

# CS-023E 3.2x2.5mm Crystal Resonator



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## Description:

The Connor-Winfield CS-023E is a 3.2x2.5mm surface mount AT-cut 3rd Overtone crystal. The CS-023E is used as the reference crystal in many frequency synthesizer and PLL applications.

## Features:

- Frequency: 114.285 MHz
- Frequency Calibration:  $\pm 20$  ppm
- Frequency Stability:  $\pm 20$  ppm
- Temperature Range:  $-40$  to  $85^{\circ}\text{C}$
- Surface Mount Package
- Tape and Reel Packaging
- RoHS Compliant / Lead Free

## Electrical Specifications

Parameter	Minimum	Nominal	Maximum	Units	Notes
Output Frequency (Fo)	-	114.285	-	MHz	
Frequency Calibration (@25°C)	-20	-	20	ppm	
Frequency Stability vs. Change in Temperature	-20	-	20	ppm	
Operating Temperature Range:	-40	-	85	°C	
Operation Mode	3rd Overtone				
Cut	AT Cut				
Aging	-3	-	3	ppm/Year	
Shunt Capacitance: (Co)	-	-	2.5	pF	
Load Capacitance: (CL)	-	18	-	pF	
Equivalent Series Resistance @ 25 °C	-	-	50	Ohms	
Drive Level	-	100	200	uW	
Insulation Resistance	-	500	-	Mohm	@ 100 Vdc
Storage Temperature:	-55	-	125	°C	

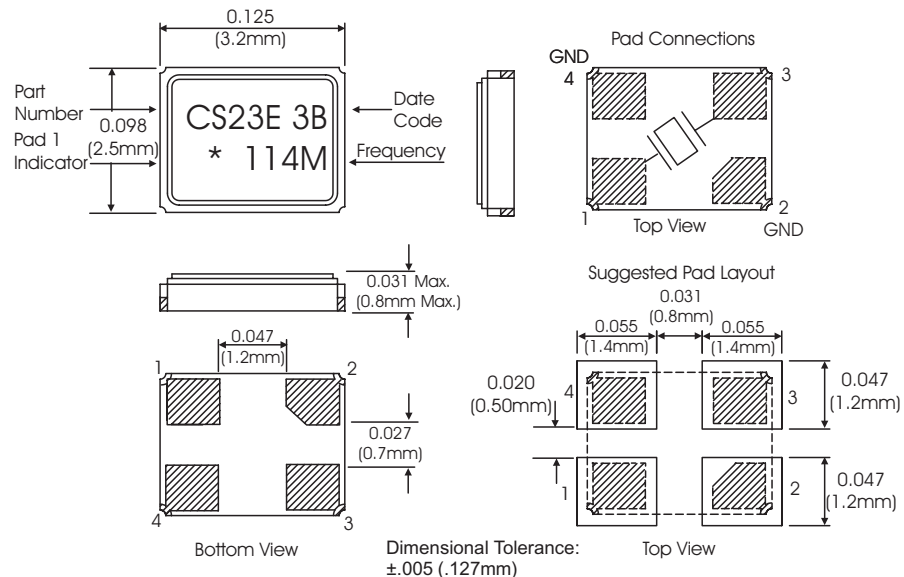
## Package Characteristics

Package	Hermetically sealed ceramic 3.2x2.5mm SMD Package.
Leakage	0.01ppm atm, cc/sec. maximum

