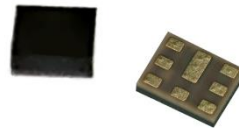


Data Sheet for SAW Components



Band1

Duplexer

Product ID: LBD2140G4E

Date: Jun. 15, 2023

Revision: 0.1 Preliminary

Features

- ◆ Package Size: 1.6 x 1.2 x 0.6max mm
- ◆ Single-Ended Input and Output
- ◆ Terminating Impedance: 50 Ω
- ◆ Moisture Sensitivity Level 3
- ◆ ESD Sensitive Device

Electrical Specifications Band1 Duplexer

Temperature Range for Specification: -30 to +85 °C

Tx to Ant					Min.	Typ.	Max.	Unit
Insertion Loss								
	1920	-	1980	MHz	-	1.5	2.0	dB
	1920	-	1980	MHz	-	1.5	2.0	dB*3
Pass Band Ripple								
	1920	-	1980	MHz	-	0.6	1.0	dB*1
	1920	-	1980	MHz	-	0.6	1.0	dB*1*3
VSWR Tx								
	1920	-	1980	MHz	-	1.5	2.0	-
	1920	-	1980	MHz	-	1.5	2.0	-*3
VSWR Ant								
	1920	-	1980	MHz	-	1.5	2.0	-
	1920	-	1980	MHz	-	1.5	2.0	-*3
Absolute Attenuation								
	10	-	1574	MHz	40	45	-	dB
	420	-	494	MHz	43	60	-	dB
	814	-	849	MHz	43	51	-	dB
	880	-	915	MHz	43	50	-	dB
	925	-	960	MHz	43	49	-	dB
	1226	-	1250	MHz	40	46	-	dB
	1427.9	-	1462.9	MHz	40	46	-	dB
	1475	-	1511	MHz	40	46	-	dB
	1559	-	1563	MHz	43	47	-	dB
	1565.42	-	1573.37	MHz	43	48	-	dB
	1573.37	-	1577.47	MHz	43	48	-	dB
	1577.47	-	1585.42	MHz	43	49	-	dB
	1597.55	-	1605.89	MHz	43	50	-	dB
	1605.89	-	1680	MHz	32	42	-	dB
	1805	-	1865	MHz	20	41	-	dB
	1865	-	1880	MHz	13	30	-	dB
	1880	-	1895	MHz	8	14	-	dB
	2010	-	2025	MHz	12	16	-	dB
	2110	-	2170	MHz	45	58	-	dB

2300	-	2400	MHz	38	44	-	dB
2400	-	2500	MHz	34	42	-	dB
2620	-	2690	MHz	32	39	-	dB
3840	-	3960	MHz	28	35	-	dB
4900	-	5950	MHz	17	23	-	dB
4905	-	5845	MHz	17	23	-	dB
7680	-	7920	MHz	12	23	-	dB

*1: Over any 5 MHz in band

*2: +15 to +85 °C

*3: +23 to +27 °C

Electrical Specifications Band1 Duplexer

Temperature Range for Specification: -30 to +85 °C

Ant to Rx	Min.	Typ.	Max.	Unit
Insertion Loss				
2110 - 2170 MHz	-	1.7	2.2	dB
2110 - 2170 MHz	-	1.7	2.2	dB ^{*1}
Pass Band Ripple				
2110 - 2170 MHz	-	1.1	1.5	dB ^{*1}
2110 - 2170 MHz	-	1.1	1.5	dB ^{*1}
VSWR Rx				
2110 - 2170 MHz	-	1.3	2.0	-
2110 - 2170 MHz	-	1.3	2.0	- ^{*1}
VSWR Ant				
2110 - 2170 MHz	-	1.3	2.0	-
2110 - 2170 MHz	-	1.3	2.0	- ^{*1}
Absolute Attenuation				
1 - 1920 MHz	33	37	-	dB
190 - 190 MHz	50	81	-	dB
718 - 748 MHz	40	46	-	dB
814 - 849 MHz	38	43	-	dB
880 - 915 MHz	36	42	-	dB
1427 - 1463 MHz	33	37	-	dB
1730 - 1790 MHz	35	41	-	dB
1710 - 1785 MHz	35	40	-	dB
1920 - 1980 MHz	45	57	-	dB
1980 - 2015 MHz	20	45	-	dB
2015 - 2075 MHz	7	24	-	dB
2255 - 6130 MHz	11	17	-	dB
2300 - 2400 MHz	35	42	-	dB
2400 - 2500 MHz	35	44	-	dB
2500 - 2570 MHz	38	48	-	dB
4030 - 4150 MHz	16	26	-	dB
4220 - 4340 MHz	14	22	-	dB
4900 - 5950 MHz	11	17	-	dB
5950 - 6130 MHz	14	22	-	dB

