G H	03 T	LF XX	-26M000
1	2	3 4	5 6	7 8	9 10	11 12	13

- 1) TGS: Company Code
- 2) TM32T: MHz SMD TCXO, CMOS Output, 4 pads, L3.2*W2.5*H1.2mm
- 3) 3: Supply Voltage, 3: 3.3V; 2: 2.5V; 1: 1.8V
- 4) 1: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 5) A: Frequency tolerance, A +/-2.0ppm or Specify
- 6) 25: Frequency Stability vs Temp. range. 25: 2.5ppm or specify
- 7) G: Operating Temp. Range, D-0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 8) H: Symmetry H: 40/60; I: 45/55
- 9) 03: Output Load: 03: CMOS//15pF or specify
- 10) T: Packed in Tape/Reel, 3000pcs/Reel
- 11) LF: RoHS Complaint
- 12) XX: Internal Control Code- 2 letter or digits ; Blank: N/A
- 13) 26M000: Frequency Range 26.000MHz or specify

TGS Crystals Ltd. reserves the right to make changes to the product(s) and or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

MAIN FEATURE

- Low Power Consumption • 1.8V, 2.5V and 3.3V option
- Industry standard option

APPLICATION

- Mobile, GPS and more

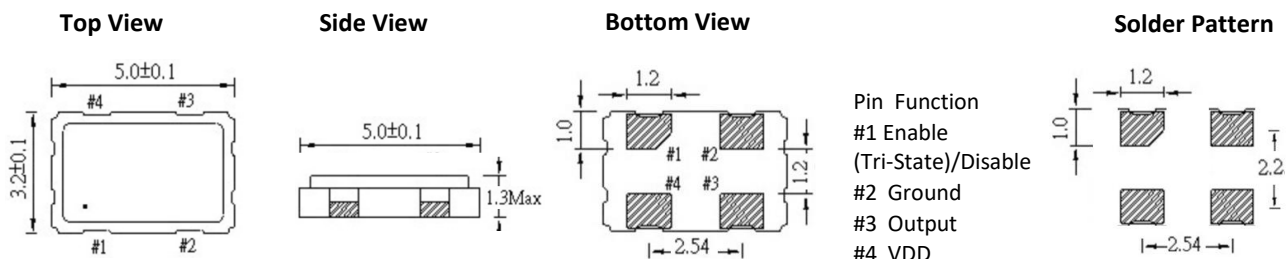


L5.0*W3.2*H1.3mm

STANDARD SPECIFICATION – COMS Output

Parameter	Value			Unit	Condition
	Min.	Type	Max.		
Supply Voltage	-	3.3	-	V	+/-0.5% or Specify 1.8V/2.5V
Frequency Range	9.50		60.00	MHz	
Frequency Tolerance @25°C			±2.0	ppm	see p/n guide or Specify
Freq. Stability @Temp. Range	-	-	±2.5	ppm	see p/n guide or Specify
Operating Temp. Range	-40	-	85	°C	see p/n guide or Specify
Load	-	15	-	pF	@ CMOS output 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	
Rise/Fall Time	-	-	5	ns	
Supply Current	-	-	10	mA	
Phase Noise	-	-145		dBc/Hz	@10KHz offset
Storage Temperature Range	-55	-	+125	°C	
Aging per year	-	±2		ppm	

DIMENSION (mm)



PART NUMBER GUIDE

Example: TGS TM53T31A25GH03 TLF-26M000

[Part Number and Part Code Structure](#)

TGS	TM53T	3 1	A 25	G H	03 T	LF XX	-26M000
1	2	3 4	5 6	7 8	9 10	11 12	13

- 1) TGS: Company Code
- 2) TM53T: MHz SMD TCXO, CMOS Output, 4 pads, L5.0*W3.2*H1.3mm
- 3) 3: Supply Voltage, 3: 3.3V; 2: 2.5V; 1: 1.8V
- 4) 1: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 5) A: Frequency tolerance, A+/-2.0ppm or Specify
- 6) 25: Frequency Stability vs Temp. range. 25: 2.5ppm or specify
- 7) G: Operating Temp. Range, D: 0~70 °C; E: -10 ~+60 °C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 8) H: Symmetry H: 40/60; I: 45/55
- 9) 03: Output Load: 03: CMOS//15pF or specify
- 10) T: Packed in Tape/Reel, 3000pcs/Reel
- 11) LF: RoHS Compliant
- 12) XX: Internal Control Code- 2 letter or digits ; Blank: N/A
- 13) 26M000: Frequency Range 26.000MHz or specify

TGS Crystals Ltd. reserves the right to make changes to the product(s) and or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

MAIN FEATURE

- Low Power Consumption • 1.8V, 2.5V and 3.3V option
- Industry standard option

APPLICATION

- Mobile, GPS and more

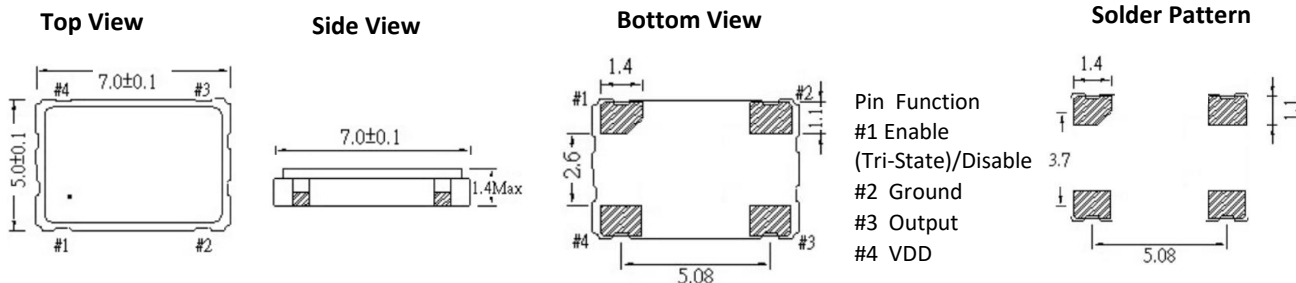


L7.5*W5.0*H1.4mm

STANDARD SPECIFICATION – COMS Output

Parameter	Value			Unit	Condition
	Min.	Type	Max.		
Supply Voltage	-	3.3	-	V	+/-0.5% or Specify 1.8V/2.5V
Frequency Range	9.50		60.00	MHz	
Frequency Tolerance @25°C			±2.0	ppm	see p/n guide or Specify
Freq. Stability @Temp. Range	-	-	±2.5	ppm	see p/n guide or Specify
Operating Temp. Range	-40	-	85	°C	see p/n guide or Specify
Load	-	15	-	pF	@ CMOS output 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	
Rise/Fall Time	-	-	5	ns	
Supply Current	-	-	10	mA	
Phase Noise	-	-145		dBc/Hz	@10KHz offset
Storage Temperature Range	-55	-	+125	°C	
Aging per year	-	±2		ppm	

