

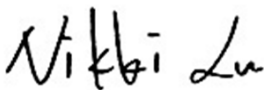


A Product Line of
Diodes Incorporated



SPECIFICATION FOR APPROVAL

CUSTOMER	
NOMINAL FREQUENCY	156.250000 MHz
PRODUCT TYPE	TYPE LD 5.0x3.2 SEAM SEALED CRYSTAL CLOCK OSCILLATOR
SPEC. NO. (P/N)	LDF620001
CUSTOMER P/N	
ISSUE DATE	February 22, 2019
VERSION	F

APPROVED	PREPARED	QA
		

Diodes Incorporated

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*Pb-free
*RoHS Compliant
*HF-Halogen Free
*REACH Compliant

TYPE LD 5.0x3.2 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

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VERSION HISTORY

Version No.	Version Date	Description	Notes
A	Aug.6,2010	Initial Release	
B	Jan.28,2011	Updated Suggested IR Reflow Profile & Format	
C	Mar.9,2011	Added Internal Pullup Resistance: 50KΩ typ & Changed Packing from 500pcs/reel to 1000pcs/reel	
D	Apr.18,2011	Revised Packing from 1000pcs/reel to 500pcs/reel	
E	Aug.2,2017	Changed Logo	
F	Feb.22,2019	Updated Logo	



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ELECTRICAL SPECIFICATIONS

SRe Part Number : LDF620001

Item	Symbol	Specifications	Units	Notes
Nominal Frequency	F ₀	156.250000	MHz	
Frequency Stability	FT	± 50	ppm	**See note
Operating Temperature Range	TR	-40 to +85	°C	
Supply Voltage	V _{CC}	+3.3 ± 10.0%	V	
Logic Type	LT	LVDS		
Supply Current, Output Enabled	I _{CC} /OE	80	mA	Max.
Supply Current, Output Disabled	I _{CC} /OD	30	uA	Max.
Duty Cycle (Symmetry)	DC/SY	45 / 55	%	Measured 50% of Waveform
Rise / Fall Time	T _R /T _F	1	ns	Max. measured 10/90% of Waveform
Output Voltage "0" Level	V _{OL}	1.10 / 0.9	V	Typ. / Min.
Output Voltage "1" Level	V _{OH}	1.43 / 1.6	V	Typ. / Max.
Output Load		100Ω & 5pF LVDS		
Differential Output Voltage		247 / 454	mV	Min. / Max.
Jitter, Phase	RMS	1	ps	Max., 12KHz ~ 20MHz Frequency Band
Jitter, Accumulated	RMS(1-σ)	4	ps	Typ. 20,000 Consecutive Periods
Jitter, Peak to Peak	Pk-Pk	40	ps	Max. 100,000 Random Periods
Start Up Time		10	ms	Max.
Storage Temperature Range		-55 to +125	°C	

※ This product doesn't include harmful substance that stipulated by SONY SS-00259 Level 1 and S-AT2-001 Level 1 standard. RoHS Compliant (Pb - Free).

****Stability includes all combinations of Operating Temperature, Load changes, rated Input (Supply) Voltage changes, Initial Calibration Tolerance (25°C), Aging (5 years at 40°C Average Effective Ambient Temperature), Shock and Vibration.**

Output Enable / Disable Function

Parameter	Min.	Typ.	Max.	Units	Notes
Input Voltage (Pin1), Output Enable	0.7V _{CC}			V	Or Open
Input Voltage (Pin1), Output Disable (low power standby)			0.3V _{CC}	V	Output is Hi-Z
Internal Pullup Resistance		50		KΩ	
Output Disable Delay			200	ns	
Output Enable Delay			2	ms	

