

BAW Components

BAW Duplexer

Cellular / LTE / Band 3

Series/type: QGBA1G74AASP3

Ordering code: QGBA1G74AASP3

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Version: 1.0



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1 Applications

- Multimode BAW duplexer for mobile telephone Cellular / LTE Band 3 systems
- Low insertion attenuation
- Low amplitude ripple

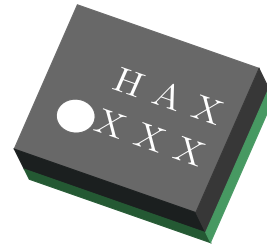
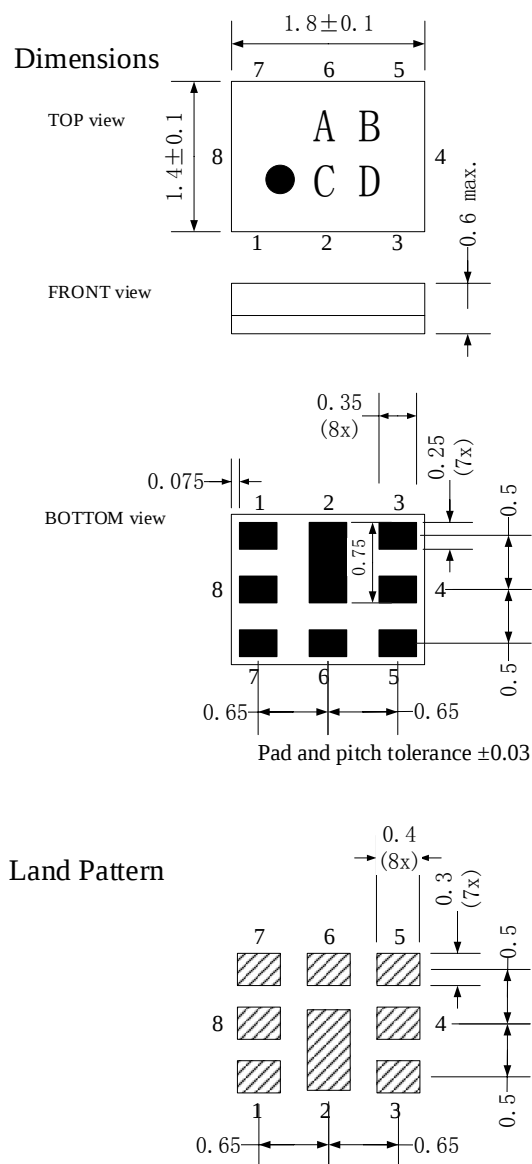


Figure 1: Picture of component with example of product marking.

2 Features

- Package size 1.8 mm x 1.4 mm
- Package height 0.6 mm (max.)
- RoHS compatible
- Package for Surface Mount Technology (SMT)
- Ni/Au-plated terminals
- Electrostatic Sensitive Device (ESD)
- Moisture Sensitivity Level 3 (MSL3)

3 Package



4 Pin configuration

- 1 Rx
- 3 Tx
- 6 ANT
- 2,4,5,7,8 Ground

Figure 2: Drawing of package with package height A = 0.6 mm (max.)

5 Matching circuit

- $R_1 : 50\Omega$ $R_2 : 50\Omega$ $R_3 : 50\Omega$
- $L_{p1} : 3.9nH$ $L_{p2} : 15nH$ $L_{p3} : 9.1nH$

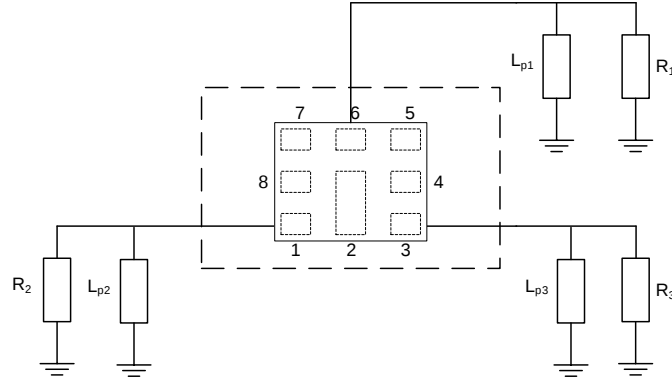


Figure 3: Schematic of matching circuit.

