



A Product Line of
Diodes Incorporated



SPECIFICATION FOR APPROVAL

CUSTOMER _____

NOMINAL FREQUENCY 12.000000 MHz




PRODUCT TYPE TYPE F9 5.0x3.2 GLASS SEALED CRYSTAL

SPEC. NO. (P/N) F91200057

CUSTOMER P/N _____

ISSUE DATE December 28, 2017

VERSION E

APPROVED	PREPARED	QA
		

Diodes Incorporated

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*RoHS Exemption
*HF-Halogen Free
*REACH Compliant

TYPE F9 5.0x3.2 GLASS SEALED CRYSTAL

F91200057

VER. E 28-Dec-17

VERSION HISTORY

Version No.	Version Date	Description	Notes
A	Apr.1,2008	Initial Release	
B	Nov.9,2010	New Logo	
C	Mar.21,2012	Updated Suggested IR Reflow Profile & Format	
D	Sep.19,2012	Changed Mechanical Drawings	
E	Dec.28,2017	Updated logo	

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ELECTRICAL SPECIFICATIONS

Item	Symbol	Specifications	Units	Notes
Nominal Frequency	Fn	12.000000	MHz	
Mode of Oscillation	MO	AT Cut-Fundamental		
Calibration Load Capacitance	CL	16	pF	
Calibration Tolerance	FL	±30	ppm	at 25°C±3°C
Operating Temperature Range	TR	-20 to +70	°C	
Frequency Stability (Frequency Deviation over the Operating Temperature Range)	F/T	±30	ppm	Reference to the Frequency at 25°C
Operating Drive Level		10	μW	
Equivalent Series Resistance	ESR	60	Ω	Max
Shunt Capacitance	C0	5	pF	Max.
Aging at 25°C		±3	ppm	Max, 1st year
Storage Temperature		-55 to +125	°C	
Insulation Resistance		500	MΩ	Min

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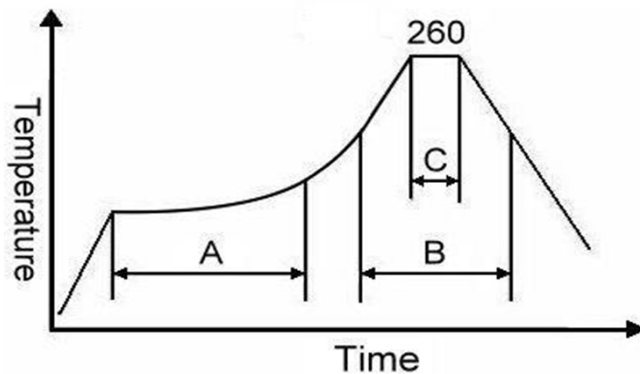
RELIABILITY SPECIFICATIONS

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:

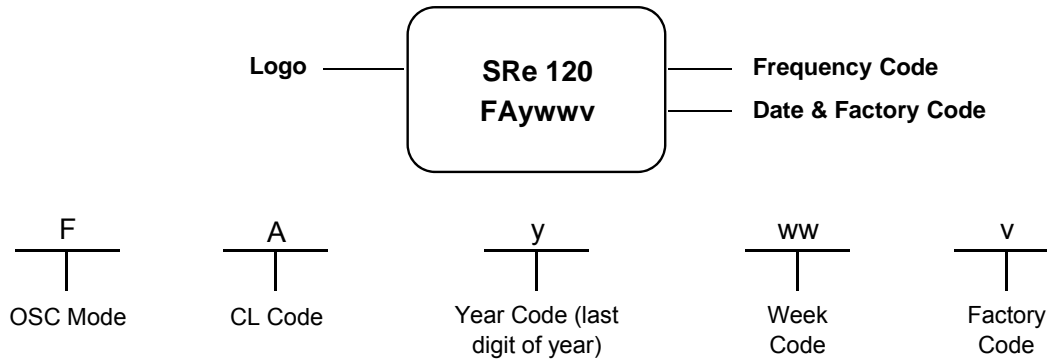
	Stage	Temperature	Time
A	Preheat	150~200°C	60~120 Sec
B	Primary Heat	217°C	60~150 Sec
C	Peak	260°C	10 Sec