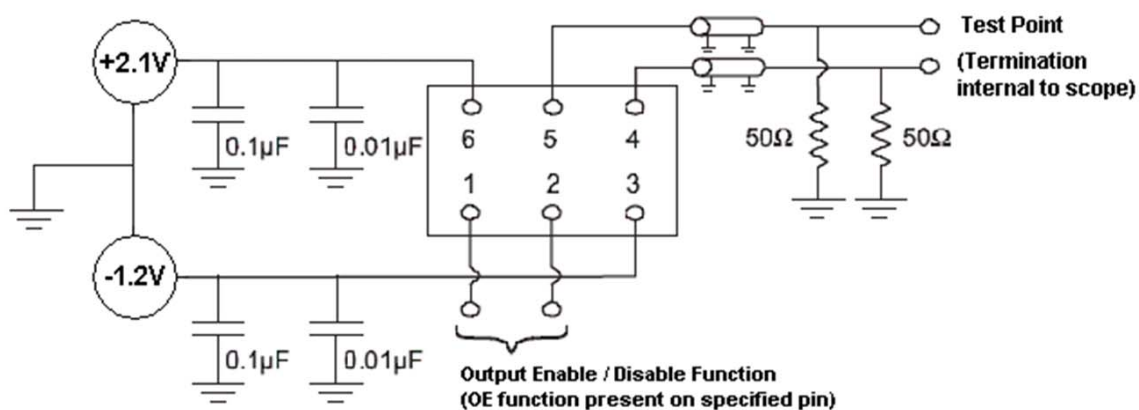


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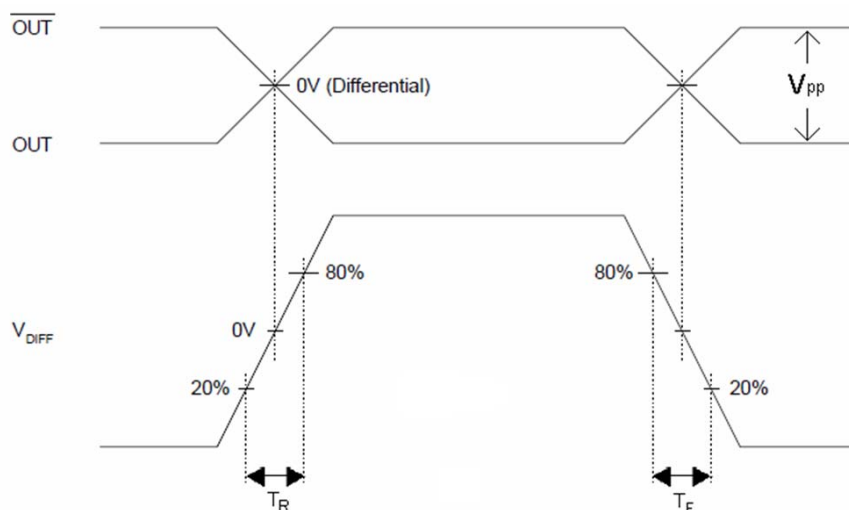
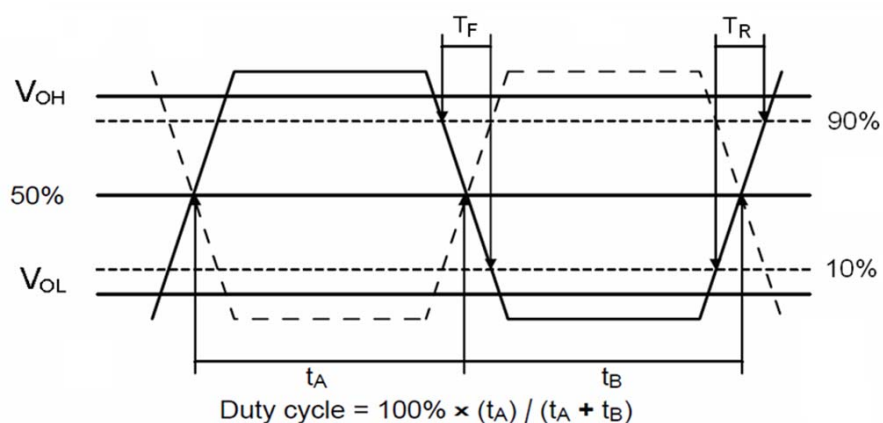
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TEST CIRCUIT



OUTPUT WAVEFORM



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RELIABILITY SPECIFICATIONS

ENVIRONMENTAL:

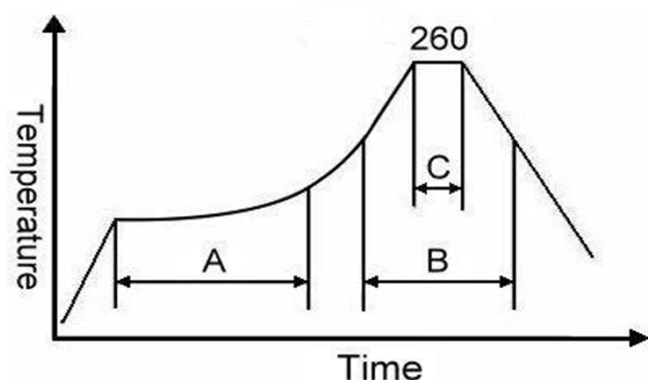
- a) THERMAL SHOCK: MIL-STD-883, Method 1011, Condition A
- b) MOISTURE RESISTANCE: MIL-STD-883, Method 1004
- c) VIBRATION: MIL-STD-883, Method 2007, Condition A
- d) RESISTANCE TO SOLDERING HEAT: J-STD-020D Table 5-2 Pb-free devices
(except 2 cycles max)
- e) HAZARDOUS SUBSTANCE: Pb - free and RoHS/ Green Compliant.