DIMENSION (mm)



PART NUMBER GUIDE

Example: TGS TM53T31A25GH03 TLF-26M000

Part Number and Part Code Structure

TGS	TM75T	3 1	A 25	G H	03 T	LF XX	-26M000
1	2	3 4	5 6	7 8	9 10	11 12	13

- 1) TGS: Company Code
- 2) TM75T: MHz SMD TCXO, CMOS Output, 4 pads, L7.0*W5.0*H1.4mm
- 3) 3: Supply Voltage, 3: 3.3V; 2: 2.5V; 1: 1.8V
- 4) 1: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 5) A: Frequency tolerance, A-+/-2.0ppm or Specify
- 6) 25: Frequency Stability vs Temp. range. 25: 2.5ppm or specify
- 7) G: Operating Temp. Range, D-0~70 °C; E: -10 ~+60 °C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 8) H: Symmetry H: 40/60; I: 45/55
- 9) 03: Output Load: 03: CMOS//15pF or specify
- 10) T: Packed in Tape/Reel, 3000pcs/Reel
- 11) LF: RoHS Compliant
- 12) XX: Internal Control Code- 2 letter or digits ; Blank: N/A
- 13) 26M000: Frequency Range 26.000MHz or specify

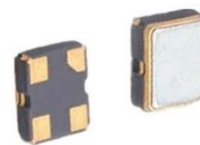
TGS Crystals Ltd. reserves the right to make changes to the product(s) and or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

MAIN FEATURE

- Low Power Consumption • 1.8V, 2.5V and 3.3V option
- Industry standard option

APPLICATION

- Mobile, GPS and more

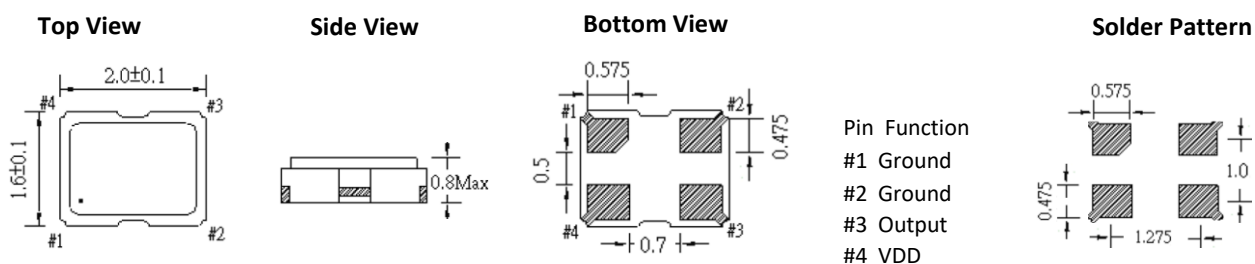


L2.0*W1.6*H0.80mm

STANDARD SPECIFICATION – Clipped Sine Wave Output

Parameter		Value			Unit	Condition
		Min.	Type	Max.		
Supply Voltage		-	3.3	-	V	+/-0.5% or see p/n guide
Frequency Range		13		52	MHz	
Freq. Stability	Temp. Range	±0.5	-	±2.5	ppm	see p/n guide or Specify
	Supply Voltage			±0.2	ppm/Vdc	@VDC +/-0.5%
	Load			±0.2	ppm	@10 Kohm/10pF (+/-10%)
Operating Temp. Range		-40	-	85	°C	see p/n guide or Specify
Output (Clipped Sine Wave)	Voltage	0.8 Vp-p	-	-	V	
	Load	10 Kohm/10pF				
Startup Time		-	-	2	ms	
Supply Current		-	-	2	mA	13.00~26.00MHz
		-	-	2.5	mA	26.001~52.00MHz
Storage Temperature Range		-40	-	85	°C	
Aging per year		-	±2		ppm	

DIMENSION (mm)



PART NUMBER GUIDE

Example: TGS TM21F3A25GTLF-26M000

[Part Number and Part Code Structure](#)

TGS	TM21F	3	A 25	G	T	LF XX	-26M000
1	2	3	4 5	6	7	8 9	10

- 1) TGS: Company Code
- 2) TM21F: MHz SMD TCXO, Clipped Sine Wave Output, 4 pads, L2.0*W1.6*H0.80mm
- 3) 3: Supply Voltage, 3: 3.3V; 2: 2.5V; 1: 1.8V
- 4) A: Overall Frequency tolerance, A: +/-2.0pm or Specify
- 5) 25: Frequency Stability vs Temp. range. 05: +/-0.5ppm; 10: +/-1.0ppm; 25: 2.5ppm or specify
- 6) G: Operating Temp. Range, D: 0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 7) T: Packed in Tape/Reel, 3000pcs/Reel
- 8) LF: RoHS Complaint
- 9) XX: Internal Control Code- 2 letter or digits ; Blank: N/A
- 10) 26M000: Frequency Range 26.000MHz or specify

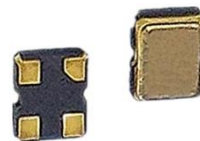
TGS Crystals Ltd. reserves the right to make changes to the product(s) and or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

