



A Product Line of  
Diodes Incorporated



# SPECIFICATION FOR APPROVAL

CUSTOMER	
NOMINAL FREQUENCY	<b>10.000000 MHz</b>
PRODUCT TYPE	<b>TYPE F9 5x3.2 GLASS SEALED CRYSTAL</b>
PART NUMBER	<b>F91000010</b>
CUSTOMER P/N	
ISSUE DATE	<b>December 22, 2017</b>
VERSION	<b>E</b>

APPROVED	PREPARED	QA

## Diodes Incorporated

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\*RoHS Exemption

\*HF-Halogen Free

\*REACH Compliant

# TYPE F9 5x3.2 GLASS SEALED CRYSTAL

**F91000010**

VER.E 22-DEC-17

## VERSION HISTORY

Version No.	Version Date	Description	Notes
A	Jul. 15, 2011	Initial Release	
B	Sep. 26, 2011	Changed ESR from 70ohms to 100ohms	
C	Oct. 3, 2011	Changed Calibration Tolerance from +/-30ppm to +/-20ppm & Changed Maximum Drive Level feom 100 uW to 500uW	
D	Feb. 19, 2013	Updated Mechanical Drawing	
E	Dec. 22, 2017	Updated logo	

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### ELECTRICAL SPECIFICATIONS

Item	Symbol	Specifications	Units	Notes
Nominal Frequency	Fn	10.000000	MHz	
Mode of Oscillation	MO	AT Cut-Fundamental		
Calibration Load Capacitance	CL	8	pF	
Calibration Tolerance	FL	$\pm 20$	ppm	at 25°C $\pm 3^{\circ}\text{C}$
Operating Temperature Range	TR	-20 to +70	°C	
Frequency Stability(Frequency Deviation over the Operating Temperature Range)	F/T	$\pm 30$	ppm	Reference to the Frequency at 25°C
Operating Drive Level		10	$\mu\text{W}$	
Maximum Drive Level		500	$\mu\text{W}$	
Equivalent Series Resistance	ESR	100	$\Omega$	Max.
Shunt Capacitance	C0	5	pF	Max.
Aging at 25°C		$\pm 3$	ppm	Max, 1st year
Storage Temperature		-55 to +125	°C	
Insulation Resistance		500	M $\Omega$	Min

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## RELIABILITY SPECIFICATIONS

### MECHANICAL AND ENVIRONMENTAL RATINGS:

- a) FINE LEAK TEST: JESD22-A109 (Condition 1A)
- b) GROSS LEAK TEST: JESD22-A109 (Condition C)
- c) MOISTURE RESISTANCE: JESD22-A113
- d) SHOCK: JESD22-B104 (Condition B)
- e) SOLDERABILITY : (RoHS version): J-STD-002
- f) VIBRATION: JESD22-B103
- g) SOLVENT RESISTANCE: JESD22-B107
- h) RESISTANCE TO SOLDERING HEAT (RoHS version): J-STD-020D Table 5.2 Pb free devices (3 cycles max)

## SUGGESTED IR REFLOW PROFILE

\*As per IPC-JEDEC J-STD-020D



Note:

