CHIP NOISE FILTER NFZ32BW□□□HN10L REFERENCE SPECIFICATION

1.Scope

This reference specification applies to NFZ32BW_HN10L Series, Chip Noise Filter.

2.Part Numbering

(ex)	NF	Z	32	BW	3R6	H	N	1	0	L
	Product ID	Structure	Dimension (L×W)	Features	Impedance	Performance	Category	Numbers of Circuit	Other	Packaging L:Taping

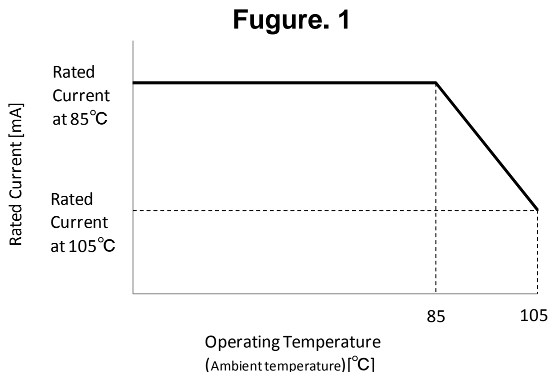
3.Rating

・Operating Temperature Range.
(Ambient temperature; Self-temperature rise is not included) -40 to +105°C
(Product temperature; Self- temperature rise is included) -40 to +125°C
・Storage Temperature Range. -40 to +125°C

Customer Part Number	MURATA Part Number	Impedance at 1MHz		DC Resistance		∗1 Rated Current(mA)	
		(Ω)	Tolerance	(Ω)	Tolerance	∗2 Ambient temperature 85℃	∗3 Ambient temperature 105℃
	NFZ32BW3R6HN10L	3.6	±30%	0.030	±20%	2550	1600
	NFZ32BW7R4HN10L	7.4		0.045		2050	1320
	NFZ32BW9R0HN10L	9.0		0.057		1750	1010
	NFZ32BW150HN10L	15		0.076		1600	970
	NFZ32BW210HN10L	21		0.12		1200	670
	NFZ32BW320HN10L	32		0.18		1000	530
	NFZ32BW420HN10L	42		0.24		850	510
	NFZ32BW700HN10L	70		0.38		700	380
	NFZ32BW111HN10L	110		0.57		520	320
	NFZ32BW151HN10L	150		0.81		450	240
	NFZ32BW221HN10L	220		1.15		390	190
	NFZ32BW291HN10L	290		1.78		310	140
	NFZ32BW451HN10L	450		2.28		275	120
	NFZ32BW621HN10L	620		2.70		250	110
	NFZ32BW881HN10L	880		4.38		200	80

∗1: As for the rated current, rated current derated as figure.1 depending on the operating temperature.
∗2: When applied rated current to the Products, temperature rise caused by self heating will be 40°C or less.
∗3: When applied rated current to the Products, temperature rise caused by self heating will be 20°C or less.

