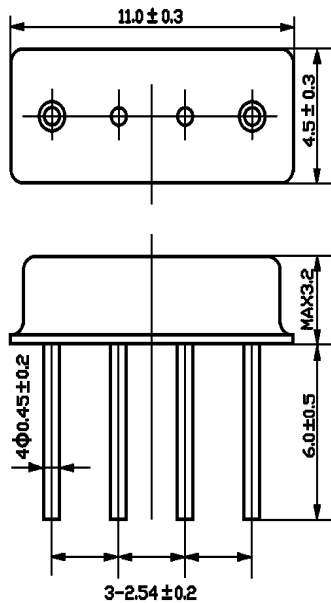


1. Package Dimension(F-11 SMD)



NO.	Function
1	Output/Input
2	GND
3	GND
4	Input/Output

Unit:mm

2. Marking

NDR433.92

2-1. Color: Black or Blue

2-2. Center Frequency(MHz):433.92

3. Performance

3-1. Maximum Rating

DC Voltage V_{DC}	10V
AC Voltage V_{PP}	10V(50Hz/60Hz)
Operation Temperature	-40°C to +85°C
Storage Temperature	-40°C to +85°C
RF Power Dissipation	0 dBm

3-2 Electronic Characteristics

Characteristic		Sym	Minimum	Typical	Maximum	Unit
Center Frequency(+25□)	Absolute Frequency	f_c	433.845		433.995	MHz
	Tolerance from 433.92 MHz	Δf_c		± 75		kHz
Insertion Loss				1.5	2.0	dB
Quality Factor	Unloaded Q	Q_U		12,800		
	50 Ω Loaded Q	Q_L		2,000		
Temperature Stability	Turnover Temperature	T_0	24	39	54	$^{\circ}\text{C}$
	Turnover Frequency	f_0		$f_c+2.7$		kHz
	Frequency Temperature Coefficient	FTC		0.037		ppm/ \square^2
Frequency Aging	Absolute Value during the First Year			≤ 10		ppm/yr
DC Insulation Resistance between Any Two Pins			1.0			M Ω
RF Equivalent RLC Model	Motional Resistance	R_M		18	26	Ω
	Motional Inductance	L_M		86.0075		μH
	Motional Capacitance	C_M		1.56417		fF
	Pin 1 to Pin 2 Static Capacitance	C_0	—	1.9		pF

☺ CAUTION: Electrostatic Sensitive Device. Observe precautions for handling

NOTES:

1. Frequency aging is the change in f_c with time and is specified at $+65^{\circ}\text{C}$ or less. Aging may exceed the specification for prolonged temperatures above $+65^{\circ}\text{C}$. Typically, aging is greatest the first year after manufacture, decreasing in subsequent years.
2. The frequency f_c is the frequency of minimum IL with the resonator in the specified test fixture in a 50 Ω test system with $\text{VSWR} \leq 1.2 : 1$. Typically, $f_{\text{oscillator}}$ or $f_{\text{transmitter}}$ is less than the resonator f_c .
3. Typically, equipment utilizing this device requires emissions testing and government approval, which is the responsibility of the equipment manufacturer.
4. Unless noted otherwise, case temperature $T_c = +22^{\circ}\text{C} \pm 2^{\circ}\text{C}$.
5. The design, manufacturing process, and specifications of this device are subject to change without notice.
6. Derived mathematically from one or more of the following directly measured parameters: f_c , IL, 3 dB bandwidth, f_c versus T_c , and C_0 .
7. Turnover temperature, T_0 , is the temperature of maximum (or turnover) frequency, f_0 . The nominal center frequency at any case temperature, TC, may be calculated from $f = f_0 \square 1 - \text{FTC} (T_0 - T_c) \square 2$. Typically, oscillator T_0 is 20° less than the specified resonator T_0 .
8. This equivalent RLC model approximates resonator performance near the resonant frequency and is provided for reference only. The capacitance C_0 is the measured static (nonmotional) capacitance between either pin 1 and ground or pin 4 and ground. The measurement includes case parasitic capacitance.

Note: Reference temperature shall be $25 \pm 2^{\circ}\text{C}$. However, the measurement may be carried out at 5°C to 35°C unless there is a dispute.

4. Reliability

- 4.1 Mechanical Shock: The components shall remain within the electrical specifications after 1000 shocks, acceleration 392m/s^2 , duration 6 milliseconds.
- 4.2 Vibration Fatigue: The components shall remain within the electrical specifications after loaded vibration at 20 Hz, amplitude 1.5mm, for 2 hours.
- 4.3 Terminal Strength: The components shall remain within the electrical specifications after pulled 2 Kgs weight for 10 seconds towards an axis of each terminal.
- 4.4 High Temperature Storage: The components shall remain within the electrical specifications after being kept at the $85^{\circ}\text{C} \pm 2^{\circ}\text{C}$ for 48 hours, then kept at room temperature for 2 hours.
- 4.5 Low Temperature Storage: The components shall remain within the electrical specifications after being kept at the $-25^{\circ}\text{C} \pm 2^{\circ}\text{C}$ for 48 hours, then kept room temperature for 2 hours.
- 4.6 Temperature Cycle: The components shall remain within the electrical specifications after 5 cycles of high and low temperature testing (one cycle: 80°C for 30 minutes \rightarrow 25°C for 5 minutes \rightarrow -25°C for 30 minutes) then kept at room temperature for 2 hours.
- 4.7 Solder-heat Resistance: The components shall remain within the electrical specifications after dipped in the solder at 260°C for 10 ± 1 seconds, then kept at room temperature for 2 hours. (Terminal must be dipped leaving 1.5 mm from the case).
- 4.8 Solder ability: Solder ability of terminal shall be kept at more than 80% after dipped in the solder flux at $230^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for 5 ± 1 seconds.

5. Remarks

5.1 Static voltage

Static voltage between signal load & ground may cause deterioration & destruction of the component. Please avoid static voltage.

5.2 Ultrasonic cleaning

Ultrasonic vibration may cause deterioration & destruction of the component. Please avoid ultrasonic cleaning.

5.3 Soldering

Only leads of component may be soldered. Please avoid soldering another part of component.