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About Us

Company Vision

We are committed to be an indispensable value-added partner to our customer by providing cost-effective, high quality and innovative solutions to the needs of global telecommunication market place.

Brief Overview of TST

Founded in 1997, TST's goal is to become the leading manufacturing, design and service provider for high performance communication components. The former Motorola employees who founded TST applied their extensive experiences in related device design, manufacturing and processing development to realize these goals. TST is now recognized as the leading SAW (surface acoustic wave) device supplier in Taiwan, as well as the key OEM/ODM supplier of SAW device in the world.

While firmly committed to its core strength in the manufacturing and design of the SAW devices, since early 2001 TST has expanded the span of its products and operations to cover BAW (Bulk Acoustic Wave) devices and modules (Xtal, XO, VCO, VCTCXO... etc). The strategy has proven to be a successful one. With the help of its outstanding technical and management team, TST is now being recognized and earned a reputation for being a value-added overall solution provider of communication components to its partners.

In anticipating the continuous and unprecedented growth of the communication segment in Asia, in 2003, TST is setting up its new facilities in Eastern China to better serve its customers' in the region with a full span of communication components, devices and modules.

SCREENING & TESTING

TST carries out all aspects of environmental test following MILSTD, JIS or European ISO standard. Electrical testing over temperature, vibration, shock or screen tests can be performed according to customers' specification and requirements.

THE INTEGRATED SERVICE & COMMITMENT

TST respects our customers and regards all of their problems as the first priority. Besides the "contract manufacturing service", our engineering team can support our customers from initial design-in stage to mass production and after service. With some customization, we are capable of OEM service requested from our subcontractor. Our logistics support ensures stocks are readily available to meet the customers' needs at the shortest time. TST is also committed to delivering reliable components, die and wafer products on time and at a highly competitive performance/ price ratio.

Quality Policy

『用心、專業、提昇產品品質』

Dedication, Profession, Total Quality Assurance

『節能、環保、追求綠色永續』

Energy Conservation, Environmental Awareness, Total Environmental Protection

『快速、可靠、創造客戶滿意』

Speed, Responsiveness, Total Customer Satisfaction



QS9000,ISO9001,ISO14001. Delphi, Visteon, TS16949, AEC-Q200

SAW Filters

Category	Model	Package Size	Frequency Range					
			1MHz	100MHz	500MHz	1000MHz	2000MHz	2600MHz
RF Filters	TA series	5.0X 5.0mm		100MHz		1000MHz		
	TA series	3.8X 3.8mm		250MHz				2600MHz
	TA series	3.0X 3.0mm		300MHz				2800MHz
	TA series	2.5X 2.0mm			800MHz			2600MHz
	TA series	2.0X 1.6mm			700MHz			2600MHz
	TA series	1.4X 1.1mm			800MHz			2600MHz
	TA series	1.1X 0.9mm			800MHz			2600MHz
IF Filters	TB series	25X 9.0mm	30MHz		200MHz			
	TB series	19.0X 6.5mm	30MHz		200MHz			
	TB series	13.3X 6.5mm	30MHz			600MHz		
	TB series	11.4X 5.0mm	70MHz		200MHz			
	TB series	9.0X 7.0mm	70MHz		200MHz			
	TB series	7.0X 5.0mm		100MHz		600MHz		
	TB series	5.0X 5.0mm		100MHz		800MHz		
	TB series	3.8X 3.8mm		150MHz		1000MHz		
SAW Duplexer	TF	5.0X 5.0mm			400MHz			2160MHz
	TF	3.8X 3.8mm			400MHz			2160MHz
	TF	2.5X 2.0mm			400MHz			2160MHz

Crystal Filters

Model	Package Size	Frequency Range					
		1MHz	100MHz	500MHz	1000MHz	2000MHz	2600MHz
TY series	7.0X 5.0mm	21.4MHz	90MHz				

SAW Resonators

Model	Package Size	Frequency Range					
		1MHz	100MHz	500MHz	1000MHz	2000MHz	2600MHz
TC series	5.0X 5.0mm		300MHz		1000MHz		
TC series	5.0X 3.5mm		300MHz		1000MHz		
TC series	3.8X 3.8mm		300MHz		1000MHz		

SAW Resonators

Model	Package Size	Frequency Range					
		1MHz	100MHz	500MHz	1000MHz	2000MHz	2600MHz
TC series	3.0X 3.0mm		300MHz		1000MHz		
TC series	2.5X 2.0mm			500MHz			2400MHz
TC series	TO39		200MHz		1000MHz		
TC series	F-II		200MHz		1000MHz		

Crystal Resonators

Model	Package Size	Frequency Range					
		1MHz	100MHz	500MHz	1000MHz	2000MHz	2600MHz
TZ series	HC49SMD	4MHz	90MHz				
TZ series	HC49US	4MHz	90MHz				
TZ series	8.0X 4.5mm	6MHz	70MHz				
TZ series	7.0X 5.0mm	6MHz	100MHz				
TZ series	6.0X 3.5mm	10MHz	80MHz				
TZ series	5.0X 3.2mm	8MHz	100MHz				
TZ series	4.0X 2.5mm	12MHz	50MHz				
TZ series	3.2X 2.5mm	12MHz	125MHz				
TZ series	2.5X 2.0mm	16MHz	66MHz				
TZ series	2.0X 1.6mm	20MHz	48MHz				
TZ series	1.6X 1.2mm	26MHz	48MHz				
TZ series	8.0X 3.8mm	32.768KHz					
TZ series	8.0X 3.0mm	32.768KHz					
TZ series	7.0X 1.5mm	32.768KHz					
TZ series	6.5X 2.0mm	32.768KHz					
TZ series	5.2X 1.5mm	32.768KHz					
TZ series	4.1X 1.5mm	32.768KHz					
TZ series	3.2X 1.5mm	32.768KHz					

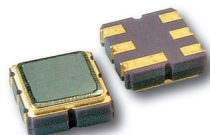
Please check TST website or email us for the details spec

Model	Package Size	Frequency Range					
		1MHz	100MHz	500MHz	1000MHz	2000MHz	2600MHz
SAW Oscillators	13.7X 9.4mm		156MHz		1000MHz		
SAW Oscillators	7.0X 5.0mm PECL		212.5MHz		700MHz		
SAW Oscillators	7.0X 5.0mm CMOS		156MHz		1000MHz		
SAW Oscillators	7.0X 5.0mm LVDS		150MHz		700MHz		
SAW Oscillators	7.0X 5.0mm		315MHz		868.35MHz		
VCSSO	13.7X 9.4mm		156MHz		1000MHz		
VCSSO	7.5X 5.0mm		156MHz		1000MHz		
Crystal Oscillators	7.0X 5.0mm PECL		50MHz		212.5MHz		
Crystal Oscillators	7.0X 5.0mm CMOS		2MHz		80MHz		
Crystal Oscillators	5.0X 3.2mm		2MHz		72MHz		
Crystal Oscillators	3.2X 2.5mm		2MHz		60MHz		
Crystal Oscillators	2.5X 2.0mm		2MHz		60MHz		
TCXO	7.0X 5.0mm		10MHz		40MHz		
TCXO	5.0X 3.2mm		10MHz		40MHz		
TCXO	3.2X 2.5mm		10MHz		40MHz		
TCXO	2.5X 2.0mm		10MHz		40MHz		
TCXO	2.0X 1.6mm		10MHz		40MHz		
VCXO	7.0X 5.0mm		50MHz		212.5MHz		
VCXO	5.0X 3.2mm		10MHz		40MHz		
OCXO	25.8X25.8mm		5MHz		100MHz		
OCXO	35.8X27mm		5MHz		100MHz		
OCXO	25.4X22mm		5MHz		40MHz		
OCXO	20.7X12.7mm		2.048MHz		40MHz		
PXO	7.0X 5.0mm	up to 200MHz					
PXO	5.0X 3.2mm	up to 200MHz					
PXO	3.2X 2.5mm	up to 200MHz					
PXO	2.5X 2.0mm	up to 200MHz					
VCO	8.2X 6.0mm			800MHz			2400MHz
VCO	5.5X 4.8mm			800MHz			2440MHz

