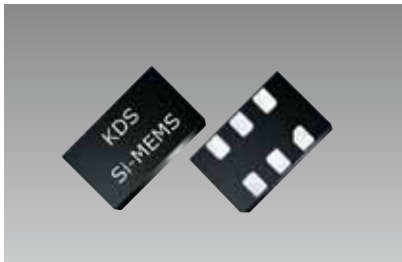


TC-MO / VC TC-MO

MO5021/MO5022



■ Features

- Industry-Standard packages: 3.2×2.5, 5.0×3.2 and 7.0×5.0 mm
- Frequency tolerance as low as $\pm 5 \times 10^{-6}$
- 0.6ps RMS phase Jitter (random)

■ Applications

- SATA, SAS, 10GB Ethernet, Fibre Channel, PCI-Express
- Networking, broadband, instrumentation



Model	Output Frequency (MHz)	Frequency Tolerance ($\times 10^{-6}$)	Supply Voltage (V)	Current Consumption (mA Typ.)	Size (mm)	Output
MO5021	1 to 220	±5	+2.25 to +3.63	+54 to +69	3.2×2.5×0.8, 5.0×3.2×0.8, 7.0×5.0×1.0 (QFN)	LVPECL LVDS
MO5022	220 to 625					

■ Standard Specification (MO5021)

Item	Legend	Min.	Typ.	Max.	Unit	Condition
Output Frequency Range	f	1	-	220	MHz	
Supply Voltage	V _{dd}	+2.25	+2.5	+2.75	V	
		+2.97	+3.3	+3.63		
		+2.25	-	+3.63		
Operating Temperature Range	T _{use}	-20	-	+70	°C	Extended Commercial Industrial
		-40	-	+85		
Frequency Stability	F _{stab}	-5.0	-	+5.0	$\times 10^{-6}$	Over operating temperature range at rated nominal power supply voltage and load.
Supply Voltage	F _{Vdd}	-	50	-	$\times 10^{-9}$	±10% V _{dd}
Output Load	F _{load}	-	0.1	-	$\times 10^{-6}$	15pF ±10% of load
First Year Aging	F _{aging1}	-2.5	-	+2.5	$\times 10^{-6}$	T _A = +25°C
10-year Aging	F _{aging10}	-5.0	-	+5.0	$\times 10^{-6}$	T _A = +25°C
Pull Range	PR	±12.5, ±25, ±50			$\times 10^{-6}$	
Upper Control Voltage	VC _U	V _{dd} - 0.1	-	-	V	All V _{dds} , Voltage at which maximum deviation is guaranteed.
Control Voltage Range	VC _L	-	-	+0.1	V	
Frequency Change Polarity	-	Positive slope			-	
Input Low Voltage	V _{IL}	-	-	V _{dd} ×0.3	V	Pin 1, OE or \overline{ST}
Input High Voltage	V _{IH}	V _{dd} ×0.7	-	-	V	Pin 1, OE or \overline{ST}
Start-up Time	T _{start}	-	6	10	ms	Measured from the time V _{dd} reaches its rated minimum value.
Resume Time	T _{resume}	-	6	10	ms	In Standby mode, measured from the time \overline{ST} pin crosses
Duty Cycle	DC	45	-	55	%	
Standby Current	I _{std}	-	-	+100	μA	\overline{ST} = Low, for all V _{dds}
OE Disable Supply Current	I _{oe}	-	-	+35	mA	OE = Low
Enable and Disable Time	T _{oe}	-	-	115	ns	f = 212.5 MHz- For other frequencies, T _{oe} = 100ns + 3 period
LVPECL, DC and AC Characteristics						
Current Consumption	I _{dd}	-	+61	+69	mA	Excluding Load Termination Current, V _{dd} = +3.3V or +2.5V
Output Low Voltage	V _{OL}	V _{dd} - 1.9	-	V _{dd} - 1.5	V	
Output High Voltage	V _{OH}	V _{dd} - 1.1	-	V _{dd} - 0.7	V	
Output Differential Voltage Swing	V _{Swing}	+1.2	+1.6	+2.0	V	
Rise and Fall Time	Tr, Tf	-	300	500	ps	20% to 80%
RMS Period Jitter	T _{jitt}	-	1.2	1.7	ps	f = 100 MHz, V _{dd} = +3.3V or +2.5V
		-	1.2	1.7		f = 156.25 MHz, V _{dd} = +3.3V or +2.5V
		-	1.2	1.7		f = 212.5 MHz, V _{dd} = +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						
Current Consumption	I _{dd}	-	+47	+55	mA	Excluding Load Termination Current, V _{dd} = +3.3V or +2.5V
Differential Output Voltage	V _{OD}	+250	+350	+450	mV	
V _{OD} Magnitude Change	ΔV _{OD}	-	-	+50	mV	
Offset Voltage	V _{OS}	+1.125	+1.2	+1.375	V	
V _{OS} Magnitude Change	ΔV _{OS}	-	-	+50	mV	
Rise and Fall Time	Tr, Tf	-	495	600	ps	20% to 80%
RMS Period Jitter	T _{jitt}	-	1.2	1.7	ps	f = 100 MHz, V _{dd} = +3.3V or +2.5V
		-	1.2	1.7		f = 156.25 MHz, V _{dd} = +3.3V or +2.5V
		-	1.2	1.7		f = 212.5 MHz, V _{dd} = +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
Packing Unit	1000pcs./reel (φ180) or 3000pcs./reel (φ180): 3225 package)					