Fugure. 1

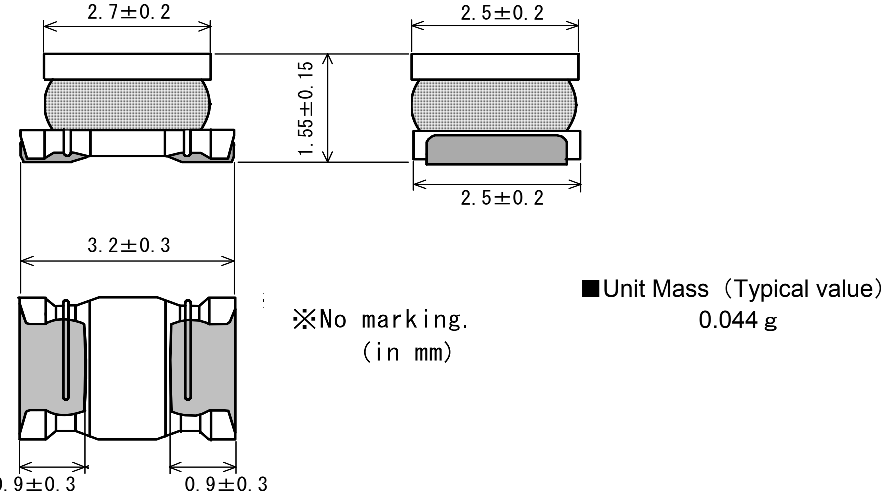


4. Testing Conditions

《Unless otherwise specified》
Temperature : Ordinary Temperature (15 to 35°C)
Humidity : Ordinary Humidity (25 to 85 %(RH))

《In case of doubt》
Temperature : 20 ± 2°C
Humidity : 60 to 70%(RH)
Atmospheric Pressure : 86 to 106 kPa

5.Appearance and Dimensions



6.Electrical Performance

No.	Item	Specification	Test Method
6.1	Impedance	Impedance shall meet item 3.	Measuring Equipment : KEYSIGHT 4192A or equivalent Measuring Frequency: 1MHz
6.2	DC Resistance	DC Resistance shall meet item 3.	Measuring Equipment: Digital multi meter

7.Mechanical Performance

No.	Item	Specification	Test Method
7.1	Shear Test	Chip Noise Filter shall not be damaged.	Substrate: Glass-epoxy substrate Force: 10N Hold Duration: 5±1s F Substrate
7.2	Bending Test		Substrate: Glass-epoxy substrate (100×40×1.0mm) Speed of Applying Force: 0.5mm / s Deflection: 2mm Hold Duration: 5s Pressure jig R230 F Deflection 45 45 Product (in mm)
7.3	Vibration	Chip Noise Filter shall not be damaged.	Oscillation Frequency : 10 to 2000 to 10Hz for 20 min Total amplitude : 1.5 mm or Acceleration amplitude 98 m/s^2 whichever is smaller. Testing Time: A period of 2 hours in each of 3 mutually perpendicular directions. (Total 6 hours)

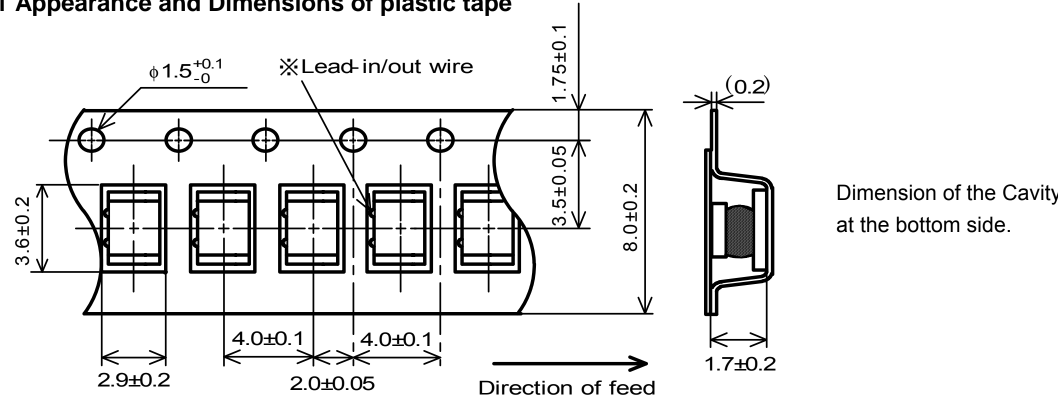
No.	Item	Specification	Test Method
7.4	Solderability	The wetting area of the electrode shall be at least 90% covered with new solder coating.	Flux: Ethanol solution of rosin,25(wt)% (Immersed for 5s to 10s) Solder : Sn-3.0Ag-0.5Cu Pre-Heating: 150±10°C / 60 to 90s Solder Temperature: 240±5°C Immersion Time: 3±1 s
7.5	Resistance to Soldering Heat	Appearance: No damage Impedance Change: within ± 10%	Flux: Ethanol solution of rosin,25(wt)% (Immersed for 5s to 10s) Solder : Sn-3.0Ag-0.5Cu Pre-Heating: 150±10°C / 60 to 90s Solder Temperature: 270±5°C Immersion Time: 10±1 s Then measured after exposure in the room condition for 24±2 hours.

