Shengxin Acoustic Chip Technology

DATASHEET

of BAW Devices

BAW Duplexer

Part Number : SXDB003HABSC18

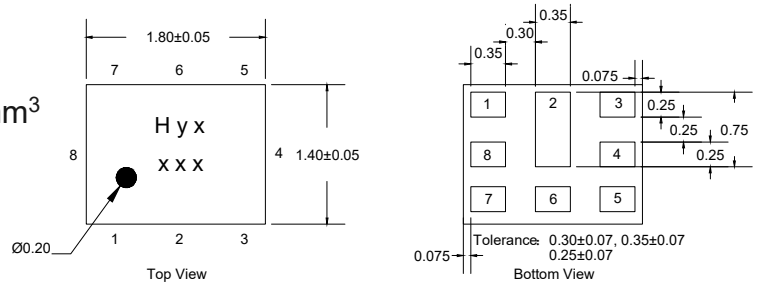
Band 3, Duplexer

- Package Dimensions
- Testing Environment
- Electrical Characteristics
- Frequency Characteristics
- Remark and Packing

Revision Record

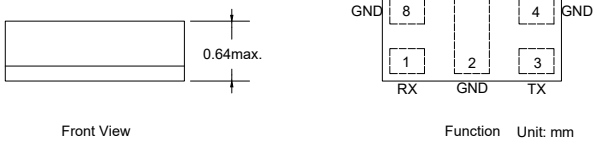
Revision Number	Date	Description
SXDB003HABSC18_Rev0.0	2022-03-11	Preliminary Version
SXDB003HABSC18_Rev0.1	2022-10-10	Description and Other Information

Dimensions & Features



- Package size 1.8 x 1.4 x 0.64(max.)mm^3
- RoHS compatible
- **E**lectrostatic **S**ensitive **D**evice (**ESD**)
- **M**oisture **S**ensitivity **L**evel 3

Pin Configuration

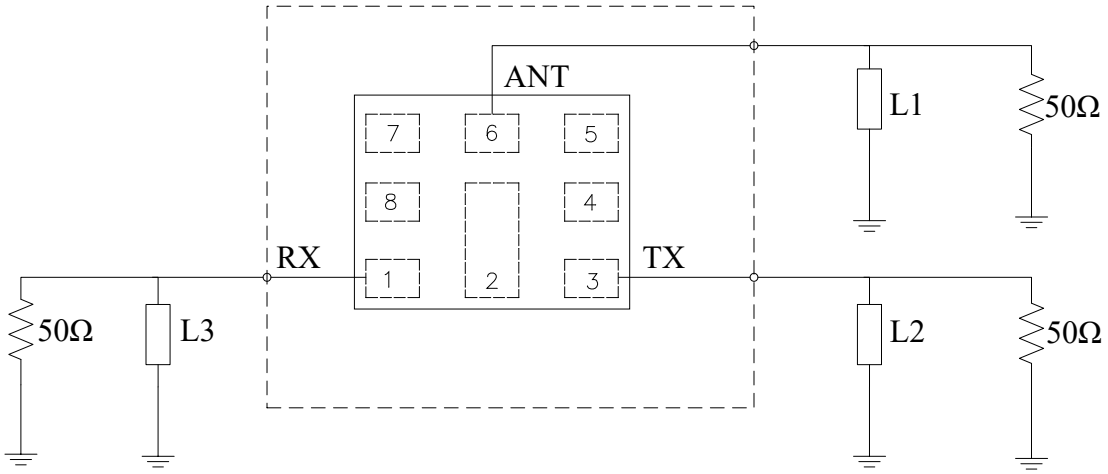


- 6 Ant
- 3 Tx (1747.5MHz)
- 1 Rx (1842.5MHz)
- Others: GND

Marking

- H: B03 Duplexer
- y: y=Part number
- xxxx: lot number

Measurement Circuit



Parameter Name	Value
L1	3.9nH
L2	9.1nH
L3	15nH

Data sheet

Maximum Ratings

Characteristics		Ratings	Unit
Operable Temperature Range	T	-30 to +85	℃
Storage Temperature Range	T_{stg}	-40 to +85	℃
Maximum DC Voltage	V_{DC}	3	V
Input Power Level	P	32	dBm
ESD Voltage(MM)	V_{MM}	50	V
ESD Voltage(HBM)	V_{HBM}	175	V

