

SAW Duplexers SD18 Series (Balanced Type)



RoHS Compliant

Features

- Small size
- Low loss, high isolation
- Rx balanced output type

Applications

- LTE
 - UMTS (W-CDMA)
 - CDMA
- Individual specification for LTE.

How to Order

SD 18 - 1950 R 8 UB Q1
① ② ③ ④ ⑤ ⑥ ⑦

- ① Type of Product (SAW Duplexer)
- ② Package Size
- ③ Nominal Center Frequency
- ④ Spec.
- ⑤ Number of Terminals
- ⑥ Input/ Output
- ⑦ Custom Specification

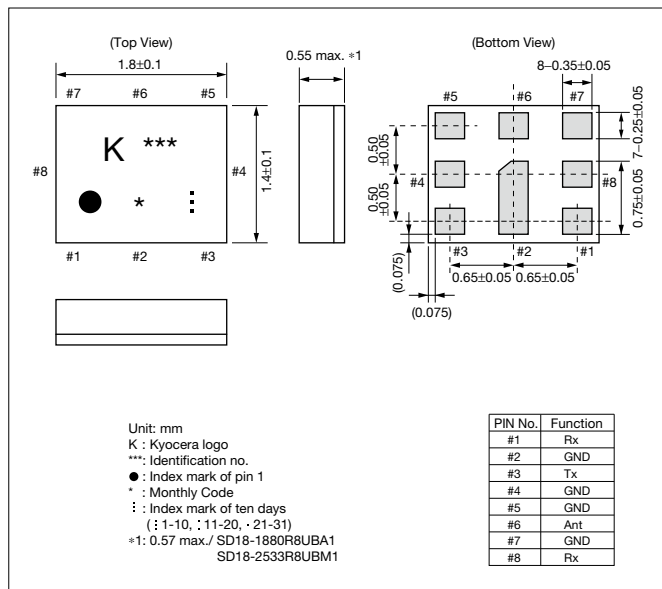
Specifications

Part No.	Band	Condition	Pass Band Frequency	Insertion Loss (dB)	Pass Band Variation (dB)	VSWR	Absolute Rejection (dB)								Isolation Tx to Rx (dB)		Operating Temperature	Storage Temperature	
															Differential Mode	Common Mode			
SD18-1950R8UBQ1	Band1	Tx to Ant	1920.48MHz	2.0 max.	0.5 max.	2.0 max.	843MHz	1573.374MHz	1805MHz	1865MHz	2010MHz	2110MHz	2400MHz	1920.48MHz	1920.48MHz	-30 to +85°C	-40 to +85°C		
			1979.52MHz				894MHz	1577.468MHz	1865MHz	1880MHz	2025MHz	2170MHz	2500MHz	1979.52MHz	1979.52MHz				
		Ant to Rx	2110.48MHz	2.5 max.	0.5 max.	2.0 max.	1920MHz	1980MHz	2255MHz	2400MHz	2484MHz	—	—	—	—				
			2169.52MHz				1980MHz	2025MHz	2400MHz	2484MHz	6000MHz	—	—	—	—				
SD18-1880R8UBA1	Band2	Tx to Ant	1850.48MHz	2.4 max. *2 1852.4-1907.6MHz	1.8 max.	2.1 max.	869MHz	1573.374MHz	2400MHz	5150MHz	—	—	—	1852.4MHz	1852.4MHz	-30 to +85°C	-40 to +85°C		
			1909.52MHz				894MHz	1577.468MHz	2500MHz	5350MHz	—	—	—	1907.6MHz	1907.6MHz				
		Ant to Rx	1930.48MHz	3.4 max. *2 1932.4-1987.6MHz	2.5 max.	2.0 max.	1MHz	1765MHz	1852.4MHz	1851.25MHz	2400MHz	5625MHz	—	—	—			—	
			1989.52MHz				1850MHz	1835MHz	1907.6MHz	1908.75MHz	2484MHz	5815MHz	—	—	—				
SD18-0836R8UBQ1	Band5	Tx to Ant	824MHz	2.0 max.	1.0 max.	2.0 max.	869MHz	1573.374MHz	1638MHz	1844.9MHz	1884.5MHz	1930MHz	2400MHz	824MHz	824MHz	-30 to +85°C	-40 to +85°C		
			849MHz				894MHz	1577.468MHz	1708MHz	1879.9MHz	1919.6MHz	1990MHz	2557MHz	849MHz	849MHz				
		Ant to Rx	869MHz	2.2 max.	1.2 max.	2.0 max.	44 min.	45 min.	40 min.	30 min.	30 min.	44 min.	45 min.	55 min.	50 min.			—	—
			894MHz				824MHz	849MHz	854MHz	1000MHz	1850MHz	1920MHz	6000MHz	—	—				
SD18-2535R8UBM1	Band7	Tx to Ant	2500MHz	3.0 max.	2.0 max.	2.0 max.	925MHz	880MHz	1573.37MHz	1805MHz	1710MHz	2402MHz	2442MHz	2500MHz	—	-20 to +85°C	-40 to +85°C		
			2570MHz				960MHz	915MHz	1577.47MHz	1830MHz	1785MHz	2442MHz	2457MHz	2570MHz	—				
		Ant to Rx	2620MHz	2.5 max.	1.5 max.	2.0 max.	30 min.	32 min.	35 min.	28 min.	30 min.	40 min.	45 min.	52 min.	2500MHz			—	
			2690MHz				880MHz	1710MHz	2402MHz	2500MHz	2775MHz	4900MHz	5300MHz	2620MHz	2500MHz				
SD18-0897R8UBQ1	Band8	Tx to Ant	882.4MHz	2.7 max. *2	2.0 max.	2.0 max.	915MHz	1785MHz	2482MHz	2570MHz	6000MHz	5300MHz	5950MHz	2690MHz	2570MHz	-20 to +85°C	-40 to +85°C		
			912.6MHz				927.4MHz	1573.374MHz	1760MHz	2400MHz	2620MHz	—	—	882.4MHz	882.4MHz				
		Ant to Rx	925MHz	3.3 max.	2.0 max.	2.0 max.	44 min. *2	43 min.	38 min.	35 min.	35 min.	—	—	55 min. *2	49 min. *2				
			960MHz				10MHz	882.4MHz	1045MHz	1750MHz	—	—	—	—	—				

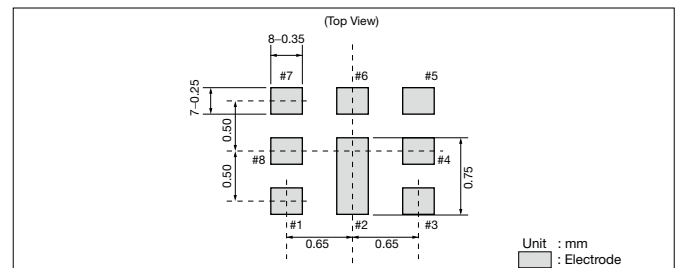
*1 Operating Temperature of +15 to +85°C *2 Integrated calculation, WCDMA Modulation (±1.92MHz). Unit : dBint

