

# VA-M Type

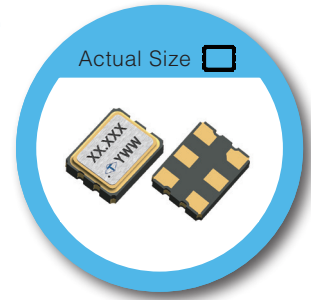
## 3.2 x 2.5 mm SMD CMOS Output Voltage Controlled Crystal Oscillator

### FEATURE

- Low power supply voltage: 3.3, 2.5 supply options
- Singled-end output : CMOS
- Frequency support from 10MHz to 250MHz
- Low phase jitter typical: 0.6 ps RMS from 12kHz to 20MHz
- Wide frequency control range - Tri-state enable/disable function
- Temperature range: -40 to 85 °C operation
- Pb-free/RoHS compliant

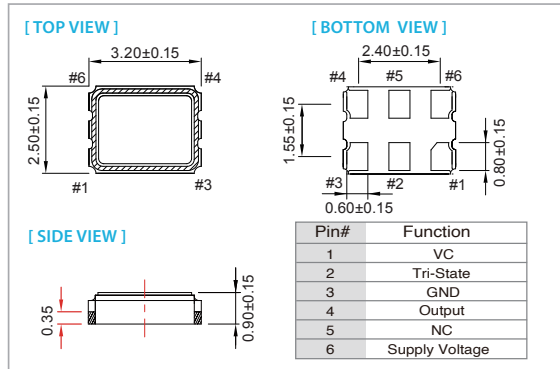
### TYPICAL APPLICATION

- High-Speed Gigabite Ethernet, Fiber Channel, Storages Area Network, SONET
- Enterprise Server, SAS/SATA - Microprocessors/DSP/FPGA
- Broadband Access - Smart Grid

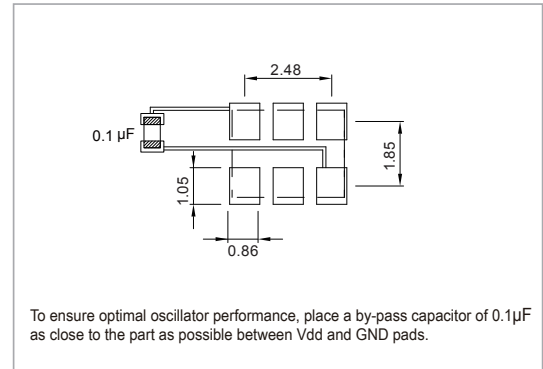


RoHS Compliant

### DIMENSION (mm)



### SOLDER PAD LAYOUT (mm)



### ELECTRICAL SPECIFICATION

Parameter	CMOS				unit		
	3.3 V		2.5 V				
	Min.	Max.	Min.	Max.			
Supply Voltage Variation (V <sub>DD</sub> )	V <sub>DD</sub> -10%	V <sub>DD</sub> +10%	V <sub>DD</sub> -5%	V <sub>DD</sub> +5%	V		
Frequency Range	10	250	10	250	MHz		
Supply Current	-	50	-	45	mA		
Output Level	Output High	2.97	-	2.25	V		
	Output Low	-	0.33	-	0.25		
Transition Time (10%-90%)	Rise Time / Fall Time	-	3	-	3	nSec	
	Duty Cycle	45	55	45	55	%	
Startup Time	-	10	-	10	mSec		
Tri-State mode (Input to Pin 2)	Enable	0.7 x V <sub>DD</sub>	-	0.7 x V <sub>DD</sub>	-	V	
	Disable	-	0.3 x V <sub>DD</sub>	-	0.3 x V <sub>DD</sub>		
Stand by Current	-	18	-	18	mA		
Output Loading (10MHz to 200MHz)	-	15	-	15	pf		
Output Loading (200MHz to 250MHz)	-	5	-	5	pf		
Phase Noise		<b>Typ.</b>	<b>Max.</b>	<b>Typ.</b>	<b>Max.</b>		
	At V <sub>DD</sub> =3.3V, f <sub>out</sub> =250MHz	1kHz offset	-107	-	-107	-	dBc/Hz
		10kHz offset	-111	-	-111	-	
		100kHz offset	-114	-	-114	-	
		1MHz offset	-125	-	-125	-	
		20MHz offset	-147	-	-147	-	
RMS Phase Jitter (12kHz to 20MHz)(fractional mode)		0.8	1.5	0.8	1.5	pSec	
RMS Phase Jitter (12kHz to 20MHz)(Integer mode)	0.6	1.2	0.6	1.2	pSec		
Parameter	Control Voltage Function on Pin 1				unit		
	3.3 V		2.5 V				
Control Voltage Center	Min.	Max.	Min.	Max.	V		
Control Voltage Range	0.3	3	0.25	2.25			
Frequency Pulling Range	±50	±150	±50	±150	ppm		
Linearity	5	10	5	10	%		
Modulation Bandwidth	10	-	10	-	kHz		
VC Input Impedance	1	-	1	-	MΩ		

### FREQ. STABILITY vs. TEMP. RANGE

Temp.(°C)	ppm	±25	±50
-10 ~ +60	○	○	○
-20 ~ +70	○	○	○
-40 ~ +85	△	○	○
-40 ~ +105	×	×	△

\* ○ : Available △:Conditional X: Not available

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

**Note: not all combination of options are available. Other specifications may be available upon request.**

Specifications subject to change without notice.

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