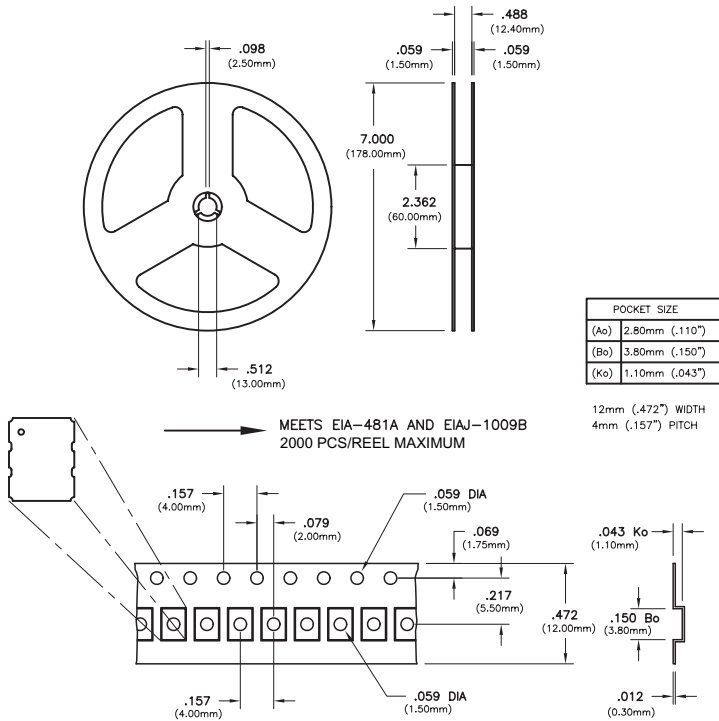
## Ordering Information

CS-023E-114.285M

## Package Outline



## Tape and Reel Information



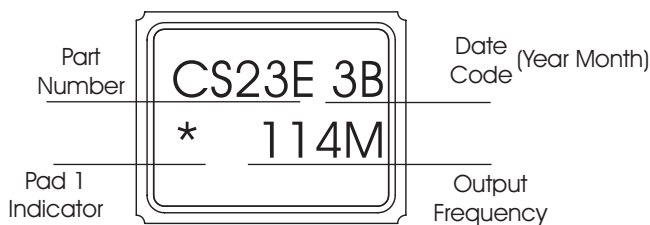
## Date Code Information

2 Character Date Code

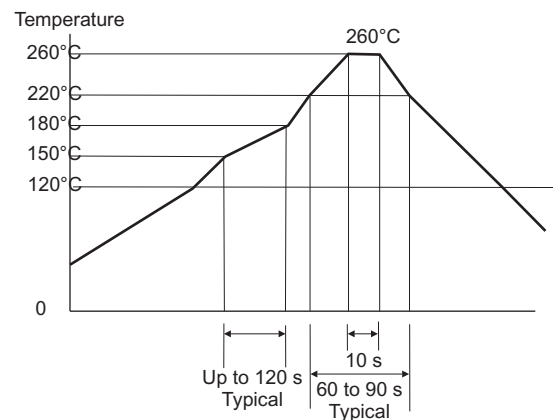
Year Code	Month Code
3 = 2013	A = January
4 = 2014	B = February
5 = 2015	C = March
6 = 2016	D = April
7 = 2017	E = May
8 = 2018	F = June
9 = 2019	G = July
0 = 2020	H = August
1 = 2021	J = September
2 = 2022	K = October
	M = November
	N = December

Date Code Example: 9G  
9 = 2019, G = July

## Marking Information



## Solder Profile



Meets IPC/JEDEC J-STD-020C

### DLD Testing Information

100% of the crystals are measured at the following drive levels in the order listed:

10nw  
25nw  
50nw  
100nw  
500nw  
1uw  
5uw  
10uw  
50uw  
100uw

The reference value is the ESR and FL at 50uw

The Frequency and resistance measurements are then compared to the reference value and P/F limits are as follows:  
10/25/50 nw levels 2.0 ppm max, 10% ESR max Remaining drive levels 1.0 ppm max, 10% ESR max.

All devices are tested once and no retesting allowed.

CS-023E is tested -40 to 85 °C every 2°C with no discontinuities > 1 ppm and the change in R - effective < 10%

### Revision History

Revision	Date	Changes
00	02/11/13	New Issue
01	04/02/14	Revision to Shunt Capacitance
02	10/05/16	Update to Description, Drive Level and Date Code Information
03	07/24/19	Updated tape and reel information and date code table.

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Revision	<b>03</b>
Date	<b>24 July 2019</b>