6130	-	6330	MHz	14	23	-	dB
6330	-	6510	MHz	14	24	-	dB

*1: +23 to +27 °C

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Electrical Specifications Band1 Duplexer

Temperature Range for Specification: -30 to +85 °C

Tx to Rx				Min.	Typ.	Max.	Unit
Isolation							
	1920	-	1980 MHz	55	61	-	dB
	2110	-	2170 MHz	52	55	-	dB

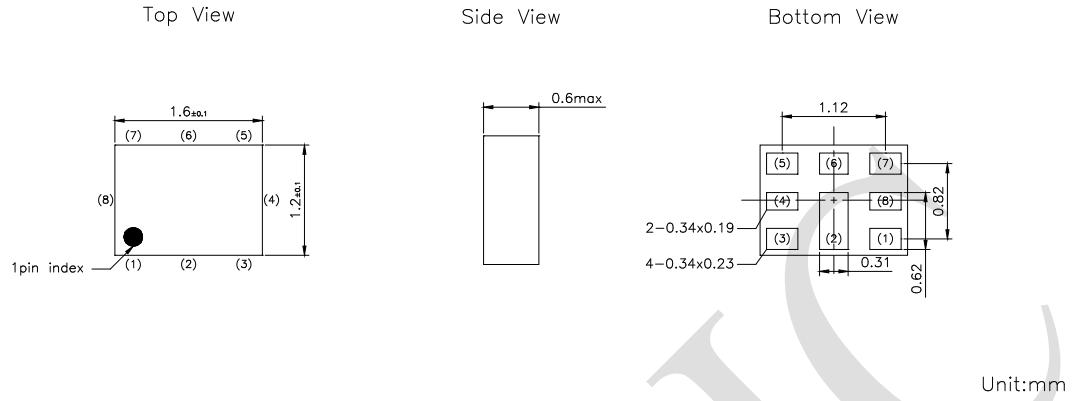
Maximum Ratings

Item	Rating	Condition / Remark
Storage Temperature	-40 to +85 °C	
DC Voltage	5 V	+25 °C
Input power	+29 dBm	LTE , +55 °C , 5000 h