*3 Integrated calculation, NCDMA Modulation (±0.615MHz). Unit : dBint

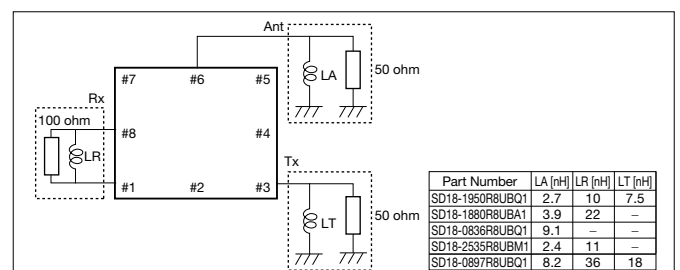
Dimensions



Recommended Land Pattern



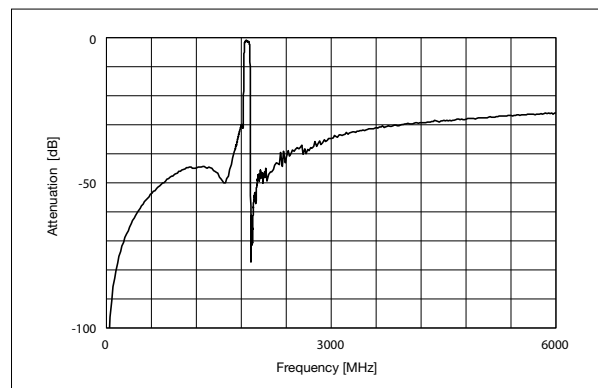
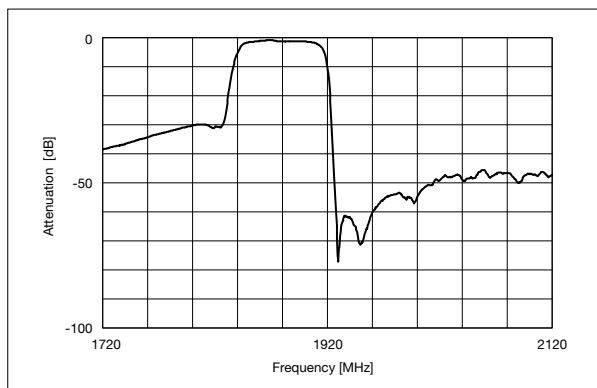
Test Circuit



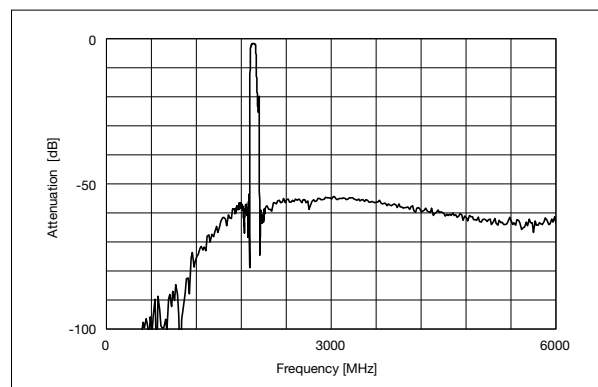
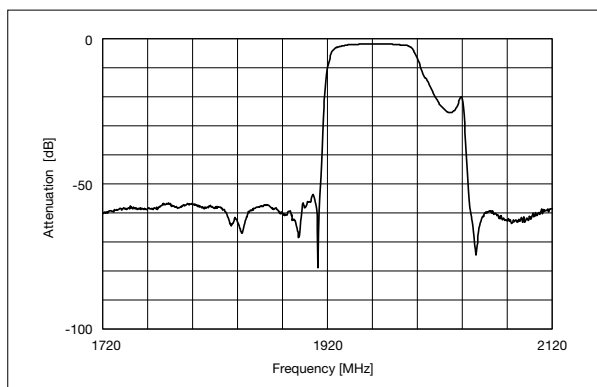
Characteristics

<Band2> Part No.: SD18-1880R8UBA1

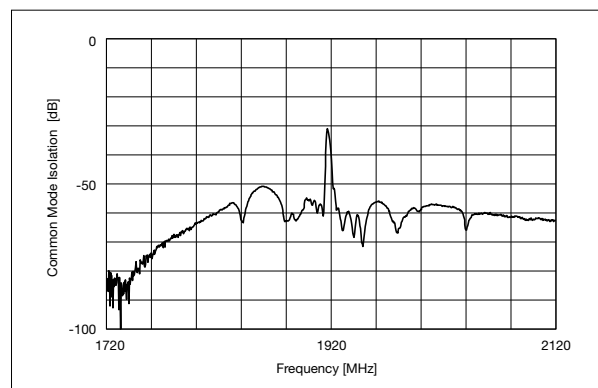
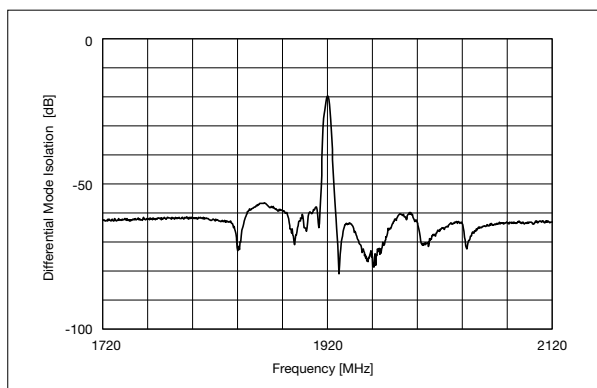
Tx to Ant



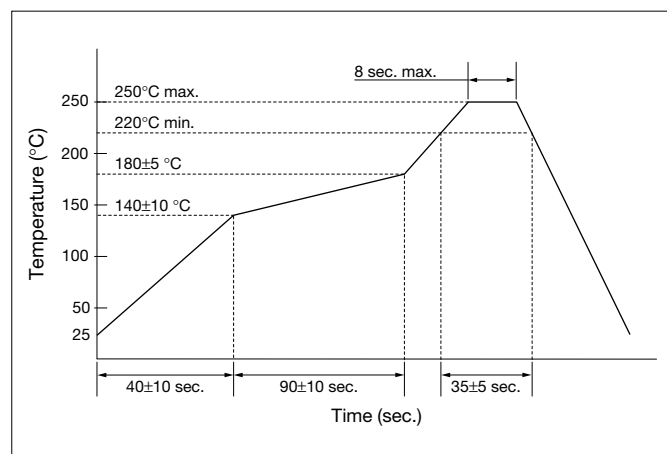
Ant to Rx



Tx to Rx



Recommended Reflow Profile



SAW Duplexers SD18 Series (Unbalanced Type)



RoHS Compliant

Features

- Small size
- Low loss, high isolation
- Rx unbalanced output type

Applications

- LTE
- Individual specification for LTE
- UMTS (W-CDMA)
- CDMA

How to Order

SD 18 - 1880 R 8 UU Q1
① ② ③ ④ ⑤ ⑥ ⑦

- ① Type of Product (SAW Duplexer)
- ② Package Size
- ③ Nominal Center Frequency
- ④ Spec.
- ⑤ Number of Terminals
- ⑥ Input/ Output
- ⑦ Custom Specification

