MO-9200A

1-220 MHz High Performance Differential Oscillator

Helping Customers Innovate, Improve & Grow

Features

- Any frequency between 1 MHz and 220 MHz accurate to 6 decimal places
- LVPECL and LVDS output signaling types
- 0.6ps RMS phase jitter (random) over 12 kHz to 20 MHz bandwidth
- Industrial and extended commercial temperature ranges
- Industry-standard packages: 3.2mm x 2.5mm, 5.0 mm x 3.2 mm and 7.0 mm x 5.0 mm

Applications

- SONET, Synchronous Ethernet, SATA, SAS, 10GB Ethernet, Fibre Channel, PCI-Express
- Telecom, networking, broadband, instrumentation

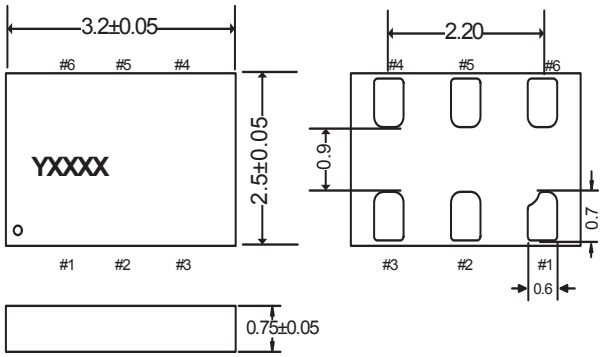
Performance Specifications

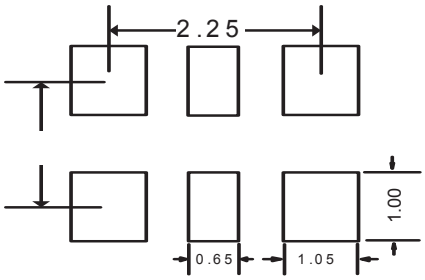
Parameter and Conditions	Symbol	Min.	Typ.	Max.	Unit	Condition
LVPECL and LVDS, Common AC Characteristics						
Output Frequency Range	f	1	–	220	MHz	
Frequency Stability	F_stab	-20	–	+20	PPM	Inclusive of Initial tolerance at 25 °C, and variations over operating temperature, aging, supply voltage and load
		-50	–	+50	PPM	
First Year Aging		-2	–	+2	PPM	25°C
10-year Aging		-5	–	+5	PPM	25°C
Operating Temperature Range	T_use	-40	–	+85	°C	Industrial
		-20	–	+70	°C	Extended Commercial
Start-up Time	T_start	–	–	10	ms	
Duty Cycle	DC	45	–	55	%	Contact Vectron for tighter duty cycle
LVPECL, DC and AC Characteristics						
Supply Voltage	Vdd	2.97	3.3	3.63	V	
		2.25	2.5	2.75	V	
Current Consumption	Idd	–	61	69	mA	Excluding Load Termination Current, Vdd = 3.3V or 2.5V
OE Disable Supply Current	I_OE	–	–	35	mA	OE = Low
Output Disable Leakage Current	I_leak	–	–	1	µA	OE = Low
Maximum Output Current	I-driver	–	–	30	mA	Maximum average current drawn from OUT+ or OUT-
Output High Voltage	VOH	Vdd-1.1	–	Vdd-0.7	V	See Figure 1
Output Low Voltage	VOL	Vdd-1.9	–	Vdd-1.5	V	See Figure 1
Output Differential Voltage Swing	V_Swing	1.2	1.6	2.0	V	See Figure 1
Rise/Fall Time	Tr, Tf	–	300	500	ps	20% to 80%
OE Enable/Disable Time	T_oe	–	–	115	ns	f = 220 MHz - For other frequencies, T_oe = 100ns + 3 period
RMS Period Jitter	T_jitt	–	1.2	1.7	ps	f = 100 MHz, VDD = 3.3V or 2.5V
		–	1.2	1.7	ps	f = 156.25 MHz, VDD = 3.3V or 2.5V
		–	1.2	1.7	ps	f = 212.5 MHz, VDD = 3.3V or 2.5V
RMS Phase Jitter (random)	T_phj	–	0.6	0.85	ps	f = 156.25 MHz, Integration bandwidth = 12 kHz to 20 MHz, all Vdds
LVDS, DC and AC Characteristics						
Supply Voltage	Vdd	2.97	3.3	3.63	V	
		2.25	2.5	2.75	V	
Current Consumption	Idd	–	47	55	mA	Excluding Load Termination Current, Vdd = 3.3V or 2.5V
OE Disable Supply Current	I_OE	–	–	35	mA	OE = Low
Output Disable Leakage Current	I_leak	–	–	1	µA	OE = Low
Differential Output Voltage	VOD	200	350	500	mV	See Figure 4
VOD Magnitude Change	ΔVOD	–	–	50	mV	See Figure 4
Offset Voltage	VOS	1.125	1.2	1.375	V	See Figure 4
VOS Magnitude Change	ΔVOS	–	–	50	mV	See Figure 4
Rise/Fall Time	Tr, Tf	–	495	600	ps	20% to 80%
OE Enable/Disable Time	T_oe	–	–	115	ns	f = 220 MHz - For other frequencies, T_oe = 100ns + 3 period
RMS Period Jitter	T_jitt	–	1.2	1.7	ps	f = 100 MHz, VDD = 3.3V or 2.5V
		–	1.2	1.7	ps	f = 156.25 MHz, VDD = 3.3V or 2.5V
		–	1.2	1.7	ps	f = 212.5 MHz, VDD = 3.3V or 2.5V
RMS Phase Jitter (random)	T_phj	–	0.6	1.0	ps	f = 156.25 MHz, Integration bandwidth = 12 kHz to 20 MHz, all Vdds