Recommended Operating Conditions

Item	Rating	Condition / Remark
Operating Temperature, T _{CASE}	-30 to +85 °C	

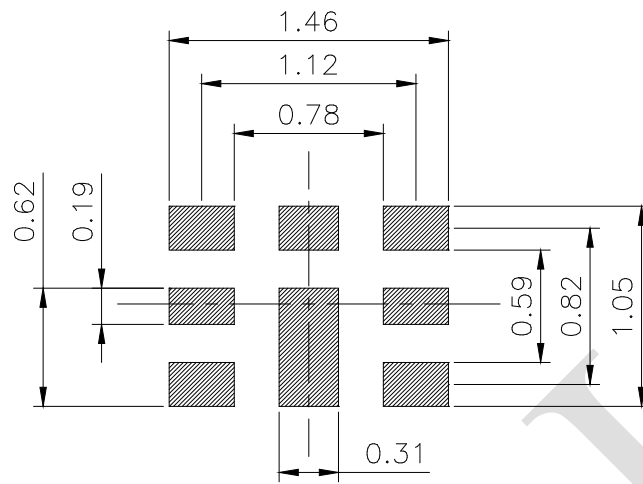
Package Information



Pin Configuration

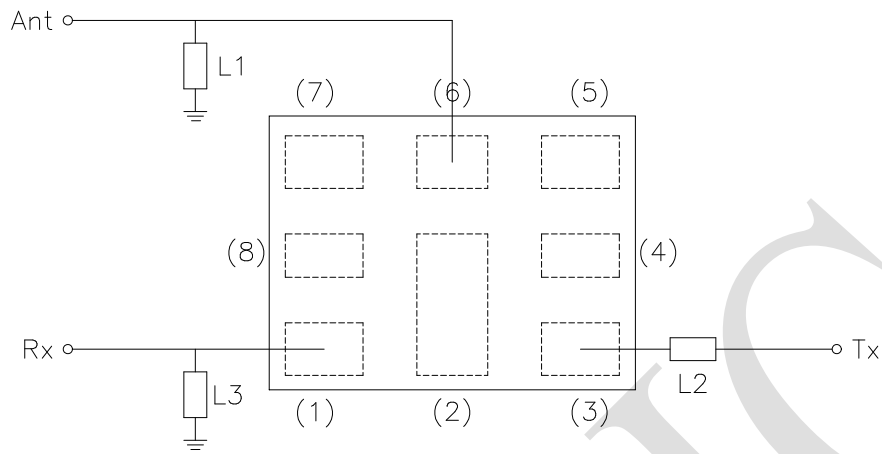
1	:	Rx
3	:	Tx
6	:	Ant
Other	:	GND

Land Pattern



Unit:mm

Application Circuit



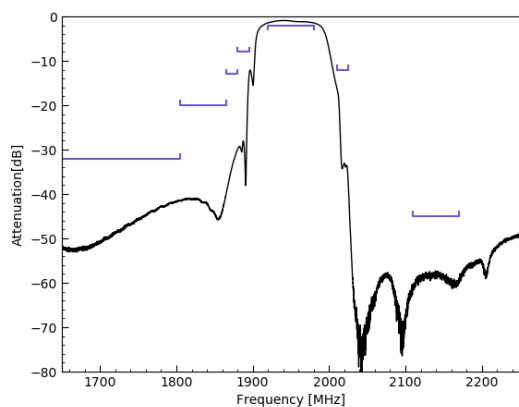
Port	Terminating Z	Matching Component
Ant	50 Ω	L1 : 3.6nH (Ideal inductor)
Tx	50 Ω	L2 : 2.2nH (Ideal inductor)
Rx	50 Ω	L3 : 12nH (Ideal inductor)

For ESD protection, external shunt inductor at all ports is recommended.