Specifications

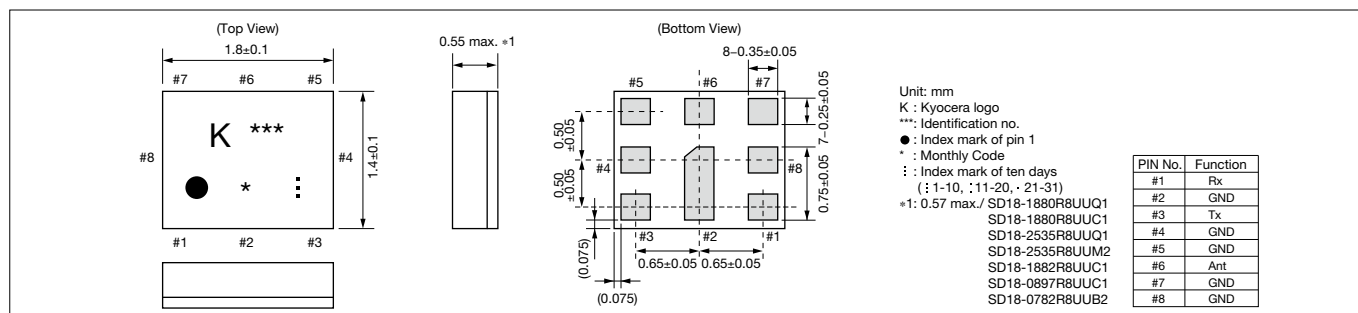
Part No.	Band	Condition	Pass Band Frequency	Insertion Loss (dB)	Pass Band Variation (dB)	VSWR	Absolute Rejection (dB)								Isolation Tx to Rx (dB)	Operating Temperature	Storage Temperature
SD18-1950R8UUQ1	Band1	Tx to Ant	1920.48MHz - 1979.52MHz	2.0 max.	0.5 max.	2.0 max.	843MHz 44 min.	1573.374MHz 42 min.	1805MHz 25 min.	1865MHz 10 min.	1880MHz 5 min. *1	2010MHz 2025MHz	2110MHz 2170MHz	2400MHz 2500MHz	55 min. 1920.48-1979.52MHz	-30 to +85°C	-40 to +85°C
		Ant to Rx	2110.48MHz - 2169.52MHz	2.5 max.	1.0 max.	2.0 max.	1920MHz 45 min.	1980MHz 15 min.	2015MHz 30 min.	2050MHz 20 min.	2050MHz 40 min.	2255MHz 6000MHz	— —	— —	54 min. 2111.25-2168.75MHz		
		Tx to Ant	1850.48MHz - 1909.52MHz	2.8 max.	1.3 max.	2.0 max.	869MHz 44 min.	1573.374MHz 43 min.	1930MHz 44 min. *2	2400MHz 35 min.	4900MHz 20 min.	— —	— —	— —	55 min. 1850.48-1909.52MHz		
SD18-1880R8UUQ1	Band2	Tx to Ant	1930.48MHz - 1989.52MHz	3.5 max.	1.3 max.	2.0 max.	824MHz 40 min.	1850MHz 45 min.	2400MHz 40 min.	4900MHz 40 min.	— —	— —	— —	— —	53 min. *2 1930.25-1989.75MHz	-30 to +85°C	-40 to +85°C
		Ant to Rx	1850.48MHz - 1909.52MHz	2.4 max. *3 (1852.4-1907.8MHz) 2.5 max. *4 (1851.25-1908.75MHz)	1.8 max.	2.1 max.	869MHz 44 min.	1573.374MHz 43 min.	2400MHz 35 min.	4900MHz 20 min.	— —	— —	— —	— —	53 min. *3 1852.4-1907.6MHz		
		Tx to Ant	1930.48MHz - 1989.52MHz	3.5 max. *3 (1932.4-1987.8MHz) 3.9 max. *4 (1931.25-1988.75MHz)	2.5 max.	2.1 max.	824MHz 40 min.	2400MHz 40 min.	4900MHz 40 min.	— —	— —	— —	— —	— —	51 min. *3 1932.4-1987.6MHz		
SD18-0836R8UUQ1	Band5	Tx to Ant	824MHz - 849MHz	2.0 max.	1.0 max.	2.0 max.	869MHz 44 min.	1573.374MHz 42 min.	1638MHz 35 min.	1844.9MHz 30 min.	1884.5MHz 30 min.	1930MHz 30 min.	2400MHz 44 min.	2557MHz 45 min.	55 min. 824-849MHz	-30 to +85°C	-40 to +85°C
		Ant to Rx	869MHz - 894MHz	2.2 max.	1.0 max.	2.0 max.	824MHz 40 min.	849MHz 45 min.	854MHz 30 min.	979MHz 8 min.	2500MHz 40 min.	5950MHz 40 min.	— —	— —	50 min. 869.7-893.37MHz		
		Tx to Ant	2500MHz - 2620MHz	2.8 max.	1.5 max.	2.0 max.	832MHz 30 min.	1573.374MHz 35 min.	1710MHz 30 min.	2402MHz 40 min.	2402MHz 40 min.	2460MHz 45 min.	4900MHz 40 min.	5950MHz 40 min.	55 min. 2500-2570MHz		
SD18-2535R8UUM2	Band7	Tx to Ant	2620MHz - 2690MHz	2.9 max.	—	2.0 max.	718MHz 40 min.	1710MHz 45 min.	2400MHz 40 min.	2500MHz 48 min.	2500MHz 45 min.	2570MHz 47 min.	5300MHz 40 min.	5950MHz 40 min.	55 min. 2620-2690MHz	-20 to +90°C	-40 to +90°C
		Ant to Rx	2500MHz - 2570MHz	2.9 max.	2.0 max.	2.2 max.	880MHz 32 min.	1573.37MHz 35 min.	1710MHz 30 min.	2402MHz 40 min.	2442MHz 45 min.	2458MHz 50 min.	4992MHz 30 min.	5140MHz 30 min.	53 min. 2500-2570MHz		
		Tx to Ant	2620MHz - 2690MHz	2.8 max.	1.5 max.	2.0 max.	880MHz 37 min.	1710MHz 35 min.	2402MHz 41 min.	2500MHz 45 min.	2775MHz 35 min.	4900MHz 35 min.	5300MHz 47 min.	5950MHz 40 min.	54 min. 2620-2698MHz		
SD18-0897R8UUQ1	Band8	Tx to Ant	882.4MHz - 912.6MHz	2.7 max. *3 (882.4-912.6MHz)	2.0 max.	2.2 max.	927.4MHz 44 min. *3	1573.374MHz 42 min.	1760MHz 45 min.	2400MHz 35 min.	2620MHz 36 min.	4900MHz 20 min.	— —	— —	55 min. 882.4-912.6MHz	-30 to +85°C	-40 to +85°C
		Ant to Rx	925MHz - 960MHz	3.5 max.	2.0 max.	2.2 max.	10MHz 45 min.	882.4MHz 45 min. *3	1045MHz 40 min.	— —	— —	— —	— —	— —	50 min. 927.4-957.6MHz		
		Tx to Ant	880.24MHz - 914.76MHz	3.0 max.	2.3 max.	2.0 max.	927.4MHz 44 min.	1573.374MHz 38 min.	1760MHz 37 min.	2400MHz 35 min.	2620MHz 36 min.	4900MHz 10 min.	— —	— —	55 min. 880.24-914.76MHz		
SD18-0897R8UUC1	Band8	Tx to Ant	925MHz - 960MHz	3.5 max.	2.3 max.	2.0 max.	10MHz 45 min.	880.24MHz 45 min.	980MHz 13 min.	1045MHz 40 min.	— —	— —	— —	— —	50 min. 927.4-957.6MHz	-20 to +85°C	-40 to +85°C
		Ant to Rx	777.5MHz - 786.5MHz	3.5 max.	—	2.1 max.	746MHz 42 min.	768MHz 20 min.	1554MHz 40 min.	— —	— —	— —	— —	— —	50 min. 746-756MHz		
		Tx to Ant	746MHz - 756MHz	2.5 max.	—	2.1 max.	777MHz 50 min.	2400MHz 40 min.	4900MHz 40 min.	— —	— —	— —	— —	— —	55 min. 777-787MHz		
SD18-1882R8UUC1	Band25	Tx to Ant	1850.48MHz - 1914.52MHz	2.5 max. (1852.4-1911MHz) 4.0 max. (1911-1915MHz)	2.0 max.	2.0 max.	869MHz 44 min.	1226MHz 43 min.	1573.4MHz 43 min.	2400MHz 33 min.	5150MHz 20 min.	— —	— —	— —	50 min. 1850.25-1914.75MHz	-30 to +85°C	-40 to +85°C
		Ant to Rx	1930.48MHz - 1994.52MHz	3.5 max.	2.0 max.	2.0 max.	777MHz 40 min.	814MHz 40 min.	1850MHz 45 min.	2400MHz 40 min.	4900MHz 40 min.	— —	— —	— —	50 min. *6 1930.48-1994.52MHz		