Characteristics

Antenna Impedance(single ended)[1]: 50Ω

Tx Impedance(single ended)[1]: 50Ω

Tx to Ant		Specifications				
Item	Frequency Range [MHz]	Characteristics				
		Temp.	min.	typ.	max.	Unit
Insertion Loss	1710 ~ 1785	-30 ~ +85	-	1.8	2.9	dB
	1710 ~ 1785	+25	-	1.8	2.8	dB
Ripple Deviation	1710 ~ 1785	+25	-	0.4	1.6	dB
Return Loss of Ant. Port	1710 ~ 1785	-30 ~ +85	8	18	-	dB
Return Loss of Tx Port	1710 ~ 1785	-30 ~ +85	11	18	-	dB
Attenuation	10 ~ 1565.5	-30 ~ +85	29	45	-	dB
Attenuation Wideband GPS	1565.4 ~ 1573.4	-30 ~ +85	29	30	-	dB
Attenuation Regular GPS	1573.4 ~ 1577.5	-30 ~ +85	28	30	-	dB
Attenuation Wideband GPS	1577.5 ~ 1585.4	-30 ~ +85	28	29	-	dB
Attenuation GLONASS	1597.6 ~ 1605.9	-30 ~ +85	27	28	-	dB
Attenuation LTE Band3 Rx	1805 ~ 1880	-30 ~ +85	43	50	-	dB
Attenuation LTE Band1 Rx	2110 ~ 2170	-30 ~ +85	23	24	-	dB
Attenuation ISM Band	2400 ~ 2500	-30 ~ +85	20	21	-	dB
Attenuation LTE Band7 Rx	2620 ~ 2690	-30 ~ +85	20	21	-	dB
Attenuation 2nd harmonic	3420 ~ 3570	-30 ~ +85	34	40	-	dB
Attenuation 3rd harmonic	5130 ~ 5355	-30 ~ +85	15	17	-	dB
RF Input Power[2]	1710 ~ 1785	55	-	30	-	dBm

Rx Impedance(single ended)[1]: 50Ω

ANT to Rx		Specifications				
Item	Frequency Range [MHz]	Characteristics				
		Temp.	min.	typ.	max.	Unit
Insertion Loss	1805 ~ 1880	-30 ~ +85	-	2.0	3.4	dB
	1805 ~ 1880	+25	-	2.0	3.0	dB
Ripple Deviation	1805 ~ 1880	+25	-	0.6	2.1	dB
Return Loss of Ant. Port	1805 ~ 1880	-30 ~ +85	9	15	-	dB
Return Loss of Tx Port	1710 ~ 1785	-30 ~ +85	10	15	-	dB
Attenuation	10 ~ 1710	-30 ~ +85	36	51	-	dB
Attenuation LTE Band 3 Tx	1710 ~ 1785	-30 ~ +85	46	55	-	dB
Attenuation ISM Band	2400 ~ 2500	-30 ~ +85	43	46	-	dB
Attenuation LTE Band 7 Tx	2500 ~ 2570	-30 ~ +85	41	43	-	dB
Attenuation	2570 ~ 3515	-30 ~ +85	31	39		
Attenuation 2nd harmonic	3515 ~ 3760	-30 ~ +85	39	42	-	dB
Attenuation 3rd harmonic	5205 ~ 5660	-30 ~ +85	22	26	-	dB

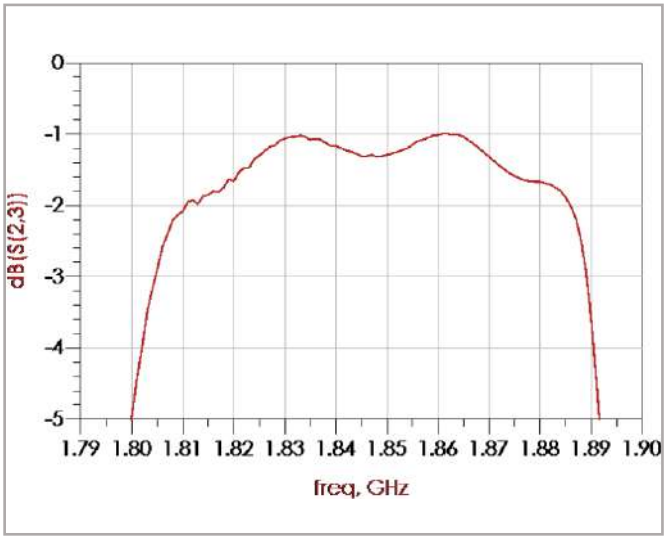
Tx to Rx		Specifications			
Item	Frequency Range [MHz]	Characteristics			
		min.	typ.[2]	max.	Unit
Isolation	1710 ~ 1785	50	53	-	dB
	1805 ~ 1880	50	55	-	dB