MAIN FEATURE

- Low Power Consumption • 1.8V, 2.5V and 3.3V option
- Industry standard option

APPLICATION

- Mobile, GPS and more

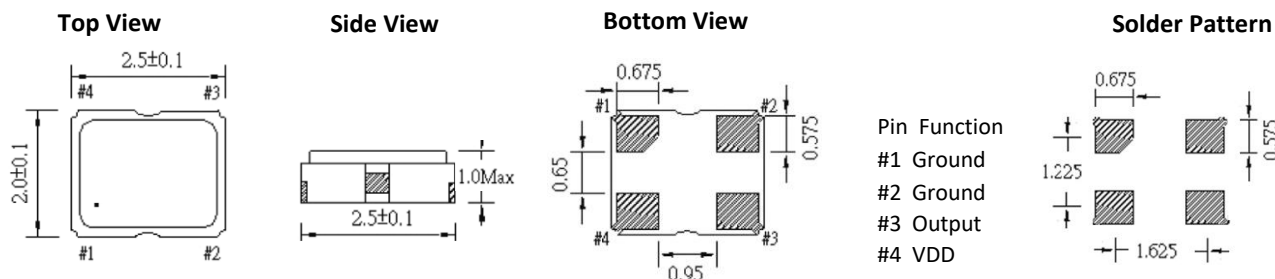


L2.5*W2.0*H1.0mm

STANDARD SPECIFICATION – Clipped Sine Wave Output

Parameter		Value			Unit	Condition
		Min.	Type	Max.		
Supply Voltage		-	3.3	-	V	+/-0.5% or see p/n guide
Frequency Range		13		52	MHz	
Freq. Stability	Temp. Range	±0.5	-	±2.5	ppm	see p/n guide or Specify
	Supply Voltage			±0.2	ppm/Vdc	@VDC +/-0.5%
	Load			±0.2	ppm	@10 Kohm/10pF (+/-10%)
Operating Temp. Range		-40	-	85	°C	see p/n guide or Specify
Output (Clipped Sine Wave)	Voltage	0.8 Vp-p	-	-	V	
	Load	10 Kohm/10pF				
Startup Time		-	-	2	ms	
Supply Current		-	-	2	mA	13.00~26.00MHz
		-	-	2.5	mA	26.001~52.00MHz
Storage Temperature Range		-40	-	85	°C	
Aging per year		-	±2		ppm	

DIMENSION (mm)



PART NUMBER GUIDE

Example: TGS TM22F3A25GTLF-26M000

[Part Number and Part Code Structure](#)

TGS	TM22F	3	A 25	G	T	LF XX	-26M000
1	2	3	4 5	6	7	8 9	10

- 1) TGS: Company Code
- 2) TM22F: MHz SMD TCXO, Clipped Sine Wave Output, 4 pads, L2.5*W2.0*H1.0mm
- 3) 3: Supply Voltage, 3: 3.3V; 2: 2.5V; 1: 1.8V
- 4) A: Overall Frequency tolerance, A: +/-2.0pm or Specify
- 5) 25: Frequency Stability vs Temp. range. 05: +/-0.5ppm; 10: +/-1.0ppm; 25: 2.5ppm or specify
- 6) G: Operating Temp. Range, D-0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 7) T: Packed in Tape/Reel, 3000pcs/Reel
- 8) LF: RoHS Complaint
- 9) XX: Internal Control Code- 2 letter or digits ; Blank: N/A
- 10) 26M000: Frequency Range 26.000MHz or specify

TGS Crystals Ltd. reserves the right to make changes to the product(s) and or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

MAIN FEATURE

- Low Power Consumption • 1.8V, 2.5V and 3.3V option
- Industry standard option

APPLICATION

- Mobile, GPS and more

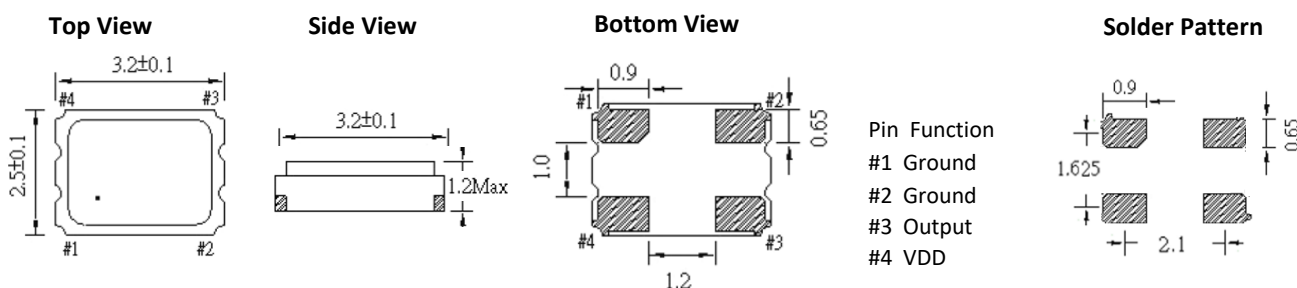


L3.2*W2.5*H1.2mm

STANDARD SPECIFICATION – Clipped Sine Wave Output

Parameter		Value			Unit	Condition
		Min.	Type	Max.		
Supply Voltage		-	3.3	-	V	+/-0.5% or see p/n guide
Frequency Range		13		52	MHz	
Freq. Stability	Temp. Range	±0.5	-	±2.5	ppm	see p/n guide or Specify
	Supply Voltage			±0.2	ppm/Vdc	@VDC +/-0.5%
	Load			±0.2	ppm	@10 Kohm/10pF (+/-10%)
Operating Temp. Range		-40	-	85	°C	see p/n guide or Specify
Output (Clipped Sine Wave)	Voltage	0.8 Vp-p	-	-	V	
	Load	10 Kohm/10pF				
Startup Time		-	-	2	ms	
Supply Current		-	-	2	mA	13.00~26.00MHz
		-	-	2.5	mA	26.001~52.00MHz
Storage Temperature Range		-40	-	85	°C	
Aging per year		-	±2		ppm	

DIMENSION (mm)



PART NUMBER GUIDE

Example: TGS TM32F3A25GTLF-26M000

[Part Number and Part Code Structure](#)

