MITECH

OVEN CONTROLLED CRYSTAL OSCILLATORS

Rev.A

01055SM
Ultra Low Phase Noise
OCXO in Tiny 14x9x9mm SMD Package

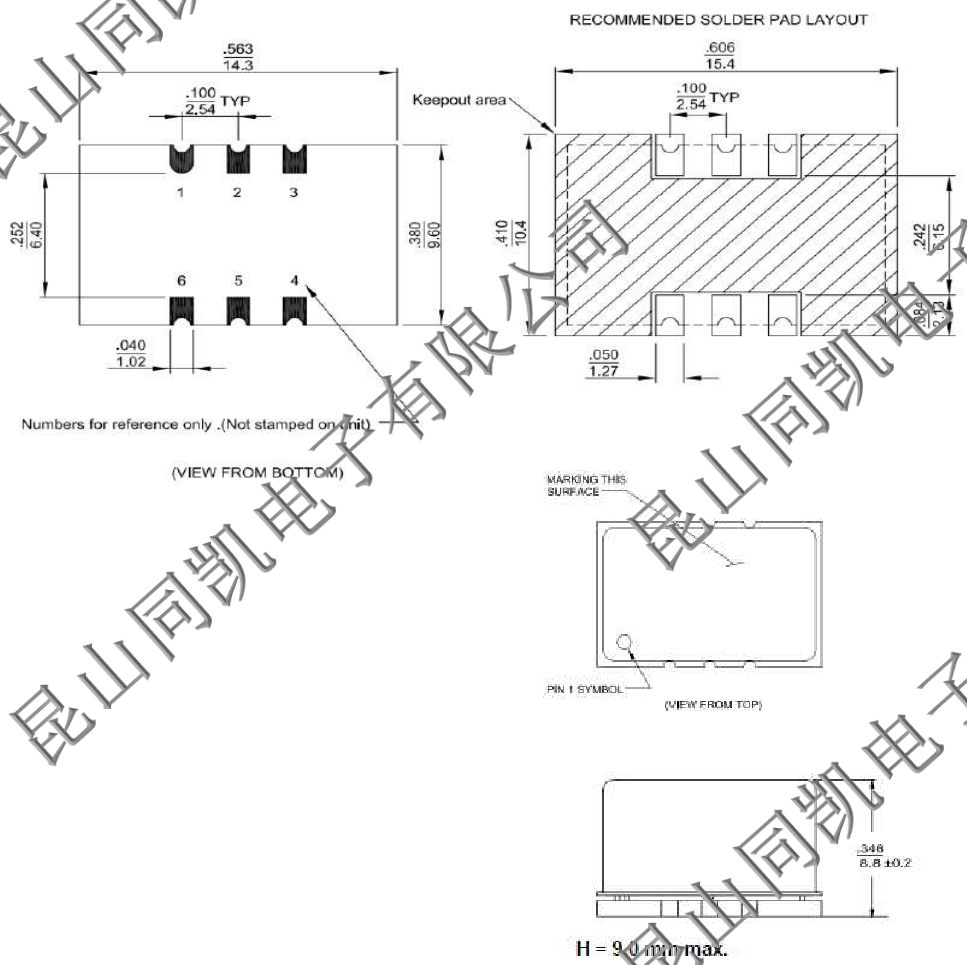
Product Data Sheet

Features

- Small HS SMD Package
- Fast Warm-Up Time
- Low Power Consumption
- Output Enable /Disable option

Applications

- Instrumentation
- Clock Reference for Microwave Signal Source
- Test & Measurement
- Telecommunication Systems
- Data Communications



MITECH

OVEN CONTROLLED CRYSTAL OSCILLATORS

01055SM

Electrical

Parameter	Symb	Condition	Min	Typ	Max	Unit	Note	
Frequency	F			10		MHz		All parameters for 10.00 MHz
Frequency stability	ΔF/F	vs. Temp.		±5		ppb	-20°C to 70°C	
		vs. Supply			5	ppb/5% change		
		Vs. load			5	ppb/10% change		
Aging		per first year 15 years			5E-7 2E-6		After 30 days of continuous operation	
Allan Deviation		1s		5E-11				
SSB Phase Noise at 10.000 MHz	£ (Δf)	10 Hz 100 Hz 1 KHz 10 KHz 100 KHz			-115 -145 -155 -165 -165	dBc/Hz		
Supply Voltage		3V±5%	3.135	3.3	3.465	V		
Power consumption	P	steady state, 25°C start-up			0.594 1.98	W		
Output Level	$V_{OL} \leqslant 0.1 \times V_S$; $V_{OH} \geqslant +0.9 \times V_S$							
Load	1 kOhm // 15pF							
Warm-up time	τ	to 0.1ppm accuracy			5	minutes		
Output Waveform	(LV)HCMOS							
Control voltage	Vc		0.3		3	V		
Pull range			±5.0			ppm	By external tuning volatge	
Duty Cycle			45%		55%			
Linearity		Monotonic,posit	±10%					
Rise & fall time					5	ns		