1. **Attention:** under the condition with matching network
2. **RF Input Power applied for a minimum of 5,000 hrs at 55℃ in the frequency band specified.**

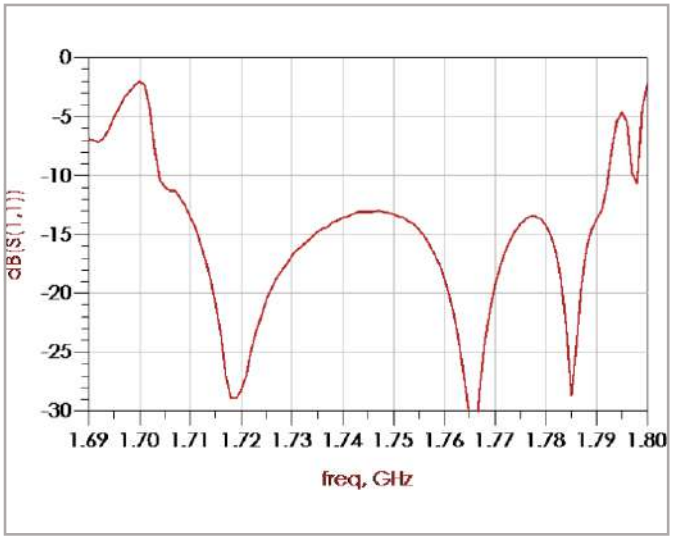
Frequency Characteristics

Pass Band Response Tx-Ant

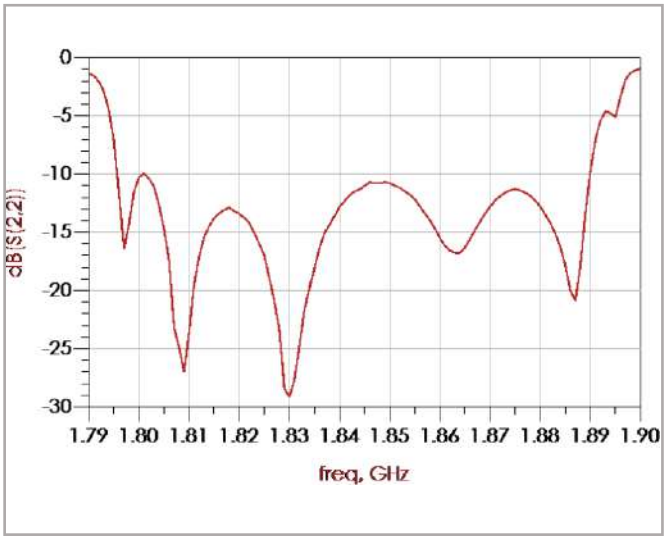
Pass Band Response Ant-Rx



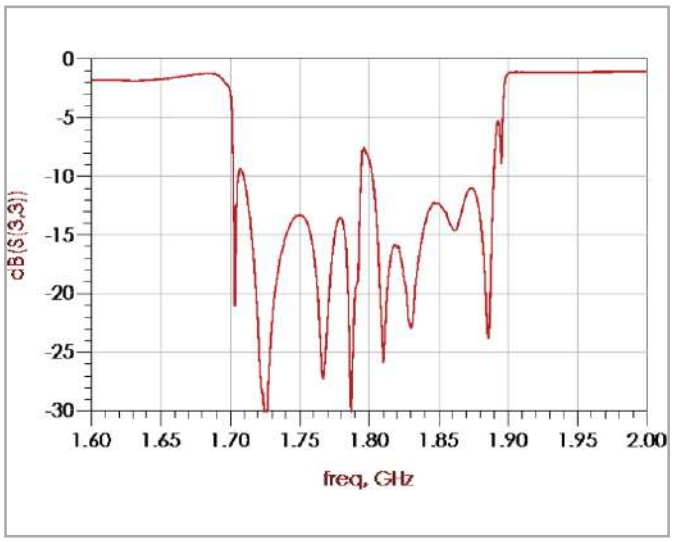
Tx Port Response



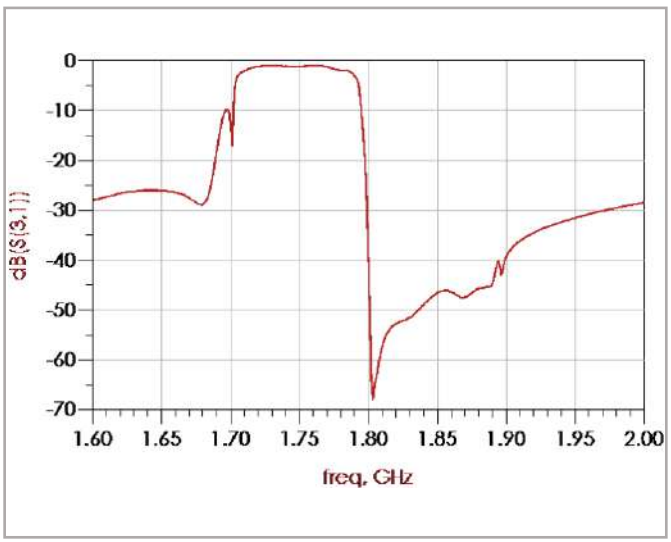
Rx Port Response



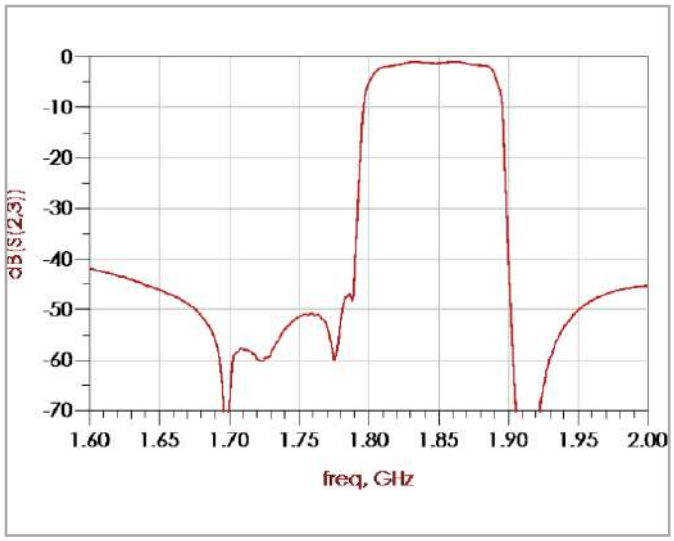
Ant Port Response



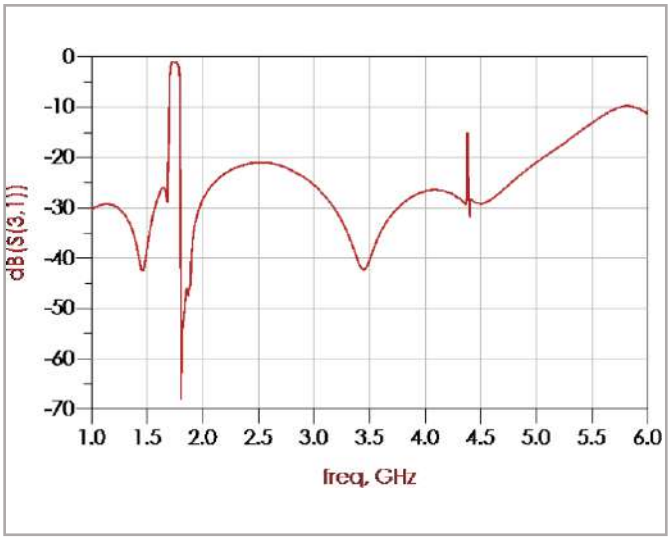
Tx-Ant Response



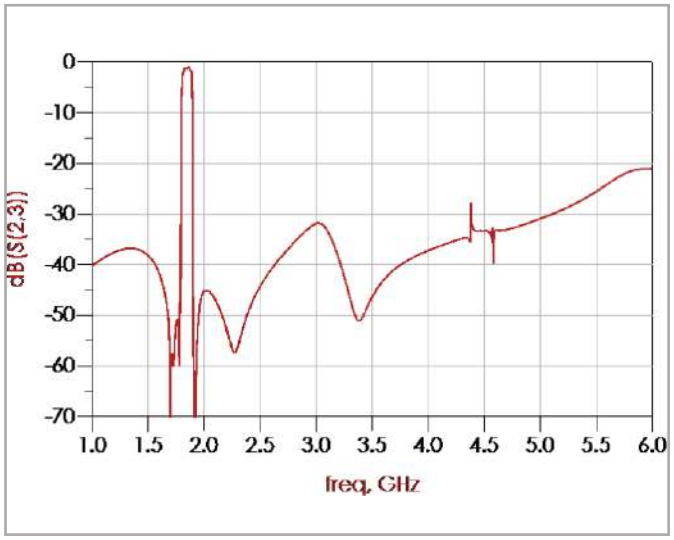
Ant-Rx Response



Tx-Ant Wideband