*1 Operating Temperature of +15 to +85°C *2 Operating Temperature of -20 to +85°C *3 Integrated calculation, WCDMA Modulation (±1.92MHz). Unit : dBint
*4 Integrated calculation, NCDMA Modulation (±0.615MHz). *5 Integrated calculation, LTE Modulation (±2.25MHz) Unit : dBint *6 Operating Temperature of -10 to +85°C

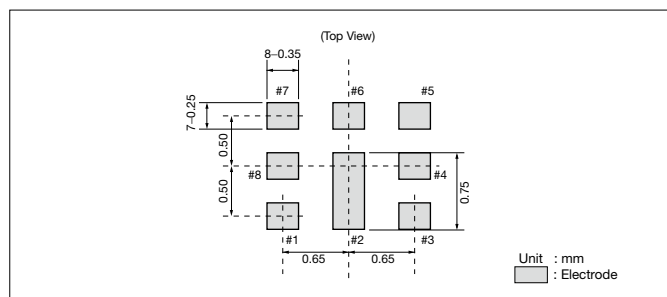
SAW Duplexers SD18 Series (Unbalanced Type)



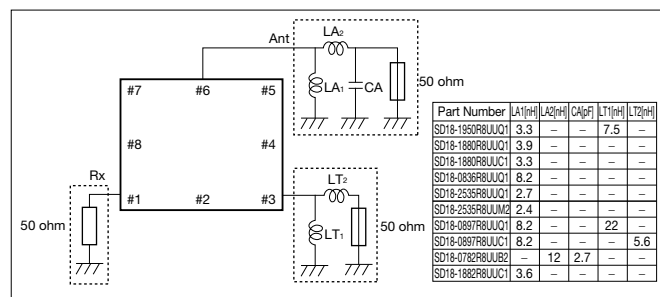
Dimensions



Recommended Land Pattern

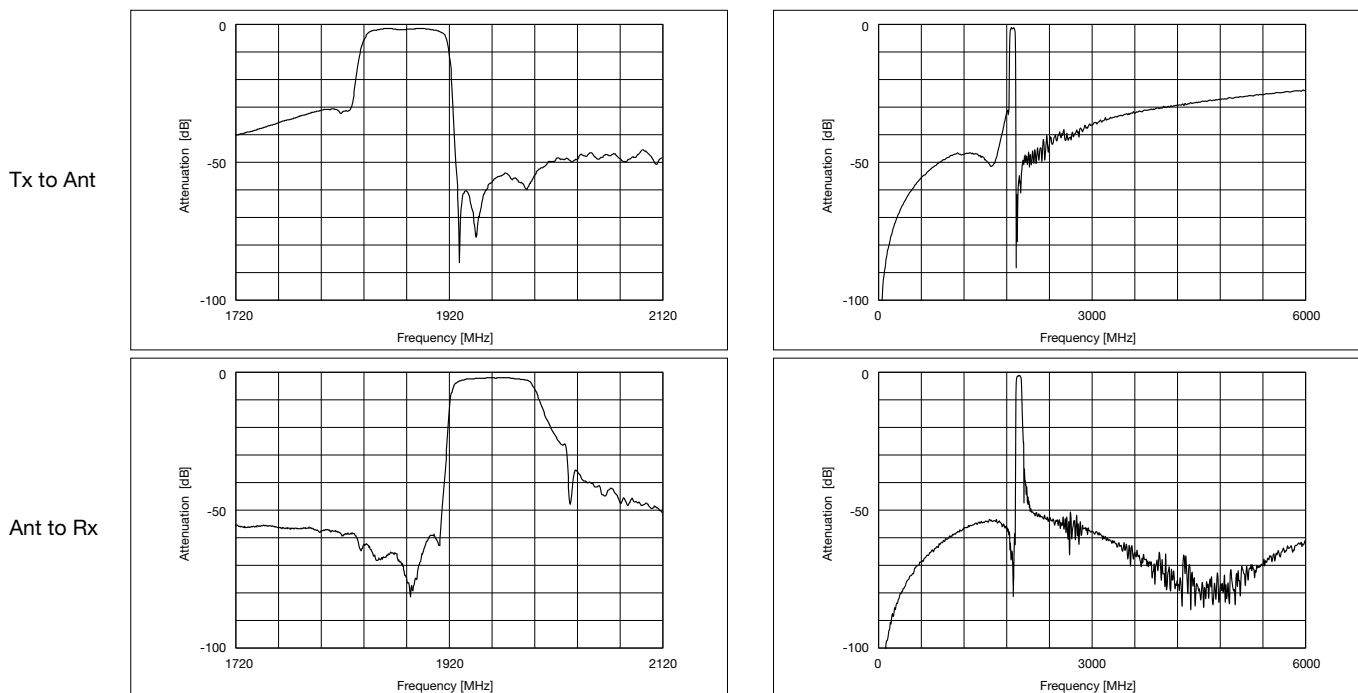


Test Circuit

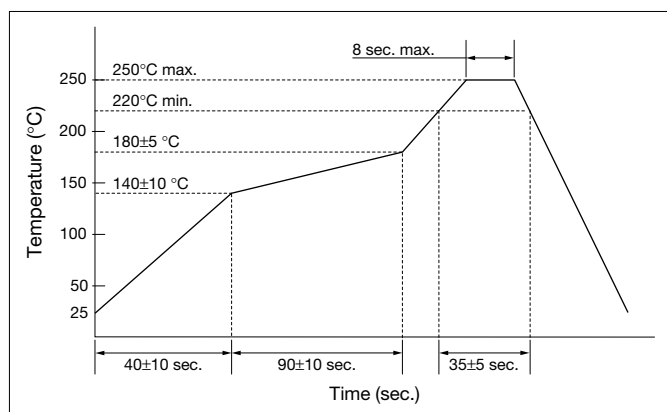


Characteristics

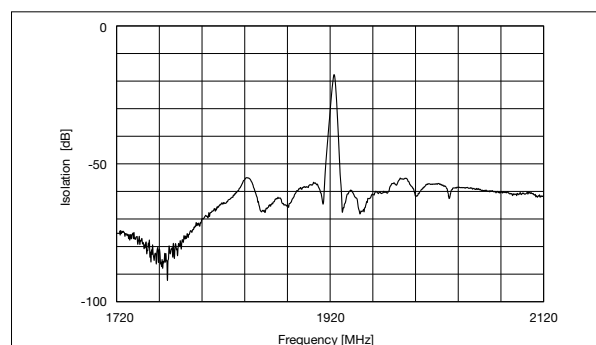
<Band2> Part No.: SD18-1880R8UUQ1



Recommended Reflow Profile



Tx to Rx



SAW Duplexers SD20 Series (Balanced Type)



RoHS Compliant

Features

- High attenuation
- High isolation
- Rx balanced output type

Applications

- UMTS (W-CDMA)
- CDMA

How to Order

SD 20 - 1950 R 9 UB Q1
① ② ③ ④ ⑤ ⑥ ⑦

- ① Type of Product (SAW Duplexer)
- ② Package Size
- ③ Nominal Center Frequency
- ④ Spec.
- ⑤ Number of Terminals
- ⑥ Input/ Output
- ⑦ Custom Specification