8.Environmental Performance (It shall be soldered on the substrate.)

No.	Item	Specification	Test Method
8.1	Heat Resistance	Appearance: No damage Impedance Change: within ± 10% DC Resistance Change: within ± 10%	Temperature: 105±2°C Time: 1000 h (+48h , -0h) Then measured after exposure in the room condition for 24±2 hours.
8.2	Cold Resistance		Temperature: -40±2°C Time: 1000 h (+48h , -0h) Then measured after exposure in the room condition for 24±2 hours.
8.3	Humidity		Temperature: 40±2°C Humidity: 90~95%(RH) Time: 1000 h (+48h , -0h) Then measured after exposure in the room condition for 24±2 hours.
8.4	Temperature Cycle		1 cycle: 1 step: -40±2°C / 30±3 min 2 step: Ordinary temp. / 10 to 15 min 3 step: +105±2°C / 30±3 min 4 step: Ordinary temp. / 10 to 15 min Total of 10 cycles Then measured after exposure in the room condition for 24±2 hours.

9. Specification of Packaging

9.1 Appearance and Dimensions of plastic tape



9.2 Specification of Taping

(1) Packing quantity (standard quantity)
2,000 pcs / reel

(2) Packing Method
Products shall be packed in the each embossed cavity of plastic tape and sealed by cover tape.

(3) Sprocket hole
The sprocket holes are to the right as the tape is pulled toward the user.

(4) Spliced point
Plastic tape and Cover tape has no spliced point.

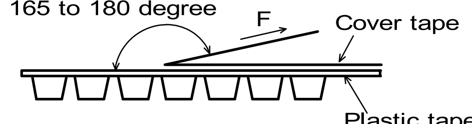
(5) Missing components number
Missing components number within 0.1 % of the number per reel or 1 pc., whichever is greater, and are not continuous. The specified quantity per reel is kept.

9.3 Pull Strength

Embossed carrier tape	10N min.
Cover tape	5N min.

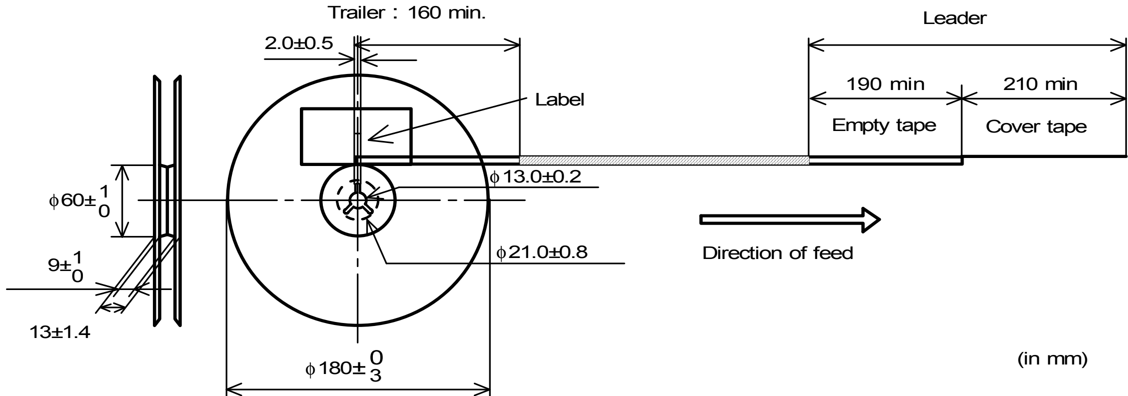
9.4 Peeling off force of cover tape

Speed of Peeling off	300mm/min
Peeling off force	0.2 to 0.7N (minimum value is typical)



9.5 Dimensions of Leader-tape, Trailer and Reel

There shall be leader-tape (cover tape) and trailer-tape (empty tape) as follows.