TGS	TM32F	3	A	25	G	T	LF	XX	-26M000
1	2	3	4	5	6	7	8	9	10

- 1) TGS: Company Code
- 2) TM32F: MHz SMD TCXO, Clipped Sine Wave Output, 4 pads, L3.2*W2.5*H1.2mm
- 3) 3: Supply Voltage, 3: 3.3V; 2: 2.5V; 1: 1.8V
- 4) A: Overall Frequency tolerance, A: +/-2.0pm or Specify
- 5) 25: Frequency Stability vs Temp. range. 05: +/-0.5ppm; 10: +/-1.0ppm; 25: 2.5ppm or specify
- 6) G: Operating Temp. Range, D: 0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 7) T: Packed in Tape/Reel, 3000pcs/Reel
- 8) LF: RoHS Complaint
- 9) XX: Internal Control Code- 2 letter or digits ; Blank: N/A
- 10) 26M000: Frequency Range 26.000MHz or specify

TGS Crystals Ltd. reserves the right to make changes to the product(s) and or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

MAIN FEATURE

- Low Power Consumption • 1.8V, 2.5V and 3.3V option
- Industry standard option

APPLICATION

- Mobile, GPS and more

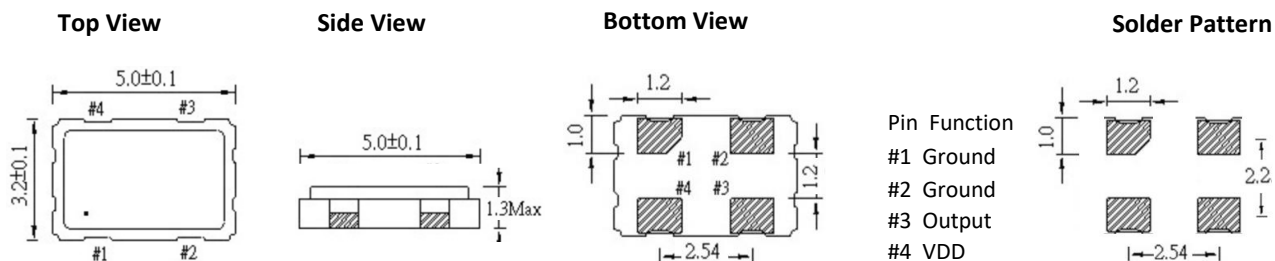


L5.0*W3.2*H1.3mm

STANDARD SPECIFICATION – Clipped Sine Wave Output

Parameter		Value			Unit	Condition
		Min.	Type	Max.		
Supply Voltage		-	3.3	-	V	+/-0.5% or see p/n guide
Frequency Range		13		52	MHz	
Freq. Stability	Temp. Range	±0.5	-	±2.5	ppm	see p/n guide or Specify
	Supply Voltage			±0.2	ppm/Vdc	@VDC +/-0.5%
	Load			±0.2	ppm	@10 Kohm/10pF (+/-10%)
Operating Temp. Range		-40	-	85	°C	see p/n guide or Specify
Output (Clipped Sine Wave)	Voltage	0.8 Vp-p	-	-	V	
	Load	10 Kohm/10pF				
Startup Time		-	-	2	ms	
Supply Current		-	-	2	mA	13.00~26.00MHz
		-	-	2.5	mA	26.001~52.00MHz
Storage Temperature Range		-40	-	85	°C	
Aging per year		-	±2		ppm	

DIMENSION (mm)



Pin Function
 #1 Ground
 #2 Ground
 #3 Output
 #4 VDD

PART NUMBER GUIDE

Example: TGS TM53F3A25GTLF-26M000

[Part Number and Part Code Structure](#)

TGS	TM53F	3	A	25	G	T	LF	XX	-26M000
1	2	3	4	5	6	7	8	9	10

- 1) TGS: Company Code
- 2) TM53F: MHz SMD TCXO, Clipped Sine Wave Output, 4 pads, L5.0*W3.2*H1.3mm
- 3) 3: Supply Voltage, 3: 3.3V; 2: 2.5V; 1: 1.8V
- 4) A: Overall Frequency tolerance, A: +/-2.0pm or Specify
- 5) 25: Frequency Stability vs Temp. range. 05: +/-0.5ppm; 10: +/-1.0ppm; 25: 2.5ppm or specify
- 6) G: Operating Temp. Range, D: 0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 7) T: Packed in Tape/Reel, 1000pcs/Reel
- 8) LF: RoHS Compliant
- 9) XX: Internal Control Code- 2 letter or digits ; Blank: N/A
- 10) 26M000: Frequency Range 26.000MHz or specify

TGS Crystals Ltd. reserves the right to make changes to the product(s) and or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

