

## CMC304-SERIES



- Ultra low phase jitter: 0.5ps ( 12kHz to 20MHz )
- LVCMOS/ LVTTTL 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 Industrial	-20		+70	°C
			-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 $V_s=2.5V, 2.8V$ or $3.3V, E/D = GND$ output is weakly pulled down			30	mA
					31	mA
Standby Current	$I_{sby}$	STBY=GND, $V_s=1.8V$ STBY=GND, $V_s=2.5V, 2.8V$ or $3.3V$ Output is weakly pulled down			10	$\mu A$
					70	$\mu A$
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 $3.3V$ $f_0=156.25MHz, V_s=1.8V$		1.5	2.0	ps
				2.0	3.0	ps
Input Voltage High	$V_{IH}$	Pin 1, E/D or STBY	70%			$V_s$
Input Voltage Low	$V_{IL}$	Pin 1, E/D or STBY			30%	$V_s$
Input pull-up impedance	$Z_{in}$			100	250	k $\Omega$

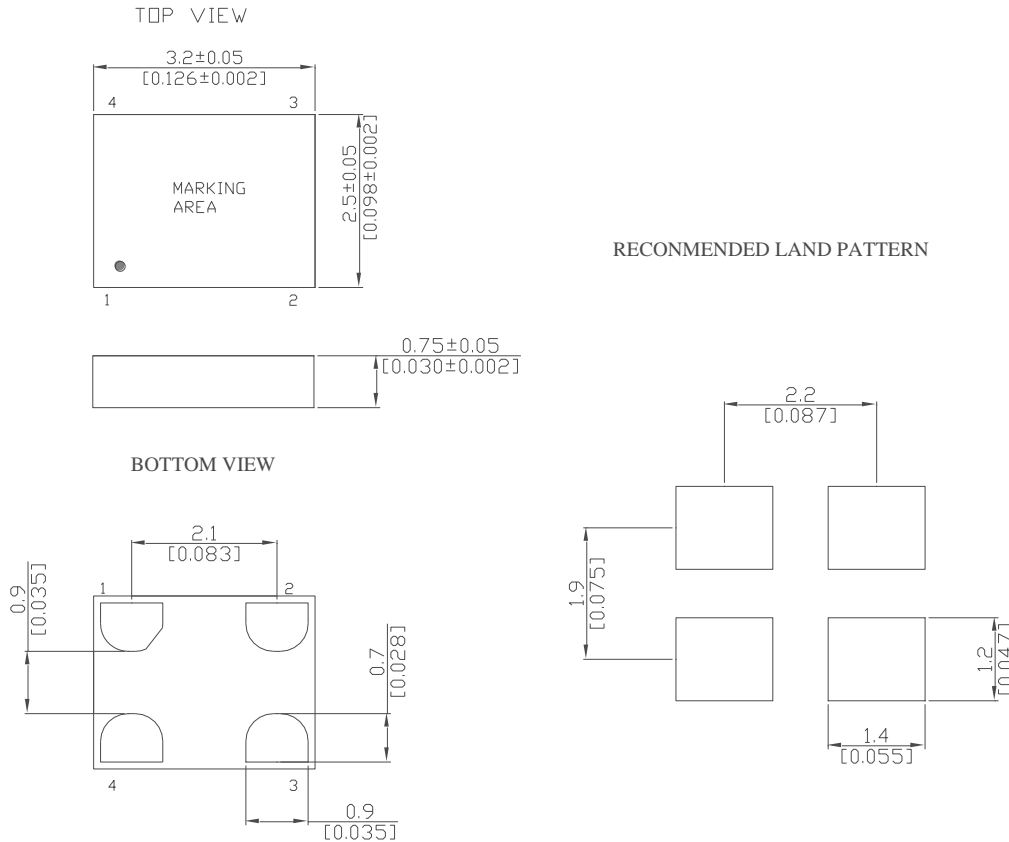
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**OUTPUT CHARACTERISTICS**

	PARAMETER	SYMBOL	CONDITION	VALUE			UNIT
				Min	Typ.	Max	
<b>LVC MOS</b>	Output Levels	<b>V<sub>OH</sub></b>	I <sub>oh</sub> = -3 mA ( V <sub>s</sub> =1.8V ) I <sub>oh</sub> = -6 mA ( V <sub>s</sub> = 2.5V, 2.8V or 3.3V )	0.9 V <sub>s</sub>			V
		<b>V<sub>OL</sub></b>	I <sub>ol</sub> =3 mA ( V <sub>s</sub> =1.8V ) I <sub>ol</sub> =6 mA ( V <sub>s</sub> = 2.5V, 2.8V or 3.3V )			0.1V <sub>s</sub>	V
	Duty Cycle	DC	f <sub>0</sub> ≤165MHz, all V <sub>s</sub> f <sub>0</sub> ≥165MHz, all V <sub>s</sub>	45 40		55 60	% %
	Output Load	CL	T <sub>a</sub> =25 °C		15		pF

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**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

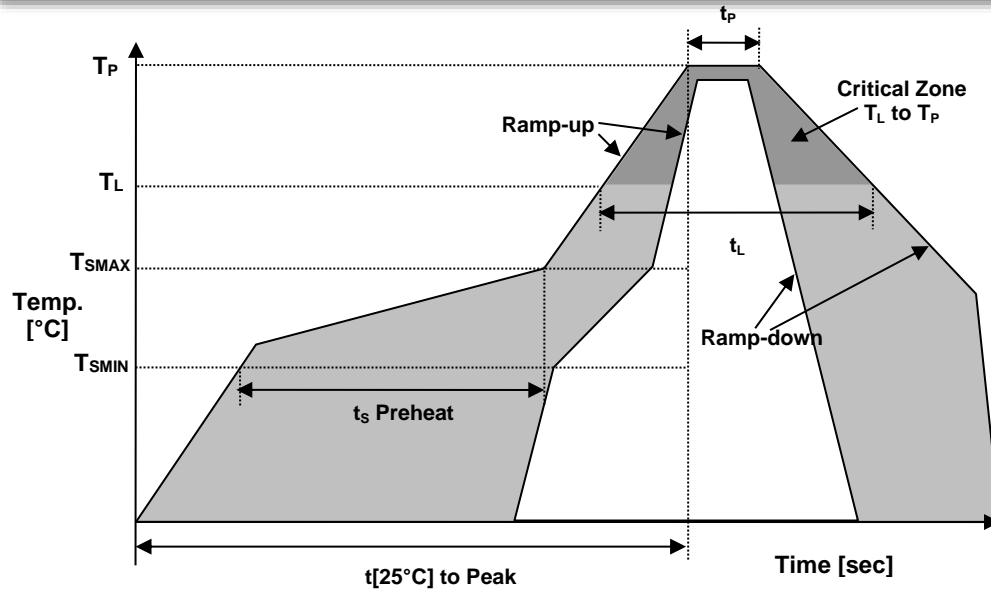
Note: \*A pull-up resistor of <10kΩ between ED/STBY pin and Vs is recommended in high noise environment.

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**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.

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**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