9.6 Marking for reel

Customer part number, MURATA part number, Inspection number(∗1), RoHS marking(∗2), Quantity etc ･･･

∗1) <Expression of Inspection No.> □□ OOOO ××× (1) (2) (3)

(1) Factory Code

(2) Date

	First digit	: Year / Last digit of year
	Second digit	: Month / Jan. to Sep. → 1 to 9, Oct. to Dec. → O, N, D
	Third, Fourth digit	: Day

(3) Serial No.

∗2) « Expression of RoHS marking » ROHS – Y (△) (1) (2)

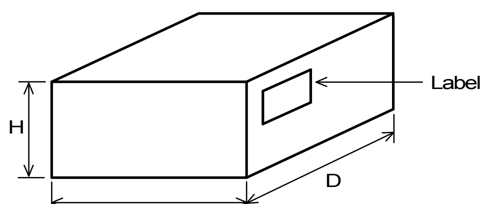
(1) RoHS regulation conformity

(2) MURATA classification number

9.7 Marking for Outside package (corrugated paper box)

Customer name, Purchasing order number, Customer part number, MURATA part number, RoHS marking (∗2) ,Quantity, etc ･･･

9.8. Specification of Outer Case



Outer Case Dimensions (mm)			Standard Reel Quantity in Outer Case (Reel)
W	D	H	
186	186	93	5

∗ Above Outer Case size is typical. It depends on a quantity of an order.

10. ⚠ Caution

Limitation of Applications

Please contact us before using our products for the applications listed below which require especially high reliability for the prevention of defects which might directly cause damage to the third party's life, body or property.

(1) Aircraft equipment
(2) Aerospace equipment
(3) Undersea equipment
(4) Power plant control equipment
(5) Medical equipment
(6) Transportation equipment (vehicles, trains, ships, etc.)
(7) Traffic signal equipment
(8) Disaster prevention / crime prevention equipment
(9) Data-processing equipment
(10) Applications of similar complexity and /or reliability requirements to the applications listed in the above

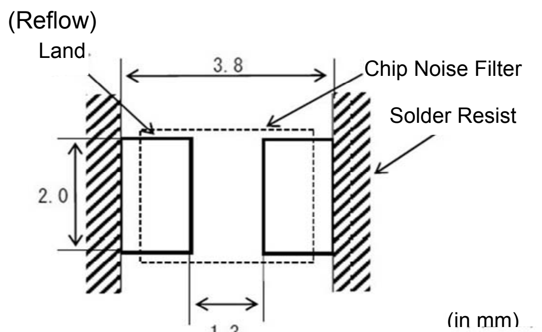
11. Notice

This product is designed for solder mounting.
Please consult us in advance for applying other mounting method such as conductive adhesive.

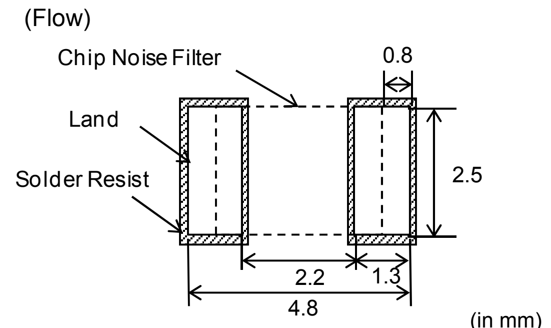
11.1 Land pattern designing

Recommended land pattern for flow and reflow soldering is as follows:
It has been designed for Electric characteristics and solderability.
Please follow the recommended patterns. Otherwise, their performance which includes electrical performance or solderability may be affected, or result to "position shift" in soldering process.