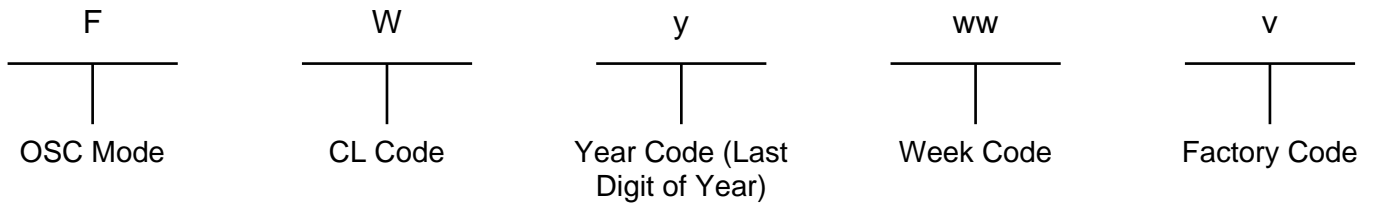
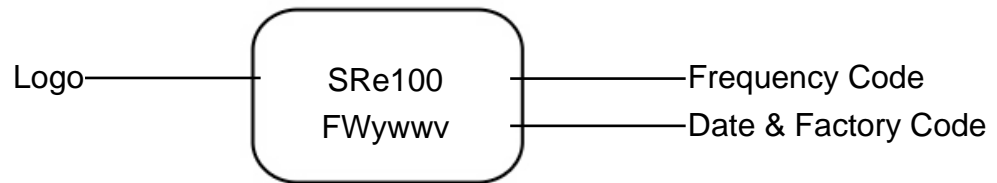
	Stage	Temperature	Time
A	Preheat	150~200°C	60~120 Sec
B	Primary Heat	217°C	60~150 Sec
C	Peak	260°C	10 Sec

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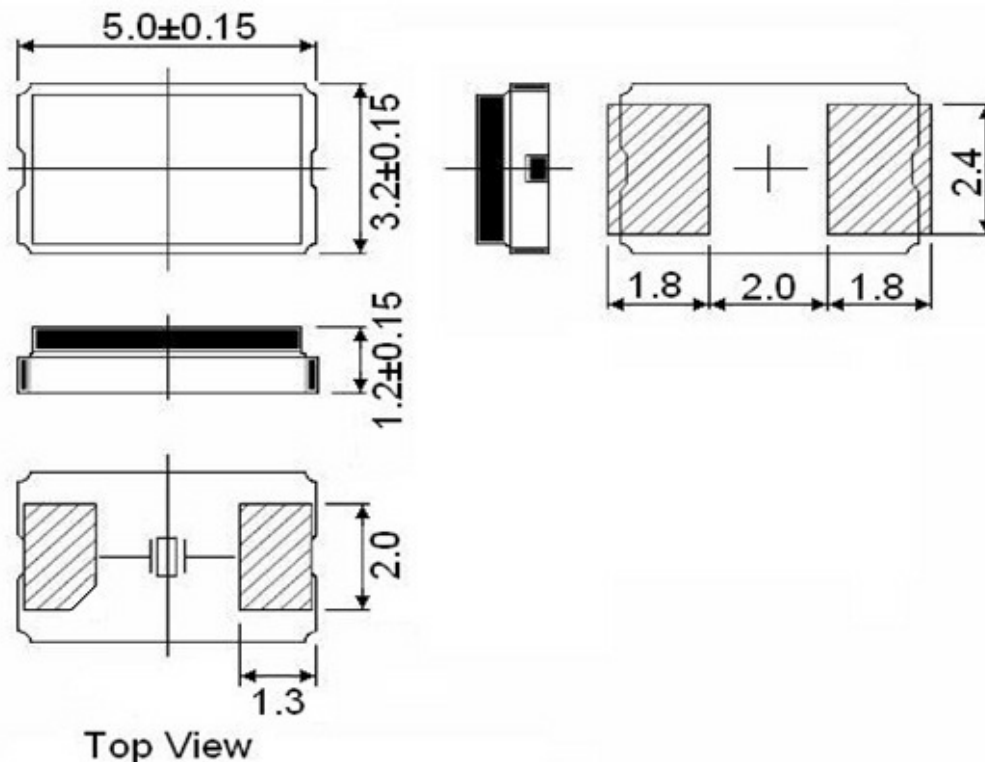
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## MARKING