Environmental and Mechanical

Storage temp. range	-45 to 90°C
Operating temp. range	-20 to 70°C
Mechanical Shock	Per MIL-STD-202, 30G, 11ms
Thermal Shock	Per MIL-STD-883, Method 1011, Condition A
Vibration	Per MIL-STD-202, 5G to 2000 Hz
Operational vibration	Phase noise under vibration to be verified by the customer
Seal	Only crystal resonator is hermetically sealed
Soldering Conditions	See MAX reflow profile below; The device may be reflowed once. Reflowing upside down is not allowed. Hand soldering is highly encouraged. NO CLEAN assembly is recommended

Electrical Connections

Pin Out	Pin #1-Vc or N/C;Pins#2–RF Enable or N/C;Pin #3 –GND and CASE;Pin #4 - OUTPUT; Pin #5–N/C; Pin #6 - Vcc

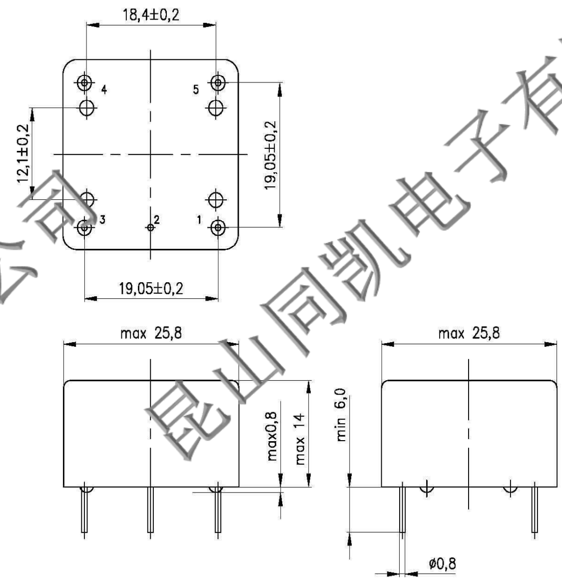
Rev. A

01060HE
Precision SC-cut OCXO in 1”x1” Through Hole Package

Product Data Sheet

Features

- Fast Warm-Up Time
- High Stability
- Long-Term Stability
- Very Low Phase Noise



Applications

- Instrumentation
- Clcok Reference Microwave Signal Source
- Data Communications
- Synthesizer reference Clock
- Test and Measurement

01060HE

Rev. A

Electrical (3)

Parameter	Symb	Condition	Min	Typ	Max	Unit	Note
Frequency	F			10.000		MHz	All parameters for 10 MHz
Frequency stability	ΔF/F	vs. Temp., total excursion		±10		ppb	
		vs. Supply			±1	ppb/5%Vcc	
Aging		per day per year, first year 10 years			5E-10 5E-8 3E-7		
Allan Variance		.1s to 1s		1E-12			
SSB Phase Noise		1Hz 10 Hz 100 Hz 1 KHz 10 KHz			-114 -144 -157 -165 -170	dBc/Hz	
G-sensitivity		worst direction		1.0		ppb/G	
Input Voltage	Vcc		11.4	12.0	12.6	V	
Power consumption	P	steady state, 25°C start-up @ -40°C			1.8 4.8	W	
Spectral Purity		Subharmonics Spurious Harmonics		none	 -80 -30	dBc	
Load		Internally AC coupled 50 Ohm					
Warm-up time	τ				5	minutes	
Output Power	Pout	Into 50 Ohm	8			dBm	
Control voltage	Vc		0.5		9.5	V	
Pull range		from nominal F	±0.4			ppm	
Linearity		Monotonic, posit.		10%			
Input impedance			10			KOhm	
Modulation bandwidth	Fm		1			KHz	
Initial Calibration		@25°C			±100	ppb	After 30 min power ON

Environmental and Mechanical

Operating temp. range	-20°C to 70°C
Storage temper.	-50°C to 95°C
Mechanical Shock	Per MIL-STD-202, 30G, 11ms
Vibration	Per MIL-STD-202, 5G to 2000 Hz
Soldering Conditions	260°C for 10s Max leads only

Electrical Connections

Pin Out	Pin #1 -- Output; Pin#2 – GND; Pin #3 – Vc; Pin #4 – Vref; Pin #5 - Vcc;

Notes:

