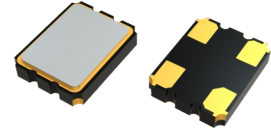


3.2 × 2.5 mm Ultra Low Power SMD Crystal Oscillator

Feature

- Typical 3.2 x 2.5 x 0.95 mm SMD package
- Singled-end Output: CMOS
- Ultra Low Power Supply Voltage: 0.9V, 1.2V, 1.5V
- Low Noise Typical: 0.3ps at 12kHz to 20MHz Frequency Offsets
- Temperature Range: -40 to 85°C Operation
- Pb-free/RoHS Compliant



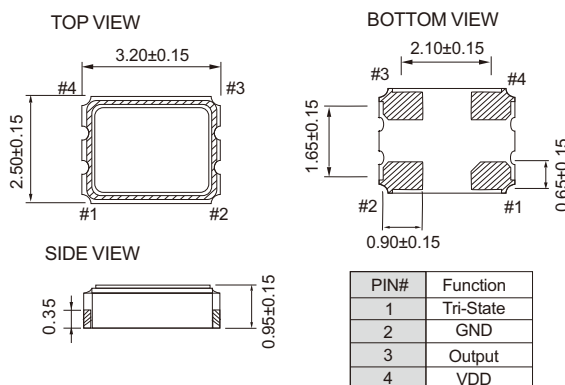
Electrical Specifications

Parameter	0.9V		1.2V		1.5V		Unit
	Min.	Max.	Min.	Max.	Min.	Max.	
Supply Voltage Variation	$V_{DD}-5\%$	$V_{DD}+5\%$	$V_{DD}-5\%$	$V_{DD}+5\%$	$V_{DD}-5\%$	$V_{DD}+5\%$	V
Frequency Range	1	50	1	50	1	50	MHz
Supply Current (At 15pF Load)	-	1.5	-	2	-	3	mA
Duty Cycle	45	55	45	55	45	55	%
Transition Time : Rise/Fall Time	$1\text{ MHz} \leq \text{FO} < 10\text{MHz}$	-	4	-	3	-	nSec
	$10\text{ MHz} \leq \text{FO} < 20\text{MHz}$	-	3	-	3	-	
	$20\text{ MHz} \leq \text{FO} < 50\text{MHz}$	-	2	-	2	-	
Output Level	Out High	$0.9V_{DD}$	$0.9V_{DD}$	$0.9V_{DD}$	$0.9V_{DD}$	$0.9V_{DD}$	V
	Out Low	$0.1V_{DD}$	$0.1V_{DD}$	$0.1V_{DD}$	$0.1V_{DD}$	$0.1V_{DD}$	
Startup Time	-	4	-	4	-	4	mSec
Tri-State (Input to Pin 1)	Enable	$0.7V_{DD}$	$0.7V_{DD}$	$0.7V_{DD}$	$0.7V_{DD}$	$0.7V_{DD}$	V
	Disable	$0.3V_{DD}$	$0.3V_{DD}$	$0.3V_{DD}$	$0.3V_{DD}$	$0.3V_{DD}$	
Period Jitter (Pk-Pk)	-	40	-	40	-	40	pSec
RMS Phase Jitter (integrated 12KHz to 20MHz)	-	1	-	1	-	1	pSec
Phase Noise @24MHz @100KHz	-148	-	-150	-	-150	-	dBc/Hz
Standby Current	-	100	-	100	-	100	μA
Aging (@25 1st year)	-	±3	-	±3	-	±3	ppm
Storage Temp. Range	-55	125	-55	125	-55	125	°C

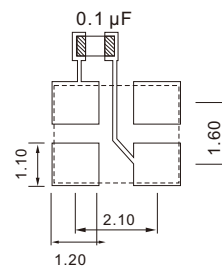
Standard frequencies are frequencies which the crystal has been designed and does not imply a stock position

.+ Transition times are measured between 10% and 90% of VDD, with an output load of 15pF.

Dimension(mm)



Solder Pad Layout(mm)



To ensure optimal oscillator performance, place a by-pass capacitor of 0.1 μF as close to the part as possible between VDD and GND pads.

FREQ. STABILITY vs. TEMP. RANGE

Temp. (°C) \ ppm	±25	±50
-10 ~ +60	○	○
-20 ~ +70	○	○
-40 ~ +85	△	○

○: Available △: Conditional X: Not available

Inclusive of calibration @ 25 °C, operating temperature range, input voltage variation, load variation, aging (1st year), shock, and vibration load variation