5.0X5.0 / 3.8X3.8 / 3.0X3.0

RoHS Compliant
Lead-free soldering

RoHS Compliant
Lead free
Lead-free soldering

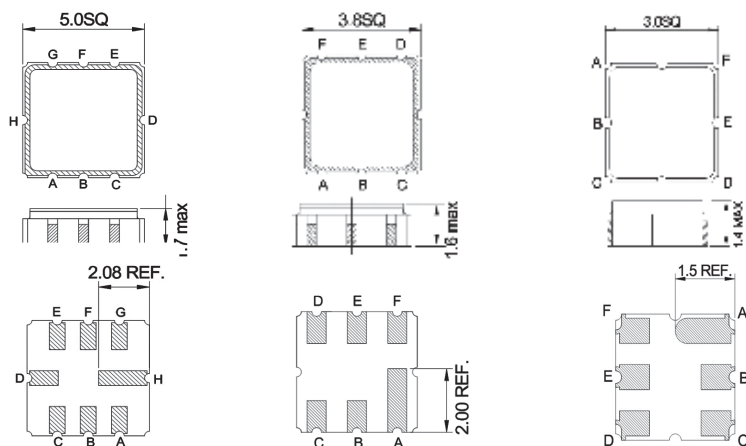


Features

- Ceramic Seam-Welded Package
- Excellent Reliability
- Ultra Miniature Package
- Suitable for Surface Mount Technology and IR Reflow Process
- For application in wireless communications system

Type(TA)	SAW Filter(RF)
Size(mm)	5.0X5.0 / 3.8X3.8 / 3.0X3.0
Frequency(MHz)	100 ~ 2800
Input / Output	Single or Balanced
Bandwidth	0.1MHz ~ 85MHz
Operating Temp Range(°C)	-40 ~ +85
Applications	Pager, Cordless Phone, GPS, FRS, Cable Modem, RKE, ISM, GSM, EGSM, DCS, PCS, CDMA, W-CDMA, SONET, Wireless Microphone, Industry Remote Control

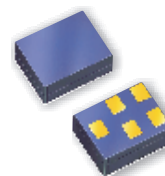
Consult our sales representative for other specifications.



2.5X2.0 / 2.0X1.6 / 1.4X1.1 / 1.1X0.9

RoHS Compliant
Lead-free soldering

RoHS Compliant
Lead free
Lead-free soldering

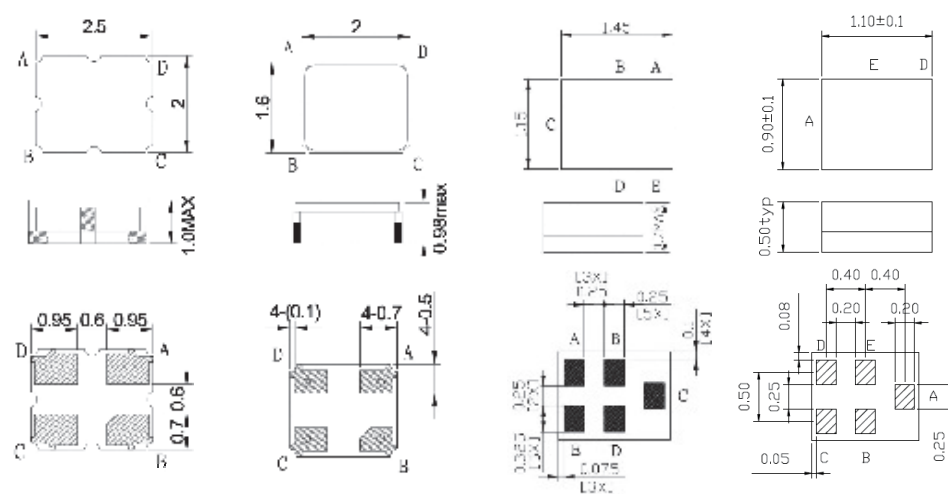


Features

- Ceramic Seam-Welded Package/1.4X1.1 Advanced CSP Package
- Excellent Reliability
- Ultra Miniature Package
- Suitable for Surface Mount Technology and IR Reflow Process
- For application in wireless communications system

Type(TA)	SAW Filter(RF)
Size(mm)	2.5X2.0 / 2.0X1.6 / 1.4X1.1
Frequency(MHz)	700 ~ 2600
Input / Output	Single or Balanced
Bandwidth	0.1MHz ~ 85MHz
Operating Temp Range(°C)	-40 ~ +85
Applications	Pager, Cordless Phone, GPS, FRS, Cable Modem, RKE, ISM, GSM, EGSM, DCS, PCS, CDMA, W-CDMA, SONET, Wireless Microphone, Industry Remote Control

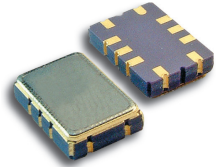
Consult our sales representative for other specifications.



13.3X6.5 / 7.0X5.0 / 5.0X5.0

RoHS Compliant
Lead-free soldering

RoHS Compliant
Lead free
Lead-free soldering

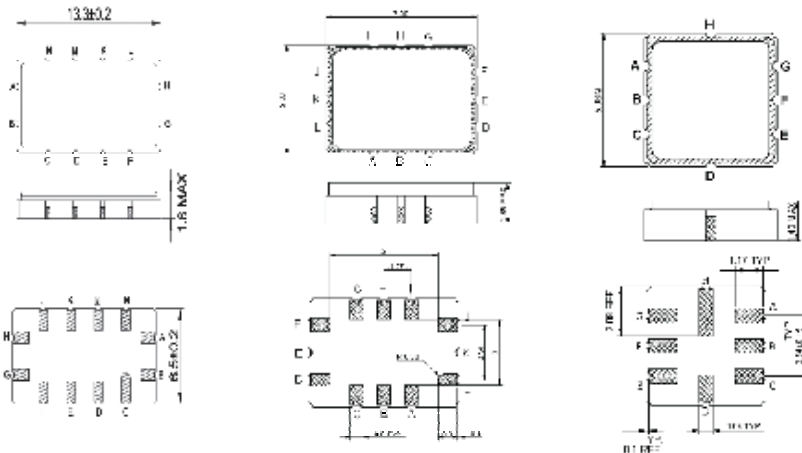


Features

- Ceramic Seam-Welded Package
- Excellent Reliability
- Ultra Miniature Package
- Suitable for Surface Mount Technology and IR Reflow Process
- For application in wireless communications system

Type(TB)	SAW Filter(IF)
Size(mm)	13.3X6.5 / 7.0X5.0 / 5.0X5.0
Frequency(MHz)	100 ~ 600
Input / Output	Single or Balanced
Bandwidth	0.015MHz ~ 100MHz
Operating Temp Range(°C)	-40 ~ +85
Applications	WLAN, Cable Modem, AV Sender, DECT, GSM, CDMA, IS-95, W-CDMA,

Bandwidth is for the typical application only for wider bandwidth device, the Insertion loss can be higher. Please consult factory for special requirements.