1. All parameters, unless otherwise specified, are at nominal conditions, ie: T=+25°C, Vs=+12 V, Vc=+5.0 V

Rev. A

01060HL-T
Precision SC-cut OCXO in 1”x1” Through Hole Package

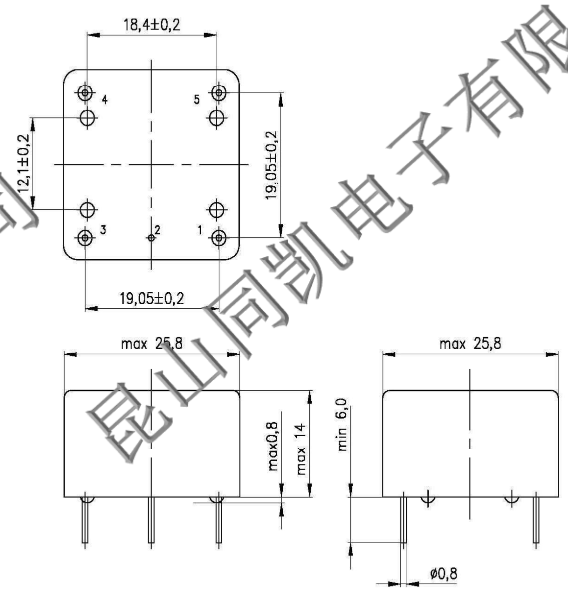
Product Data Sheet

Features

- SC-cut crystal
- High Stability (from 5 ppb)
- Low Aging (5x10^{-10}/day)
- Very Low Phase Noise (-135 dBc/Hz @ 10 Hz)

Applications

- Instrumentation
- Telecommunication Systems
- Data Communications
- GPS
- COTS/Dual use



01060HL-T

Rev. A

Electrical (3)

Parameter	Symb	Condition	Min	Typ	Max	Unit	Note
Frequency	F			10.000		MHz	All parameters for 10 MHz
Frequency stability	ΔF/F	vs. Temp., total excursion			±10	ppb	Peak-to-peak
		vs. Supply			±1	ppb/5%Vcc	
Aging		per day per year, first year 10 years			5E-10 1E-7 3E-7		
Allan Variance		.1s to 1s		5E-12			
SSB Phase Noise		1Hz 10 Hz 100 Hz 1 KHz 10 KHz			-100 -135 -155 -162 -168	dBc/Hz	
G-sensitivity		worst direction			1.0	ppb/G	
Input Voltage	Vcc		11.4	12.0	12.6	V	
Power consumption	P	steady state, 25°C steady state, -30°C start-up @ -40°C			1.5 2.4 3.8	W	
Spectral Purity		Subharmonics Spurious Harmonics		none	 -80 -30	dBc	
Load		Internally AC coupled 50 Ohm					
Warm-up time	τ				5	minutes	
Output Power	Pout	Into 50 Ohm	8			dBm	
Control voltage	Vc		0.5		9.5	V	
Pull range		from nominal F	±0.4			ppm	
Deviation slope		Monotonic, posit.	0.08	0.1		ppm/V	
Input impedance	Zin		10			KOhm	
Modulation bandwidth	Fm				1	KHz	
Setability	Vc0	@25°C, Fnom.	4.5	5.0	5.5	V	
Initial Calibration		@25°C			±100	ppb	After 30 min power ON

Environmental and Mechanical

Operating temp. range	-40°C to 70°C
Storage temper.	-50°C to 95°C
Mechanical Shock	Per MIL-STD-202, 30G, 11ms
Vibration	Per MIL-STD-202, 5G to 2000 Hz
Soldering Conditions	260°C for 10s Max leads only

Electrical Connections

Pin Out	Pin #1 -- Output; Pin#2 – GND; Pin #3 – Vc; Pin #4 – Vref; Pin #5 - Vcc;

Notes:

1. All parameters, unless otherwise specified, are at nominal conditions, ie: T=+25°C, Vs=+12 V .

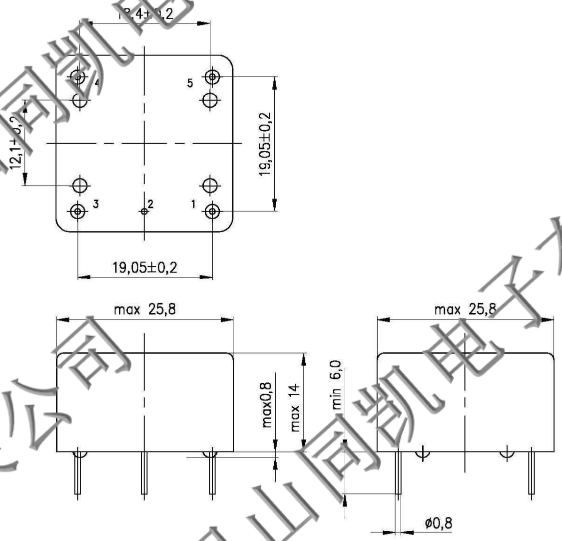
10060HL-16 Premium Low Phase Noise Precision SC-cut HF OCXO in 1”x1” Through Hole Package

Rev. A

Product Data Sheet

Features

- SC-cut crystal
- Ultra Low Phase Noise
- Compact package



Applications

- Telecommunication Systems
- Data Communications
- Radar
- Instrumentation

Electrical (1)