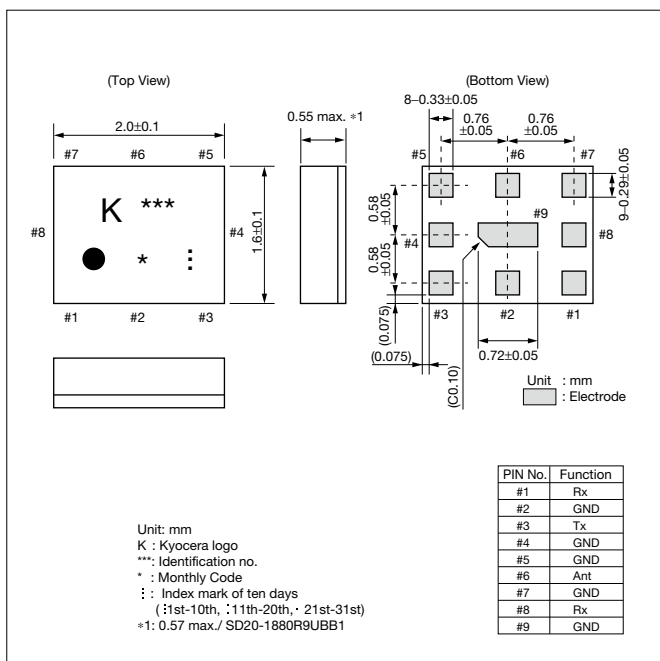
Specifications

Part No.	Band	Condition	Pass Band Frequency	Insertion Loss (dB)	Pass Band Variation (dB)	VSWR	Absolute Rejection (dB)								Isolation Tx to Rx (dB)		Operating Temperature	Storage Temperature
															Differential Mode	Common Mode		
SD20-1950R9UBQ1	Band1	Tx to Ant	1920.48MHz	2.0 max.	0.5 max.	2.3 max.	843MHz	1573.374MHz	1805MHz	1865MHz	2010MHz	2110MHz	2400MHz	1920.48MHz	1920.48MHz	-30 to +85°C	-40 to +85°C	
			894MHz				1577.466MHz	1865MHz	1880MHz	2025MHz	2170MHz	2500MHz	1979.52MHz	1979.52MHz				
		1979.52MHz				41 min.	43 min.	30 min.	10 min.	20 min. *1	44 min.	36 min.	55 min.	50 min.				
		2110.48MHz	2.5 max.	0.5 max.	2.1 max.	1920MHz	1980MHz	2255MHz	2400MHz	2484MHz	—	—	—	—				
2169.52MHz	1980MHz	2025MHz				2400MHz	2484MHz	6000MHz	—	—	—	—						
SD20-1880R9UBB1	Band2	Tx to Ant	1850.48MHz	3.0 max.	1.8 max.	2.1 max.	869MHz	1565.42MHz	1597.552 MHz	1930MHz	2010MHz	2110MHz	2400MHz	1850.48MHz	1850.48MHz	-30 to +85°C	-40 to +85°C	
			894MHz				1585.42 MHz	1605.886MHz	1990MHz	2025MHz	2155MHz	2500MHz	1909.52MHz	1909.52MHz				
		1909.52MHz				36 min.	38 min.	35 min.	36 min.	30 min.	30 min.	25 min.	40 min.	40 min.				
		1930.48MHz	4.6 max.	2.5 max.	2.1 max.	30MHz	1765MHz	1850MHz	2005MHz	2050MHz	2400MHz	2810MHz	—	—				
1989.52MHz	1850MHz	1835MHz				1910MHz	2050MHz	2075MHz	2484MHz	2910MHz	—	—						
SD20-0836R9UBQ1	Band5	Tx to Ant	824MHz	2.1 max.	1.0 max.	1.9 max.	869MHz	1573.374MHz	1638MHz	1844.9MHz	1884.5MHz	1930MHz	2400MHz	824MHz	824MHz	-30 to +85°C	-40 to +85°C	
			849MHz				1577.466MHz	1708MHz	1879.9MHz	1919.6MHz	1990MHz	2557MHz	849MHz	849MHz				
		849MHz				44 min.	45 min.	25 min.	30 min.	30 min.	40 min.	38 min.	55 min.	50 min.				
		869MHz	2.2 max.	1.2 max.	2.0 max.	447MHz	824MHz	849MHz	909MHz	1000MHz	1850MHz	1920MHz	—	—				
894MHz	824MHz	849MHz				854MHz	1000MHz	1850MHz	1920MHz	6000MHz	—	—						
SD20-0897R9UBQ1	Band8	Tx to Ant	882MHz	2.7 max. *2	2.1 max.	2.3 max.	927.4MHz	1573.374MHz	1760MHz	2400MHz	2620MHz	—	—	882.4MHz	882.4MHz	-30 to +85°C	-40 to +85°C	
			912.6MHz				957.6MHz	1577.466MHz	1830MHz	2500MHz	2745MHz	—	—	912.6MHz	912.6MHz			
						44 min. *2	37 min.	35 min.	25 min.	25 min.	—	—	55 min. *2	42 min. *2				
		925MHz	2.9 max. *2	2.1 max.	2.3 max.	10MHz	882.4MHz	1045MHz	1750MHz	—	—	—	—	—	—			
960MHz	880MHz	912.6MHz				1750MHz	4810MHz	—	—	—	—	—						

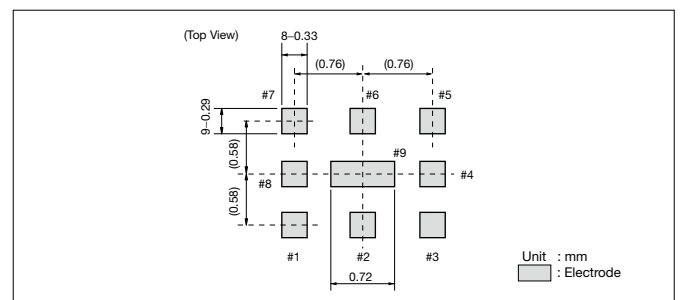
*1 Operating Temperature of 0 to +85°C

*2 Integrated over ±1.92MHz around the WCDMA channel center frequency. unit : dBint

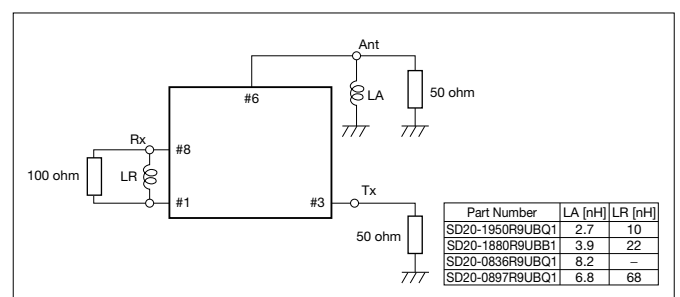
Dimensions



Recommended Land Pattern



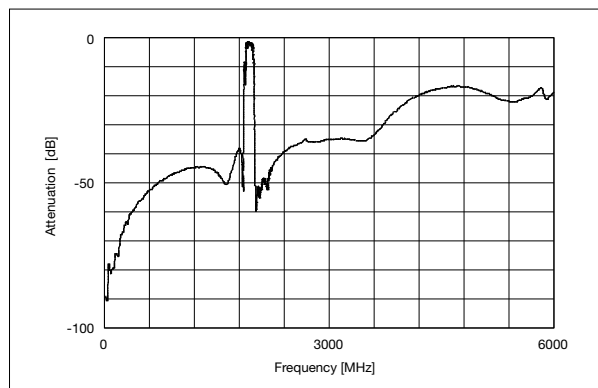
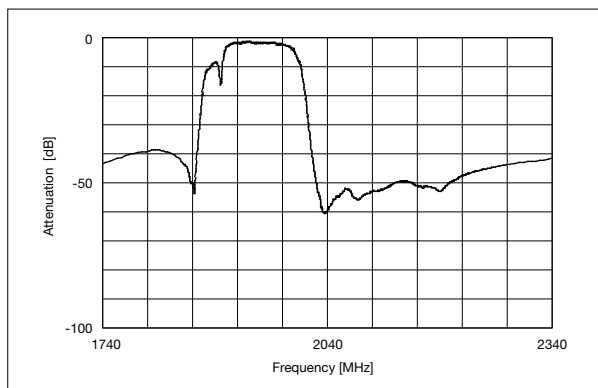
Test Circuit



