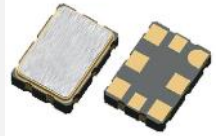


## MINIATURE CERAMIC SMD OSCILLATOR (7.0 x 5.0mm)

### FEATURES:

- Available output frequency from 15MHz to 2.1GHz
- Ultra low phase jitter <300fs
- Available LVCMOS, LVDS, LVPECL, CML, HCSL outputs
- 3.3V, 2.5V and 1.8V supply options



## ELECTRICAL SPECIFICATION

LVCMOS							
Parameter	3.3V		2.5V		1.8V		Unit
	Min.	Max.	Min.	Max.	Min.	Max.	
Supply Voltage Variation (VDD) ±10%	3.63	2.97	2.25	2.75	1.71	1.89	V
Frequency Range	15	250	15	250	15	250	MHz
Supply Current		90		80		70	mA
Output Level	Output High	0.9 X VDD	0.9 X VDD	0.9 X VDD	0.9 X VDD	0.9 X VDD	V
	Output Low		0.1 X VDD	0.1 X VDD	0.1 X VDD	0.1 X VDD	
Rise Time / Fall Time (20%-80%)		1.2		1.5		2.0	nSec
Duty Cycle Fout < 100MHz	45	55	45	55	45	55	%
Duty Cycle Fout > 100MHz	40	60	40	60	40	60	%
Startup Time		8		8		8	mSec
Tri-State Mode	Enable	0.7 x VDD	0.7 x VDD	0.7 x VDD	0.7 x VDD	0.7 x VDD	V
	Disable		0.3 x VDD	0.3 x VDD	0.3 x VDD	0.3 x VDD	
Output Load	15pF						pF
Period Jitter		100		100		100	ps

LVPECL						
Parameter	3.3V		2.5V		Unit	
	Min.	Max.	Min.	Max.		
Supply Voltage Variation (VDD)	3.63	2.97	2.25	2.75	V	
Frequency Range	15	2100	15	2100	MHz	
Supply Current		110		95	mA	
Output Level	Output High	VDD-1.165	VDD-0.8	VDD-1.165	VDD-0.8	V
	Output Low	VDD-2.0	VDD-1.55	VDD-2.0	VDD-1.55	
Rise Time / Fall Time (20%-80%)		0.35		0.35	nSec	
Duty Cycle	45	55	45	55	%	
Startup Time		8		8	mSec	
Tri-State Mode	Enable	0.7 x VDD	0.7 x VDD	0.7 x VDD	V	
	Disable		0.3 x VDD	0.3 x VDD		
Standby Current		110		95	mA	
Output Load	50 ohms into VDD-2V					

Phase Noise	3.3V		2.5V		
	Typ.	Max.	Typ.	Max.	
At VDD=3.3V , Fout=873.515MHz	1kHz offset	-106	-106		dBc/Hz
	10kHz offset	-115	-115		
	100kHz offset	-123	-123		
	1MHz offset	-133	-133		
	20MHz offset	-150	-150		
RMS Phase Jitter (12kHz to 20MHz)	150	300	150	300	fs
Period Jitter		50		50	ps

Transko Electronics, Inc reserves the right to make changes to the product (s), service (s), and specification (s) described herein without notice. See "Terms of Sale" for details on our website.

LVDS								
Parameter	3.3V		2.5V		1.8V		Unit	
	Min.	Max.	Min.	Max.	Min.	Max.		
Supply Voltage Variation (VDD)	3.63	2.97	2.25	2.75	1.71	1.89	V	
Frequency Range	15	2100	15	2100	15	2100	MHz	
Supply Current		90		80		70	mA	
Output Level	Output High			1.6			1.6	V
	Output Low	0.9		0.9		0.9		
Rise Time / Fall Time (20%-80%)		0.35		0.35		0.35	nSec	
Duty Cycle	45	55	45	55	45	55	%	
Startup Time		8		8		8	mSec	
Tri-State Mode	Enable	0.7 x VDD		0.7 x VDD		0.7 x VDD		V
	Disable		0.3 x VDD		0.3 x VDD		0.3 x VDD	
Standby Current		90		80		70	mA	
Output Load	100 ohms between OUT and OUTN							

