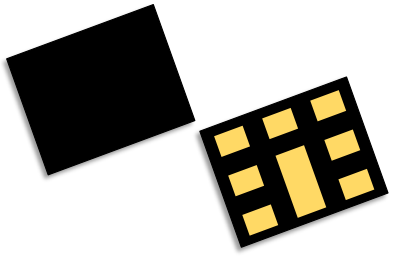
Product Description

The NS83213B is a high-performance Surface Acoustic Wave (SAW) Duplexer for Band13 &Band 67 application with low insertion loss and high isolation.

The NS83213B uses Chip Scale Packaging (CSP) techniques to achieve the industry advanced 1.6 x 1.2 mm footprint and 0.6 mm max height. The duplexer exhibits excellent power handling capabilities.

Applications

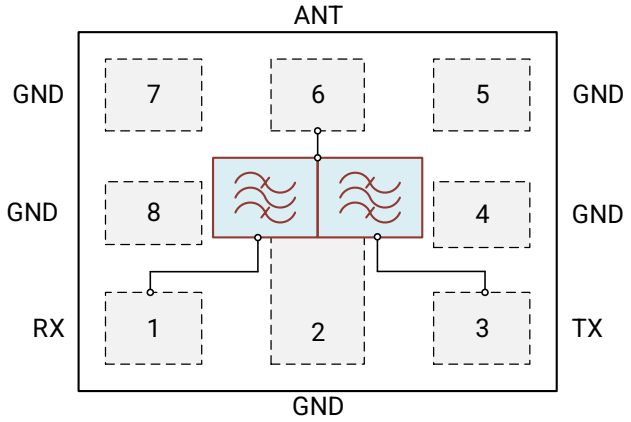
- Band13 & 67 Duplexer Application



Product Features

- Low Insertion Loss
- High Isolation
- Standard Size: 1.6 x 1.2 mm
- Operating Temperature -30 to +85°C
- Single Ended Operation
- RoHS2.0 Compliant, Halogen Free Pb-free Module Package, MSL3

