Transko Cal Crystal Comclok

TST53

RoHS Compliant

MINIATURE CERAMIC SMD OSCILLATOR (5.0 x 3.2mm)

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		V
	Output Low		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		V
	Disable		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		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

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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		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		
		Typ.	Max.	Typ.	Max.	Typ.	Max.	
At VDD=3.3V, Fout=805.664MHz	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

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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						

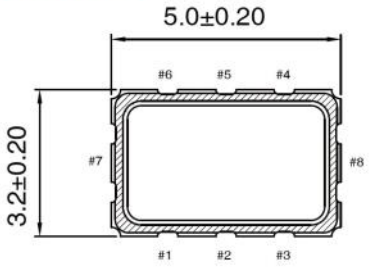
Phase Noise		3.3V		2.5V		1.8V		Unit
		Typ.	Max.	Typ.	Max.	Typ.	Max.	
At VDD=3.3V, Fout=873.515MHz	1kHz offset	-87		-87		-87		dBc/Hz
	10kHz offset	-110		-110		-110		
	100kHz offset	-127		-127		-127		
	1MHz offset	-138		-138		-138		
	20MHz offset	-153		-153		-153		
RMS Phase Jitter (12kHz to 20MHz)		150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

FREQUENCY STABILITY

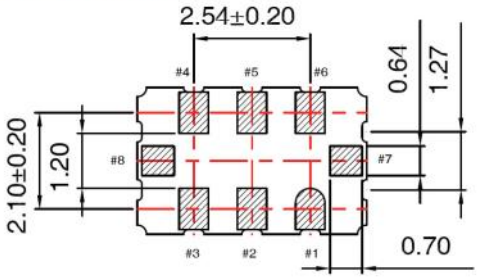
Parameter	Min.	Max.	Unit	Notes
Frequency Stability	±25	±100	ppm	Inclusive of calibration @ 25 °C, operating temperature range, input voltage variation, load variation, aging (1st year). Please select from Part Numbering Guide
Operating Temperature	-40°	+85°	C	Please select from Part Numbering Guide

DIMENSIONS (mm)

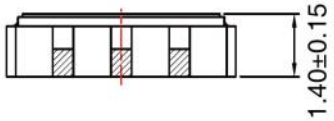
[TOP VIEW]



[BOTTOM VIEW]



[SIDE VIEW]



Pin Configuration		
	LVPECL LVDS CML HCSL	LVCMOS
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

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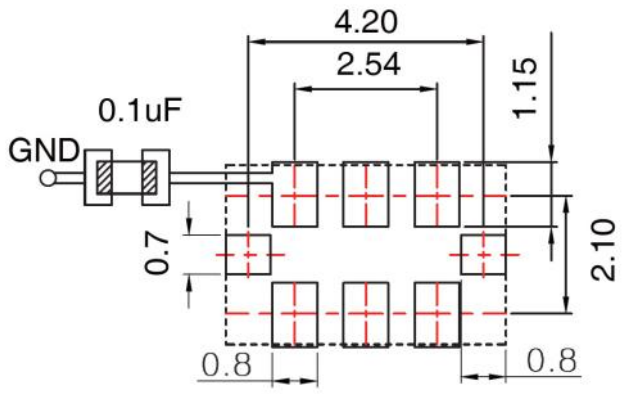
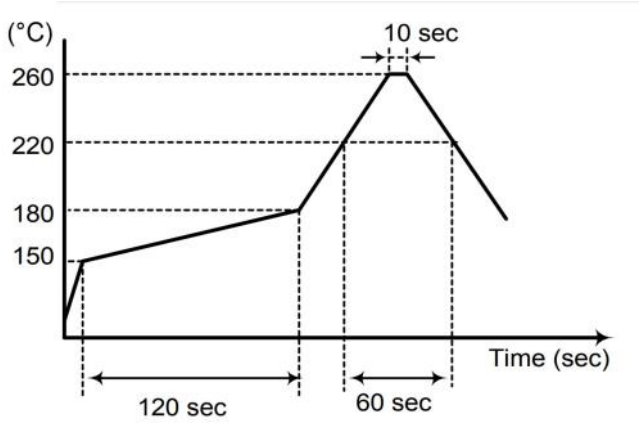
SOLDER PATTERN



REFLOW PROFILE



PART NUMBERING GUIDE

TST53 – P 50 HM 33 T1 – 148.500M – TR

Product series

Output
P: LVPECL
L: LVDS
H: LVCMOS
C: CML
S: HCSL

Frequency Stability
00: ± 100ppm
50: ± 50ppm
25: ± 25ppm
XX: Two digit for Stability

Operating Temperature

A: -55	**F:** -20	**M:** 70	**S:** 100
B: -50	**G:** -10	**N:** 75	**T:** 105
C: -40	**H:** 0	**P:** 80	**U:** 125
D: -35	**J:** 50	**Q:** 85	**X:**custom
E: -30	**K:** 60	**R:** 90	

Tape and Reel
TR: 1000/reel
Blank: Cut tape

Frequency
M: MHz

En/Disable
T1: pin 1 OE
pin 2 N/C
T2: pin 1 N/C
pin 2 OE

Supply Voltage
18: 1.8 Volt
25: 2.5 Volt
33: 3.3 Volt