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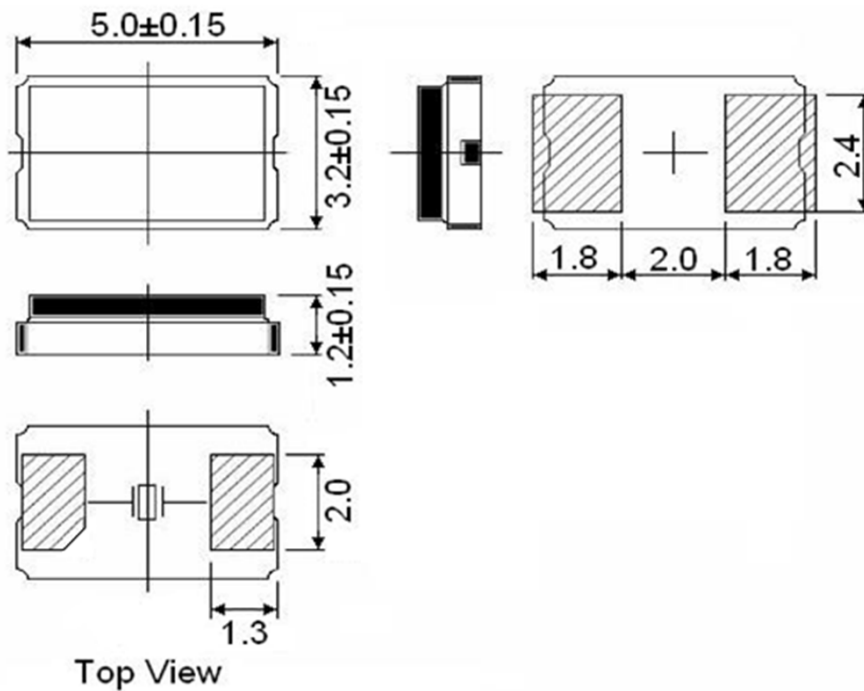
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MARKING



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



Note:

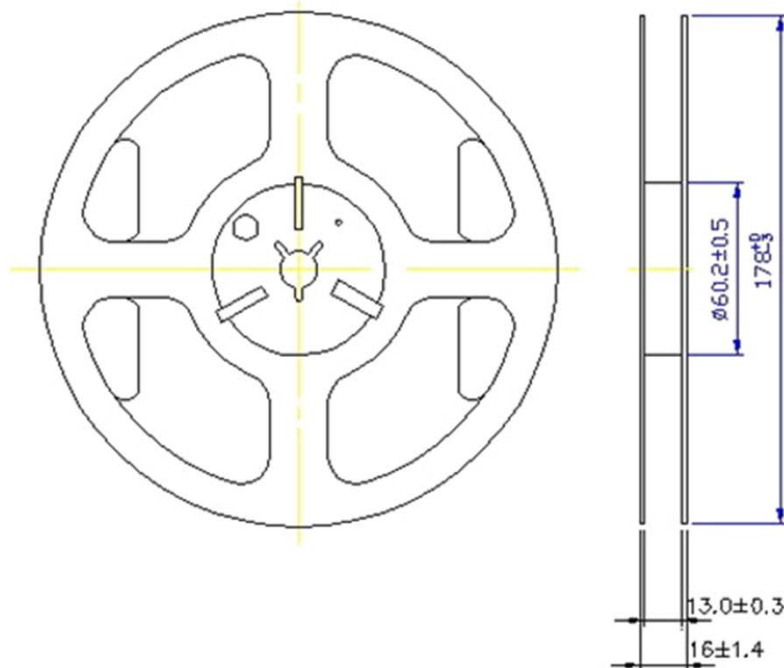
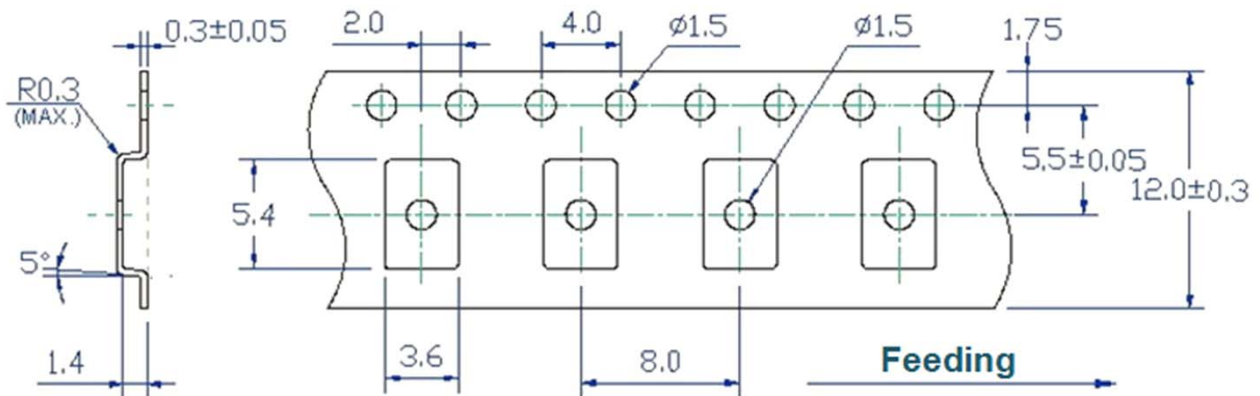
Pin shape is only for reference, and the Pin with chamfer or without chamfer is based on the real product.

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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