Functional Block Diagram



Top View

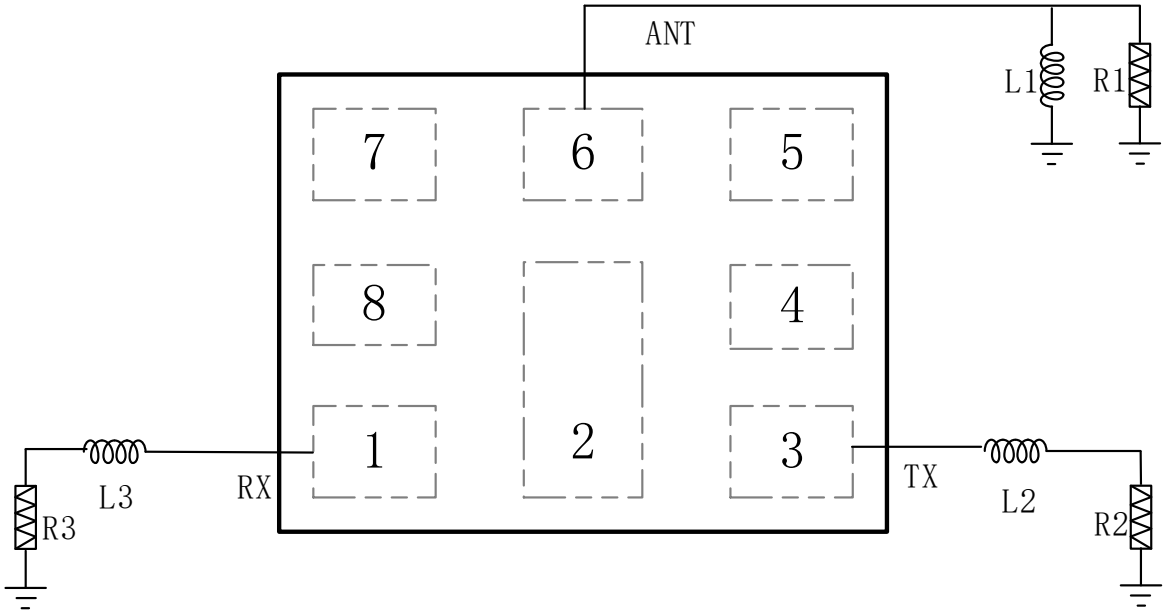
Ordering Information

Part No.	Description
NS83213B	Packaged Part
NS83213B-EVB	Evaluation Board

Absolute Maximum Ratings

Parameter	Rating
Storage Temperature	-40°C ~ +85°C
Operating Temperature	-30°C ~ +85°C
RF Input Power	+30dBm, +55°C for 5000 hours
Maximum DC Voltage	3 V

Testing Circuit (Top Thru View)



R1	50 ohm
R2	50 ohm
R3	50 ohm
L1*	13 nH
L2*	5.1 nH
L3*	5.6 nH
Pin1	RX
Pin3	TX
Pin6	ANT
Pin 2/4/5/7/8	GND

* Ideal Value

Electrical Specifications (TX)

Temperature Range for Specification: Tc = -30 ~ +85 °C
ANT Terminating Condition: 50Ω // 13 nH
TX Terminating Condition: 50Ω + 5.1 nH
RX Terminating Condition: 50Ω + 5.6 nH

Parameter	Frequency	Min.	Typ. [a]	Max.	Unit	Note
		-30°C to +85°C				
Insertion Loss	777 to 787 MHz		1.3	1.6	dB	
Ripple[b]	777 to 787 MHz		0.3	0.6	dB	
VSWR_TX	777 to 787 MHz		1.4	1.6		
VSWR_ANT	777 to 787 MHz		1.4	1.6		
Attenuation	460 to729MHz	33	35		dB	VLB RX
	729 to 746 MHz	45	47		dB	B12 RX
	746 to 756 MHz	53	55		dB	B13 RX
	859 to 894MHz	35	37		dB	B26 RX
	925 to 960 MHz	35	37		dB	B8 RX
	1432 to 1517 MHz	42	44		dB	B75 and B11/21 RX
	1561 to 1610 MHz	45	47		dB	2fo and GPS
	1805 to 2200 MHz	50	52		dB	B3/25/66 RX
	2300 to 2400 MHz	56	59		dB	B40/3fo
	2401 to 2483MHz	55	58		dB	2.4G WIFI
	2496 to 2690MHz	50	54		dB	B41F
	3300 to 5000 MHz	36	39		dB	N77/79

[a]. Typical data is the worst value of the parameter over the indicated band at +25°C.

[b]. Ripple is the difference between the max and min value in passband.

Electrical Specifications (RX)

Temperature Range for Specification: Tc = -30 ~ +85 °C
ANT Terminating Condition: 50Ω // 13 nH
TX Terminating Condition: 50Ω + 5.1 nH
RX Terminating Condition: 50Ω +5.6 nH

Parameter	Frequency	Min.	Typ. [a]	Max.	Unit	Note
		-30°C to +85°C				
Insertion Loss	738 to 758 MHz		1.6	1.9	dB	
Ripple[b]	738 to 758 MHz		0.5	0.9	dB	
VSWR_RX	738 to 758 MHz		1.5	1.7		
VSWR_ANT	738 to 758 MHz		1.5	1.7		
Attenuation	450 to 698 MHz	32	35		dB	B71/72/73 TX
	699 to 716MHz	25	27		dB	B12 TX
	777 to 787 MHz	46	50		dB	B13 TX
	814 to 849 MHz	37	40		dB	B26 TX
	880 to 915 MHz	36	39		dB	B8_TX
	1427 to 1463 MHz	42	45		dB	B11/21 TX
	1710 to 1785 MHz	46	50		dB	B3 TX
	1850 to 1910 MHz	46	51		dB	B2 TX
	1920 to 1980 MHz	48	52		dB	B1 TX
	2300 to 2400 MHz	50	55		dB	B40
	2401 to 2483 MHz	52	56		dB	2.4G WIFI
	3300 to 5000 MHz	60	65		dB	N77/79

[a]. Typical data is the worst value of the parameter over the indicated band at +25°C.

[b]. Ripple is the difference between the max and min value in passband.