MECHANICAL:

- a) SHOCK: MIL-STD-883, Method 2002, Condition B
- b) SOLDERABILITY: JESD22-B102-D Method 2 (Preconditioning E)
- c) TERMINAL STRENGTH: MIL-STD-883, Method 2004, Test Condition D
- d) GROSS LEAK: MIL-STD-883, Method 1014, Condition C
- e) FINE LEAK: MIL-STD-883, Method 1014, Condition A2, $R1=2 \times 10^{-8}$ atm cc/s
- f) SOLVENT RESISTANCE: MIL-STD-202, Method 215

SUGGESTED IR REFLOW PROFILE

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



Note:

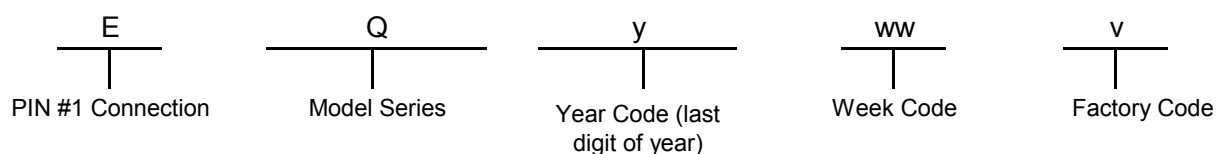
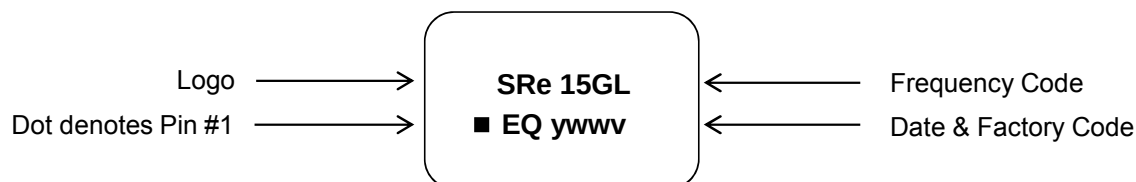
	Stage	Temperature	Time
A	Preheat	150~200°C	60~120 Sec
B	Primary Heat	217°C	60~150 Sec
C	Peak	260°C	10 Sec

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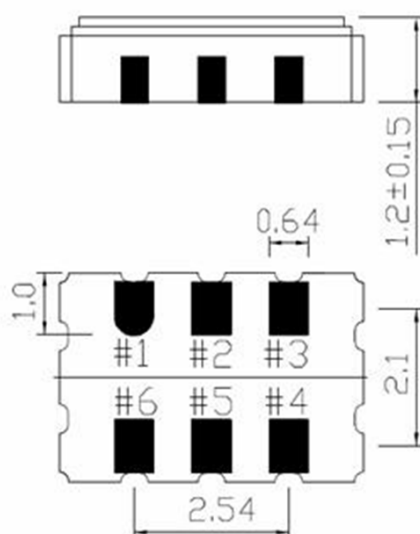
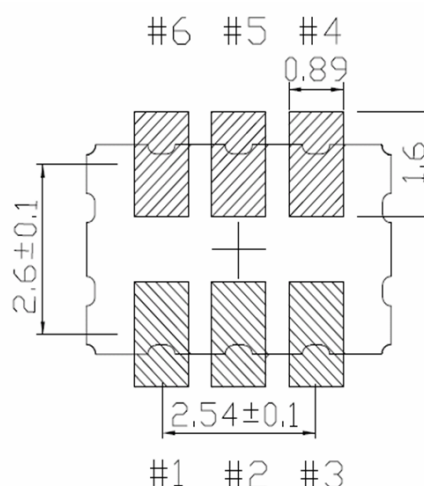
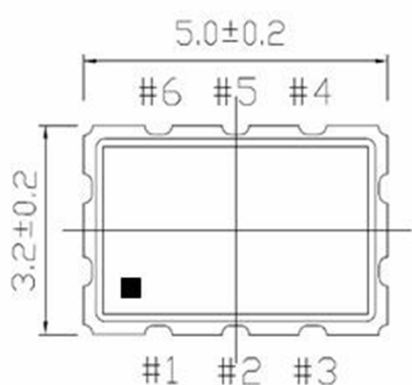
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MARKING



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

Recommended Land Pattern*



*External high-frequency power decoupling is recommended.(see test circuit for minimum recommendation). To ensure optimal performance, do not route traces beneath the package.