Parameter	Symb	Condition	Min	Typ	Max	Unit	Note	
Frequency	F			100		MHz		All parameters for 100.000 MHz
Frequency stability	ΔF/F	vs. Temp.			±50	ppb	-40 to +70℃	
					±275	ppb	-55 to +85 ℃	
		vs. Supply			5	ppb/5% change		
		Vs. load			2	ppb/5% change		
Aging		per day per first year 10 years			5E-9 5E-7 2.0	 ppm	After 30 days of continuous operation	
Allan Deviation		.01s to 1s		5E-11				
SSB Phase Noise	£(Δf)	10 Hz 100 Hz 1 KHz 10 KHz			-95 -125 -158 -170	dBc/Hz		
G-sensitivity		worst direction			1	ppb/G		
Input Voltage	Vcc	12V±5%	11.4	12.0	12.6	V		
Power consumption	P	steady state, 25°C start-up			1.8 4.8	W	Still air	
Spectral Purity		Output power Subharmonics Spurious Harmonics	12	 none	16 -80 -30	dBm dBc		
Load	50 Ohm (Internally AC-coupled)							
Warm-up time	τ	to 0.1ppm accuracy			5	minutes		
Output Waveform		Sine-wave						
Control voltage	Vc		0		10.0	V		
Pull range		from nominal F	±3.0			ppm		
Modulation Bandwidth	MBW	Vc port input LPF 3dB cut-off freq.	0.5	1		KHz		
Deviation slope		Monotonic, posit		0.7		ppm/V		
Setability	Vc0	@25°C, Fnom.	4.0	5.0	6.0	V		

Note: 1. All parameters, unless otherwise specified, are at nominal conditions, ie: Vs = +12V, Vc= +5.0;T= +25℃± 3℃

Environmental and Mechanical

Operating temp. range	-55 to +85℃
Storage temper.	-55 to +90℃
Mechanical Shock	Per MIL-STD-202, 30G, 11ms
Thermal Shock	Per MIL-STD_883, Method 1011, Condition A
Vibration	Per MIL-STD-202, 5G to 2000 Hz
Operational vibration	Phase noise under vibration to be verified by the customer
Seal	Per MIL-STD_883, Method 1014, Cond A and Cond C
Soldering Conditions	260℃ for 10s Max leads only

Electrical Connections

Pin Out	Pin #1- Output ; Pin #2 – GND; Pin #3 – Voltage Control; Pin#4 – Vref ; Pin#5 - Vcc

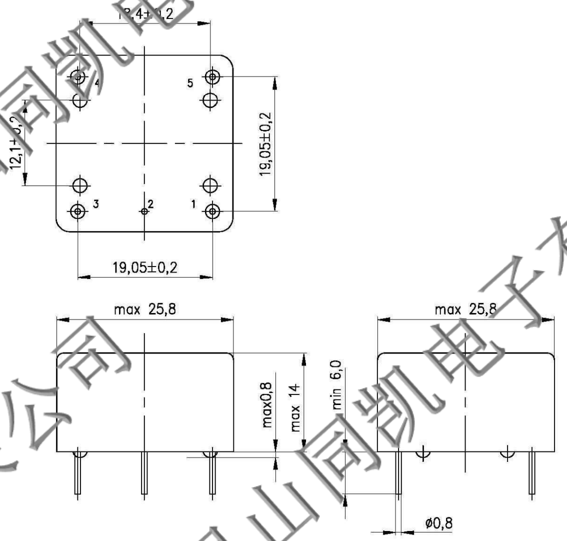
10060HL-16-5V Premium Low Phase Noise Precision SC-cut HF OCXO in 1”x1” Through Hole Package

Rev. A

Product Data Sheet

Features

- SC-cut crystal
- Ultra Low Phase Noise
- Compact package



Applications

- Telecommunication Systems
- Data Communications
- Radar
- Instrumentation

Electrical (1)

Parameter	Symb	Condition	Min	Typ	Max	Unit	Note
Frequency	F			100		MHz	All parameters for 100.000 MHz
Frequency stability	ΔF/F	vs. Temp.			±50	ppb	-40 to +70°C
					±275	ppb	-55 to +85 °C
		vs. Supply			5	ppb/5% change	
		Vs. load			2	ppb/5% change	
Aging		per day per first year 10 years			5E-9 5E-7 2.0	ppm	After 30 days of continuous operation
Allan Deviation		.01s to 1s		5E-11			
SSB Phase Noise	£(Δf)	10 Hz 100 Hz 1 KHz 10 KHz			-95 -125 -158 -170	dBc/Hz	
G-sensitivity		worst direction			1	ppb/G	
Input Voltage	Vcc	12V±5%	4.75	5.0	5.25	V	
Power consumption	P	steady state, 25°C start-up			1.8 4.8	W	
Spectral Purity		Output power Subharmonics Spurious Harmonics	12	none	16 -80 -30	dBm dBc	
Load		50 Ohm (Internally AC-coupled)					
Warm-up time	τ	to 0.1ppm accuracy			5	minutes	
Output Waveform		Sine-wave					
Control voltage	Vc		0		10.0	V	
Pull range		from nominal F	±3.0			ppm	
Modulation Bandwidth	MBW	Vc port input LPF 3dB cut-off freq.	0.5		1	KHz	
Deviation slope		Monotonic, posit		0.7		ppm/V	
Setability	Vc0	@25°C, Fnom.	4.0	5.0	6.0	V	