5.0X5.0 / 3.8X3.8 / 2.5X2.0

RoHS Compliant
Lead-free soldering

RoHS Compliant
Lead free
Lead-free soldering

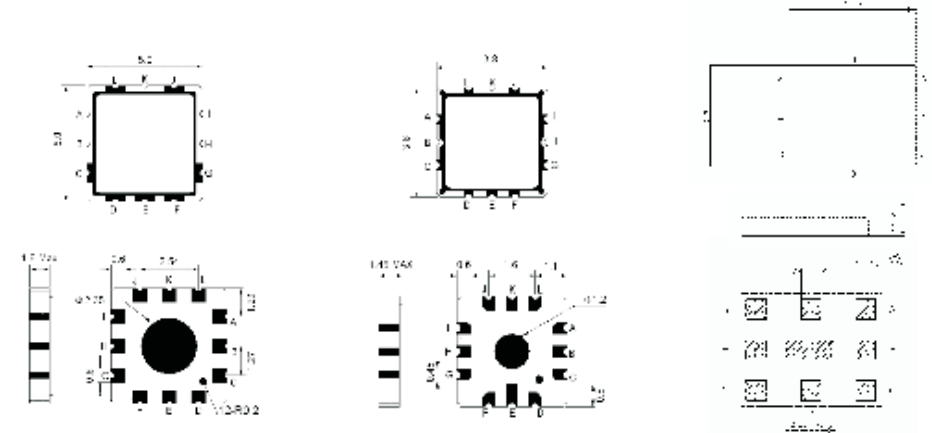


Features

- Ceramic Seam-Welded Package
- Excellent Reliability
- Ultra Miniature Package
- Suitable for Surface Mount Technology and IR Reflow Process
- For application in wireless communications system

Type(TF)	SAW Duplexer
Size(mm)	5.0X5.0 / 3.8X3.8 / 2.5X2.0
Frequency(MHz)	400 ~ 2160
Input / Output	Single or Balanced
Bandwidth	4.5MHz ~ 60MHz
Operating Temp Range(°C)	-40 ~ +85
Applications	CDMA450, CDMA800, WCDMA/UMTS

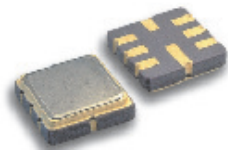
Consult factory representative for special requirements.



5.0X5.0 / 5.0X3.5

RoHS Compliant
Lead-free soldering

RoHS Compliant
Lead free
Lead-free soldering



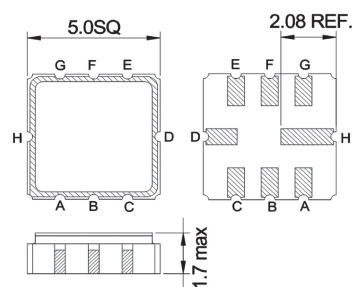
Features

- Ceramic Seam-Welded Package
- Excellent Reliability
- Ultra Miniature Package
- Suitable for Surface Mount Technology and IR Reflow Process
- For application in wireless communications system

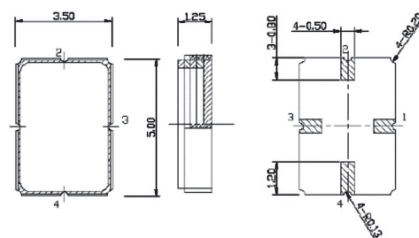
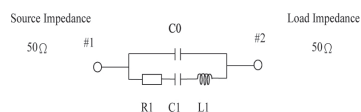
Type(TC)	SAW Resonator
Size(mm)	5.0X5.0 / 5.0X3.5
Frequency(MHz)	300 ~ 1000
Port	I
Insertion Loss	< 1.5dB Typical
Tolerance	$\pm 15\text{KHz} \sim \pm 200\text{KHz}$
Operating Temp Range(°C)	-40 ~ +85

Applications

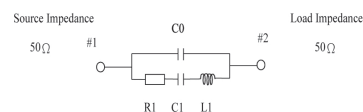
provides reliable, fundamental mode, quartz frequency stabilization i.e. in transmitters or local oscillators



Equivalent Circuit



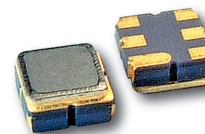
Equivalent Circuit



3.8X3.8 / 3.0X3.0 / 2.5X2.0

RoHS Compliant
Lead-free soldering

RoHS Compliant
Lead free
Lead-free soldering



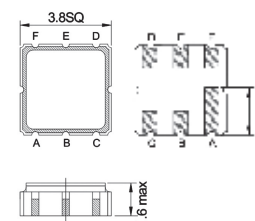
Features

- Ceramic Seam-Welded Package
- Excellent Reliability
- Ultra Miniature Package
- Suitable for Surface Mount Technology and IR Reflow Process
- For application in wireless communications system

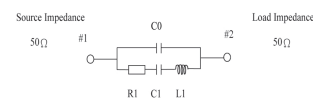
Type(TC)	SAW Resonator
Size(mm)	3.8X3.8 / 3.0X3.0 / 2.5X2.0
Frequency(MHz)	300 ~ 1000 / 500~2400
Port	I
Insertion Loss	< 1.5dB Typical
Tolerance	$\pm 15\text{KHz} \sim \pm 200\text{KHz}$
Operating Temp Range(°C)	-40 ~ +85

Applications

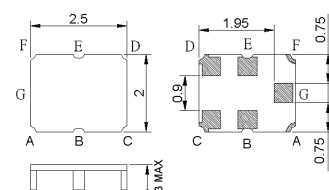
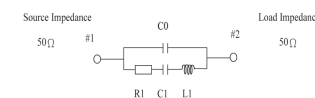
provides reliable, fundamental mode, quartz frequency stabilization i.e. in transmitters or local oscillators



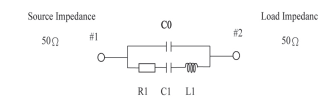
Equivalent Circuit



Equivalent Circuit



Equivalent Circuit



TO-39 / F-11

TO-39



F-11



RoHS Compliant
Lead-free soldering

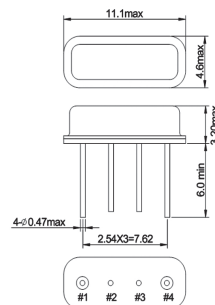
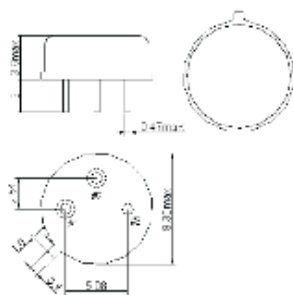
Features

- Metal dip Package
- Excellent Reliability Performance
- Rugged, Hermetic, Low-Profile F11 case
- For application in wireless communications systems

Type(TC)	SAW Resonator
Size(mm)	TO-39 / F-11
Frequency(MHz)	200 ~ 1000
Port	I
Insertion Loss	< 1.5dB Typical
Tolerance	$\pm 15\text{KHz} \sim \pm 200\text{KHz}$
Operating Temp Range(°C)	-40 ~ +85

