



# MCSO1EL

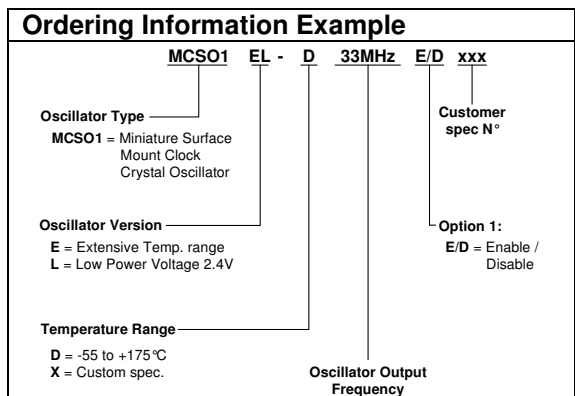
Miniature SMD Clock-Oscillator  
 Overall stability  $\pm 300\text{ppm}$  Works up to  $175^\circ\text{C}$   
 2.4V Power Supply 32.768KHz

<b>FREQUENCY STABILITY</b>	
OVER:	
OPERATING TEMP. RANGE:	See note 1
OVERALL STABILITY:	$< \pm 300\text{ppm}^*$
INCLUDING:	
•	OVER OPERATING TEMPERATURE RANGE
•	ADJUSTMENT @ $25^\circ\text{C}$
•	AGING (24 HOURS @ $175^\circ\text{C}$ )
•	STABILITY OVER SUPPLY VOLTAGE $\pm 10\%$
•	STABILITY OVER LOAD (MIN. TO MAX.)
<b>POWER SUPPLY</b>	
SUPPLY VOLTAGE:	$V_{dd} = 2.4\text{V} \pm 5\%$
INPUT CURRENT:	$< 300\mu\text{A}$
<b>OUTPUT</b>	
OUTPUT SIGNAL:	HC-MOS compatible
SYMMETRY:	$40 / 60\%$ (min.) @ $V_{dd} / 2^*$
RISE & FALL TIME:	$t_r < 15\text{ns}$ $t_f < 15\text{ns}^*$
LEVEL "0" & "1":	$< 0.4\text{V}$ $> V_{dd} - 0.5\text{V}$
START-UP TIME:	$< 5\text{ms}$
FAN OUT (LOAD):	$25\text{pF max}^*$
<b>ENVIRONMENT</b>	
OPERABLE TEMP. RANGE:	$-55$ to $+175^\circ\text{C}$ (during 72 hours)
STORAGE TEMP. RANGE:	$-65$ to $+125^\circ\text{C}$
VIBRATIONS:	10 to 2000Hz / 10g
SHOCKS:	5000g, 0.3ms, $\frac{1}{2}$ sine
PACKAGE:	Ceramic
PACKAGE DIMENSIONS:	$8.0 \times 3.7 \times 2.0\text{mm}$ (see packaging info)
PROCESSING:	Reflow soldering $260^\circ\text{C}$ / 10s max. (see packaging info)
<b>MISCELLANEOUS</b>	
Supply voltage 3.3 and 5V available	

<b>Note 1: Operating Temperature Range</b>	
MCSO1EL-D:	$-55$ to $+175^\circ\text{C}$

<b>Option 1: Enable / Disable (on request)</b>	
See application circuit on page 2 for details	
<b>Pin 1:</b>	<b>Pin 3 (Fout):</b>
Open	Clock
H	Clock
L	High Z

<b>Marking Example</b>			
<b>Micro Crystal</b>		<b>Micro Crystal</b>	
MCSO1EL-D	E/D	Type	Option 1
32.768 KHz	09.12	Frequency	Date Code
○		○ (PIN 1)	



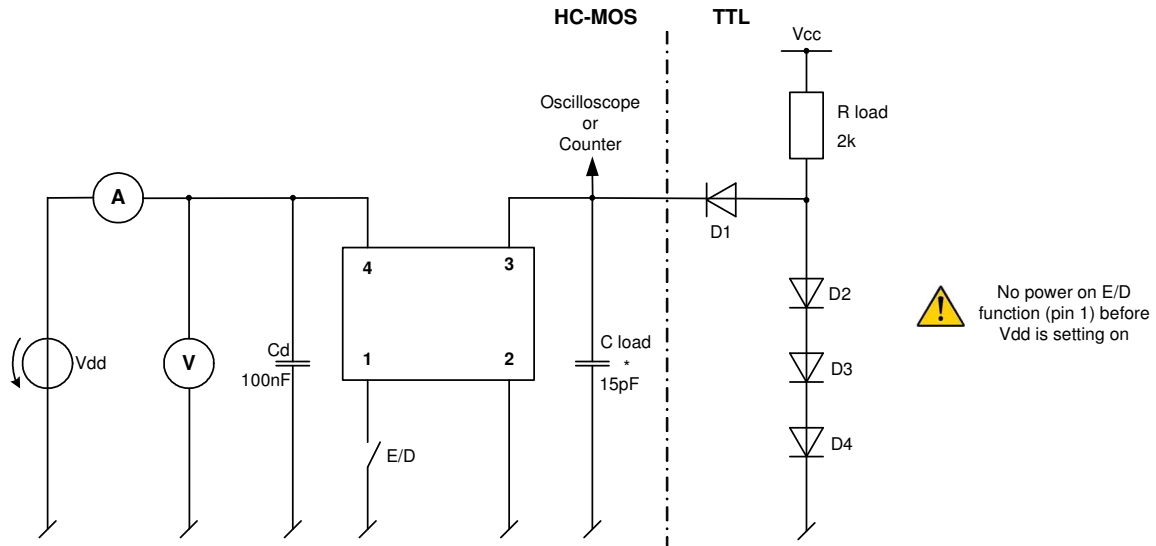
# PRELIMINARY

Date :	May 2007	Revision No. : 1	Revision Date : 10.09
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In accordance with our policy of continuous development and improvement,  
 we reserve the right to modify the design or the specifications of our products without prior notice.

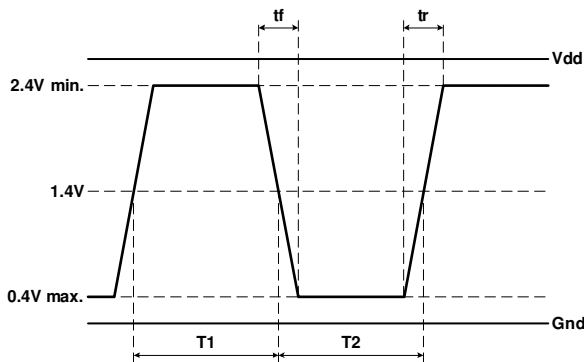
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**Application and Test Circuit:**

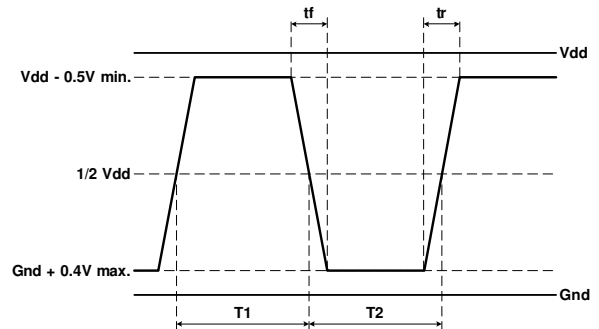


**Waveform Output:**

**Waveshape TTL**



**Waveshape HC-MOS**



$$Duty\ Cycle = 100 \times \frac{T1}{T1 + T2} [\%]$$

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