6 Absolute Maximum Ratings

Table 1: Absolute Maximum Ratings of Example Data Sheet

Parameter	Rating
Storage temperature	$T_{STG} = -40^{\circ}C$ to $+85^{\circ}C$
Operating temperature	$T_{opt} = -20^{\circ}C$ to $+85^{\circ}C$
DC voltage	$V_{DC} = 3.0V(max)$
Input power ¹	$P_{IN} = +29dBm$ 5000h $+55^{\circ}C$

¹Input signal shall be applied to TX port.

7 Characteristics

Temperature range for specification $T_{SPEC} = -20^{\circ}C \dots +85^{\circ}C$

ANT terminating impedance $Z_{ANT} = 50\Omega$ with par. L_{p1}

RX terminating impedance $Z_{RX} = 50\Omega$ with par. L_{p2}

TX terminating impedance $Z_{TX} = 50\Omega$ with par. L_{p3}

7.1 TX-ANT

Item		min.	typ.	max.	Unit	Note
Center Frequency		1747.5			MHz	
Insertion Loss	1710 to 1785 MHz		1.4	2.9	dB	Any 4.5MHz
Ripple Deviation	1710 to 1785 MHz		0.7	2.0	dB	Any 5MHz
VSWR	1710 to 1785 MHz		1.5	2.0		Ant
	1710 to 1785 MHz		1.5	2.0		Rx
Absolute Attenuation	10 - 1574.2 MHz	29	45		dB	
	1574.3 to 1576.5 MHz	29	31		dB	
	1597.6 to 1605.9 MHz	27	29		dB	
	1805 to 1880 MHz	44	51		dB	
	2110 to 2170 MHz	23	26		dB	
	2400 to 2500 MHz	20	22		dB	
	2620 to 2690 MHz	20	22		dB	
	3420 to 3570 MHz	34	40		dB	
	5130 to 5355 MHz	13	15		dB	

7.2 ANT-RX

Item		min.	typ.	max.	Unit	Note
Center Frequency		1842.5			MHz	
Insertion Loss	1805 to 1880 MHz		1.5	3.3	dB	
Ripple Deviation	1805 to 1880 MHz		0.5	2.3	dB	
VSWR	1805 to 1880 MHz		1.8	2.1		Ant
	1805 to 1880 MHz		1.5	2.1		Tx
Absolute Attenuation	10 to 1710 MHz	36	51		dB	
	1710 to 1785 MHz	46	53		dB	
	2400 to 2500 MHz	43	53		dB	
	2500 to 2570 MHz	41	57		dB	
	2570 to 3515 MHz	25	33		dB	

7.3 TX-RX

Item	Tx to Rx	min.	typ.	max.	Unit	Note
Isolation	1710 to 1785 MHz	49	53		dB_{INT}	Any 4.5MHz
	1805 to 1880 MHz	51	55		dB_{INT}	Any 4.5MHz

