

CMC304-SERIES



- Ultra low phase jitter: 0.5ps (12kHz to 20MHz)
- LVCMOS/ LVTTL compatible output
- SMD package 3.2 x 2.5 mm

ELECTRICAL SPECIFICATIONS

PARAMETER	SYMBOL	CONDITION	VALUE			UNIT
			Min.	Typ.	Max.	
Frequency Range	f_0	Any Frequency between Frequency range, accurate to 6 decimal places	80		220	MHz
Supply Voltage	V_s	Supply voltages between 2.5V and 3.3V can be supported in increments of 0.1V	1.71	1.8	1.89	V
			2.25	2.5	2.75	V
			2.52	2.8	3.08	V
			2.97	3.3	3.63	V
Supply Current	I_s	$V_s = 1.8V, f_0=100MHz$, no load		30	33	mA
		$V_s = 2.5V, 2.8V$ and $3.3V f_0=100MHz$, no load		34	36	mA
Operating Temperature	T_a	Extended Commercial	-20		+70	°C
		Industrial	-40		+85	°C
Frequency Stability	$\Delta f/f_0$	Including First Year aging, initial frequency tolerance at 25°C, Frequency stability over temperature range, supply variation, load variation	-10		+10	ppm
			-20		+20	ppm
			-25		+25	ppm
			-50		+50	ppm
Long term stability, aging	$\Delta f/\Delta t_y$	First year	-1.5		1.5	ppm
		10 years	-5.0		5.0	ppm
Enable / Disable Time	$T_{E/D}$	$f_0=220MHz$, for other frequencies, $T_{E/D} = 100ns + 3$ cycles			115	ms
Enable / Disable Current	$I_{E/D}$	$V_s=1.8V, E/D = GND$, output is weakly pulled down			30	mA
		$V_s=2.5V, 2.8V$ or $3.3V, E/D = GND$ output is weakly pulled down			31	mA
Standby Current	I_{sby}	STBY=GND, $V_s=1.8V$			10	μA
		STBY=GND, $V_s=2.5V, 2.8V$ or $3.3V$ Output is weakly pulled down			70	μA
Startup Time	T_{ST}	Measured from the time V_s reaches its rated maximum value		6	10	ms
Resume Time	T_{res}	Measured from the time STBY pin crosses 50% threshold			10	ms
Rise/ Fall Time	T_r / T_f	$CL = 15pF, 10\% - 90\% V_s$		1.5	2.0	ns
RMS Phase Jitter	J_{PH}	$f_0=156.25MHz, BW 12KHz$ to 20MHz		0.6	1.0	ps
RMS Period Jitter	J_P	$f_0=156.25MHz, V_s=2.5V, 2.8V$ or $3.3V$		1.5	2.0	ps
		$f_0=156.25MHz, V_s=1.8V$		2.0	3.0	ps
Input Voltage High	V_{IH}	Pin 1, E/D or STBY	70%			Vs
Input Voltage Low	V_{IL}	Pin 1, E/D or STBY			30%	Vs
Input pull-up impedance	Z_{in}			100	250	kΩ