Phase Noise		3.3V		2.5V		1.8V		Unit
		Typ.	Max.	Typ.	Max.	Typ.	Max.	
At VDD=3.3V, Fout=873.515MHz	1kHz offset	-106		-106		-106		dBc/Hz
	10kHz offset	-115		-115		-115		
	100kHz offset	-123		-123		-123		
	1MHz offset	-133		-133		-133		
	20MHz offset	-150		-150		-150		
RMS Phase Jitter (12kHz to 20MHz)		150	300	150	300	150	300	fs
Period Jitter			50		50		50	ps

CML								
Parameter	3.3V		2.5V		1.8V		unit	
	Min.	Max.	Min.	Max.	Min.	Max.		
Supply Voltage Variation (VDD)	3.63	2.97	2.25	2.75	1.71	1.89	V	
Frequency Range	15	2100	15	2100	15	2100	MHz	
Supply Current		90		80		70	mA	
Output Level	Output High	VDD-0.085	VDD	VDD-0.085	VDD	VDD-0.085	VDD	V
	Output Low	VDD-0.6	VDD-0.32	VDD-0.6	VDD-0.32	VDD-0.6	VDD-0.32	
Rise Time / Fall Time (20%-80%)		0.35		0.35		0.35	nSec	
Duty Cycle	45	55	45	55	45	55	%	
Startup Time		8		8		8	mSec	
Tri-State Mode	Enable	0.7 x VDD		0.7 x VDD		0.7 x VDD		V
	Disable		0.3 x VDD		0.3 x VDD		0.3 x VDD	
Standby Current		90		80		70	mA	
Output Load	50 ohms to VDD							

Phase Noise		3.3V		2.5V		1.8V		Unit
		Typ.	Max.	Typ.	Max.	Typ.	Max.	
At VDD=3.3V, Fout=873.515MHz	1kHz offset	-107		-107		-107		dBc/Hz
	10kHz offset	-117		-117		-117		
	100kHz offset	-125		-125		-125		
	1MHz offset	-135		-135		-135		
	20MHz offset	-150		-150		-150		
RMS Phase Jitter (12kHz to 20MHz)		150	300	150	300	150	300	fs
Period Jitter			50		50		50	ps

HCSL								
Parameter	3.3V		2.5V		1.8V		Unit	
	Min.	Max.	Min.	Max.	Min.	Max.		
Supply Voltage Variation (VDD)	3.63	2.97	2.25	2.75	1.71	1.89	V	
Frequency Range	15	700	15	700	15	700	MHz	
Supply Current		115		100		94	mA	
Output Level	Output High	0.66	1.15	0.66	1.15	0.66	1.15	V
	Output Low	0	0.15	0	0.15	0	0.15	
Rise Time / Fall Time (20%-80%)		0.4		0.4		0.4	nSec	
Duty Cycle	45	55	45	55	45	55	%	
Startup Time		8		8		8	mSec	
Tri-State Mode	Enable	0.7 x VDD		0.7 x VDD		0.7 x VDD	V	
	Disable		0.3 x VDD		0.3 x VDD			0.3 x VDD
Standby Current		115		100		95	mA	
Output Load	50 ohms to GND							

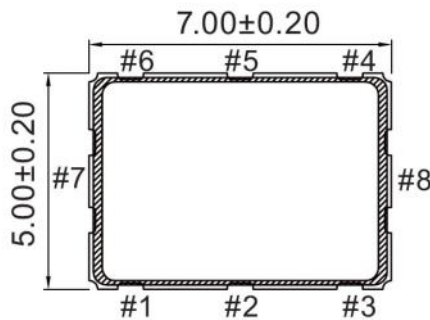
Phase Noise		3.3V		2.5V		1.8V		Unit
		Typ.	Max.	Typ.	Max.	Typ.	Max.	
At VDD=3.3V, Fout=873.515MHz	1kHz offset	-87		-87		-87		dBc/Hz
	10kHz offset	-110		-110		-110		
	100kHz offset	-127		-127		-127		
	1MHz offset	-138		-138		-138		
	20MHz offset	-153		-153		-153		
RMS Phase Jitter (12kHz to 20MHz)		150	300	150	300	150	300	fs
Period Jitter			50		50		50	ps