## MECHANICAL DRAWINGS ( Scale: None. Dimensions are in mm.)



### Note:

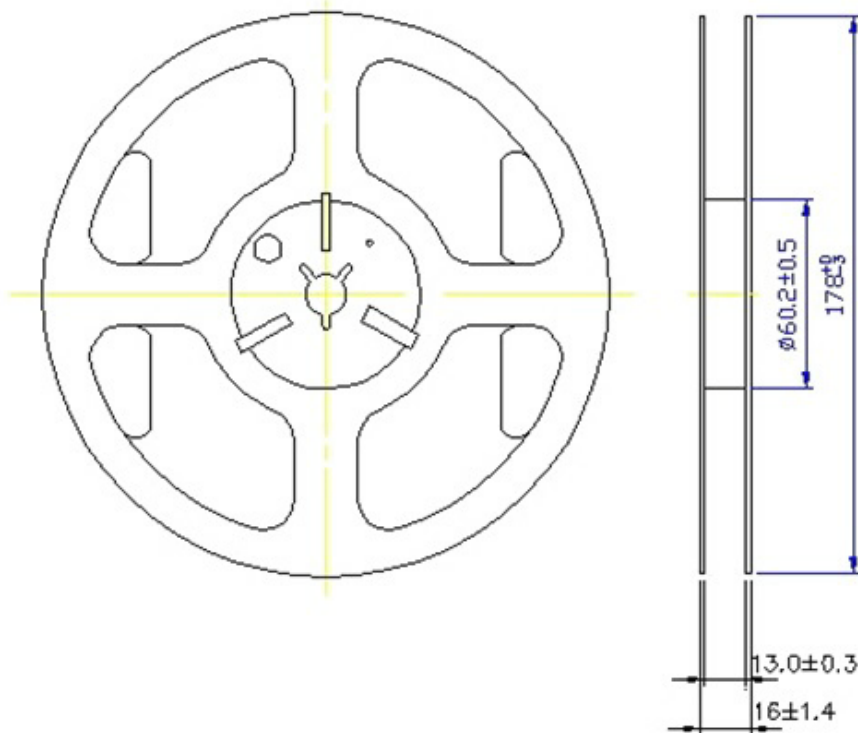
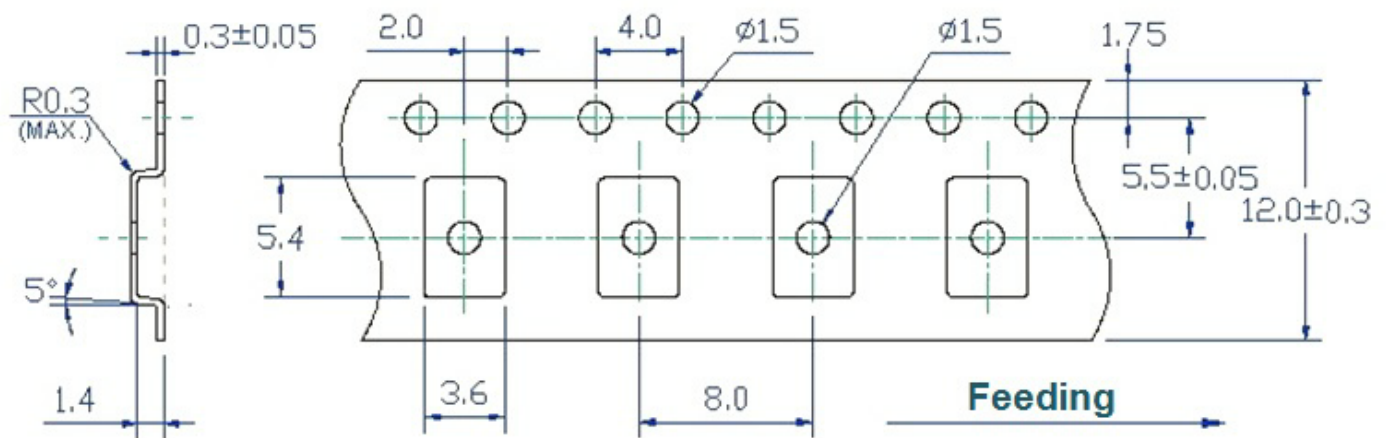
Pin shape is only for reference, and the Pin with chamfer or without chamfer is based on the real product.

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## Tape & Reel



1. 230mm minimum leader which consist of carrier and/or tape followed by a minimum of 160mm of empty carrier tape sealed with cover tape.
2. 160mm minimum trailer of empty carrier tape sealed with cover tape.

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## PACKING