8 Transmission coefficients

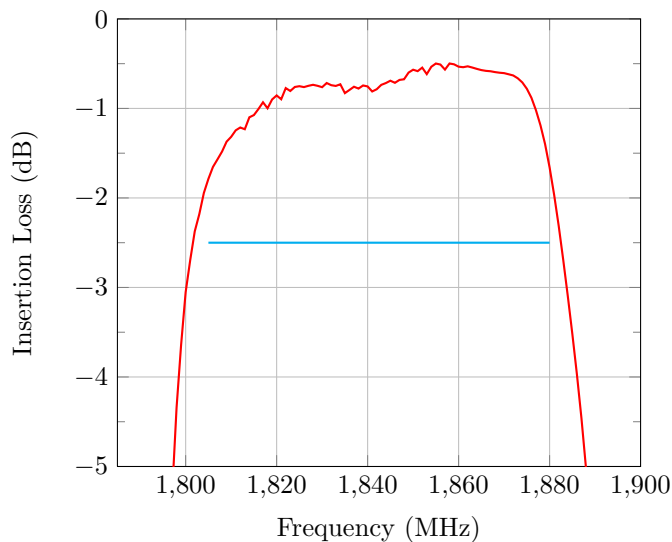


Figure 4: Tx-Ant Insertion Loss

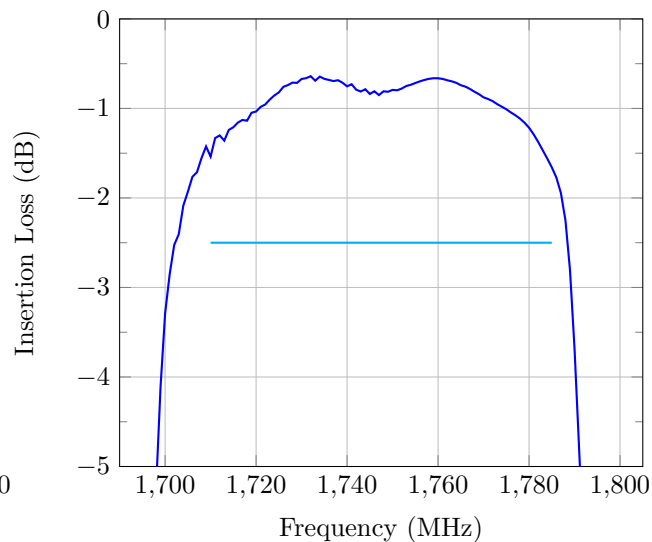


Figure 5: Ant-Rx Insertion Loss

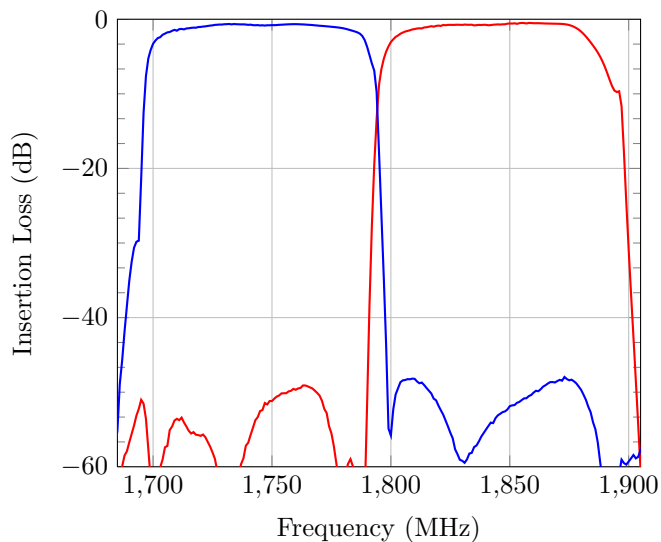


Figure 6: Tx Rejection in Rx Band and Rx Rejection in Tx Band

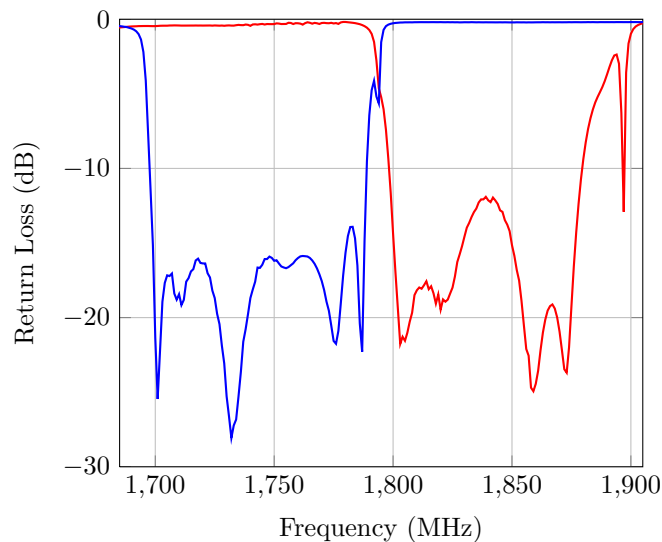


Figure 7: Tx and Rx Port Return Loss

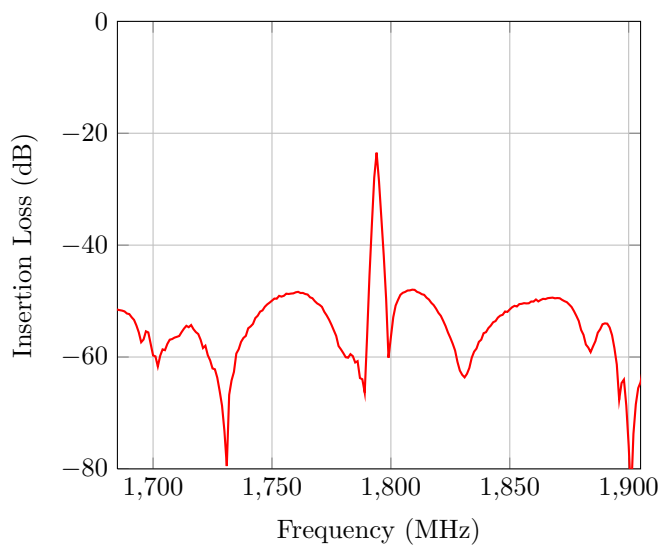