Note: 1. All parameters, unless otherwise specified, are at nominal conditions, ie: Vs = +12V, Vc= +5.0; T= +25°C ± 3°C

Environmental and Mechanical

Operating temp. range	-55 to +85°C
Storage temper.	-55 to +90°C
Mechanical Shock	Per MIL-STD-202, 30G, 11ms
Thermal Shock	Per MIL-STD_883, Method 1011, Condition A
Vibration	Per MIL-STD-202, 5G to 2000 Hz
Operational vibration	Phase noise under vibration to be verified by the customer
Seal	Per MIL-STD_883, Method 1014, Cond A and Cond C
Soldering Conditions	260°C for 10s Max leads only

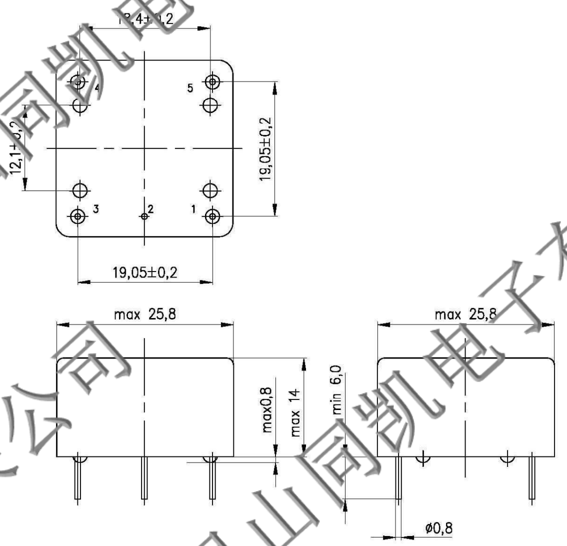
Electrical Connections

Pin Out	Pin #1- Output ; Pin #2 – GND; Pin #3 – Voltage Control; Pin#4 – Vref; Pin#5 - Vcc

10060HP-16 Premium Low Phase Noise Precision SC-cut HF OCXO in 1”x1” Through Hole Package

Rev. A

Product Data Sheet



Features

- SC-cut crystal
- Ultra Low Phase Noise
- Sine Wave +16 dBm output
- Compact package

Applications

- Telecommunication Systems
- Data Communications
- Radar
- Instrumentation

MITECH **OVEN CONTROLLED CRYSTAL OSCILLATORS**

Electrical (1)

Parameter	Symb	Condition	Min	Typ	Max	Unit	Note
Frequency	F			100		MHz	All parameters for 100.000 MHz
Frequency stability	ΔF/F	vs. Temp.			±50	ppb	-40 to +70 ℃
					±275	ppb	-55 to +85 ℃
		vs. Supply			5	ppb/5% change	
		Vs. load			2	ppb/5% change	
Aging		per day per first year 10 years			5E-9 5E-7 2.0	ppm	After 30 days of continuous operation
Allan Deviation		.01s to 1s		5E-11			
SSB Phase Noise	£(Δf)	10 Hz 100 Hz 1 KHz 10 KHz			-100 -130 -162 -172	dBc/Hz	
G-sensitivity		worst direction			1	ppb/G	
Input Voltage	Vcc	12V±5%	11.4	12.0	12.6	V	
Power consumption	P	steady state, 25°C start-up			1.8 4.8	W	
Spectral Purity		Output power Subharmonics Spurious Harmonics	12	none	16 -80 -30	dBm dBc	
Load		50 Ohm (Internally AC-coupled)					
Warm-up time	τ	to 0.1ppm accuracy			5	minutes	
Output Waveform		Sine-wave					
Control voltage	Vc		0		10.0	V	
Pull range		from nominal F	±3.0			ppm	
Modulation Bandwidth	MBW	Vc port input LPF 3dB cut-off freq.	0.5	1		KHz	
Deviation slope		Monotonic, posit		0.7		ppm/V	
Setability	Vc0	@25°C, Fnom.	4.0	5.0	6.0	V	

Note: 1. All parameters, unless otherwise specified, are at nominal conditions, ie: Vs = +12V, Vc= +5.0;T= +25°C ± 3°C

Environmental and Mechanical

Operating temp. range	-55 to +85 ℃
Storage temper.	-55 to +90 ℃
Mechanical Shock	Per MIL-STD-202, 30G, 11ms
Thermal Shock	Per MIL-STD_883, Method 1011, Condition A
Vibration	Per MIL-STD-202, 5G to 2000 Hz
Operational vibration	Phase noise under vibration to be verified by the customer
Seal	Per MIL-STD_883, Method 1014, Cond A and Cond C
Soldering Conditions	260°C for 10s Max leads only