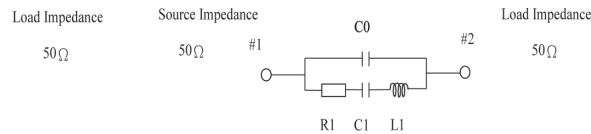
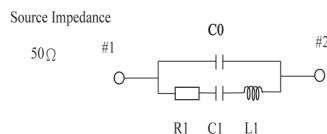
Applications

provides reliable, fundamental mode, quartz frequency stabilization i.e. in transmitters or local oscillators



Equivalent Circuit

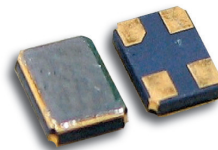
Equivalent Circuit



5.0X3.2 / 4.0X2.5 / 3.2X2.5

RoHS Compliant
Lead-free soldering

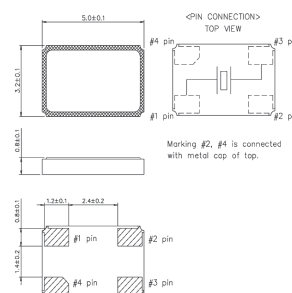
RoHS Compliant
Lead free
Lead-free soldering



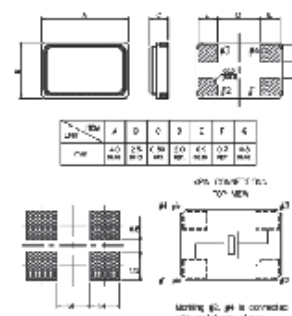
Features

- Ceramic Seam Weld Package
- Excellent Reliability Performance
- Ultra Miniature Package
- Available to Surface Mount Technology and IR Reflow Process
- For use in wireless communications devices

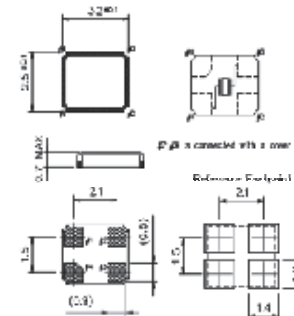
Type(TZ)	Crystal Resonator
Size(mm)	5.0X3.2 / 4.0X2.5 / 3.2X2.5
Frequency(MHz)	8 ~ 125
Overtone	Fundamental
Tolerance(25±3°C)	$\pm 10\text{ppm} \sim \pm 50\text{ppm}$
Operating Temp Range(°C)	-10 ~ +60 / -40 ~ +85
Temperature Characteristics (in reference to 25°C)	$\pm 10\text{ppm} / \pm 15\text{ppm}$
Rs(Ω)	50max ~ 120max
C Load (pF)	series ~ 32pF



Pin	Pin Connection
#1 pin	IN/OUT
#2 pin	GND
#3 pin	IN/OUT
#4 pin	GND



Pin	Pin Connection
#1 pin	IN/OUT
#2 pin	GND
#3 pin	IN/OUT
#4 pin	GND



Pin	Pin Connection
#1 pin	IN/OUT
#2 pin	GND
#3 pin	IN/OUT
#4 pin	GND

2.5X2.0 / 2.0X1.6 / 1.6X1.2

RoHS Compliant
Lead-free soldering

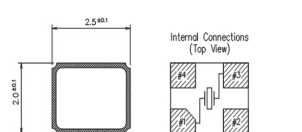
RoHS Compliant
Lead free
Lead-free soldering



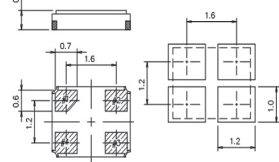
Features

- Ultra Miniature Package
- Excellent Reliability Performance
- Available to Surface Mount Technology and IR Reflow Process
- For use in wireless communications devices

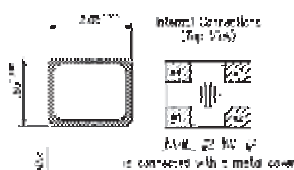
Type(TZ)	Crystal Resonator	
Size(mm)	2.5X2.0 / 2.0X1.6 / 1.6X1.2	
Frequency(MHz)	16 ~ 66	
Overtone	Fundamental	
Tolerance(25±3°C)	±10ppm ~ ±50ppm	
Operating Temp Range(°C)	-10 ~ +60 / -40 ~ +85	
Temperature Characteristics (in reference to 25°C)	±10ppm / ±15ppm	
Rs(Ω)	50max ~ 200max	
C Load (pF)	series ~ 32pF	



[NOTE] #2, #4 is connected with a cover
(Please connect with a GND or a power supply)



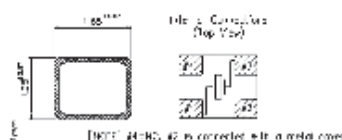
	Pin Connection
#1 pin	IN/OUT
#2 pin	GND
#3 pin	IN/OUT
#4 pin	GND



[NOTE] #2, #4 is connected with a metal cover
#2 is connected with a metal cover



	Pin connection
#1 Pin	IN/OUT
#2 Pin	NC
#3 Pin	IN/OUT
#4 Pin	GND



[NOTE] #4-NC, #2 is connected with a metal cover



	Pin connection
#1 pin	IN/OUT
#2 pin	NC
#3 pin	IN/OUT
#4 pin	GND

8.0X3.8 / 7.0X1.5 / 3.2X1.5

RoHS Compliant
Lead-free soldering

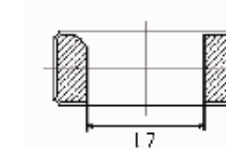
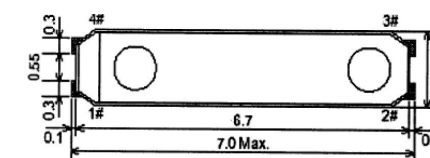
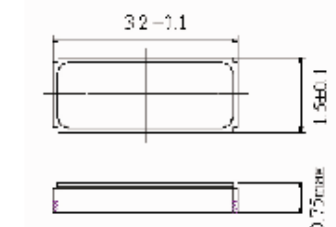
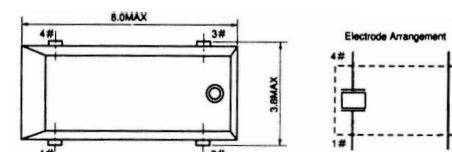
RoHS Compliant
Lead free
Lead-free soldering



Features

- Excellent Reliability Performance
- Ultra Miniature Package
- Suitable for Surface Mount Technology and IR Reflow Process

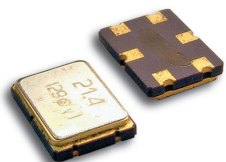
Type(TZ)	Crystal Resonator	
Size(mm)	8.0X3.8 / 7.0X1.5 / 3.2X1.5	
Frequency(KHz)	32.768	
Operating Temp Range(°C)	-40 ~ +85	
Applications		
Remarks		



7.0X5.0

RoHS Compliant
Lead-free soldering

RoHS Compliant
Lead free
Lead-free soldering

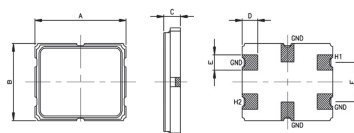


Features

- Ceramic Seam-Welded Package
- Excellent Reliability
- Ultra Miniature Package
- Suitable for Surface Mount Technology and IR Reflow Process
- For application in wireless communications system

Type(TY)	Crystal Filter
Size(mm)	7.0X5.0
Frequency(MHz)	21.4 ~ 90
Overtone	Fundamental or 3rd OT
Pole	2 / 3
Bandwidth	$\pm 3.75\text{KHz} \sim \pm 7.5\text{KHz}$
Insertion Loss	3dB max

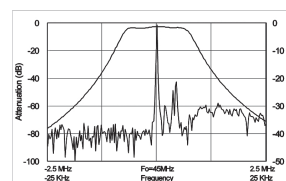
Consult factory representative for special requirements.