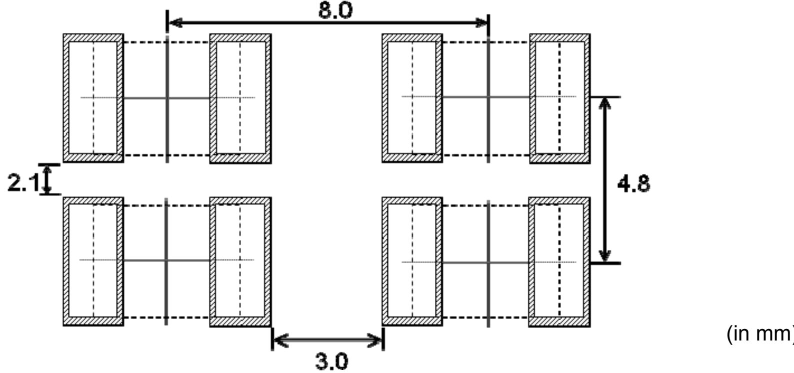
(Reflow)



(Flow)



(Distance between the products for Flow)



(in mm)

11.2 Flux, Solder

Flux	・Use rosin-based flux. ・Don’t use highly acidic flux with halide content exceeding 0.2(wt)% (chlorine conversion value). ・Don’t use water-soluble flux.
Solder	・Use Sn-3.0Ag-0.5Cu solder ・Standard thickness of solder paste : 100μm to 150μm

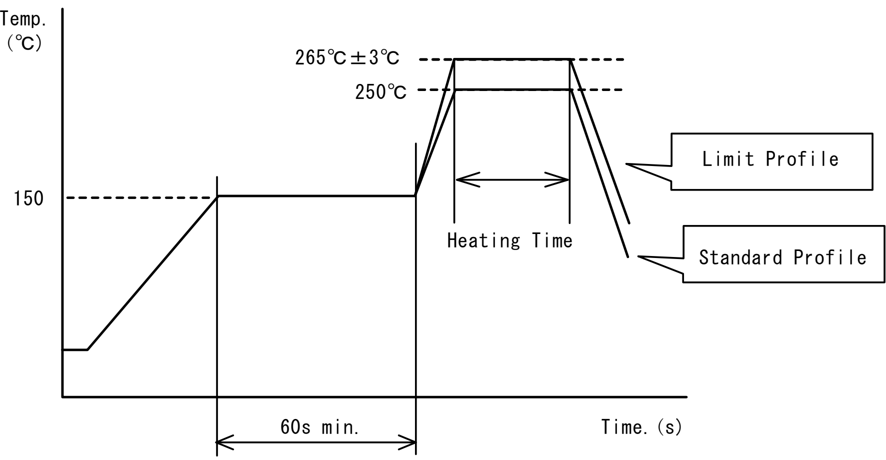
Other flux (except above) Please contact us for details, then use.

11.3 Flow soldering conditions / Reflow soldering conditions

・Pre-heating should be in such a way that the temperature difference between solder and product surface is limited to 100°C max. Cooling into solvent after soldering also should be in such a way that the temperature difference is limited to 100°C max.
Insufficient pre-heating may cause cracks on the product, resulting in the deterioration of product quality.

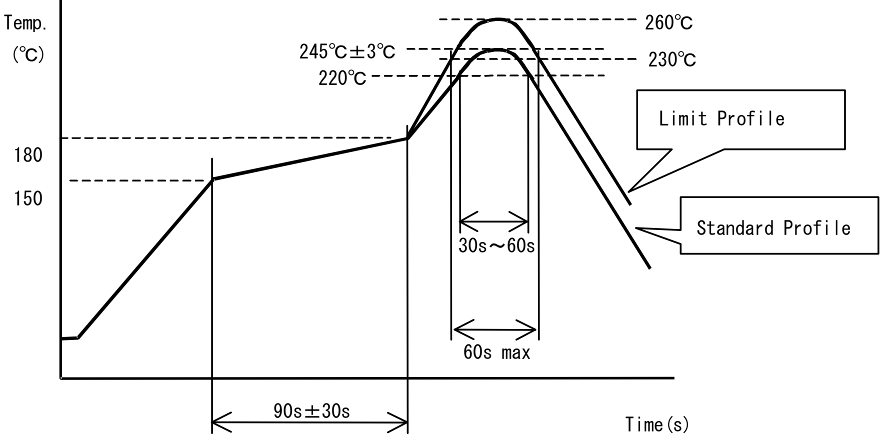
・Standard soldering profile and the limit soldering profile is as follows.
The excessive limit soldering conditions may cause leaching of the electrode and / or resulting in the deterioration of product quality.