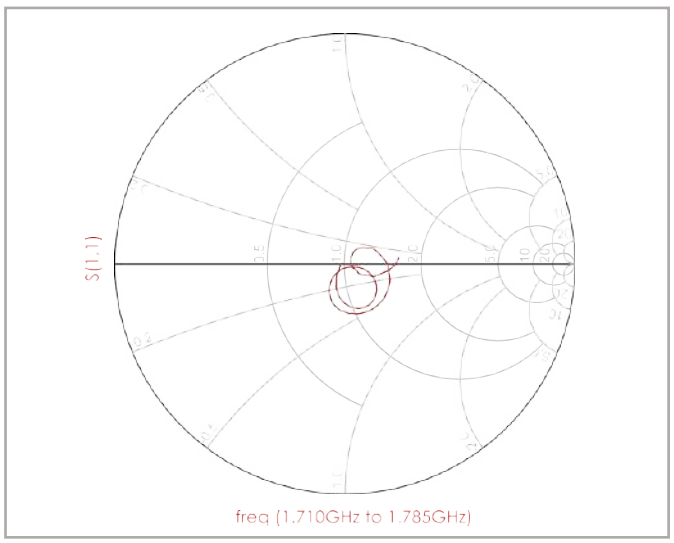


Ant-Rx Wideband

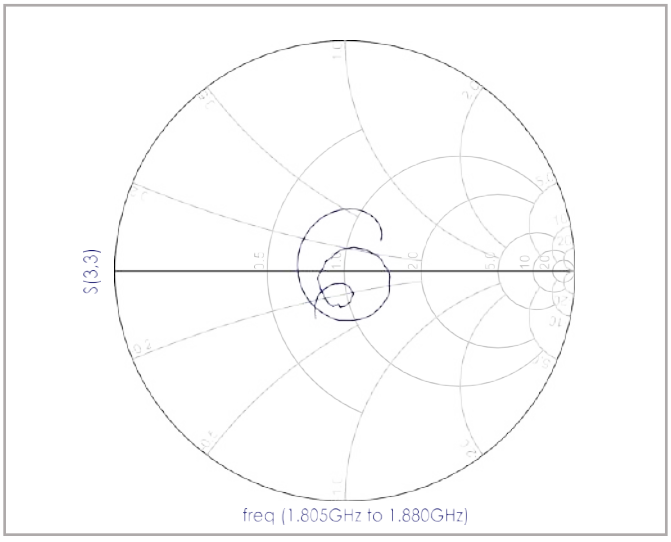


Tx-Rx Isolation

Tx-Ant Smith Chart



Ant-Rx Smith Chart



Reliability Characteristics

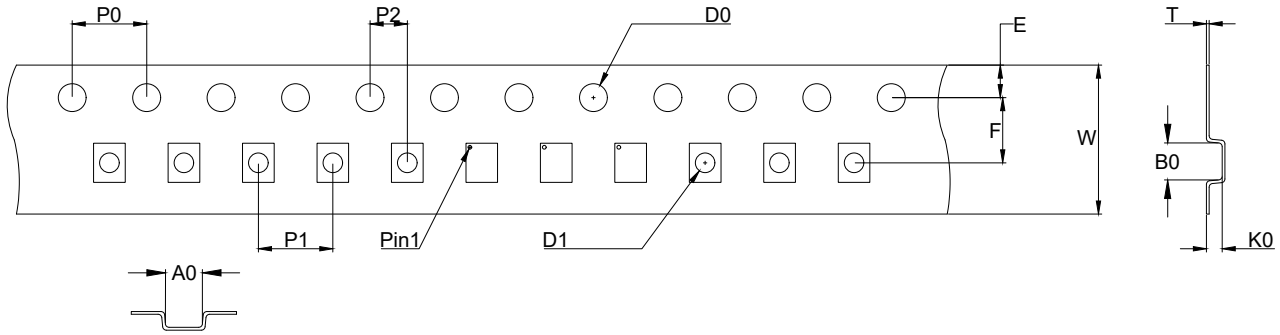
No.	Item	Condition to be satisfied
1	High Temp. Storage	①Test temperature: +85℃±3℃ ②Duration time：500 hours ③Restore time: 2 hours at the room temperature(25℃)
2	Low Temp. Storage	①Test temperature: -40℃±3℃ ②Duration Time: 500 hours ③Restore time: 2 hours at the room temperature(25℃)
3	High Temp. High Humidity Storage	①Test temperature: +85℃±3℃ ②Test Humidity：85%±3% ③Duration Hours：240 hours ④Restore time: 2 hours at the room temperature(25℃)
