

**CM SERIES:  
CLOCK OSCILLATOR, CMOS FOR SPREAD SPECTRUM APPLICATIONS**

- For Reduced EMI Applications

**n ELECTRICAL PARAMETERS:**

PARAMETER	SYMBOL	TEST CONDITIONS <sup>*1</sup>	VALUE	UNIT
Nominal Frequency	fo		10.000 ~ 160.000	MHz
Supply Voltage	Vcc		+3.3 or +5.0 ±5%	VDC
Supply Current	Is		45.0 MAX <sup>*2</sup>	mA
Output Logic Type			HCMOS	
Load			15 TYP	pF
Output Voltage Levels	Voh / Vol		0.9•Vcc / 0.1•Vcc	VDC
Duty Cycle	DC	Measured at 50% of Vcc	40/60 to 60/40	%
Rise / Fall Time	tr / tf	Measured at 20/80% and 80/20% Vcc Levels	1.5 TYP <sup>*2</sup>	ns
Jitter	J	1σ	40 TYP	ps
Overall Frequency Stability	Δf/fc	Op. Temp., Aging, Load, Supply and Cal. Variations	±25, ±50, or ±100 MAX	ppm
Output Enabled	En	High Voltage or No Connect	0.7•Vcc MIN	VDC
Output Disabled	Dis	Ground (Output = High Impedance)	0.3•Vcc MAX	VDC
EMI Peak Freq. Reduction		3 <sup>rd</sup> to 19 <sup>th</sup> Odd Harmonic	7 ~ 14	dB
Absolute voltage range	Vcc(abs)	Non-Destructive	-0.5...+7.0	VDC

\*1 Test Conditions Unless Stated Otherwise: Nominal Vcc, Nominal Load, +25 ±3°C

\*2 Frequency Dependent

**n ENVIRONMENTAL PARAMETERS:**

PARAMETER	SYMBOL	TEST CONDITIONS <sup>*1</sup>	VALUE	UNIT
Operating temperature range	Ta		SEE PART NUMBER TABLE	°C
Storage temperature range	T(stg)		-55...+125	°C

**n PART NUMBERING SYSTEM:**

SERIES	PACKAGE	FREQUENCY STABILITY (Overall)	TEMPERATURE RANGE (°C)	VOLTAGE SUPPLY	FREQUENCY (MHz)	MODULATION DIRECTION & MODULATION RATE CODE
CM: Spread Spectrum with HCMOS Output	07: 7x5 mm 11: 11.4x9.6 mm 14: 14x9 mm	I: ±25 ppm H: ±50 ppm J: ±100 ppm	LV: 0...+50 LZ: 0...+70 HZ: -20...+70 D3: -40...+85	33: +3.3 VDC 50: +5.0 VDC	10.000...160.000	See Table Below

**MODULATION DIRECTION AND MODULATION RATE:**

DOWN SPREAD		CENTER SPREAD		DOWN AND CENTER SPREAD	
CODE	RATE %	CODE	RATE %	CODE	RATE %
D100	-1.00	C050	±0.50	D25C075	+0.25/-0.75%
D150	-1.50	C075	±0.75	D25C125	+0.25/-1.00%
D250	-2.50	C100	±1.00	D25C150	+0.25/-1.25%
		C125	±1.25	D25C200	+0.25/-2.00%
				D50C100	+0.50/-1.00%
				D50C150	+0.50/-1.50%
				D50C300	+0.50/-3.00%

**EXAMPLE: CM11-LZH-33-155.520-D150**

Spread Spectrum Oscillator, HCMOS Output, 11.4x9.6 mm Package, 0...+70°C Operating Temperature Range, ±50 ppm Total Frequency Stability, +3.3 VDC Supply Voltage, 155.52 MHz, Downspread -1.50% Modulation.

**n MECHANICAL SPECIFICATION**

<p><b>7 x 5 mm PKG.</b></p> <p>INDICATES PIN 1.</p> <p>OUTLINE DIMENSIONS: .197 ± 0.008 (5.0 ± 0.2), .276 ± 0.008 (7.0 ± 0.2), .079 MAX. (2.00 MAX.).</p> <p>SOLDER PATTERN DIMENSIONS: .079 TYP. (2.00 TYP.), .129 (3.28), .087 (2.20), .071 (1.80), .100 (2.54).</p> <p><b>SOLDER PATTERN</b></p>	<p><b>OUTLINE TOLERANCE:</b> ±0.015" / 0.4mm (Unless otherwise specified)</p> <p><b>PIN FUNCTIONS:</b> [1] ENABLE/DISABLE [2] NO CONNECT [3] CASE/GROUND [4] OUTPUT [5] NO CONNECT [6] Vcc</p> <p><b>EXAMPLE MARKING:</b> CP07-LZH 155D150 RAL D/C</p> <p><b>*0.01mF external by-pass filter is recommended as seen on solder pattern.</b></p>
<p><b>14 x 9 mm PKG.</b></p> <p>TOP VIEW: 0.550 (13.97), 0.350 (8.88)</p> <p>FRONT VIEW: 0.200 TYP. (5.08 TYP.)</p> <p>SIDE VIEW: H</p> <p>BOTTOM VIEW: 0.298 (7.44), 0.066 (1.68), 0.057 (1.45)</p> <p>RECOMMENDED SOLDER PATTERN: .286 (7.26), .086 (2.2), .400 (10.16), .107 (2.72), .200 (5.08)</p> <p><b>RECOMMENDED SOLDER PATTERN.</b></p>	<p><b>OUTLINE TOLERANCE:</b> ±0.015" / 0.4mm (Unless otherwise specified)</p> <p>H = T.B.D.</p> <p><b>PIN FUNCTIONS (6 pins):</b> [1] ENABLE/DISABLE [2] NO CONNECT [3] CASE/GROUND [4] OUTPUT [5] NO CONNECT [6] Vcc</p> <p><b>EXAMPLE MARKING:</b> CP14-LZH-33 155.52D150 RAL D/C</p>
<p><b>11.4 x 9.6 mm PKG.</b></p> <p>Side View: .028 x 4 (0.7 x 4), .200 ± 0.008 (5.08 ± 0.2)</p> <p>Top View: MARKING AREA, .378 ± 0.012 (9.6 ± 0.3), .449 ± 0.016 (11.4 ± 0.4), .020 ± 0.008 (0.5 ± 0.2), .039 ± 0.008 x 2 (1.0 ± 0.2 x 2), .051 ± 0.008 (1.3 ± 0.2), .200 ± 0.008 (5.08 ± 0.2), .055 x 2 (1.4 x 2)</p> <p>SEE NOTE 1.</p>	<p><b>OUTLINE TOLERANCE:</b> ±0.015" / 0.4mm (Unless otherwise specified)</p> <p>H = T.B.D.</p> <p><b>PIN FUNCTIONS:</b> [1] ENABLE/DISABLE [2] CASE/GROUND [3] OUTPUT [4] Vcc</p> <p><b>MARKING (EXAMPLE):</b> CP11-LZH-33 155.52D125 RAL D/C</p>