Electrical Specifications (Isolation)

Temperature Range for Specification: Tc = -30 ~ +85 °C
ANT Terminating Condition: 50Ω // 13 nH
TX Terminating Condition: 50Ω + 5.1nH
RX Terminating Condition: 50Ω + 5.6 nH

Parameter	Frequency	Min.	Typ.	Max.	Unit	Note
		-30°C to +85°C				
Isolation	777 to 787 MHz	52	55		dB	
	738 to 758 MHz	54	57		dB	

Typical TX to ANT Transmission Coefficient (+25°C)

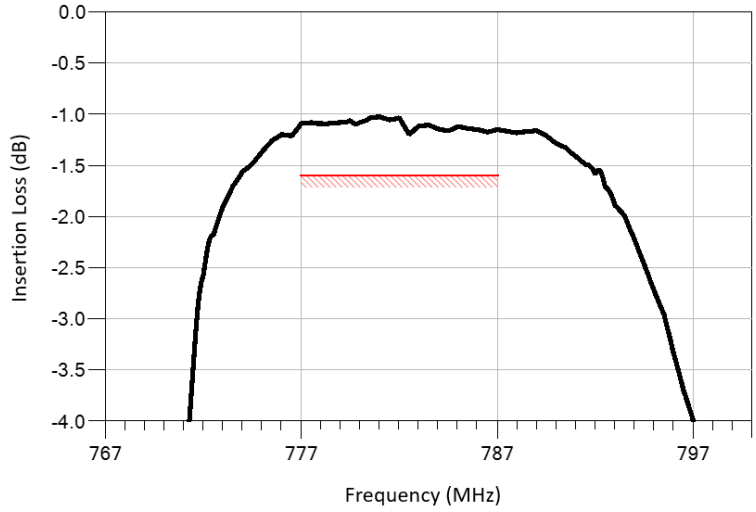


Figure 1. Passband Insertion Loss, 777 – 787 MHz

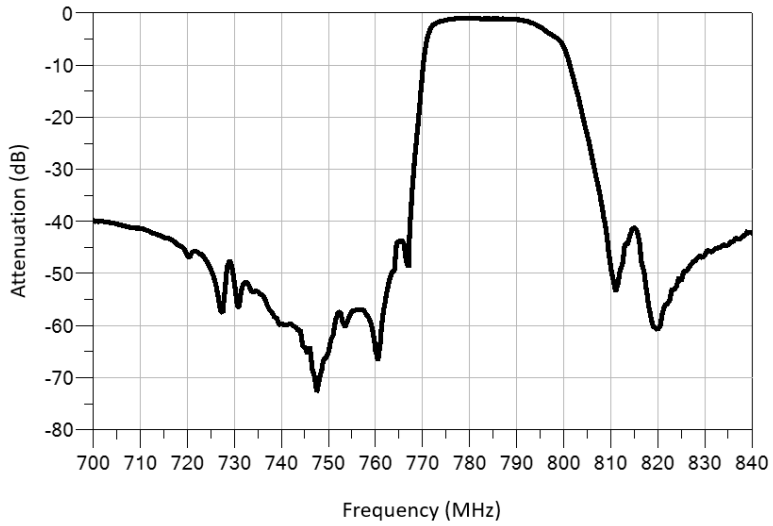


Figure 2. Narrow Band Attenuation, 700 –840MHz

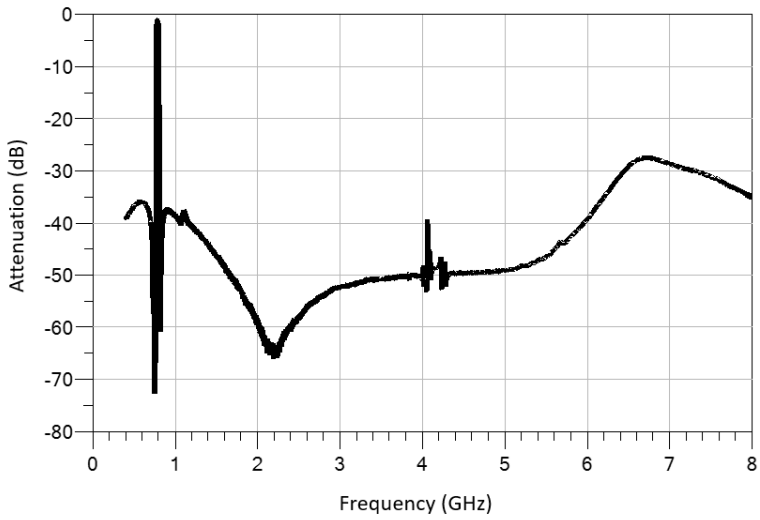


Figure 3. Wide Band Attenuation, 450 – 8000 MHz

Typical ANT to RX Transmission Coefficient (+25°C)