■ Typical Frequencies

21.400000	45.000000
90.000000	

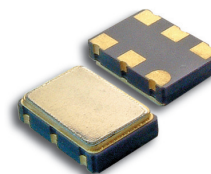
A	B	C	D	E	F
7.00 ± 0.18	5.00 ± 0.18	1.27 ± 0.20	1.21 ± 0.13	0.99 ± 0.13	2.54 ± 0.13



13.7X9.4 / 7.0X5.0

PECL/CMOS/LVDS
RoHS Compliant
Lead-free soldering

RoHS Compliant
Lead free
Lead-free soldering



Features

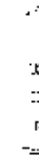
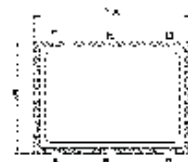
- SMD type SAW Oscillator
- 3.3V Operation / Complementary PECL Output
- Main application: SONET & Remote Keyless Entry

Type(TS)	SAW Oscillator
Size(mm)	13.7X9.4 / 7.0X5.0
Frequency(MHz)	212.5 ~ 700 / 156 ~ 1000 / 150 ~ 700
Output Level	PECL / CMOS / LVDS
Operating Temp Range(°C)	-40 ~ +85
Supply Voltage	2.5V~3.3V
Output Load	50ohms

Applications

WLAN, Cable Modem, AV Sender,
DECT, GSM, CDMA, IS-95, W-CDMA,

Consult factory sales representative for other specifications.

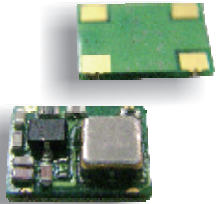


Pin	Function
1	PECL
2	CMOS
3	CMOS
4	CMOS
5	CMOS
6	CMOS

7.0X5.0

RF Sine Wave
RoHS Compliant
Lead-free soldering

RoHS Compliant
Lead free
Lead-free soldering



Features

- SMD type SAW Oscillator
- Excellent for High-density Packaging
- Excellent Frequency Stability & Phase Noise

Type(TS)	SAW Oscillator
Size(mm)	7.0X5.0
Frequency(MHz)	315 ~ 868.35
Output Level	RF Sine Wave
Operating Temp Range(°C)	-40 ~ +85
Supply Voltage	12V
Output Load	50ohms

Consult factory sales representative for other specifications.

■ Typical Frequencies

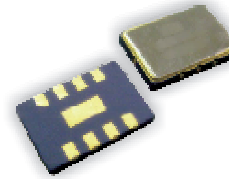
315	433.92
868.35	



13.7X9.4 / 7.0X5.0

RoHS Compliant
Lead-free soldering

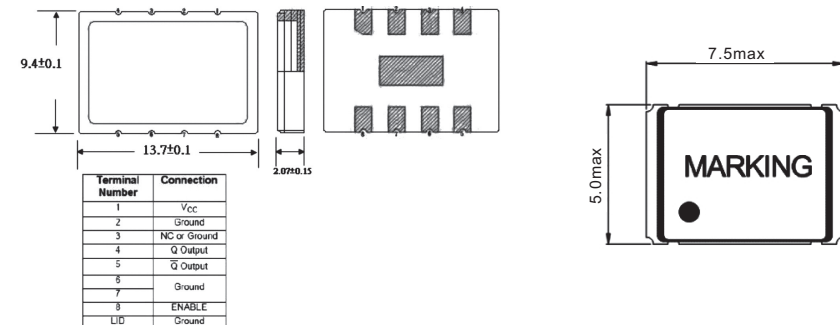
RoHS Compliant
Lead free
Lead-free soldering



Features

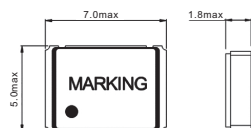
- Ceramic Seam Weld Package
- Excellent Reliability Performance
- Ultra Miniature Package
- Available to Surface Mount Technology and IR Reflow Process
- For use in wireless communications devices

Type(TH)	VCSO
Size(mm)	13.7X9.4 / 7.0X5.0
Frequency(MHz)	156 ~ 1000
Output Level	CMOS
Frequency Stability(Over all)	25ppm ~ ±50ppm
Operating Temp Range(°C)	-40 ~ +85
Supply Voltage	2.5V ~ 3.3V
Output Load	15pF
Applications	WLAN, Cable Modem, AV Transmitter, DECT, GSM, CDMA, IS-95, W-CDMA,



7.0X5.0

PECL

RoHS Compliant
Lead-free soldering

Features

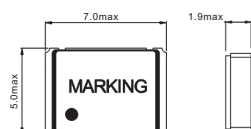
- SMD type Crystal Oscillator
- High Frequency XO / 3.3V Operation / Complementary PECL Output
- Optionable stand-by function for output (Tri-state output)
- Main applications : WLAN, SONET/SDH/DWDM, @ abite Ethernet, Storage Area Network, Digital Video

RoHS Compliant
Lead free
Lead-free soldering

Type(TW)	Crystal Oscillator
Size(mm)	7.0X5.0
Frequency(MHz)	50 ~ 212.5
Output Level	PECL
Frequency Stability(Over all)	$\pm 25\text{ppm} \sim \pm 100\text{ppm}$
Operating Temp Range(°C)	-20 ~ +70 / -40 ~ +85
Supply Voltage	2.5V ~ 3.3V
Output Load	50Ω

7.0X5.0

CMOS

RoHS Compliant
Lead-free soldering

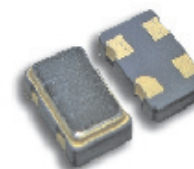
Features

- SMD type Crystal Oscillator
- Excellent for High-density Packaging
- High Frequency Stability
- Good Phase Noise

Type(TW)	Crystal Oscillator
Size(mm)	7.0X5.0
Frequency(MHz)	2 ~ 125
Output Level	CMOS
Frequency Stability(Over all)	$\pm 25\text{ppm} \sim \pm 50\text{ppm}$
Operating Temp Range(°C)	-20 ~ +70 / -40 ~ +85
Supply Voltage	2.5V ~ 3.3V
Output Load	15pF

5.0X3.2 / 3.2X2.5 / 2.5X2.0

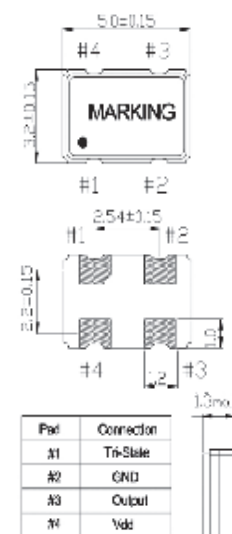
CMOS

RoHS Compliant
Lead-free solderingRoHS Compliant
Lead free
Lead-free soldering

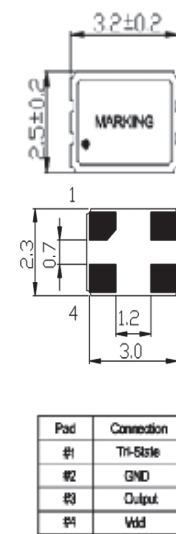
Features

- Ultra Small Package
- Excellent for High-density Packaging
- High Frequency Stability
- Good Phase Noise Performance