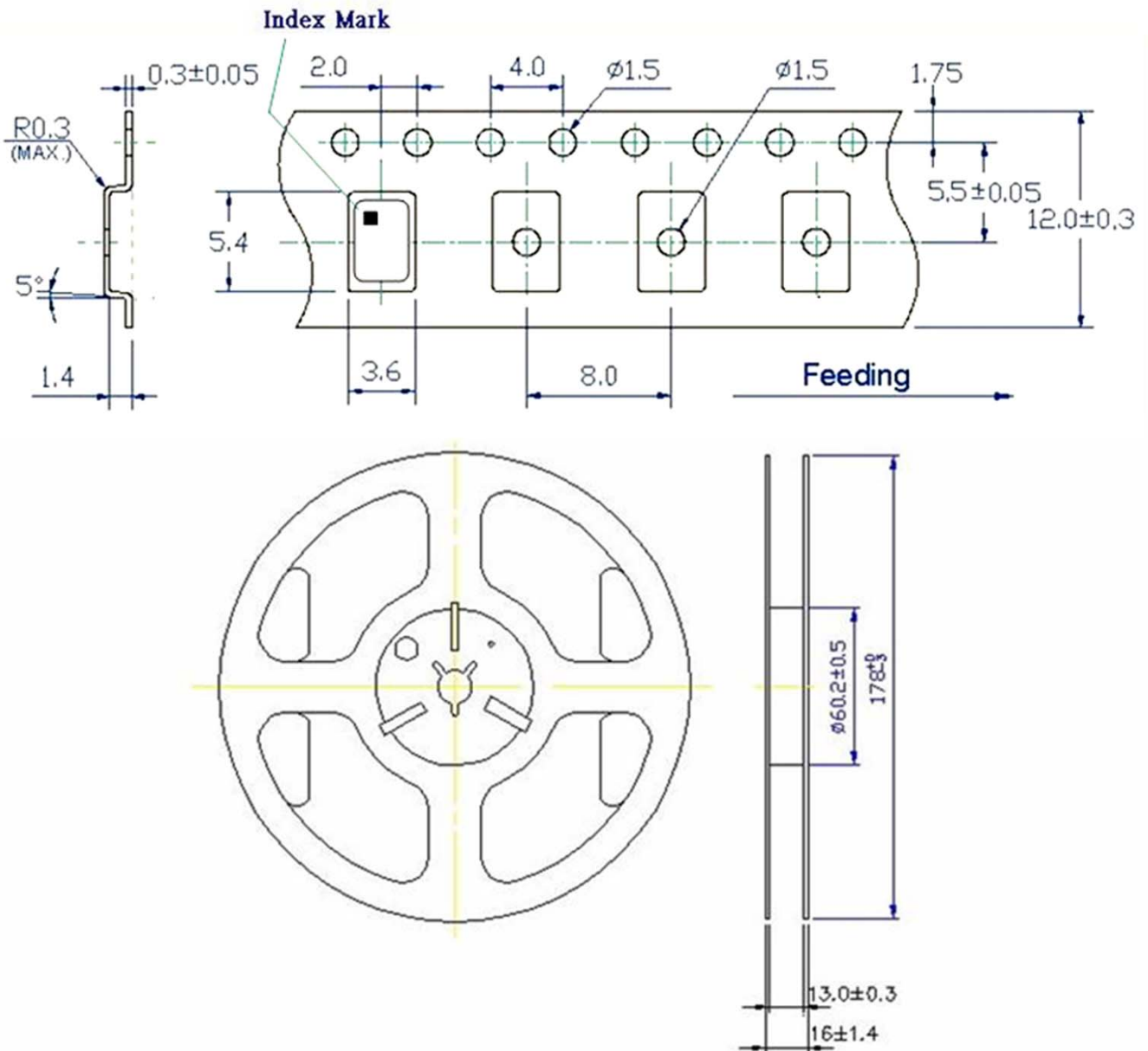
Pin	Function
1	EN
2	NC
3	V _{EE}
4	OUTPUT
5	OUTPUT N
6	V _{CC}

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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