Electrical Connections

Pin Out	Pin #1- Output ; Pin #2 – GND; Pin #3 – Voltage Control; Pin#4 – Vref; Pin#5 - Vcc

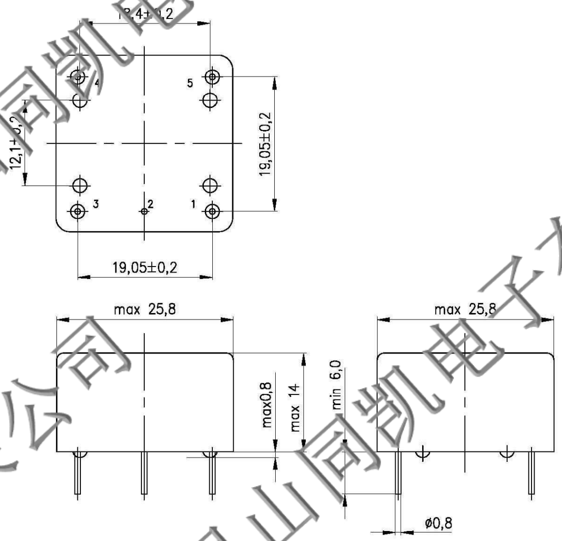
10060HP-16-5V Premium Low Phase Noise Precision SC-cut HF OCXO in 1”x1” Through Hole Package

Rev. A

Product Data Sheet

Features

- SC-cut crystal
- Ultra Low Phase Noise
- Sine Wave +16 dBm output
- Compact package



Applications

- Telecommunication Systems
- Data Communications
- Radar
- Instrumentation

MITECH

OVEN CONTROLLED CRYSTAL OSCILLATORS

Electrical (1)

Parameter	Symb	Condition	Min	Typ	Max	Unit	Note
Frequency	F			100		MHz	All parameters for 100.000 MHz
Frequency stability	ΔF/F	vs. Temp.			±50	ppb	-40 to +70℃
					±275	ppb	-55 to +85 ℃
		vs. Supply			5	ppb/5% change	
		Vs. load			2	ppb/5% change	
Aging		per day per first year 10 years			5E-9 5E-7 2.0	ppm	After 30 days of continuous operation
Allan Deviation		.01s to 1s		5E-11			
SSB Phase Noise	£(Δf)	10 Hz 100 Hz 1 KHz 10 KHz			-100 -130 -162 -172	dBc/Hz	
G-sensitivity		worst direction			1	ppb/G	
Input Voltage	Vcc	12V±5%	4.75	5.0	5.25	V	
Power consumption	P	steady state, 25°C start-up			1.8 4.8	W	
Spectral Purity		Output power Subharmonics Spurious Harmonics	12	none	16 -80 -30	dBm dBc	
Load	50 Ohm (Internally AC-coupled)						
Warm-up time	τ	to 0.1ppm accuracy			5	minutes	
Output Waveform		Sine-wave					
Control voltage	Vc		0		10.0	V	
Pull range		from nominal F	±3.0			ppm	
Modulation Bandwidth	MBW	Vc port input LPF 3dB cut-off freq.	0.5		1	KHz	
Deviation slope		Monotonic, posit		0.7		ppm/V	
Setability	Vc0	@25°C, Fnom.	4.0	5.0	6.0	V	

Note: 1. All parameters, unless otherwise specified, are at nominal conditions, ie: Vs = +12V, Vc= +5.0; T= +25°C ± 3°C

Environmental and Mechanical

Operating temp. range	-55 to +85℃
Storage temper.	-55 to +90℃
Mechanical Shock	Per MIL-STD-202, 30G, 11ms
Thermal Shock	Per MIL-STD_883, Method 1011, Condition A
Vibration	Per MIL-STD-202, 5G to 2000 Hz
Operational vibration	Phase noise under vibration to be verified by the customer
Seal	Per MIL-STD_883, Method 1014, Cond A and Cond C
Soldering Conditions	260°C for 10s Max leads only

Electrical Connections

Pin Out	Pin #1- Output ; Pin #2 – GND; Pin #3 – Voltage Control; Pin#4 – Vref ; Pin#5 - Vcc

超低相噪恒温晶振

Rev. R

EP01060系列
Precision Ultra Low Phase Noise OCXO in 36x27 mm “Europack”