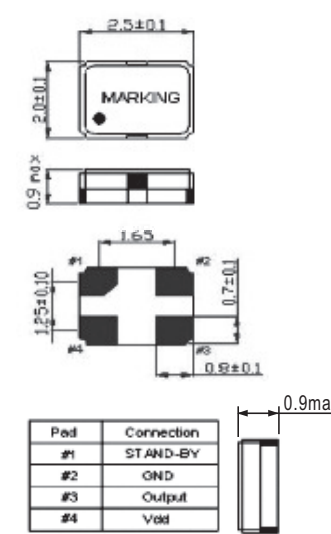
Type(TW)	Crystal Oscillator
Size(mm)	5.0X3.2 / 3.2X2.5 / 2.5X2.0
Frequency(MHz)	2 ~ 72
Output Level	CMOS
Frequency Stability(Over all)	$25\text{ppm} \sim \pm 50\text{ppm}$
Operating Temp Range(°C)	-20 ~ +70 / -40 ~ +85
Supply Voltage	1.8V ~ 3.3V
Output Load	15pF



UNIT : mm



UNIT : mm



5.0X3.2 / 3.2X2.5 / 2.5X2.0 / 2.0X1.6

RoHS Compliant
Lead-free soldering

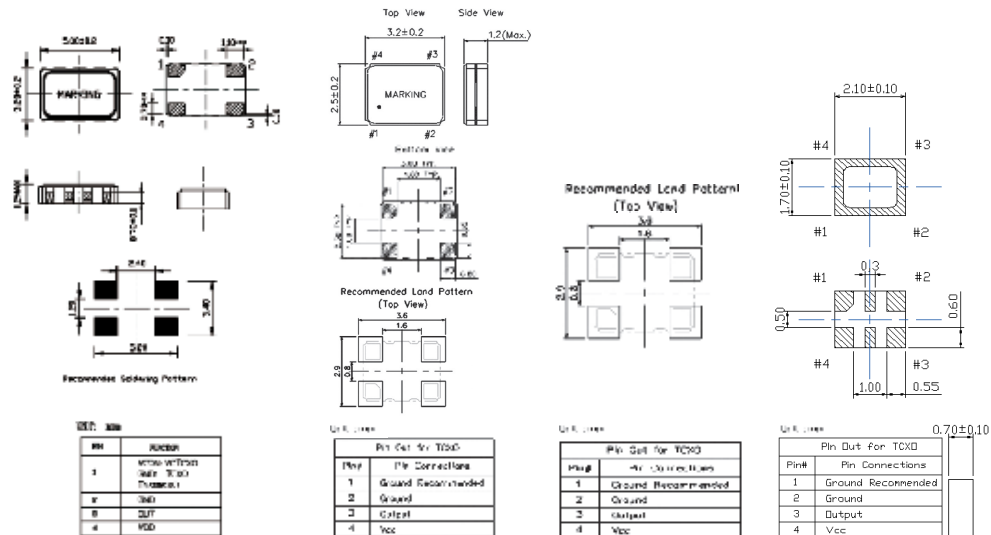
RoHS Compliant
Lead free
Lead-free soldering



Features

- SMD type Crystal Oscillator
- Miniature and lightweight
- Low phase noise
- One Chip IC assures high reliability
- Main applications: Mobil phones, GPS applications and other mobile communications systems

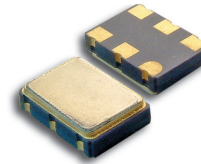
Type(TX)	TCXO
Size(mm)	5.0X3.2 / 3.2X2.5 / 2.5X2.0 / 2.0X1.6
Frequency(MHz)	10 ~ 52
Tolerance(25±3°C)	±0.5ppm ~ ±1.5ppm
Frequency Stability	±0.5ppm / ±1.5ppm / ±2.0ppm
Operating Temp Range(°C)	-30 ~ +85 / -20 ~ +70 / -40 ~ +85
Voltage Input (Vdd)	1.8V ~ 3.3V
Output	Clipped Sine Wave



7.0X5.0

PECL/CMOS
RoHS Compliant
Lead-free soldering

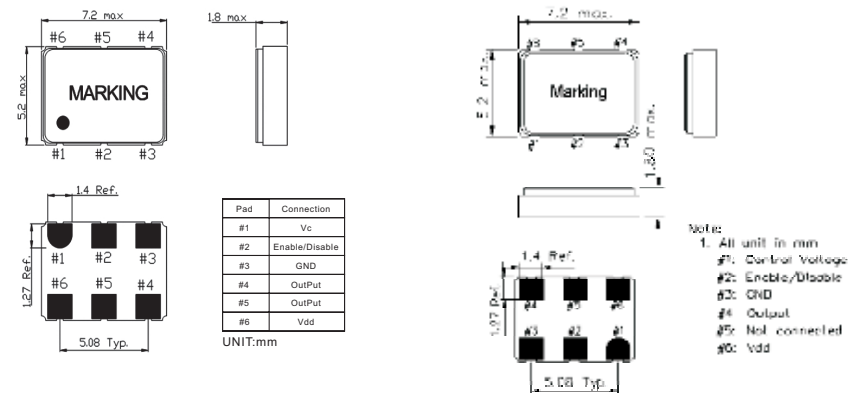
RoHS Compliant
Lead free
Lead-free soldering



Features

- SMD type Crystal Oscillator
- High Frequency XO / 3.3V Operation / Complementary PECL Output / CMOS
- Optionable stand-by function for output (Tri-state output)
- Main applications : WLAN, SONET/SDH/DWDM, Gigabite Ethernet, Storage Area Network, Digital Video

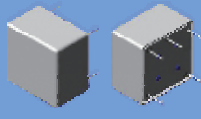
Type(TX)	VCXO
Size(mm)	7.0X5.0
Frequency(MHz)	50 ~ 212.5
Frequency Stability	±50ppm
Pull Range	±100ppm(min)
Operating Temp Range(°C)	-10 ~ +70 / -40 ~ +85
Supply Voltage	3.3V
Control Voltage	+1.65V±1.5V
Output Level	PECL / CMOS
Output Load	50Ω / 15pF



Note:
1. All unit in mm
#1: Control Voltage
#2: Enable/Disable
#3: GND
#4: Output
#5: Not connected
#6: Vdd

OCXO

25.8X25.8mm Series



Outline drawing

Performance specs

Power Supply	±3.3V ±5%	±5V ±5%	±12V ±5%
Consumption	0.9W steady state 2~2.5W optional start-up state(<2 minutes)		
Warm-up time	<10ppb after 10 minutes Vs. 2 Hours reading (SC cut)		
Frequency range	5~100 MHz		
Initial tolerance	200ppb (100 ppb optional)		

		0~70°C	-20~70°C	-40~85°C
5~20 MHz	AT	5~50 ppb	5~50 ppb	10~50 ppb
	SC	4~20 ppb	4~20 ppb	*
20~40 MHz	AT	5~50 ppb	5~50 ppb	10~100 ppb
	SC	4~20 ppb	4~20 ppb	*
40~100 MHz	AT	10~100 ppb	10~100 ppb	20~100 ppb
	SC	4~50 ppb	4~50 ppb	*

