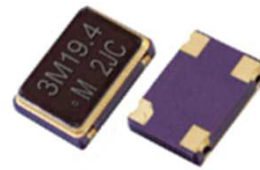


Temperature Compensated Crystal Oscillators [TCXO " M " and VCTCXO " VM "]

Clipped Sine Wave ; Wave form code " S " [SMD Type]

Features

- Frequency stability as tight as ± 0.5 ppm over -30°C to 85°C
- Frequency stability as tight as ± 1.0 ppm over -40°C to 85°C



General Specifications [$T_A = +25^{\circ}\text{C}$, $V_{DD} =$ at specified voltage , Load : 10K ohms//10 pF]

Output Wave Form		Clipped Sine wave . Wave form code is " S "																	
Suggested package (SMD type)		M22S , VM22S		M32S , VM32S		M53S , VM53S		M57S , VM57S											
Pads		4		4		4		10											
Package size		2.5 x 2.0 x 0.8 mm		3.2 x 2.5 x 1.3 mm		5.0 x 3.2 x 1.3 mm		7.0 x 5.0 x 2.0 mm											
Supply voltage (V_{DD}) [unit : V]		1.8 , 2.5 , 2.8		1.8 , 2.5 , 3.0 , 3.3		2.5 , 3.0 , 3.3 , 5.0		3.3 , 5.0											
Frequency Range		10.0 ~ 52.0 MHz		8.192 ~ 40.0 MHz		6.4 ~ 40.0 MHz		10.0 ~ 52.0 MHz											
Suggested package (SMD type)		M572S , VM572S		M43S , VM43S		M63S , VM63S		M47S , VM47S											
Pads		4		4		6		4 (Gull - Wing)											
Package size		7.0 x 5.0 x 2.3 mm		11.4 x 9.6 x 3.0 mm		11.4 x 9.6 x 3.0 mm		20.8 x 11.7 x 4.7 mm											
Supply voltage (V_{DD}) [unit : V]		3.3 , 5.0		2.5 , 3.0 , 3.3 , 5.0		2.5 , 3.0 , 3.3 , 5.0		2.5 , 3.0 , 3.3 , 5.0											
Frequency Range		10.0 ~ 40.0 MHz		6.4 ~ 40.0 MHz		6.4 ~ 40.0 MHz		6.4 ~ 40.0 MHz											
Standard Frequency (Partial list) [MHz]		10.000		12.800		13.000		14.400		14.7456		15.360		16.367667					
		16.384		19.200		19.440		20.000		25.000		26.000		27.000					
Initial Calibration Tolerance		$< \pm 1$ ppm . at $+25^{\circ}\text{C} \pm 2^{\circ}\text{C}$																	
Frequency Stability (ppm)		± 0.5 ppm		± 1.0 ppm		± 1.5 ppm		± 2.0 ppm		± 2.5 ppm		± 3.0 ppm		○ : available		△ : contact us		X : not available	
Frequency Stability vs Temperature (examples)		0 $^{\circ}\text{C}$ to 50 $^{\circ}\text{C}$		○		○		○		○		○		○					
		-10 $^{\circ}\text{C}$ to 60 $^{\circ}\text{C}$		△		○		○		○		○		○					
		-20 $^{\circ}\text{C}$ to 70 $^{\circ}\text{C}$		△		○		○		○		○		○					
		-30 $^{\circ}\text{C}$ to 75 $^{\circ}\text{C}$		△		○		○		○		○		○					
		-30 $^{\circ}\text{C}$ to 85 $^{\circ}\text{C}$		△		○		○		○		○		○					
-40 $^{\circ}\text{C}$ to 85 $^{\circ}\text{C}$		△		△		○		○		○		○							
Frequency Stability		vs Aging		± 1.0 ppm / year max . at 25C															
		vs Voltage Change		± 0.2 ppm max . , for a $\pm 5\%$ input voltage change .															
		vs Load Change		± 0.2 ppm max . , for a $\pm 10\%$ load condition change .															
		vs Reflow (SMD type)		± 1.0 ppm max . , 1 reflow and measured 24 hours afterwards .															
Output Voltage Level (peak to peak)		0.8 V p-p (min.)																	
Current Consumption. (max.)		10.0 ~ 15 MHz : 1.5 mA max .				15.1 ~ 26.0 MHz : 2.0 mA				26.1 ~ 40.0 MHz : 2.5 mA									
Electrical Frequency Tuning (EFC) by external control voltage		Control Voltage Center		1.8 V		0.9 V \pm 0.6 V		2.5 V		1.4 V \pm 1.0 V									
				3.0 V		1.5 V \pm 1.0 V		5.0 V		1.5 V \pm 1.0 V									
		Frequency Deviation Range		± 5.0 ppm (min.) , $V_{\text{control}} = +1.5 \text{ V} \pm 1.0 \text{ V}$															
		Slope Polarity (Transfer Function)		Positive slope . Positive voltage for positive frequency shift .															
		Input Impedance : 1.0M Ω min .				Modulation Bandwidth : 3 KHz min .				Linearity : $\pm 10\%$ max .									
Start-Up Time .		2.0 m sec . (typ.) , 5.0 m sec . (max.) (reach 90% amplitude and at $+25^{\circ}\text{C} \pm 2^{\circ}\text{C}$)																	
Output Load		10 K Ω // 10 pF $\pm 10\%$																	
Output Format		DC block , AC coupled . Except (V) M53 and (V) M32 model .																	
Phase Noise (13.0 MHz as example) [dBc / Hz ; typical]		10 Hz		100 Hz		1 KHz		10 KHz		100 KHz									
		-80		-115		-135		-148		-148									
Storage Temperature		-40°C to $+85^{\circ}\text{C}$ or -55°C to $+125^{\circ}\text{C}$ (package dependent)																	