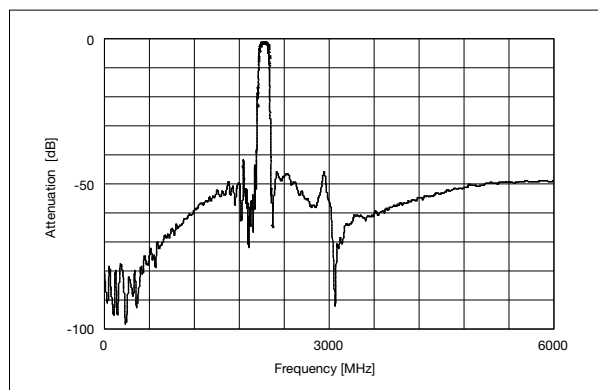
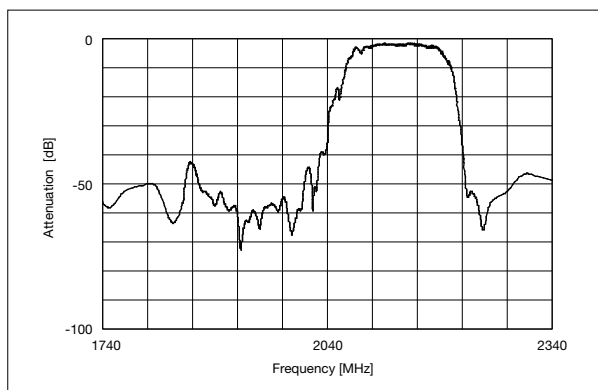
Characteristics

<Band1> Part No.: SD20-1950R9UBQ1

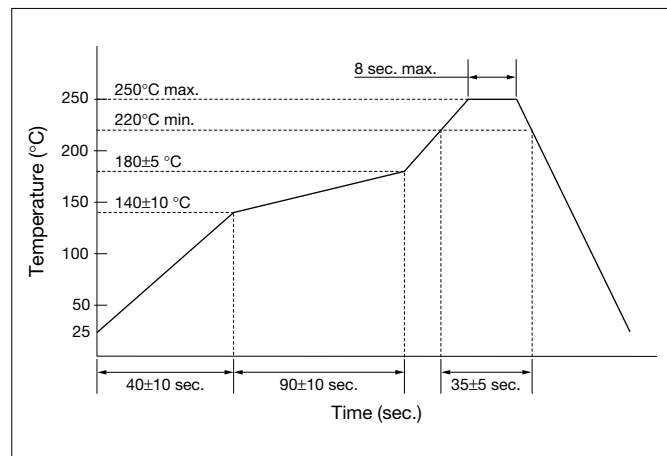
Tx to Ant



Ant to Rx



Recommended Reflow Profile



SAW Duplexers SD20 Series (Unbalanced Type)



RoHS Compliant

Features

- High attenuation
- High isolation
- Rx unbalanced output type

Applications

- UMTS (W-CDMA)
- CDMA

How to Order

SD 20 - 1950 R 9 UU Q1
① ② ③ ④ ⑤ ⑥ ⑦

- ① Type of Product (SAW Duplexer)
- ② Package Size
- ③ Nominal Center Frequency
- ④ Spec.
- ⑤ Number of Terminals
- ⑥ Input/ Output
- ⑦ Custom Specification

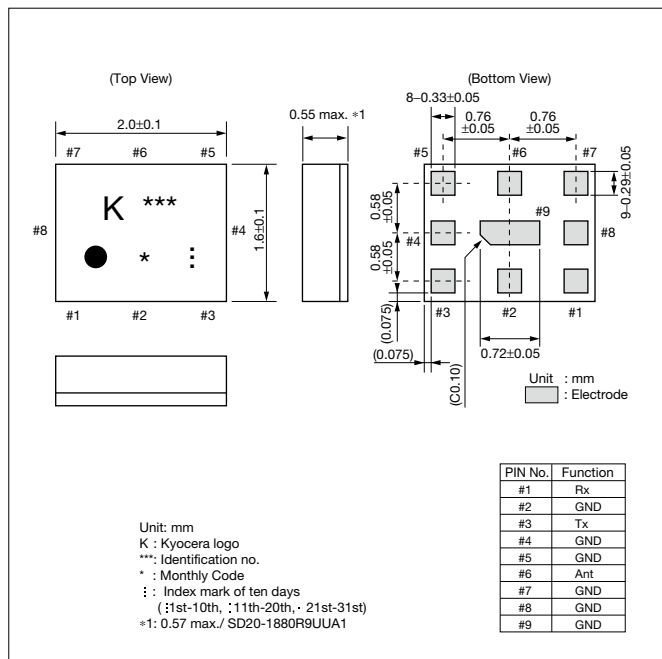
Specifications

Part No.	Band	Condition	Pass Band Frequency	Insertion Loss (dB)	Pass Band Variation (dB)	VSWR	Absolute Rejection (dB)						Isolation Tx to Rx (dB)	Operating Temperature	Storage Temperature
SD20-1950R9UUQ1	Band1	Tx to Ant	1920.48MHz - 1979.52MHz	2.1 max.	0.5 max.	2.2 max.	843MHz 894MHz 41 min. 1MHz	1573.374MHz 1577.466MHz 44 min.	1805MHz 1865MHz 30 min.	1865MHz 1880MHz 10 min.	2010MHz 2025MHz 20 min. *1	2400MHz 2500MHz 35 min.	51 min. (1920.48- 1979.52MHz) 47 min. (2111.25- 2168.75MHz)	-30 to +85°C	-40 to +85°C
		Ant to Rx	2110.48MHz - 2169.52MHz	2.6 max.	0.5 max.	2.2 max.	1920MHz 1980MHz 38 min. 47 min.	1920MHz 1980MHz 47 min.	2025MHz 2400MHz 35 min.	2400MHz 2484MHz 35 min.	2400MHz 2484MHz 35 min.	6000MHz			
SD20-1880R9UUA1	Band2	Tx to Ant	1850.48MHz - 1909.52MHz	2.4 max. *2 2.5 max *3 (1852.4-1907.6MHz) (1851.25-1908.75MHz)	1.8 max.	2.1 max.	869MHz 894MHz 44 min.	1573.374MHz 1577.466MHz 43 min.	2400MHz 2500MHz 35 min.	4900MHz 5850MHz 20 min.	— — —	— — —	53 min. *2 (1852.4-1907.6MHz) 52 min. *3 (1851.25-1908.75MHz)	-30 to +85°C	-40 to +85°C
		Ant to Rx	1930.48MHz - 1989.52MHz	3.5 max. *2 3.98 max *3 (1932.4-1987.6MHz) (1934.25-1988.75MHz)	2.5 max.	2.1 max.	824MHz 849MHz 40 min.	1852.4MHz 1907.6MHz 48 min. *2	1851.25MHz 1908.75MHz 47 min. *3	2400MHz 2500MHz 40 min.	4900MHz 5950MHz 40 min.	— — —	51 min. *2 (1932.4-1987.6MHz) 48 min. *3 (1931.25-1988.75MHz)		
SD20-0836R9UUQ1	Band5	Tx to Ant	824MHz - 849MHz	2.1 max.	1.0 max.	2.0 max.	869MHz 894MHz 48 min.	1573.374MHz 1577.466MHz 45 min.	1638MHz 1708MHz 38 min.	2400MHz 2557MHz 36 min.	4900MHz 5950MHz 5 min.	— — —	55 min. (824- 849MHz)	-30 to +85°C	-40 to +85°C
		Ant to Rx	869MHz - 894MHz	2.4 max.	1.0 max.	2.0 max.	447MHz 824MHz 45 min.	824MHz 849MHz 50 min.	849MHz 854MHz 30 min.	909MHz 979MHz 3 min.	2400MHz 2500MHz 40 min.	4900MHz 5950MHz 25 min.	53 min. (869.7- 893.37MHz)		
SD20-0897R9UUQ1	Band8	Tx to Ant	880.48MHz - 914.52MHz	2.7 max. *2 (882.4- 912.6MHz)	1.5 max.	2.2 max.	927.4MHz 957.6MHz 44 min.	1573.374MHz 1577.466MHz 37 min.	1760MHz 1880MHz 30 min.	2400MHz 2500MHz 23 min.	2620MHz 2745MHz 23 min.	4900MHz 5950MHz 15 min.	53 min. (882.4- 912.6MHz)	-30 to +85°C	-40 to +85°C
		Ant to Rx	925MHz - 960MHz	2.9 max. *2 (927.4- 957.6MHz)	1.5 max.	2.2 max.	880MHz 912.6MHz 45 min.	882.4MHz 912.6MHz 50 min. *2	2400MHz 2500MHz 45 min.	4900MHz 5950MHz 20 min.	— — —	— — —	49 min. (927.4- 957.6MHz)		