(1) Flow soldering profile



	Standard Profile	Limit Profile
Pre-heating	150℃、60s min.	
Heating	250℃、4s～6s	265℃±3℃、5s
Cycle of flow	2 times	1 time

(2)Reflow soldering profile



	Standard Profile	Limit Profile
Pre-heating	150～180°C 、90s±30s	
Heating	above 220°C、30s～60s	above 230°C、60s max.
Peak temperature	245±3°C	260°C,10s
Cycle of reflow	2 times	2 times

11.4 Reworking with soldering iron.

The following conditions must be strictly followed when using a soldering iron.

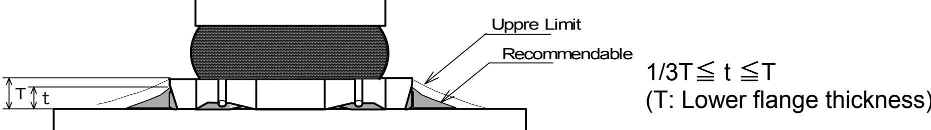
Pre-heating	150°C,1 min
Tip temperature	350°C max.
Soldering iron output	80W max.
Tip diameter	φ3mm max.
Soldering time	3 (+1,-0)s
Times	2 times

Note：Do not directly touch the products with the tip of the soldering iron in order to prevent the crack on the products due to the thermal shock.

11.5 Solder Volume

・Solder shall be used not to be exceeded the upper limits as shown below.

・Accordingly increasing the solder volume, the mechanical stress to Chip is also increased. Exceeding solder volume may cause the failure of mechanical or electrical performance.



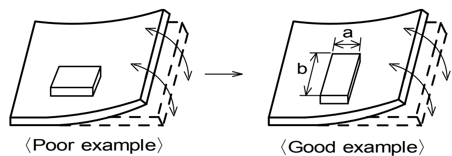
1/3T≦ t ≦T
(T: Lower flange thickness)

11.6 Product's location

The following shall be considered when designing and laying out P.C.B.'s.

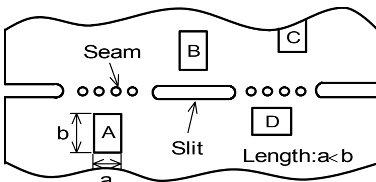
(1) P.C.B. shall be designed so that products are not subject to the mechanical stress due to warping the board.

［Products direction］



Products shall be located in the sideways direction (Length: a<b) to the mechanical stress.

(2) Products location on P.C.B. separation
Products (A,B,C,D) shall be located carefully so that products are not subject to the mechanical stress due to warping the board.
Because they may be subjected the mechanical stress in order of A>C>B ≅ D.



11.7 Cleaning Conditions

Products shall be cleaned on the following conditions.

(1) Cleaning temperature shall be limited to 60°C max.(40°C max for IPA.)

(2) Ultrasonic cleaning shall comply with the following conditions with avoiding the resonance phenomenon at the mounted products and P.C.B.
Power : 20 W / l max.　　Frequency : 28kHz to 40kHz　　Time : 5 minutes max.

(3) Cleaner
1. Alternative cleaner
・Isopropyl alcohol (IPA)
2. Aqueous agent
・PINE ALPHA ST-100S

(4) There shall be no residual flux and residual cleaner after cleaning.
In the case of using aqueous agent, products shall be dried completely after rinse with de-ionized water in order to remove the cleaner.

(5) Other cleaning
Please contact us.