MAIN FEATURE

- Low Power Consumption • 1.8V, 2.5V and 3.3V option
- Industry standard option

APPLICATION

- Mobile, GPS and more

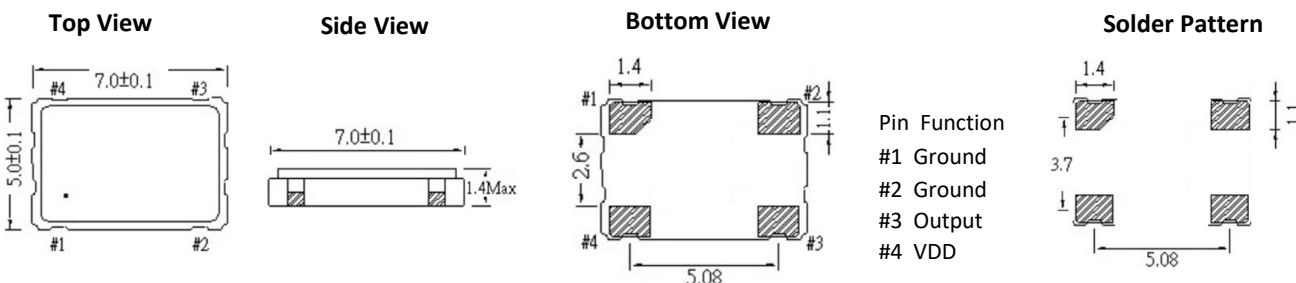


L7.5*W5.0*H1.4mm

STANDARD SPECIFICATION – Clipped Sine Wave Output

Parameter		Value			Unit	Condition
		Min.	Type	Max.		
Supply Voltage		-	3.3	-	V	+/-0.5% or see p/n guide
Frequency Range		13		52	MHz	
Freq. Stability	Temp. Range	±0.5	-	±2.5	ppm	see p/n guide or Specify
	Supply Voltage			±0.2	ppm/Vdc	@VDC +/-0.5%
	Load			±0.2	ppm	@10 Kohm/10pF (+/-10%)
Operating Temp. Range		-40	-	85	°C	see p/n guide or Specify
Output (Clipped Sine Wave)	Voltage	0.8 Vp-p	-	-	V	
	Load	10 Kohm/10pF				
Startup Time		-	-	2	ms	
Supply Current		-	-	2	mA	13.00~26.00MHz
		-	-	2.5	mA	26.001~52.00MHz
Storage Temperature Range		-40	-	85	°C	
Aging per year		-	±2		ppm	

DIMENSION (mm)



PART NUMBER GUIDE

Example: TGS TM53F3A25GTLF-26M000

[Part Number and Part Code Structure](#)

TGS	TM75F	3	A 25	G	T	LF XX	-26M000
1	2	3	4 5	6	7	8 9	10

- 1) TGS: Company Code
- 2) TM75F: MHz SMD TCXO, Clipped Sine Wave Output, 4 pads, L7.5*W5.0*H1.4mm
- 3) 3: Supply Voltage, 3: 3.3V; 2: 2.5V; 1: 1.8V
- 4) A: Overall Frequency tolerance, A: +/-2.0pm or Specify
- 5) 25: Frequency Stability vs Temp. range. 05: +/-0.5ppm; 10: +/-1.0ppm; 25: 2.5ppm or specify
- 6) G: Operating Temp. Range, D: 0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 7) T: Packed in Tape/Reel, 1000pcs/Reel
- 8) LF: RoHS Complaint
- 9) XX: Internal Control Code- 2 letter or digits ; Blank: N/A
- 10) 26M000: Frequency Range 26.000MHz or specify

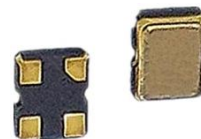
TGS Crystals Ltd. reserves the right to make changes to the product(s) and or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

MAIN FEATURE

- Low Power Consumption • 3.3V, 4 pads
- Industry standard option

APPLICATION

- Mobile, GPS and more

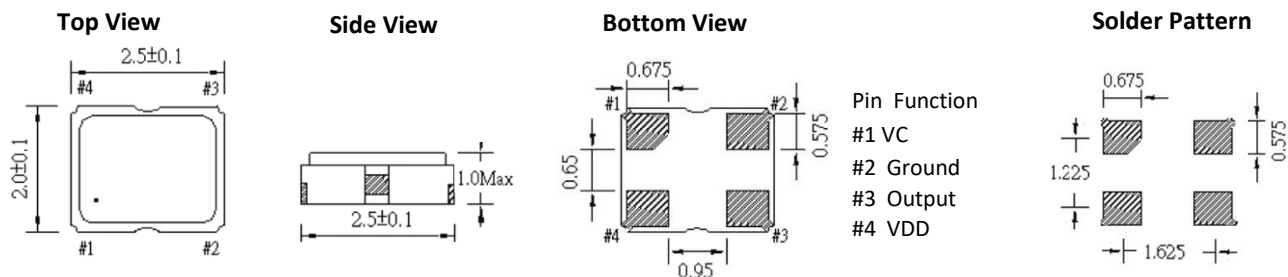


L2.5*W2.0*H1.0mm

STANDARD SPECIFICATION – CMOS Output

Parameter		Value			Unit	Condition
		Min.	Type	Max.		
Supply Voltage		-	3.3	-	V	+/-10%
Control Voltage Range		0.3	1.65	3	V	
Frequency Range		1.25		62.00	MHz	
Frequency Tolerance @25°C			±50		ppm	see p/n guide or Specify
Freq. Stability @Temp. Range		-	±50		ppm	see p/n guide or Specify
Operating Temp. Range		-20	-	70	°C	see p/n guide or Specify
Output	VOH	90%			V	@90% x VDD
	VOL	-		10%	V	@10% x VDD
	Load	-	15	-	pF	@ CMOS output or Specify
Symmetry		45	-	55		see p/n guide or Specify
Startup Time		-	-	10	ms	
Rise/Fall Time		-	-	10	ns	
Supply Current		-	-	15	mA	
Storage Temperature Range		-55	-	125	°C	
Aging per year		-	±3		ppm	

DIMENSION (mm)



PART NUMBER GUIDE

Example: TGS VM22A30BDH03 TLF-26M000

[Part Number and Part Code Structure](#)

TGS	VM22A	3 0	B D	G H 03	T	LF XX	-26M000
1	2	3 4	5 6	7 8 9	10	11 12	13

- 1) TGS: Company Code
- 2) VM22A: MHz SMD VCXO, CMOS Output, 4 pads, L2.5*W2.0*H1.0mm
- 3) 3: Supply Voltage, 3: 3.3V
- 4) 0: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 5) B: Overall Frequency tolerance, A: +/-25ppm; B: +/-50ppm; C: +/-100ppm; J: +/-20ppm or Specify
- 6) D: Operating Temp. Range, D: 0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 7) H: Symmetry H: 40/60; I: 45/55
- 8) 03: Output Load: 03: CMOS//15pF or specify
- 9) T: Packed in Tape/Reel, 3000pcs/Reel
- 10) LF: RoHS Compliant
- 11) XX: Internal Control Code- 2 letter or digits ; Blank: N/A
- 12) 26M000: Frequency Range 26.000MHz or specify

TGS Crystals Ltd. reserves the right to make changes to the product(s) and or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

MAIN FEATURE

- Low Power Consumption • 3.3V, 6 pads
- Industry standard option • High reliability and low aging