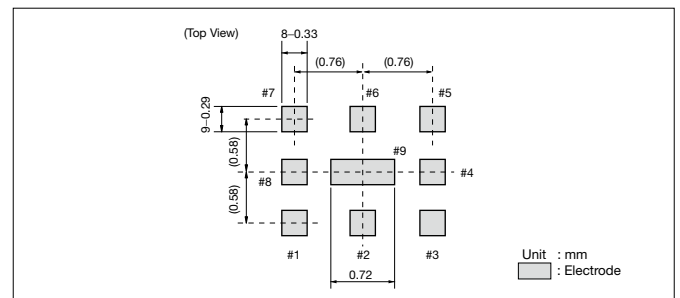
*1 Operating Temperature of +15 to +85°C *2 Integrated calculation, WCDMA Modulation (±1.92MHz). Unit : dBint

*3 Integrated calculation, NCDMA Modulation (±0.615MHz). Unit : dBint

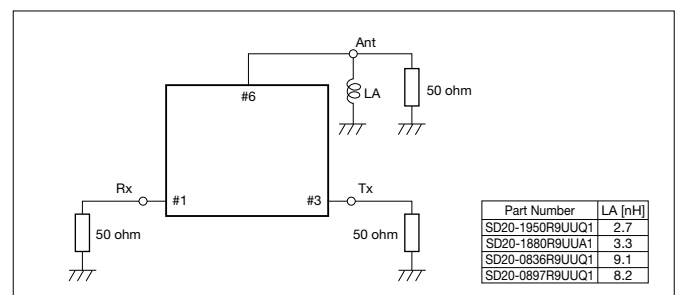
Dimensions



Recommended Land Pattern



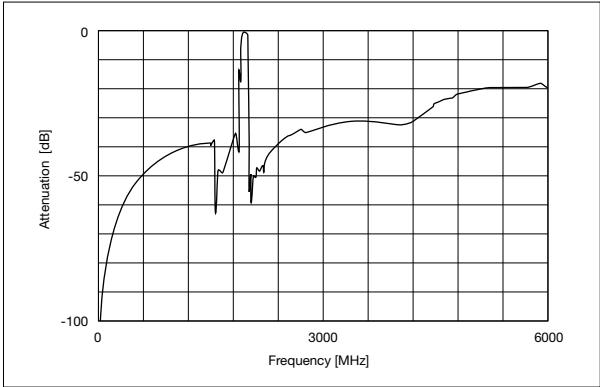
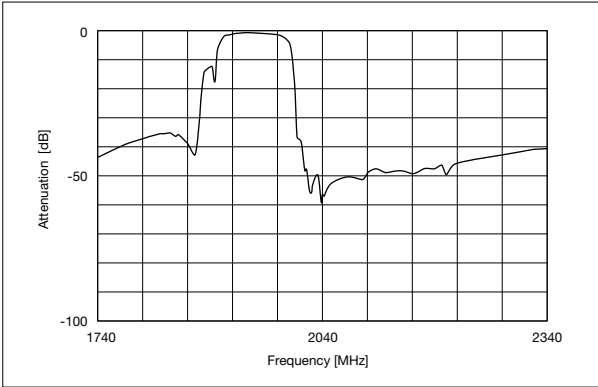
Test Circuit



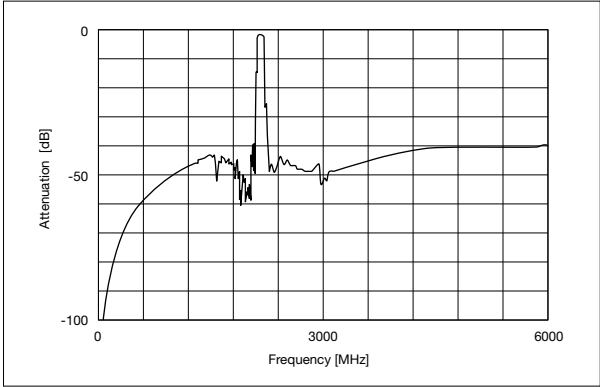
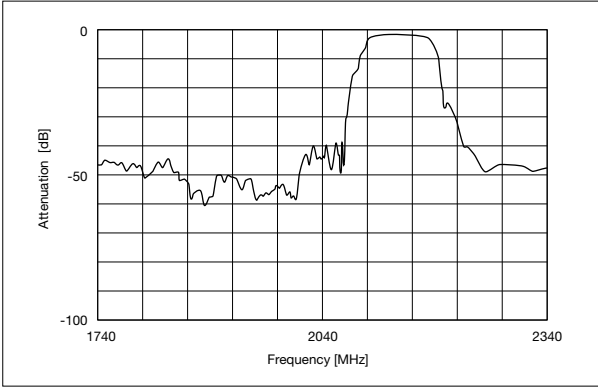
Characteristics

<Band1> Part No.: SD20-1950R9UUQ1

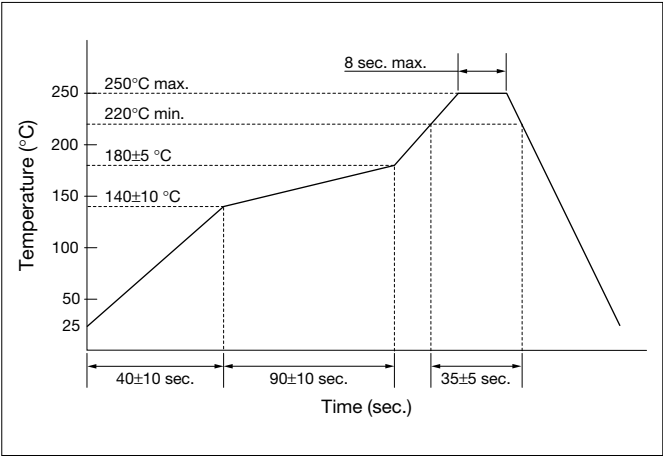
Tx to Ant



Ant to Rx



Recommended Reflow Profile



1. Operating Environment

- 1) Use products within the rated operating temperature, otherwise it may not satisfy electrical characteristics specifications. It might work initially, but there is a high possibility that it will cause degradation, breakdown and lower reliability.
- 2) This product is designed and manufactured with intention to be used in electronic devices for standard applications, but not in the following environment which may affect performance of the product. Be sure not to use products in the following conditions which may cause electrical characteristics and reliability degradation.
 - Under corrosive gas (Cl_2 , H_2S , NH_3 , SO_x , NO_x , etc.)
 - Under volatile and inflammability gas
 - Dusty environment
 - Direct exposure to water, or high humidity environment
 - Direct sunlight
 - High static electricity, or high electric intensity.