* : Please contact with us for data

Output signal	♦ HCMOS/TTL 15pF/5TTL load, duty cycle 40~60%
	♦ Sinus 50 Harmonics -30dBc, non-harmonics -70dBc

Freq tuning range	♦ SC: 0.5ppm~1ppm Linearity: 10%
	♦ AT: 1~3ppm Linearity: 10~20%

Phase noise	10Hz	100Hz	1KHz	10KHz	100KHz
(10MHz SC typical)	-125dBc	-135dBc	-145dBc	-155dBc	-155dBc

Aging	♦ SC: 20~50ppb	♦ AT: 50~200ppb
--------------	----------------	-----------------

Pin function

1: RF Output	2: Case ground	3: Vctrl**
4: Vref	5: Vcc	

** : Electrical Frequency Control optional

Performance specs

Power Supply	±3.3V ±5%	±5V ±5%	±12V ±5%
Consumption	0.9W steady state 2~4W optional start-up state(<2 minutes)		
Warm-up time	<10ppb after 10 minutes Vs. 2 Hours reading (SC cut)		
Frequency range	5~100 MHz		
Initial tolerance	200ppb (100 ppb optional)		

		0~70°C	-20~70°C	-40~85°C
5~20 MHz	AT	5~50 ppb	5~50 ppb	5~50 ppb
	SC	1~20 ppb	1~20 ppb	*
20~40 MHz	AT	5~50 ppb	5~50 ppb	10~100 ppb
	SC	2~20 ppb	2~20 ppb	*
40~100 MHz	AT	10~100 ppb	10~100 ppb	20~100 ppb
	SC	4~50 ppb	4~50 ppb	*

* : Please contact with us for data

Output signal	♦ HCMOS/TTL 15pF/5TTL load, duty cycle 40~60%
	♦ Sinus 50 Harmonics -30dBc, non-harmonics -70dBc

Freq tuning range	♦ SC: 0.5ppm~1ppm Linearity: 10%
	♦ AT: 1~3ppm Linearity: 10~20%

Phase noise	10Hz	100Hz	1KHz	10KHz	100KHz
(10MHz SC typical)	-125dBc	-135dBc	-145dBc	-155dBc	-155dBc

Aging	♦ SC: 20~50ppb	♦ AT: 50~200ppb
--------------	----------------	-----------------

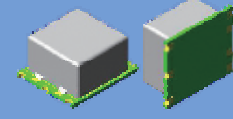
Pin function

1: Vctrl**	2: Vref	3: Vcc
4: RF Output	5: Case ground	

** : Electrical Frequency Control optional
Height optional: 10mm ~ 19mm

OCXO

25.4X22mm Series



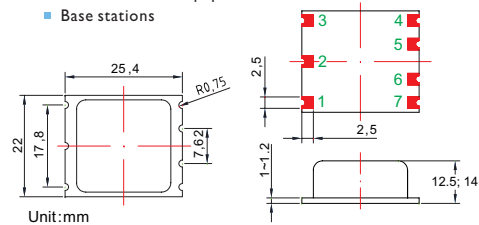
Outline drawing

Features

- SMD package for reflow
- Output signal enable
- High stability
- Fast warm-up & accurate oven-alarm

Applications

- Test equipments
- Communication equipments
- Base stations



Unit:mm

Performance specs

Power Supply	±3.3V ±5%	±5V ±5%	±12V ±5%
Consumption	1.1W steady state 2~4W optional start-up state(<2 minutes)		
Warm-up time	<10ppb after 10 minutes Vs. 2 Hours reading (SC cut)		
Frequency range	5~40 MHz		
Initial tolerance	200ppb (100 ppb optional)		

		0~70°C	-20~70°C	-40~85°C
5~12 MHz	AT	10~50 ppb	10~50 ppb	20~50 ppb
	SC	2~10 ppb	2~20 ppb	*
12~26 MHz	AT	10~50 ppb	10~50 ppb	20~100 ppb
	SC	2~10 ppb	20~20 ppb	*
26~40 MHz	AT	10~50 ppb	20~50 ppb	20~100 ppb
	SC	5~20 ppb	5~20 ppb	*

* : Please contact with us for data

Output signal	♦ HCMOS/TTL 15pF/5TTL load, duty cycle 40~60%
	♦ Sinus 50 Harmonics -30dBc, non-harmonics -70dBc

Freq tuning range	♦ SC: 0.5ppm~1ppm Linearity: 10%
	♦ AT: 1~3ppm Linearity: 10~20%

Phase noise	10Hz	100Hz	1KHz	10KHz	100KHz
(10MHz AT typical)	-125dBc	-135dBc	-145dBc	-155dBc	-155dBc

Aging	♦ SC: 20~50ppb	♦ AT: 100~300ppb
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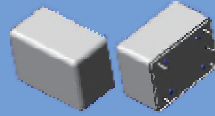
Pin function

1: RF output	2: Oven Alarm	3: Case GND	4: Vref
5: Vctrl	6: Enable	7: Vcc	

** : Electrical Frequency Control optional

OCXO

35.8X27mm Series



Outline drawing

Features

- Eu standard package
- High stability
- Low power consumption
- Fast warm-up

Applications

- Base stations
- Synthesizers
- Communication & test equipments

Unit: mm

Performance specs

Power Supply	±3.3V ±5%	±5V ±5%	±12V ±5%
Consumption	0.9W steady state 2~4W optional start-up state(<2 minutes)		
Warm-up time	<10ppb after 10 minutes Vs. 2 Hours reading (SC cut)		
Frequency range	5~100 MHz		
Initial tolerance	200ppb (100 ppb optional)		

		0~70°C	-20~70°C	-40~85°C
5~20 MHz	AT	5~50 ppb	5~50 ppb	5~50 ppb
	SC	1~20 ppb	1~20 ppb	*
20~40 MHz	AT	5~50 ppb	5~50 ppb	10~100 ppb
	SC	2~20 ppb	2~20 ppb	*
40~100 MHz	AT	10~100 ppb	10~100 ppb	20~100 ppb
	SC	4~50 ppb	4~50 ppb	*

* : Please contact with us for data

Output signal	♦ HCMOS/TTL 15pF/5TTL load, duty cycle 40~60%
	♦ Sinus 50 Harmonics -30dBc, non-harmonics -70dBc

Freq tuning range	♦ SC: 0.5ppm~1ppm Linearity: 10%
	♦ AT: 1~3ppm Linearity: 10~20%

Phase noise	10Hz	100Hz	1KHz	10KHz	100KHz
(10MHz SC typical)	-125dBc	-135dBc	-145dBc	-155dBc	-155dBc

Aging	♦ SC: 20~50ppb	♦ AT: 50~200ppb
--------------	----------------	-----------------

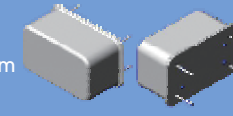
Pin function

1: Vctrl**	2: Vref	3: Vcc
4: RF Output	5: Case ground	

** : Electrical Frequency Control optional
Height optional: 10mm ~ 19mm

OCXO

20.3X12.7mm Series



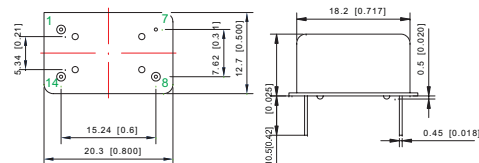
Outline drawing

Features

- DIP14 small size
- Low cost for high volume
- Low power consumption
- Fast warm-up