APPLICATION

- Mobile, GPS and more

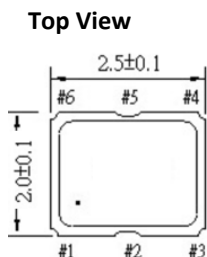


L2.5*W2.0*H1.1mm

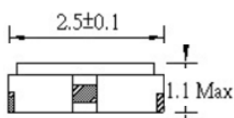
STANDARD SPECIFICATION – CMOS Output

Parameter	Value			Unit	Condition
	Min.	Type	Max.		
Supply Voltage	-	3.3	-	V	+/-10%
Control Voltage Range	0.3	1.65	3	V	
Frequency Range	1.25		62.00	MHz	
Frequency Tolerance @25°C		±50		ppm	see p/n guide or Specify
Freq. Stability @Temp. Range	-	±50		ppm	see p/n guide or Specify
Operating Temp. Range	-20	-	70	°C	see p/n guide or Specify
Output	VOH	90%		V	@90% x VDD
	VOL	-	10%	V	@10% x VDD
	Load	-	15	pF	@ CMOS output or Specify
Symmetry	45	-	55		see p/n guide or Specify
Startup Time	-	-	10	ms	
Rise/Fall Time	-	-	10	ns	
Supply Current	-	-	15	mA	
Storage Temperature Range	-55	-	125	°C	
Aging per year	-	±3		ppm	

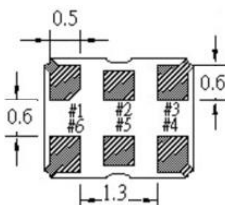
DIMENSION (mm)



Side View

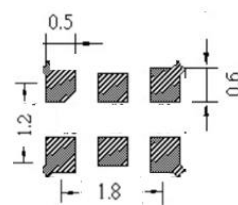


Bottom View



Pin Function
 #1 Vcon
 #2 Enable
 (Tri-State)/Disable
 #3 Ground
 #4 Output
 #5 NC
 #6 VDD

Solder Pattern



PART NUMBER GUIDE

Example: TGS VM22C30BDH03 TLF-26M000

[Part Number and Part Code Structure](#)

TGS	VM22C	3 0	B D	G H 03	T	LF XX	-26M000
1	2	3 4	5 6	7 8 9	10	11 12	13

- 1) TGS: Company Code
- 2) VM22C: MHz SMD VCXO, CMOS Output, 6 pads, L2.5*W2.0*H1.1mm
- 3) 3: Supply Voltage, 3: 3.3V
- 4) 0: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 5) B: Overall Frequency tolerance, A: +/-25ppm; B: +/-50ppm; C: +/-100ppm; J: +/-20ppm or Specify
- 6) D: Operating Temp. Range, D: 0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 7) H: Symmetry H: 40/60; I: 45/55
- 8) 03: Output Load: 03: CMOS//15pF or specify
- 9) T: Packed in Tape/Reel, 3000pcs/Reel
- 10) LF: RoHS Complaint
- 11) XX: Internal Control Code- 2 letter or digits ; Blank: N/A
- 12) 26M000: Frequency Range 26.000MHz or specify

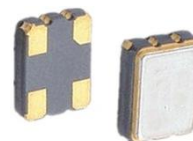
TGS Crystals Ltd. reserves the right to make changes to the product(s) and or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

MAIN FEATURE

- Low Power Consumption • 3.3V, 4 pads
- Industry standard option • High reliability and low aging

APPLICATION

- Mobile, GPS and more

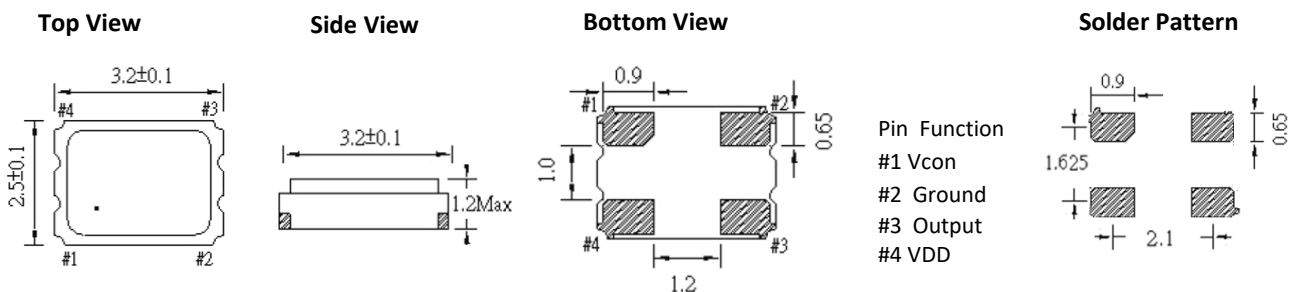


L3.2*W2.5*H1.2mm

STANDARD SPECIFICATION – CMOS Output

Parameter	Value			Unit	Condition
	Min.	Type	Max.		
Supply Voltage	-	3.3	-	V	+/-10%
Control Voltage Range	0.3	1.65	3	V	
Frequency Range	1.25		62.00	MHz	
Frequency Tolerance @25°C		±50		ppm	see p/n guide or Specify
Freq. Stability @Temp. Range	-	±50		ppm	see p/n guide or Specify
Operating Temp. Range	-20	-	70	°C	see p/n guide or Specify
Output	VOH	90%		V	@90% x VDD
	VOL	-	10%	V	@10% x VDD
	Load	-	15	pF	@ CMOS output or Specify
Symmetry	45	-	55		see p/n guide or Specify
Startup Time	-	-	10	ms	
Rise/Fall Time	-	-	10	ns	
Supply Current	-	-	15	mA	
Storage Temperature Range	-55	-	125	°C	
Aging per year	-	±3		ppm	

DIMENSION (mm)



PART NUMBER GUIDE

Example: TGS VM32A30BDH03 TLF-26M000

[Part Number and Part Code Structure](#)