## FREQUENCY STABILITY

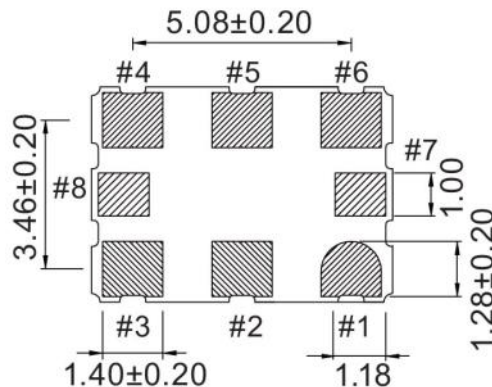
Parameter	Min.	Max.	Unit	Notes
Frequency Stability	±25	±100	ppm	Inclusive of calibration @ 25 °C, operating temperature range, input voltage variation, load variation, aging (1st year). Please select from Part Numbering Guide
Operating Temperature	-40°	+85°	C	Please select from Part Numbering Guide

## DIMENSIONS (mm)

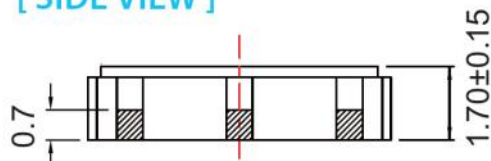
### [ TOP VIEW ]



### [ BOTTOM VIEW ]



### [ SIDE VIEW ]

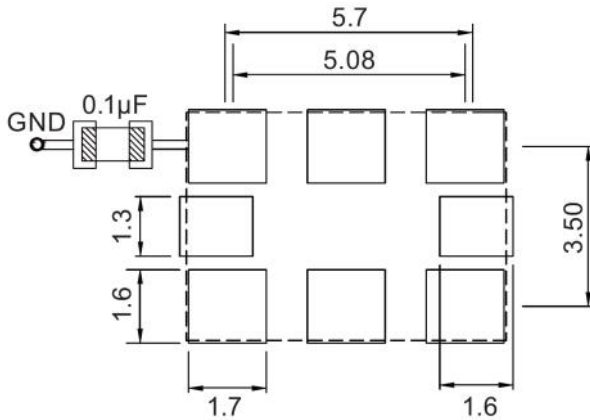


### Pin Configuration

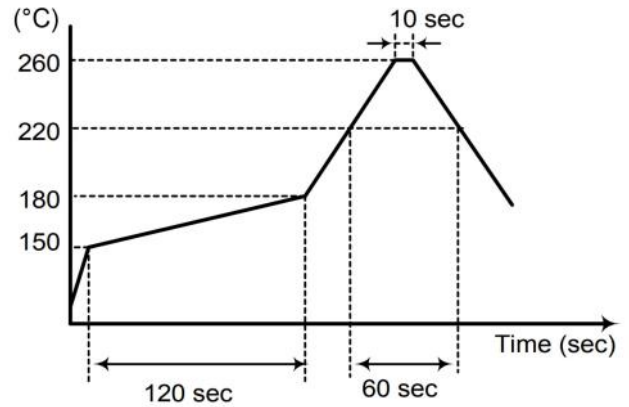
	LVPECL LVDS CML HCSL	LVC MOS
1	OE or NC*	OE or NC*
2	OE or NC*	OE or NC*
3	GND	GND
4	OUTPUT	OUTPUT
5	C. OUTPUT	NC
6	VDD	VDD
7	NC	NC
8	NC	NC

\* Please specify function on PN Guide

## SOLDER PATTERN



## REFLOW PROFILE



## PART NUMBERING GUIDE