Applications

- Base stations
- Communication equipments
- Portable test equipments



unit: mm[inch]

Performance specs

Power Supply	±3.3V ±5%	±5V ±5%	±12V ±5%
Consumption	0.6W steady state 2.5W start-up state(<2 minutes)		
Warm-up time	<20ppb after 10 minutes Vs. 2 Hours reading		
Frequency range	2.048~40 MHz		
Initial tolerance	200ppb (100 ppb optional)		

		0~70°C	-20~70°C	-40~85°C
2.048~12 MHz	AT	30~100 ppb	50~100 ppb	70~200 ppb
	SC	20~50 ppb	30~50 ppb	*
12~26 MHz	AT	30~100 ppb	50~100 ppb	100~200 ppb
	SC	20~50 ppb	30~50 ppb	*
26~40 MHz	AT	50~200 ppb	100~200 ppb	30~100 ppb
	SC	30~100 ppb	50~100 ppb	*

* : Please contact with us for data

Output signal	♦ HCMOS/TTL 15pF/5TTL load, duty cycle 40~60%
	♦ Sinus 50 Harmonics -30dBc, non-harmonics -70dBc

Freq tuning range	♦ SC: 0.5ppm~1ppm Linearity: 10%
	♦ AT: 1~3ppm Linearity: 10~20%

Phase noise	10Hz	100Hz	1KHz	10KHz	100KHz
(10MHz AT typical)	-105dBc	-125dBc	-145dBc	-150dBc	-152dBc

Aging	♦ SC: 100~200ppb	♦ AT: 200~500ppb
--------------	------------------	------------------

Pin function

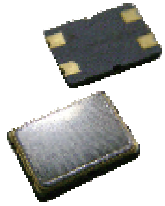
1: Vctrl**	7: Case ground
8: RF Output	14: Vcc

** : Electrical Frequency Control optional

7.0X5.0 / 5.0X3.2 / 3.2X2.5 / 2.5X2.0

CMOS
RoHS Compliant
Lead-free soldering

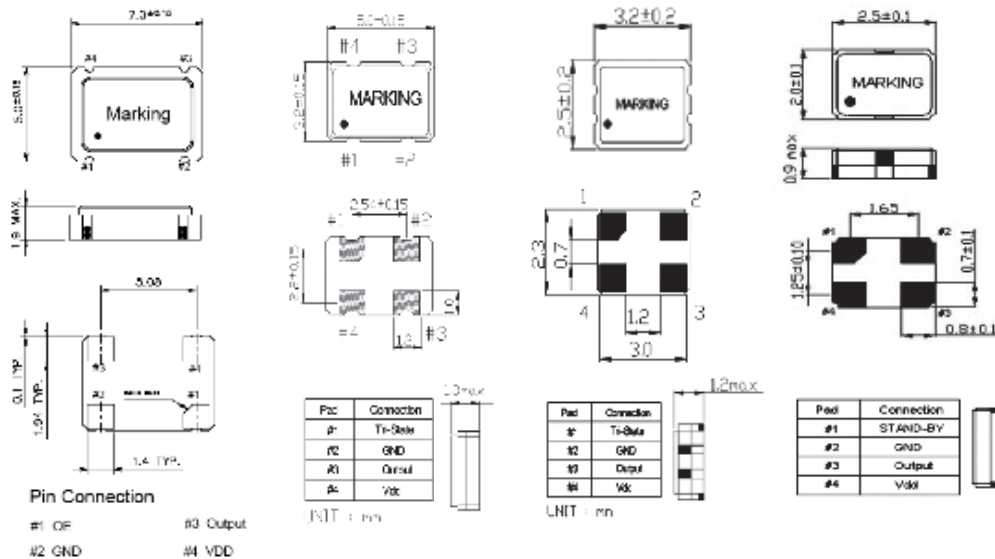
RoHS Compliant
Lead free
Lead-free soldering



Features

- SMD type Crystal Oscillator
- Excellent for High-density Packaging
- High Frequency Stability
- High Phase Noise

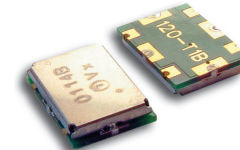
Type(TW)	PXO
Size(mm)	7.0X5.0 / 5.0X3.2 / 3.2X2.5 / 2.5X2.0
Frequency(MHz)	Up to 200
Output Level	CMOS
Frequency Stability(Over all)	$\pm 25\text{ppm} \sim \pm 50\text{ppm}$
Operating Temp Range(°C)	-20 ~ +70 / -40 ~ +85
Supply Voltage	2.5V ~ 3.3V
Output Load	15pF



8.2X6.0 / 5.5X4.8

RoHS Compliant
Lead-free soldering

RoHS Compliant
Lead free
Lead-free soldering

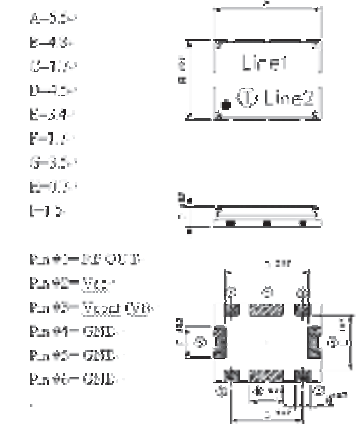
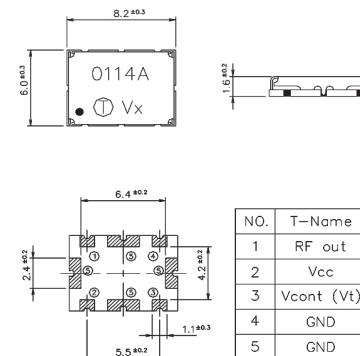


Features

- Wide Tuning range
- Small package
- Low phase noise
- Up to 2.4GHz
- Main applications : DCS/GSM, ISM Bands Wireless Telemetry, WiFi Radio.

Type(TV)	Voltage Controlled Oscillator
Size(mm)	8.2X6.0 / 5.5X4.8
Frequency(MHz)	800 ~ 2400
Voltage	+2.2 to +12VDC
Power	Power Efficient
Phase Noise	Exceptionally Low Phase Noise
Operating Temp Range(°C)	-40 ~ +85
Tuning Range	Ultra Wide Tuning Range

Consult factory for special requirements



Standard Packing

SAW Filter Standard Package (Reference Only)

Package Size	1.4X1.1	2.0X1.6	2.0X2.5	3.0X3.0	3.8X3.8	5.0X5.0	5.0X3.5	7.0X5.0
13"				3000	3000	3000	3000	2000
7"	3000	3000	2000	1000	1000	1000	1000	1000

Package Size	9.0X7.0	11.4X5.0	13.3X6.5	19X6.5	25X9.0	13.7X9.4
7"	500	500	500	500	500	200

Crystal Standard Package (Reference Only)

Package Size	2.0X1.6	2.0X2.5	2.5X3.2	2.5X4.0	5.0X3.2	6.0X3.5	7.0X5.0
13"					3000	1000	
7"	3000	3000	3000	1000			1000

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