Please consult with us if you intend to use products in the above environment.

- 3) This product can not be used in liquid such as water, oil, chemical and organic solvent.
- 4) Operate under rated voltage, otherwise it may not satisfy electrical characteristics specifications. It might work initially, but there is high possibility that it will cause degradation, breakdown and lower the reliability.
- 5) Avoid contact with other components on the board, since outer resin is not intended for the insulation with other components.
- 6) There might be a strong electrical charge when rapid thermal change is applied to this product. This charge may damage the product and the peripheral circuit. Therefore, insert load discharge path between input/output and ground.
- 7) Do not apply larger load greater than the one loaded in the environmental test. It might work initially, but there is a high possibility that it will cause degradation, breakdown and lower the reliability.
- 8) Do not use transfer mold for this product. It may break hermetic seal and cause abnormal operation. Please consult us when molding by resin.

2. Storage instructions

1) Do not store products in the following environment which may deteriorate solderability.

- Under corrosive gas (Cl_2 , H_2S , NH_3 , SOx , NOx , etc.)
- Under volatile and inflammability gas
- Dusty environment
- Direct exposure to water, or high humidity environment
- Direct sunlight
- High static electricity, or high electric intensity

Please consult with us if you intend to use products in the above environment.

2) Store products under normal temperature and humidity in the sealed or unopened package.

Storage of products for over 12months after shipment may deteriorate solderability, and it is advised to perform solderability test before use. Also, be cautioned that color of electrode might change after a long term storage.

3) Open the sealed pack just before use.

Practice assembly within 168 hours after opening the pack, and in the condition of 5-30deg.C and below 60%RH.

4) Stacking the box too high may cause fall over. It is advised to stack the box at the maximum of 5 boxes.

3. Handling instructions

1) Do not apply larger vibration or shock greater than specified, since it may cause degradation, breakdown and lower reliability.

2) Do not apply larger shock or load greater than specified, while carrying the board with products mounted.

3) Take appropriate measure to avoid static electricity and high voltage when handling products, since it may cause degradation or damage to the products.

4) Do not handle this product with bare hands.

4. Assembly instructions

1) Place products in the place to avoid stress from bending and camber of the board.

There may be a large stress or shock when the product is placed near the connection parts with other outer parts.

2) Please do not apply larger stress greater than the one loaded in the environmental test when mounting on the board.

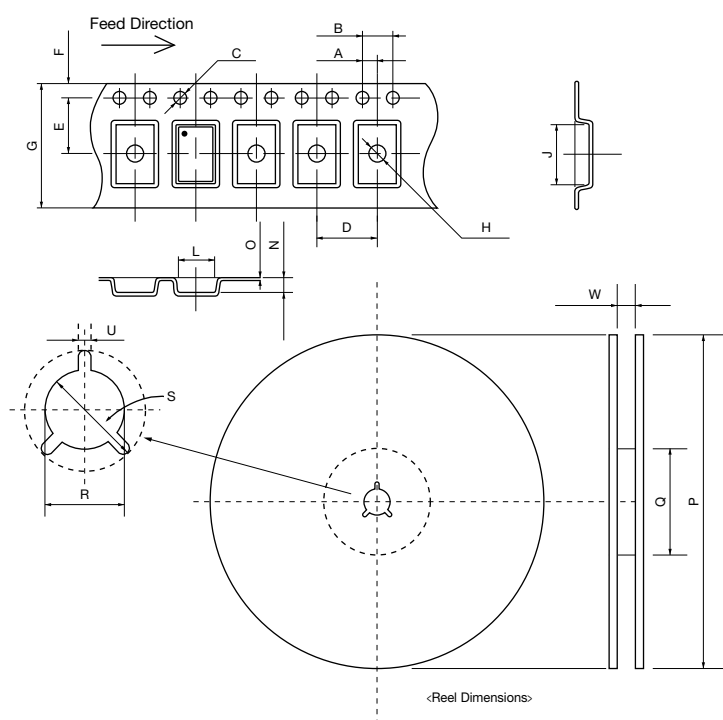
3) Make sure to solder all electrodes to the board, otherwise it may cause lower electrode strength.

Tape & Reel Specifications

SAW Duplexers/ SAW Filters

(Unit: mm)

		SAW Duplexers		SAW Filters				
		SD18	SD20	SF14	SF15	SF16	SF18	SF20
T A P E	A	2.0±0.05	2.0±0.05	2.0±0.05	2.0±0.05	2.0±0.05	2.0±0.05	2.0±0.05
	B	4.0±0.1	4.0±0.1	4.0±0.1	4.0±0.1	4.0±0.1	4.0±0.1	4.0±0.1
	C	φ1.5+0.1/-0	1.5±0.1	φ1.5±0.1	1.5±0.1	1.5±0.1	φ1.5+0.1/-0	1.5±0.1
	D	4.0±0.1	4.0±0.1	4.0±0.1	4.0±0.1	4.0±0.1	4.0±0.1	4.0±0.1
	E	3.5±0.05	3.5±0.05	3.5±0.05	3.5±0.05	3.5±0.05	3.5±0.05	3.5±0.05
	F	1.75±0.1	1.75±0.1	1.75±0.1	1.75±0.1	1.75±0.1	1.75±0.1	1.75±0.1
	G	8.0±0.1	8.0±0.2	8.0±0.2	8.0±0.2	8.0±0.2	8.0±0.1	8.0±0.2
	H	φ0.8±0.05	1.1±0.1	φ0.5±0.05	0.5±0.1	1.1±0.1	φ0.8±0.05	1.1±0.1
	J	2.05±0.1	2.25±0.1	1.7±0.1	1.80±0.1	1.90±0.1	2.05±0.1	2.25±0.1
	L	1.7±0.1	1.8±0.1	1.4±0.1	1.4±0.1	1.85±0.1	1.7±0.1	1.8±0.1
	N	0.85+0/-0.5	0.7±0.1	0.8±0.1	0.7±0.1	0.95±0.2	0.85+0/-0.5	0.7±0.1
	O	0.2±0.05	0.2±0.05	0.2±0.05	0.2±0.05	0.25±0.05	0.2±0.05	0.2±0.05
R E E L	P	φ178±2	φ178±2	φ178±2	φ178±2	φ178±2	φ178±2	φ178±2
	Q	φ60±2	φ60±2	φ60±2	φ60±2	φ60±2	φ60±2	φ60±2
	R	φ13±0.2	φ13±0.2	φ13±0.2	φ13±0.2	φ13±0.2	φ13±0.2	φ13±0.2
	S	φ21±0.8	φ21±0.8	φ21±0.8	φ21±0.8	φ21±0.8	φ21±0.8	φ21±0.8
	U	2±0.5	2±0.5	2±0.5	2±0.5	2±0.5	2±0.5	2±0.5
	W	9.5±1	9.5±1	9.5±1	9.5±1	9.5±1	9.5±1	9.5±1
Qty.		3000	3000	3000	3000	3000	3000	3000



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