4	Temperature Cycling	①Test Temperature: -40^{0}_{-10}℃~$+85^{+10}_{0}$℃ ②Time for each step: ≥30min ③Conversion time: ≤1min ④Cycle times: 100 times ⑤Restore time: 24 hours at the room temperature(25℃)
5	Soldering heat resistance	①Reflow with 260±5℃, 10±1s (Solder Pot) ②Restore time: 2 hours at the room temperature(25℃)
6	Solderability test	Soldering method and temperature: lead-free reflow soldering, $+255^{+5}_{0}$℃

Remarks

1. Please be certain not to apply voltage above the rated voltage of SAW components.
2. Please be sure that the component operate within the specified operating temperature range.
3. Abrupt temperature change shall be avoided because deterioration of the component characteristics can occur under that situation.
4. Please be careful of soldering temperature when soldering.
5. Please do not place soldering iron on the body of components.
6. Please be careful not to subject the terminals or leads of components to excessive force.

Packing Information

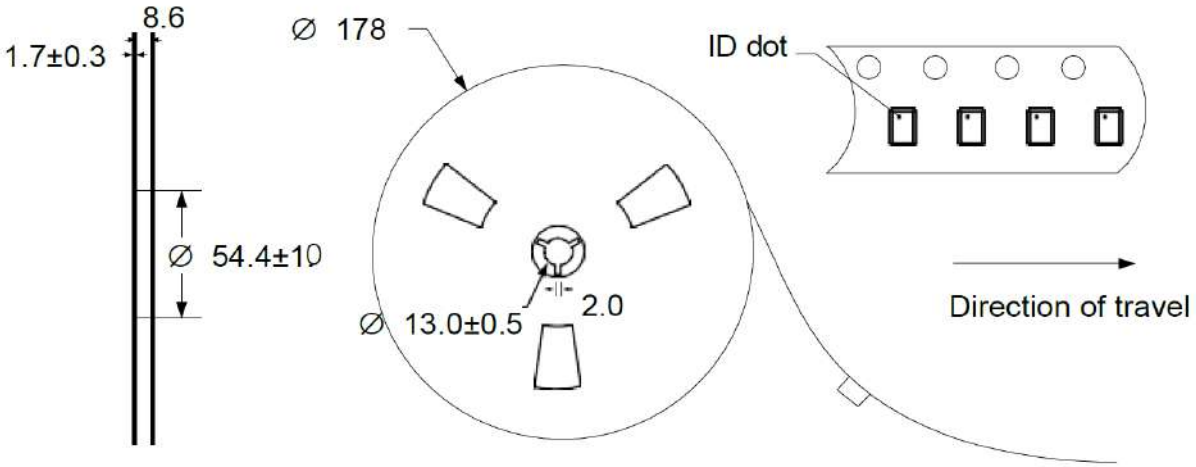
Tape (Unit: mm)



Size	P0	P1	P2	D0	D1	E	F	W	A0	B0	K0	T
Value	4.00	4.00	2.00	Φ1.55	Φ1.00	1.75	3.50	8.00	1.70	2.10	0.80	0.25
Tolerance	±0.10	±0.10	±0.10	±0.05	±0.05	±0.10	±0.10	±0.20	±0.05	±0.05	±0.05	±0.05

Reel (Unit：mm)

Standard T/R size=5,000 units/reel.



Recommended Soldering Profile