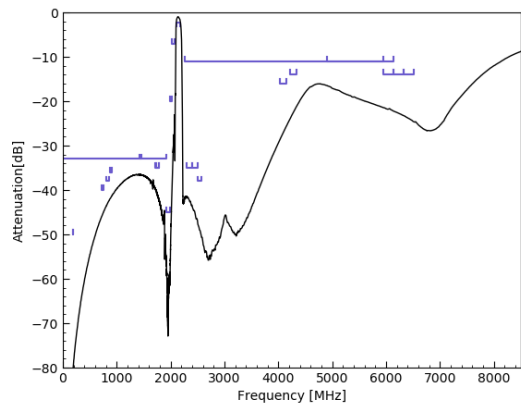
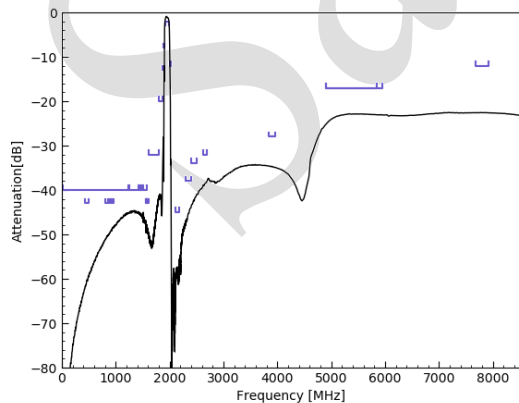
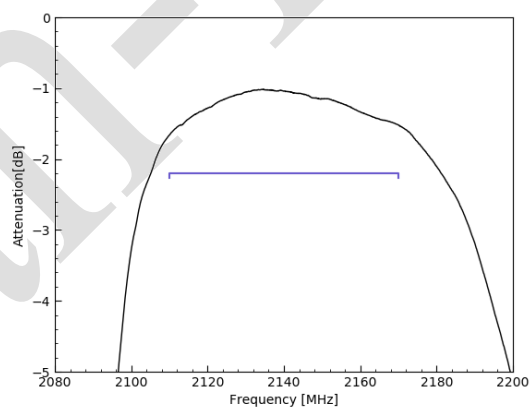
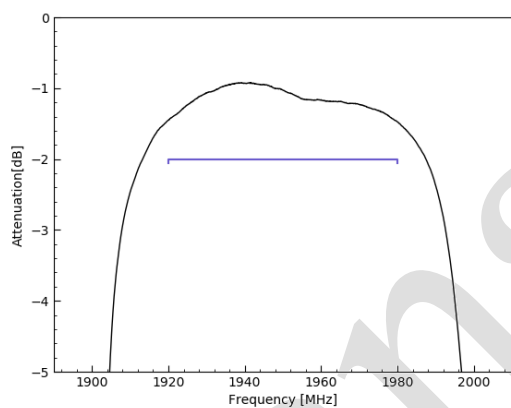
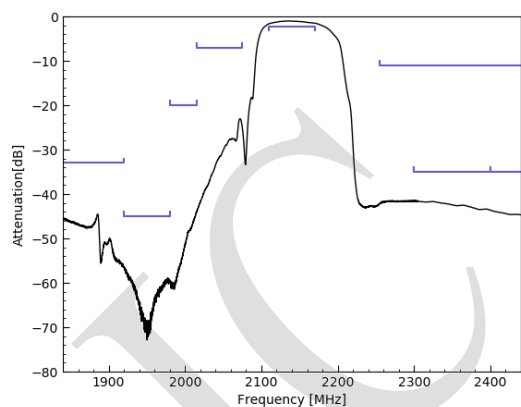
Electrical Characteristics

Band1 Duplexer

Tx to Ant



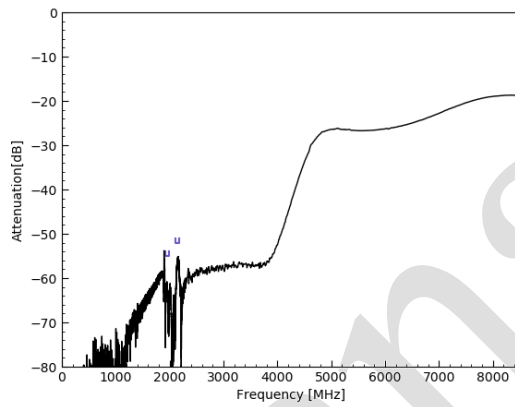
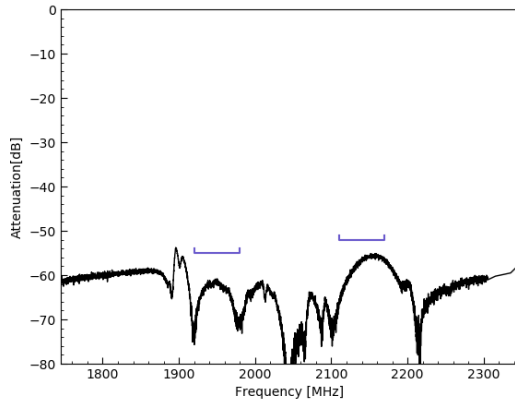
Ant to Rx