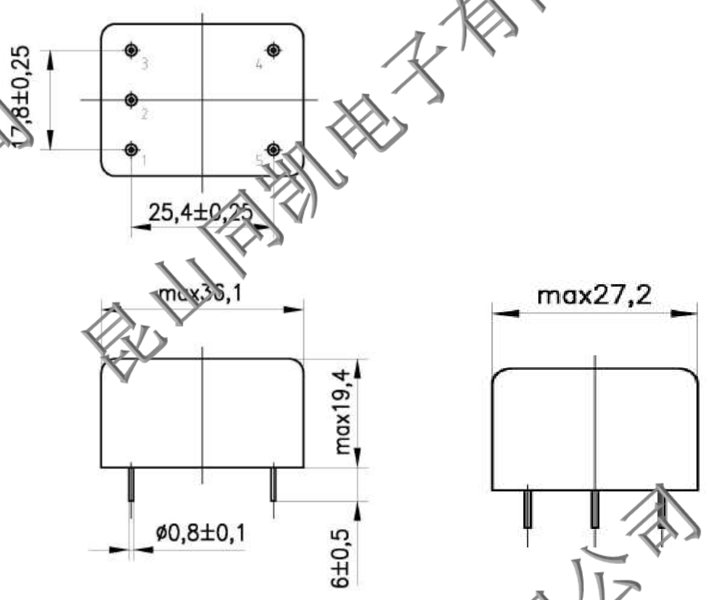
Product Data Sheet

Features

- SC-cut crystal
- High Stability
- Low Aging
- Ultra Low Phase Noise Option:

Premium(P)	-140dBc/Hz at 10Hz; -170dBc/Hz on the floor
Ultimate(U)	-115 dBc/Hz at 1 Hz -142dBc/Hz at 10Hz; -170dBc/Hz on the floor

- Sine Wave output



Applications

- Instrumentation
- GPS
- Telecommunication Systems
- Radar
- COTS/Dual use
- Test Measurement

EP01060系列

Rev. R

Parameter	Symb	Condition	Min	Typ	Max	Unit	Note
Electrical (6)							
Frequency	F		8	10.000	13	MHz	
Frequency stability	ΔF/F	vs. Temp.		20		ppb	-40°C to 70°C
		vs. Supply		0.2	0.3	ppb/10%Vcc	
Aging		per day per year, first year 10 years			5E-10 1E-7 2.5E-7		
Allan Deviation		1s			2E-12		
SSB Phase Noise		1Hz 10 Hz 100 Hz 1 KHz 10 KHz 100 KHz			-110 -140 -155 -165 -170 -170	dBc/Hz	Premium version, option P
		1Hz 10 Hz 100 Hz 1 KHz 10 KHz 100 KHz			-115 -142 -155 -165 -170 -170		Ultimate version, option U
G-sensitivity					1.0	ppb/G	
Input Voltage	Vcc		11.4	12.0	12.6	V	
Power consumption, Still air	P	steady state, 25°C start-up			1.8 4.8	W	
Spectral Purity		Subharmonics Spurious Harmonics		none -35	 -80 -30	dBc	
Load		AC-coupled 50 Ohm (Sine-wave)					
Warm-up time	τ	to 0.1ppm accuracy			5	minutes	
Output Waveform		Sinewave					
Output Power			8			dBm	
Control voltage	Vc		0.5		9.5	V	
Input impedance	Zin	At Vc pin	10			Kohm	
Reference Voltage	Vref	Vcc = 12V		9.5		V	
Output Impedance		At Vref pin		100		Ohm	
Pull range		from nominal F	±0.4			ppm	

All parameters for 10 MHz

Environmental and Mechanical

Operating temp. range	-45°C to 90°C Standard
Storage Temperature	-50°C to 90°C
Mechanical Shock	Per MIL-STD-202, 30G, 11ms
Vibration	Per MIL-STD-202, 5G to 2000 Hz
Soldering Conditions	260°C for 10s Max leads only

Electrical Connections

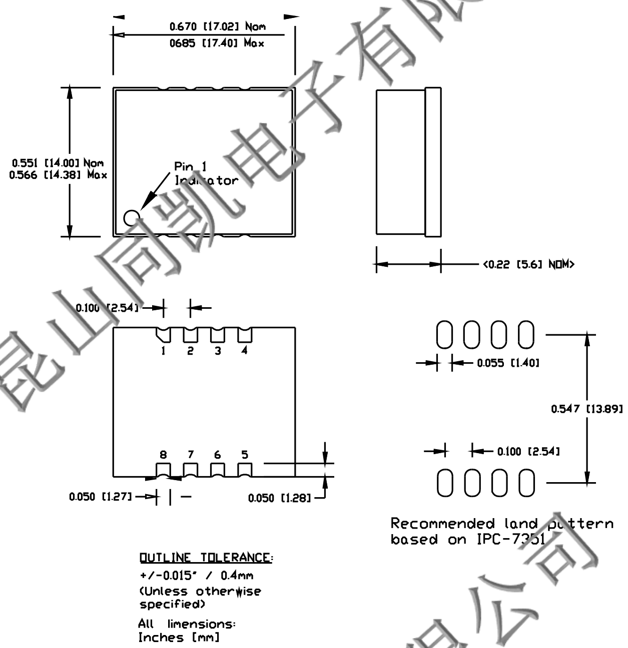
Pin Out	Pin #1-Vc ; Pin#2 – Vref; Pin #3 – Vcc; Pin #4- Output ; Pin #5- GND;

超低相噪温补晶振

Rev. N

MITECH TC100xxSM系列
HF SMD TCXO/VCTCXO

TC10035SM / TC10040SM / TC10050SM



Description:

The TC100xxSM series of SMD temperature compensated crystal oscillators (TCXO), provides High Frequency with excellent temperature stability, extremely low phase noise and jitter with Sine-wave output in a small surface mount FR4 based package.