TGS	VM32A	3 0	B D	G H 03	T	LF XX	-26M000
1	2	3 4	5 6	7 8 9	10	11 12	13

- 1) TGS: Company Code
- 2) VM32A: MHz SMD VCXO, CMOS Output, 4 pads, L3.2*W2.5*H1.2mm
- 3) 3: Supply Voltage, 3: 3.3V
- 4) 0: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 5) B: Overall Frequency tolerance, A: +/-25ppm; B: +/-50ppm; C: +/-100ppm; J: +/-20ppm or Specify
- 6) D: Operating Temp. Range, D: 0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 7) H: Symmetry H: 40/60; I: 45/55
- 8) 03: Output Load: 03: CMOS//15pF or specify
- 9) T: Packed in Tape/Reel, 3000pcs/Reel
- 10) LF: RoHS Compliant
- 11) XX: Internal Control Code- 2 letter or digits ; Blank: N/A
- 12) 26M000: Frequency Range 26.000MHz or specify

TGS Crystals Ltd. reserves the right to make changes to the product(s) and or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

MAIN FEATURE

- Low Power Consumption • 3.3V, 6 pads
- Industry standard option • High reliability and low aging

APPLICATION

- Mobile, GPS and more



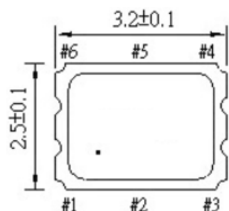
L3.2*W2.5*H1.2mm

STANDARD SPECIFICATION – CMOS Output

Parameter	Value			Unit	Condition
	Min.	Type	Max.		
Supply Voltage	-	3.3	-	V	+/-10%
Control Voltage Range	0.3	1.65	3	V	
Frequency Range	1.25		62.00	MHz	
Frequency Tolerance @25°C		±50		ppm	see p/n guide or Specify
Freq. Stability @Temp. Range	-	±50		ppm	see p/n guide or Specify
Operating Temp. Range	-20	-	70	°C	see p/n guide or Specify
Output	VOH	90%		V	@90% x VDD
	VOL	-	10%	V	@10% x VDD
	Load	-	15	pF	@ CMOS output or Specify
Symmetry	45	-	55		see p/n guide or Specify
Startup Time	-	-	10	ms	
Rise/Fall Time	-	-	10	ns	
Supply Current	-	-	15	mA	
Storage Temperature Range	-55	-	125	°C	
Aging per year	-	±3		ppm	

DIMENSION (mm)

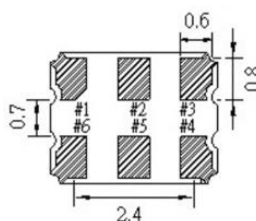
Top View



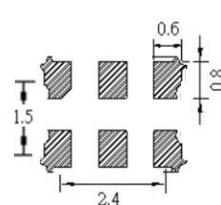
Side View



Bottom View



Solder Pattern



Pin Function

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

PART NUMBER GUIDE

Example: TGS VM32C30BDH03 TLF-26M000

[Part Number and Part Code Structure](#)

TGS	VM32C	3 0	B D	G H 03	T	LF XX	-26M000
1	2	3 4	5 6	7 8 9	10	11 12	13

- 1) TGS: Company Code
- 2) VM32C: MHz SMD VCXO, CMOS Output, 6 pads, L3.2*W2.5*H1.2mm
- 3) 3: Supply Voltage, 3: 3.3V
- 4) 0: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 5) B: Overall Frequency tolerance, A: +/-25ppm; B: +/-50ppm; C: +/-100ppm; J: +/-20ppm or Specify
- 6) D: Operating Temp. Range, D: 0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 7) H: Symmetry H: 40/60; I: 45/55
- 8) 03: Output Load: 03: CMOS//15pF or specify
- 9) T: Packed in Tape/Reel, 3000pcs/Reel
- 10) LF: RoHS Complaint
- 11) XX: Internal Control Code- 2 letter or digits ; Blank: N/A
- 12) 26M000: Frequency Range 26.000MHz or specify

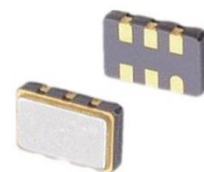
TGS Crystals Ltd. reserves the right to make changes to the product(s) and or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

MAIN FEATURE

- Low Power Consumption • 3.3V, 6 pads
- Industry standard option • High reliability and low aging

APPLICATION

- Mobile, GPS and more



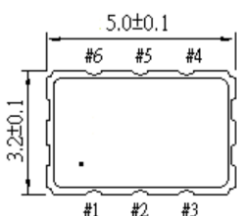
L5.0*W3.2*H1.3mm

STANDARD SPECIFICATION – CMOS Output

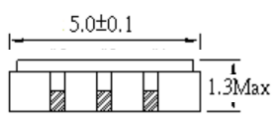
Parameter	Value			Unit	Condition
	Min.	Type	Max.		
Supply Voltage	-	3.3	-	V	+/-10%
Control Voltage Range	0.3	1.65	3	V	
Frequency Range	1.25		62.00	MHz	
Frequency Tolerance @25°C		±50		ppm	see p/n guide or Specify
Freq. Stability @Temp. Range	-	±50		ppm	see p/n guide or Specify
Operating Temp. Range	-20	-	70	°C	see p/n guide or Specify
Output	VOH	90%		V	@90% x VDD
	VOL	-	10%	V	@10% x VDD
	Load	-	15	pF	@ CMOS output or Specify
Symmetry	45	-	55		see p/n guide or Specify
Startup Time	-	-	10	ms	
Rise/Fall Time	-	-	10	ns	
Supply Current	-	-	15	mA	
Storage Temperature Range	-55	-	125	°C	
Aging per year	-	±3		ppm	

DIMENSION (mm)

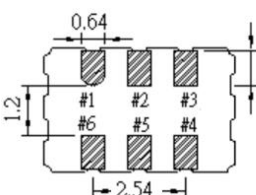
Top View



Side View

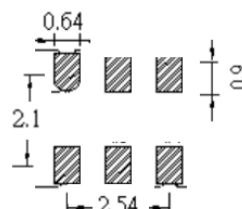


Bottom View



Pin Function
 #1 Vcon
 #2 Enable (Tri-State)/Disable
 #3 Ground
 #4 Output
 #5 NC
 #6 VDD