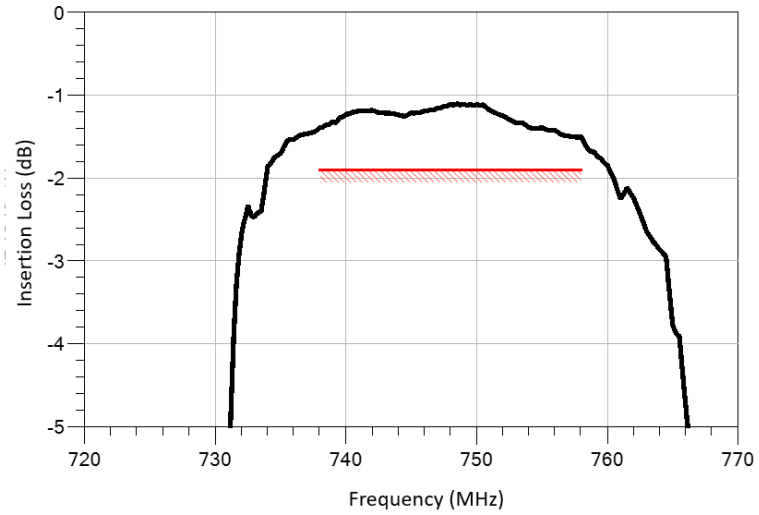


Figure 4. Passband Insertion Loss, 738 – 758 MHz

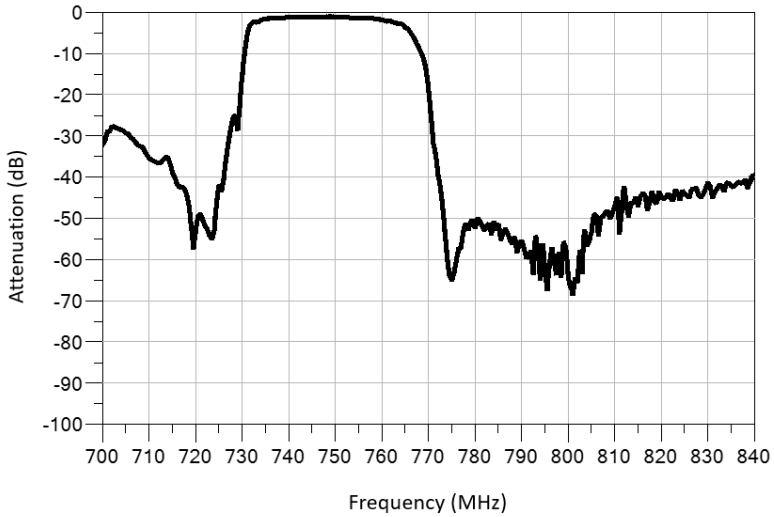


Figure 5. Narrow Band Attenuation, 700 –840MHz

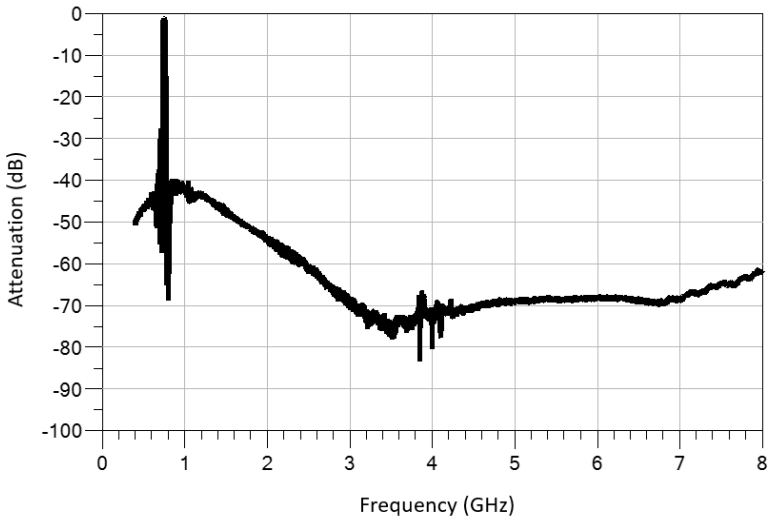