Electrical Characteristics

Band1 Duplexer

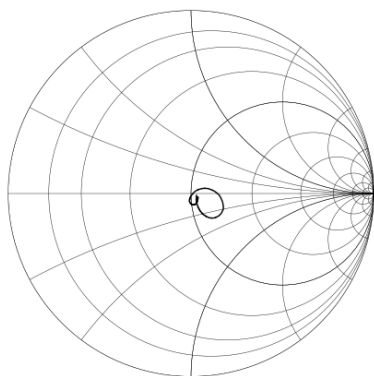
Tx to Rx



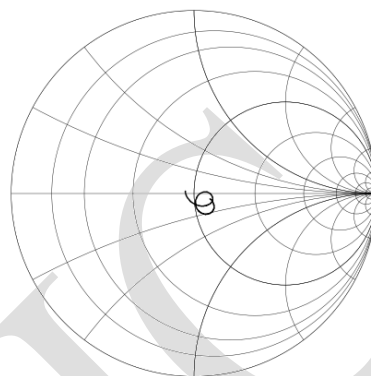
Electrical Characteristics

Band1 Duplexer

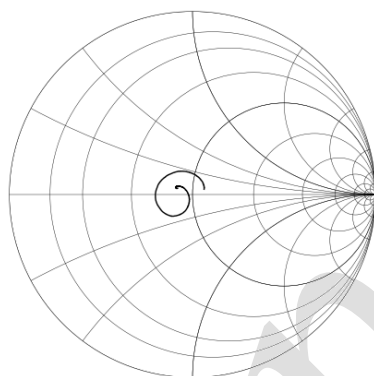
Ant Impedance (Tx band)



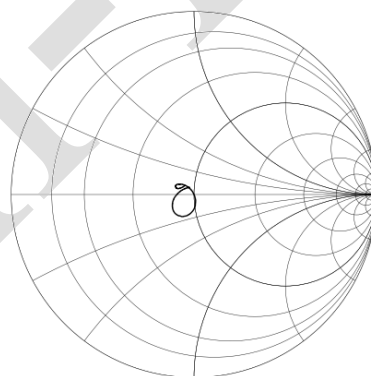
Ant Impedance (Rx band)



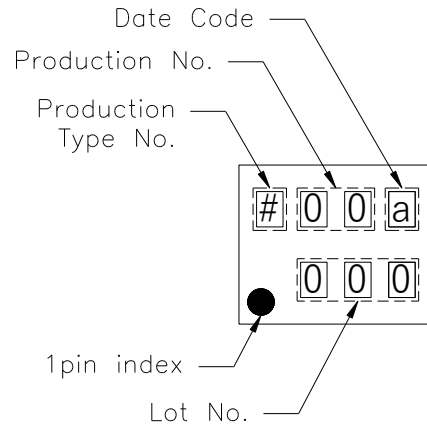
Tx Impedance



Rx Impedance



Marking Information



Production type No. (S: Sample, P: Production)

Product No. : 4E

Lot No. (Indicated by 0 ~ 9 or A to Z and a to z, except I, O, i, o and l)

Product date code :

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2023	n	p	q	r	s	t	u	v	w	x	y	z
2024	A	B	C	D	E	F	G	H	J	K	L	M
2025	N	P	Q	R	S	T	U	V	W	X	Y	Z
2026	a	b	c	d	e	f	g	h	j	k	l	m

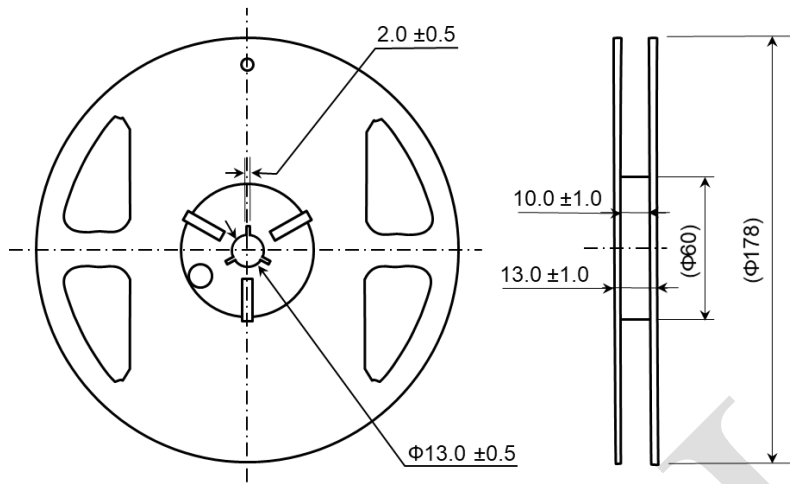
Technical drawing of a tape with a feeding hole. The drawing shows a side view of the tape with a central feeding hole. The dimensions are as follows:

- Overall width: 0.2 ± 0.03
- Distance from left edge to first hole: 0.72 ± 0.05
- Distance between holes: 2.0 ± 0.05 and 4.0 ± 0.1
- Feeding Hole diameter: $\Phi 1.55 \pm 0.05$
- Distance from last hole to right edge: 1.36 ± 0.02
- Overall height: 8.0 ± 0.10
- Distance from top edge to hole center: 1.75 ± 0.1
- Distance from bottom edge to hole center: 3.5 ± 0.05
- Distance from hole center to right edge: 0.2 ± 0.1
- Distance from hole center to right edge (inner): 1.78 ± 0.05
- Overall length: 4.0 ± 0.1
- Overall width (bottom): $\Phi 0.60 \pm 0.10$
- Direction: Tape Running Direction

The diagram illustrates the layout of a magnetic tape. It is divided into three main sections from left to right: **Vacant**, **Components Contained**, and **Vacant + Leader Part**. The tape runs from **END** on the left to **START** on the right, as indicated by the **TAPE RUNNING DIRECTION** arrow at the bottom.

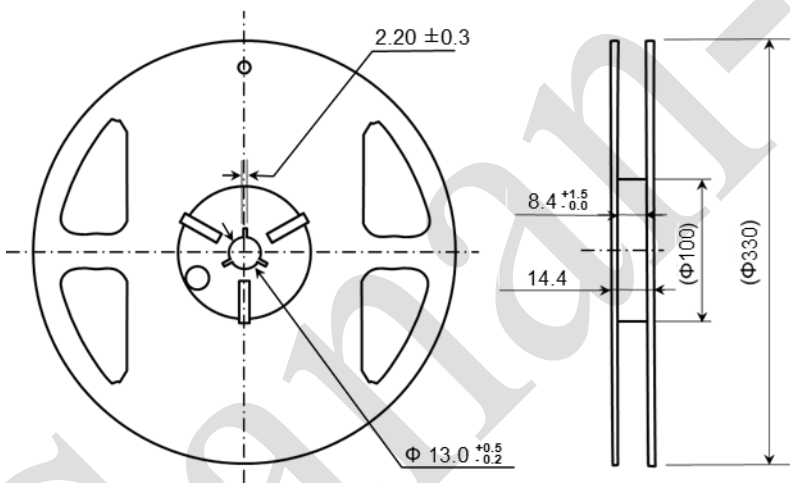
- Vacant Section:** The first section, starting from the **END** label, contains a series of circles and squares. A dimension line below this section indicates a length of **150mm min.**
- Components Contained Section:** The middle section, separated from the first by a double line, contains a series of circles and squares, some of which are shaded with diagonal lines.
- Vacant + Leader Part Section:** The final section, starting after the **Components Contained** section, contains a series of circles and squares. A dimension line below this section indicates a length of **400mm min.** leading to the **START** label.

Reel Information



$\Phi 178$ Reel Dimension

UNIT: mm



$\Phi 330$ Reel Dimension

UNIT: mm

Ordering Code

Part Number	Description
LBD2140G4E-SA	Bulk (few pieces)
LBD2140G4E-MB	Tape & Reel 3,000 pcs/reel
LBD2140G4E-MC	Tape & Reel 10,000 pcs/reel
LBD2140G4E-SZ	EVB

Revision History

Revision	Date	Description
0.1	Jun. 15, 2023	● Initial release

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