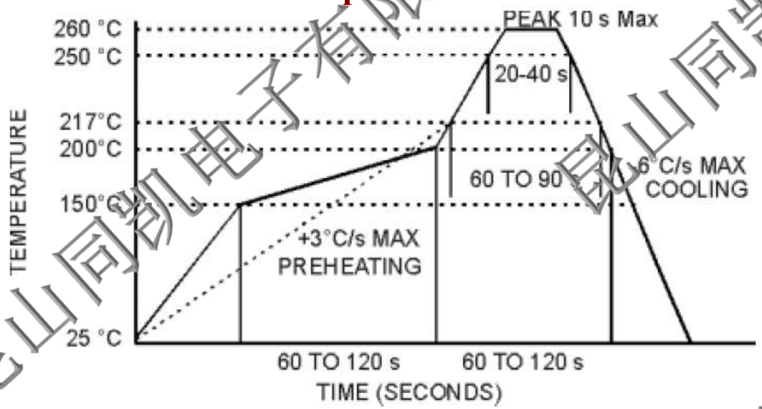
Features

- **Small, Low Profile SMD Package**
- **Very Low Phase Jitter and Phase Noise**
- **Excellent Frequency Stability**
- **No Multiplication – no sub-harmonics**
- **Stratum3 available**
- **COTS/Dual use**

Electrical Connections

Pin out	Pin 1=Vcc; Pin 2=Do Not Connect; Pin 3=GND; Pin 4=GND; Pin 5=Output; Pin 6=Optional Voltage Control; Pin 7 & 8= Do Not Connect

Maximum solder reflow profile



The device may be reflowed once. Reflowing upside down is not allowed. NO CLEAN assembly is recommended.

TC10035SM / TC10040SM / TC10050SM

Rev. N

Specifications (1)

Parameter	Symb	Condition	Min	Typ	Max	Unit	Note
Electrical							
Frequency Range	F	Sine-wave		100		MHz	
Input Voltage	Vcc		3.135	3.30	3.465	V	
Input Current	Icc	Sine			40	mA	@100MHz, 3.3V
Frequency Stab.	△F/F	Overall, available			±4.6		20 years
Frequency Stability	△F/F	vs. Temperature vs. Vcc aging		±0.5 ±0.1 ±1 ±2.5 ±3.5		ppm ppm/V ppm/year ppm ppm	 First Year 7 years 10 years
Allan Deviation		1s		5E-10			
Calibration	△F/F	As shipped, 25ºC		±0.5	±1	ppm	
Load		Sine	Internally AC-coupled 50 Ohm				
Output power (2)	P	Sine-wave Into	0	3		dBm	3.3V
Start up time	Ts			2	100	ms	
Phase Jitter		1σ		0.4 0.2	1 0.4	ps	100Hz to 20MHz 12KHz to 20MHz
Subharmonics				none			
Spurious					-60	dBc	
Harmonics		Sine-wave		-30	-25	dBc	
SSB Phase Noise			TC10050SM	TC10040SM	TC10035SM		
		@10Hz @100 Hz @1 KHz @10 KHz @100 KHz	-90 -120 -150 -160 -165	-85 -110 -140 -155 -160	-80 -110 -135 -158 -160	dBc/Hz	
Input Impdeance			>10K Ohm				
Control voltage	Vc		0		3.0	V	
Modulation bandwidth	MB				1.5	Hz	
Deviation	ΔF/F	Vc=0V to 3.3V,25°C	±5	±7		ppm	

Note 1) All parameters, unless otherwise specified, are at nominal conditions, ie: T=25°C, Nominal Vcc & Nominal Load
2) Higher output power available – consult factory (current consumption may increase)

Absolute Maximum Ratings

Parameter	Symb	Condition	Min	Typ	Max	Unit	Note
Storage temp.	Ts		-40		105	° C	
Contr. Voltage	Vc		-1		6	V	

Environmental and Mechanical

Operating temp. range	-40 to 85°C
Mechanical Shock	Per MIL-STD-202, Method 213, Cond. E
Thermal Shock	Per MIL-STD-883, Method 1011, Cond. A
Vibration	Per MIL-STD-883, Method 2007, Cond. A
Soldering Conditions	See MAX reflow profile; The device may be reflowed once. Reflowing upside down is not allowed. NO CLEAN assembly is recommended.
Hermetic Seal	Leak rate less than $1x10^{-8}$ atm.cc/s of helium (crystal only)