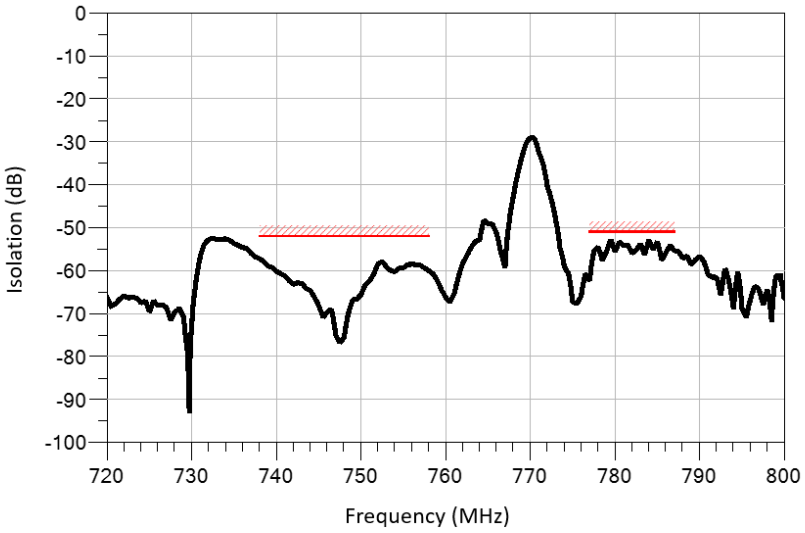


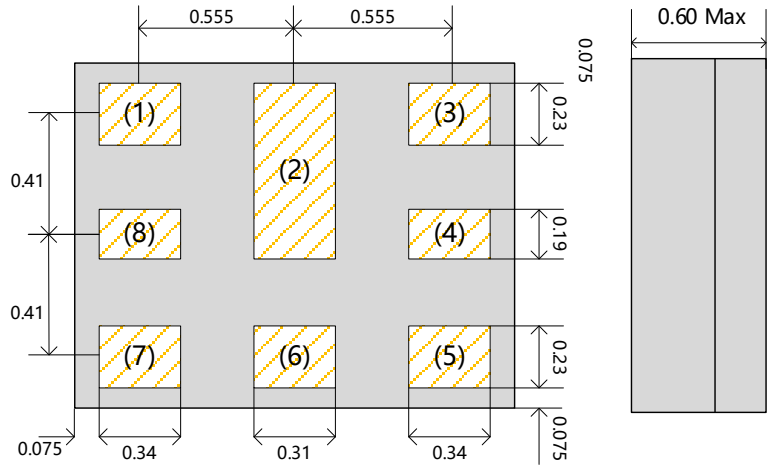
Figure 6. Wide Band Attenuation, 450 – 8000 MHz

Typical Isolation (+25°C)



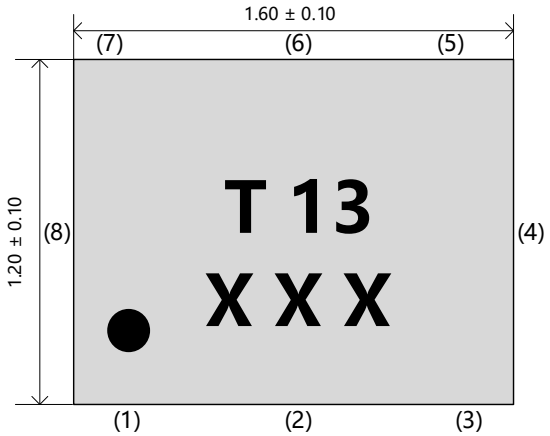
Package & Dimensions (Unit: mm)