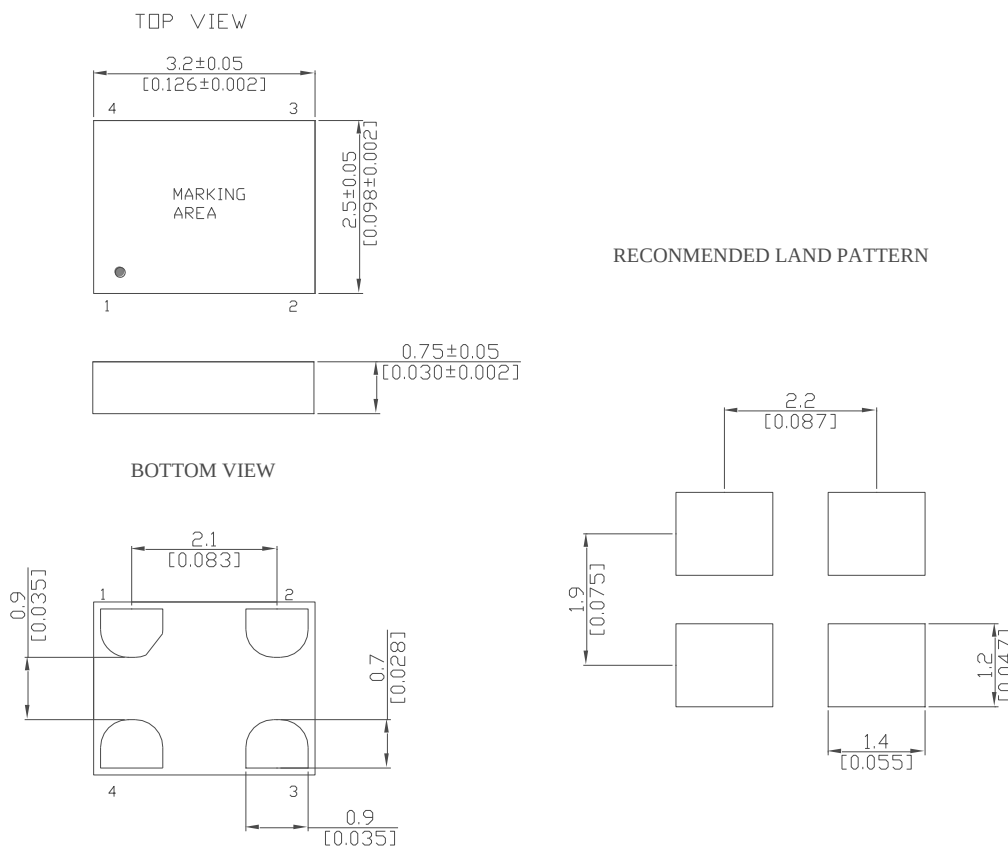
CMC304-SERIES

OUTPUT CHARACTERISTICS

	PARAMETER	SYMBOL	CONDITION	VALUE			UNIT
				Min	Typ.	Max	
LVC MOS	Output Levels	V_{OH}	$I_{OH} = -3 \text{ mA (Vs=1.8V)}$ $I_{OH} = -6 \text{ mA (Vs= 2.5V, 2.8V or 3.3V)}$	0.9 Vs			V
		V_{OL}	$I_{OL} = 3 \text{ mA (Vs=1.8V)}$ $I_{OL} = 6 \text{ mA (Vs= 2.5V, 2.8V or 3.3V)}$			0.1Vs	V
	Duty Cycle	DC	$f_0 \leq 165 \text{ MHz, all Vs}$ $f_0 \geq 165 \text{ MHz, all Vs}$	45 40		55 60	% %
	Output Load	CL	Ta=25 °C		15		pF

CMC304-SERIES

MECHANICAL DIMENSIONS AND PIN FUNCTIONING



PIN	SYMBOL	FUNCTION
1	E/D/STBY	E/D H or Open* :Enable output frequency L :Disable output frequency , high impedance STBY H or Open* : Enable output frequency L : Output is low (weak pull down) Device goes to sleep mode. Supply current (Is) reduces to Istby
2	GND	Electrical Ground
3	OUTPUT	Output Signal
4	Vs	Supply Voltage

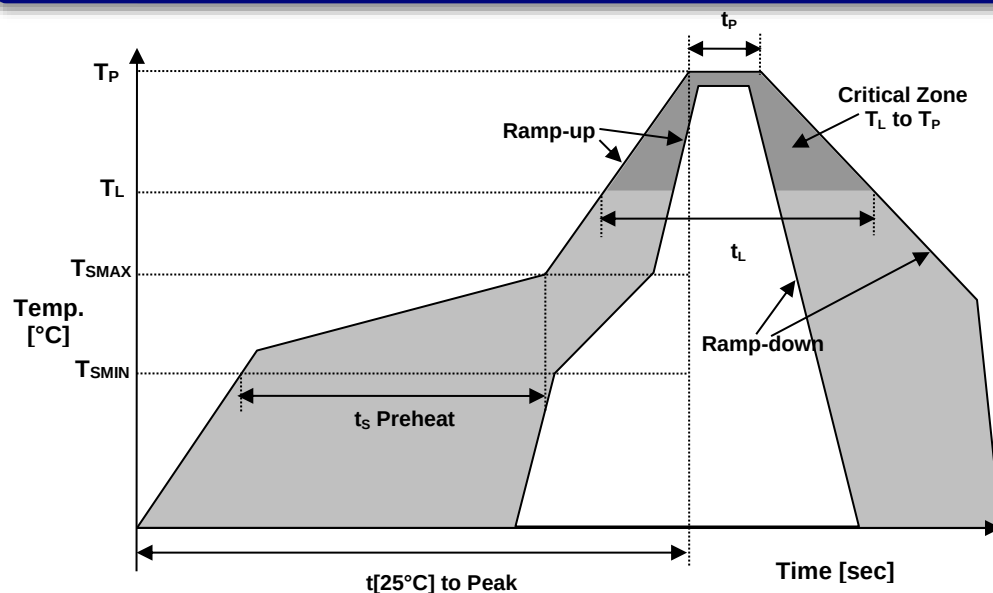
Note: *A pull-up resistor of <10kΩ between ED/STBY pin and Vs is recommended in high noise environment.

CMC304-SERIES

ENVIRONMENTAL

Soldering	MIL-STD-883F, Method 2003
Moisture Sensitivity Level	MSL 1 at 260°C
Temperature Cycle	JESD22, Method A104
Vibration	MIL-STD-883F, Method 2007
Mechanical Shock	MIL-STD-883F, Method 2002
Storage Temperature	-65° +150°C

REFLOW PROFILE



Recommended Solder Reflow Profile		
Temperature Min Preheat	T_{SMIN}	150°C
Temperature Max Preheat	T_{SMAX}	200°C
Time (T_{SMIN} to T_{SMAX})	t_s	60-180 sec.
Temperature	T_L	217°C
Peak Temperature	T_P	260°C
Ramp-up rate	R_{UP}	3°C/sec max.
Ramp-down rate	R_{DOWN}	6°C/sec max.
Time within 5°C of Peak Temperature	t_p	10 sec.
Time $t[25^\circ\text{C}]$ to Peak Temperature	$t[25^\circ\text{C}]$ to Peak	480 sec.
Time	t_L	60-150 sec.

CMC304-SERIES

ORDERING INFORMATION

SERIES	SUPPLY VOLTAGE (V)	Frequency Stability	TEMP RANGE (°C)	Output Load	Enable/Disable Function	-	OUTPUT FREQUENCY (MHz)
CMC304	18: Vs=1.8V 25: Vs=2.5V 28: Vs=2.8V 33: Vs=3.3V	A:±10ppm B:±20ppm C:±25ppm D:±50ppm	U: -20~70 V: -40~85	1:15pF	E: E/D output S:Standby	-	

APPROVALS

Eng. approval, date: SP, 07/11/2016

Created by, date: SP, 07/11/2016

Revision: A