Outline Drawing / Packaging

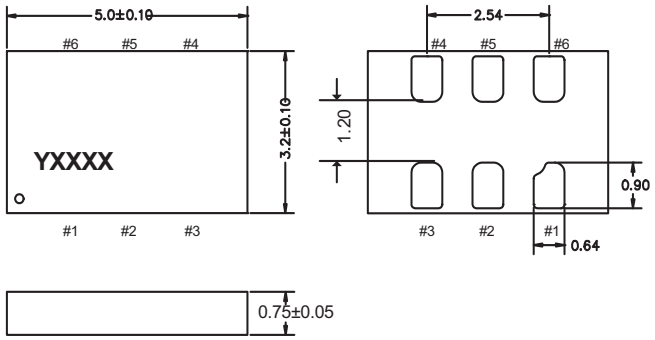
Package Outline & Dimensions (Unit: mm)	Recommended Land Pattern (Unit: mm)

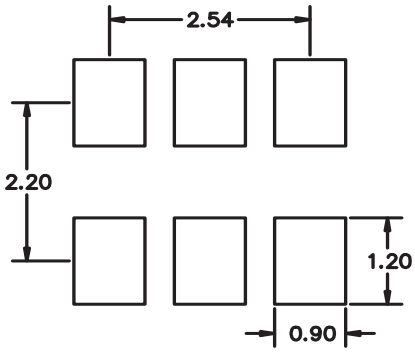
3.2 x 2.5x 0.75 mm



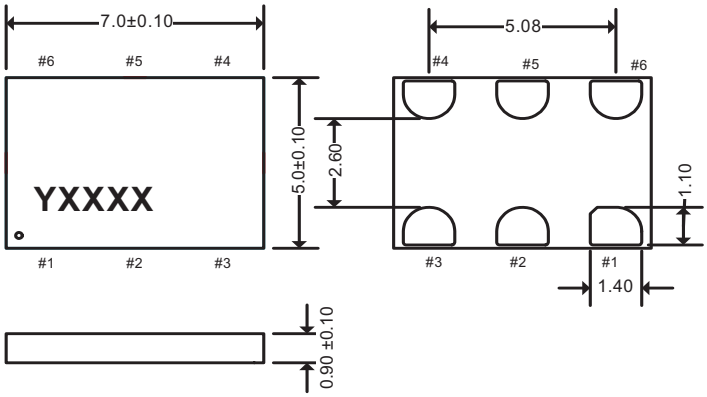


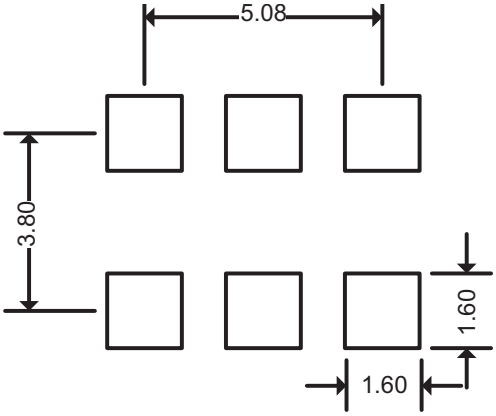
5.0 x 3.2 x 0.75 mm





7.0 x 5.0 x 0.90 mm





Pin Connections			
Pin	Symbol		Functionality
1	OE	Input	H or Open: specified frequency output L: output is high impedance
2	NC	NA	Do Not Connect; Leave it floating
3	GND	Power	VDD Power Supply Ground
4	OUT+	Output	Oscillator output
5	OUT-	Output	Complementary oscillator output
6	VDD	Power	Power supply voltage

Top View