Bottom View



Side View

Top View

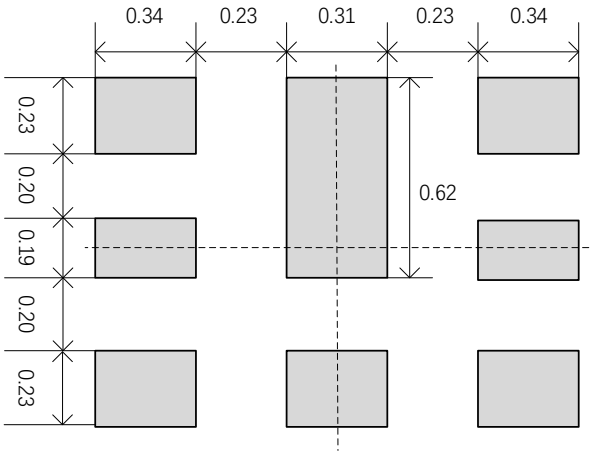


Note:

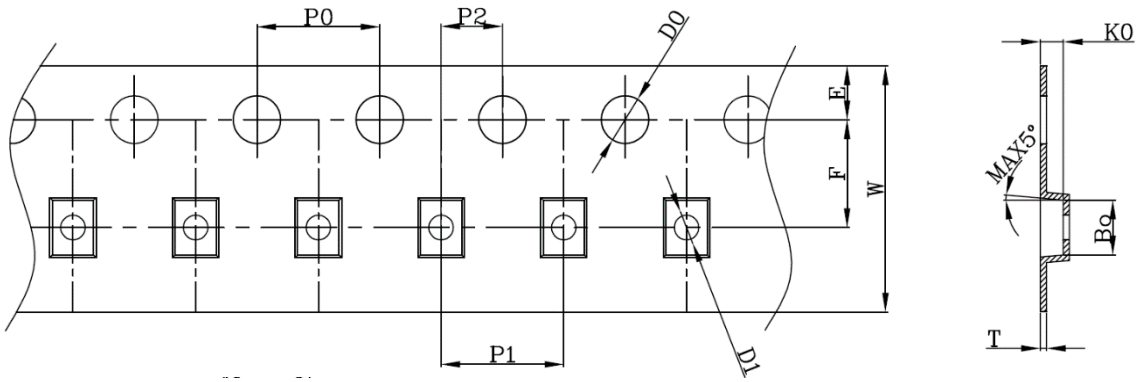
The character 'T13' indicates NS83213B.

The character 'XXX' indicates date code.

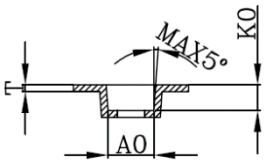
PCB Mounting Pattern (Unit: mmT)



Tape and Reel Information (Unit: mm)