Solder Pattern



PART NUMBER GUIDE

Example: TGS VM53C30BDH03 TLF-26M000

[Part Number and Part Code Structure](#)

TGS	VM53C	3 0	B D	G H 03	T	LF XX	-26M000
1	2	3 4	5 6	7 8 9	10	11 12	13

- 1) TGS: Company Code
- 2) VM53C: MHz SMD VCXO, CMOS Output, 6 pads, L5.0*W3.2*H1.3mm
- 3) 3: Supply Voltage, 3: 3.3V
- 4) 0: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 5) B: Overall Frequency tolerance, A: +/-25ppm; B: +/-50ppm; C: +/-100ppm; J: +/-20ppm or Specify
- 6) D: Operating Temp. Range, D: 0~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 7) H: Symmetry H: 40/60; I: 45/55
- 8) 03: Output Load: 03: CMOS//15pF or specify
- 9) T: Packed in Tape/Reel, 1000pcs/Reel
- 10) LF: RoHS Complaint
- 11) XX: Internal Control Code- 2 letter or digits ; Blank: N/A
- 12) 26M000: Frequency Range 26.000MHz or specify

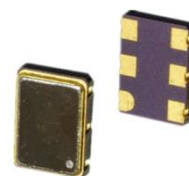
TGS Crystals Ltd. reserves the right to make changes to the product(s) and or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

MAIN FEATURE

- Low Power Consumption • 3.3V, 6 pads
- Industry standard option • High reliability and low aging

APPLICATION

- Mobile, GPS and more

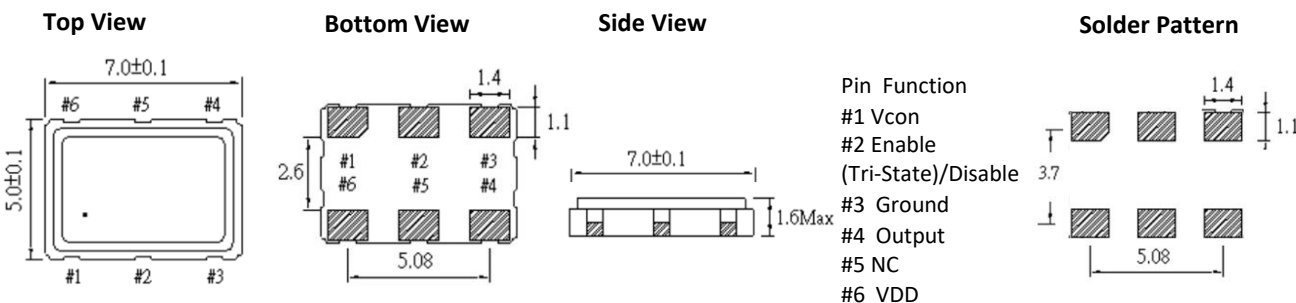


L7.0*W5.0*H1.6mm

STANDARD SPECIFICATION – CMOS Output

Parameter	Value			Unit	Condition
	Min.	Type	Max.		
Supply Voltage	-	3.3	-	V	+/-10%
Control Voltage Range	0.3	1.65	3	V	
Frequency Range	1.25		62.00	MHz	
Frequency Tolerance @25°C		±50		ppm	see p/n guide or Specify
Freq. Stability @Temp. Range	-	±50		ppm	see p/n guide or Specify
Operating Temp. Range	-20	-	70	°C	see p/n guide or Specify
Output	VOH	90%		V	@90% x VDD
	VOL	-	10%	V	@10% x VDD
	Load	-	15	pF	@ CMOS output or Specify
Symmetry	45	-	55		see p/n guide or Specify
Startup Time	-	-	10	ms	
Rise/Fall Time	-	-	10	ns	
Supply Current	-	-	15	mA	
Storage Temperature Range	-55	-	125	°C	
Aging per year	-	±3		ppm	

DIMENSION (mm)



PART NUMBER GUIDE

Example: TGS VM75C30BDH03 TLF-26M000

[Part Number and Part Code Structure](#)

TGS	VM75C	3 0	B D	G H 03	T	LF XX	-26M000
1	2	3 4	5 6	7 8 9	10	11 12	13

- 1) TGS: Company Code
- 2) VM75C: MHz SMD VCXO, CMOS Output, 6 pads, L7.0*W5.0*H1.6mm
- 3) 3: Supply Voltage, 3: 3.3V
- 4) 0: Enable/Disable Function, 1: Tri-state Via Pin 1; 0: N/A
- 5) B: Overall Frequency tolerance, A: +/-25ppm; B: +/-50ppm; C: +/-100ppm; J: +/-20ppm or Specify
- 6) D: Operating Temp. Range, D: -20~70 °C; E: -10 ~+60°C; F: -20 ~+70 °C; G: -40 ~+85 °C or Specify
- 7) H: Symmetry H: 40/60; I: 45/55
- 8) 03: Output Load: 03: CMOS//15pF or specify
- 9) T: Packed in Tape/Reel, 1000pcs/Reel
- 10) LF: RoHS Complaint
- 11) XX: Internal Control Code- 2 letter or digits ; Blank: N/A
- 12) 26M000: Frequency Range 26.000MHz or specify

TGS Crystals Ltd. reserves the right to make changes to the product(s) and or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

Headquarters

East Tower 2, XinchengDa Industry Park,
NO.2 Brigade, SanDian, Dong Xi Hu,
Wuhan, Hubei, 430040, China

Sales Office

Room 2524, Tower B, Commerical Bldg.
YueXiu JunBo, No. 18 TaZiHu Rd.
Wuhan, HuBei 430014 China
Tel: (86-27)8324 8955
Fax: (86-27)8324 8953
E: sales@tgscrystals.com

Global Representative

Irvine, CA, USA

NextGen
Oscillator, Relay & Switch

We are looking for more experienced Distributors to expanding business in Worldwide! Contact our Representative for more information TODAY !!