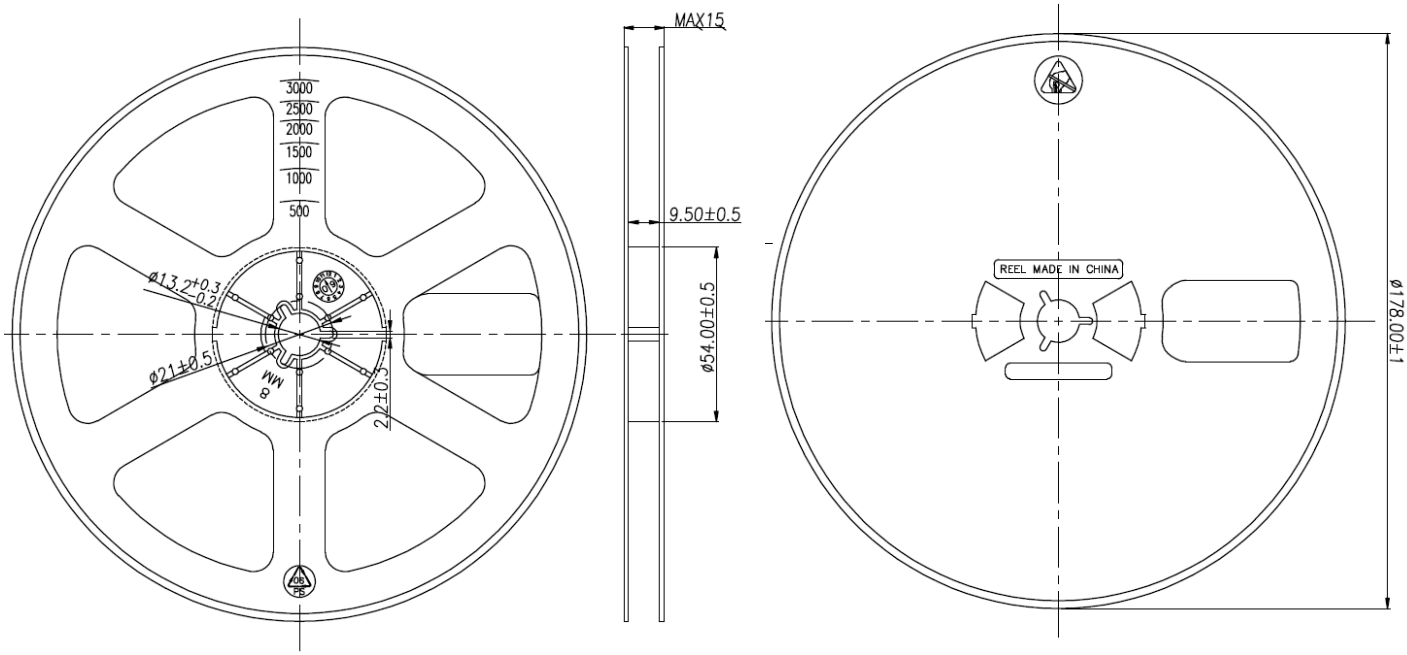
A0	B0	K0	P0	P1	P2
1.35±0.05	1.78±0.05	0.70±0.05	4.00±0.10	4.00±0.10	2.00±0.05
T	E	F	D0	D1	W
0.20±0.05	1.75±0.05	3.50±0.05	1.55±0.05	0.80±0.10	8.00±0.10



Note:

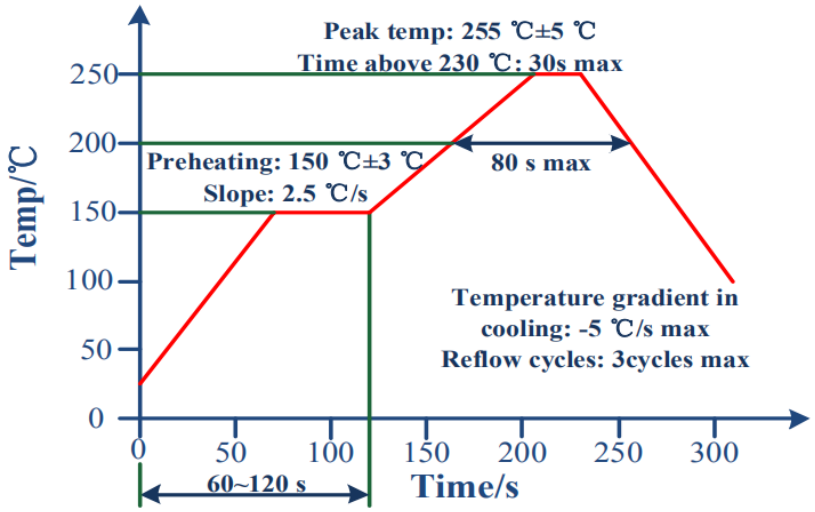
(1) Black antistatic composite PC.
(2) Cumulative tolerance of 10 sprocket holes is ± 0.20.
(3) All dimensions meet EIA-481-E requirements.
(4) The sector of 250mm straps shall not exceed 2mm.

Reel



Reeling Quantity: 5000 PCS / Reel

Recommended IR Reflow Profile



Important Notes

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