Figure 8: Tx-Rx Isolation

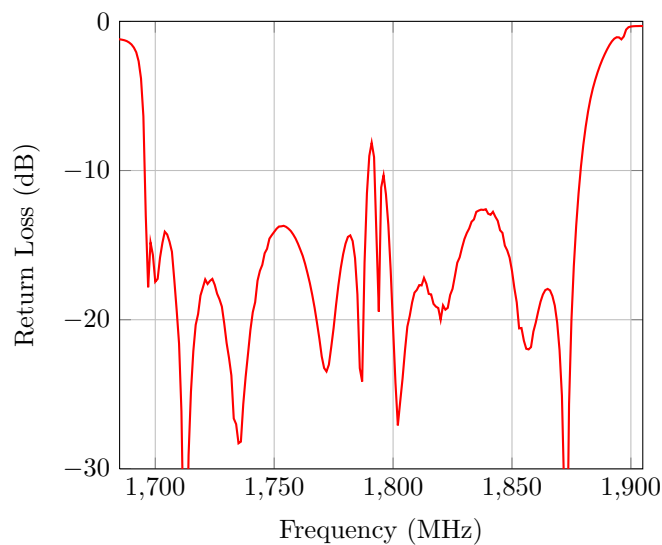


Figure 9: Antenna Port Return Loss

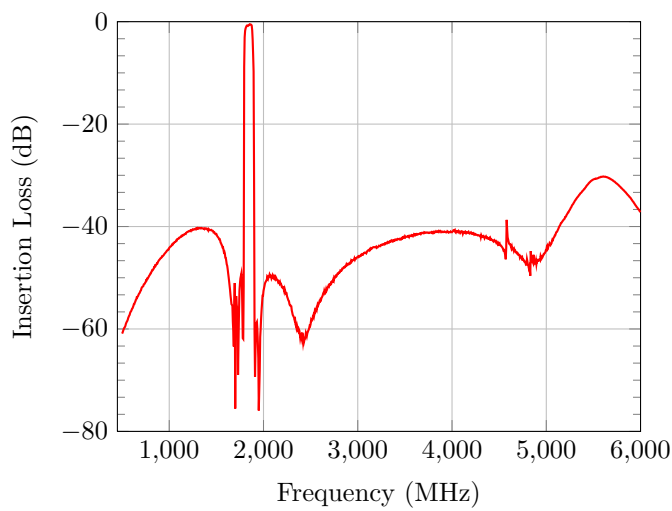


Figure 10: Tx-Ant Wideband Insertion Loss

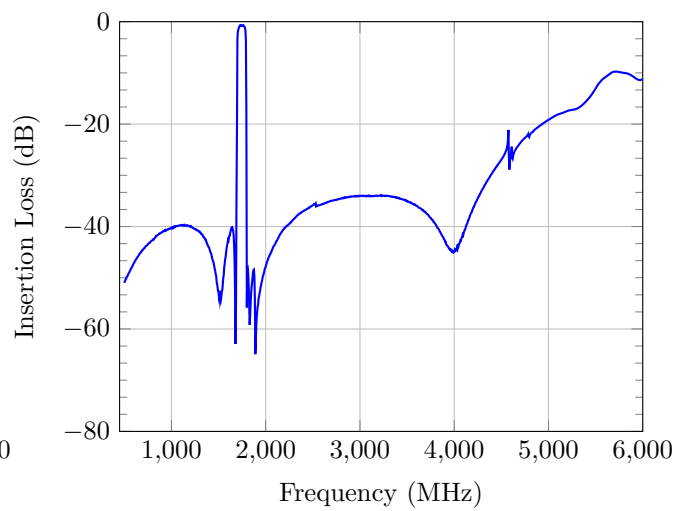
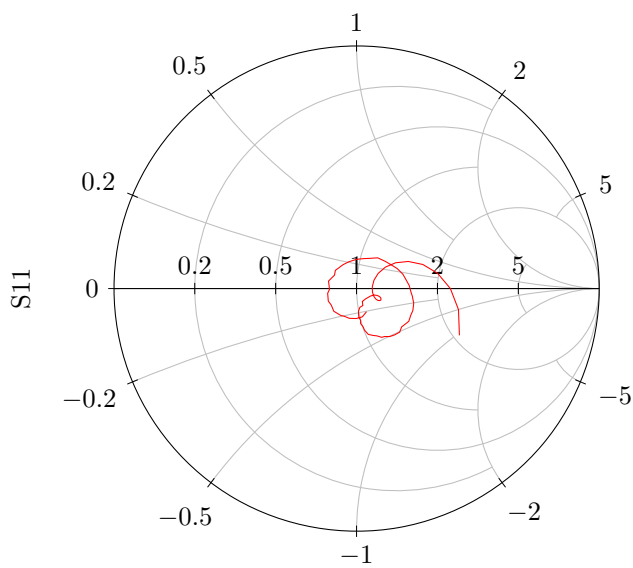
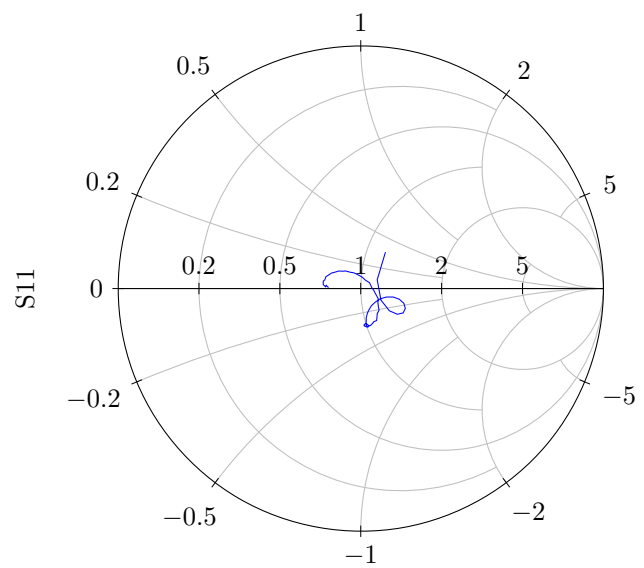
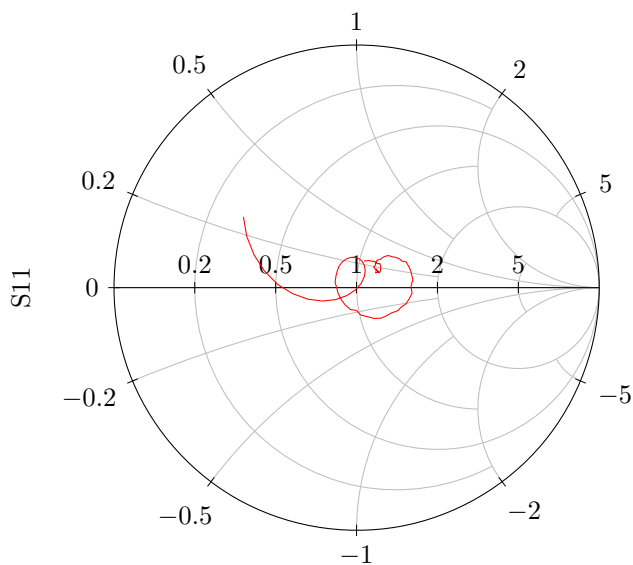
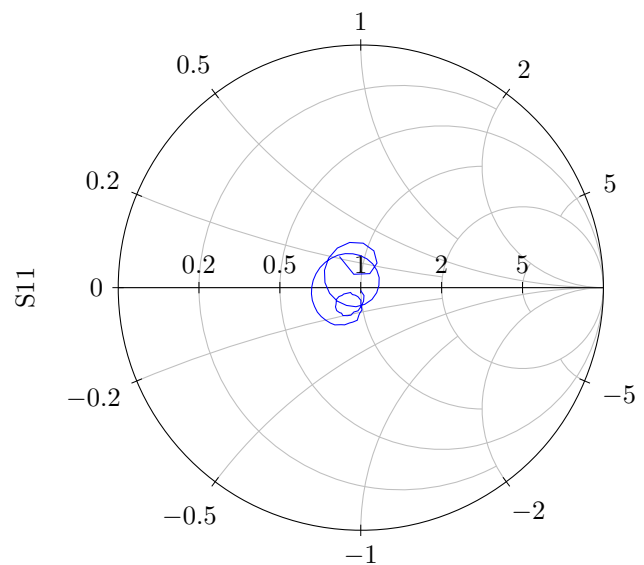


Figure 11: Ant-Rx Wideband Insertion Loss

Figure 12: Tx Port Impedance in Tx Band ($Z_0 = 50\Omega$)Figure 13: Rx Port Impedance in Rx Band ($Z_0 = 50\Omega$)Figure 14: Ant Port Impedance in Tx Band ($Z_0 = 50\Omega$)Figure 15: Ant Port Impedance in Rx Band ($Z_0 = 50\Omega$)

9 Soldering profile

The recommended soldering process is in accordance with IEC 60068-2-58-3rd edit and IPC/JEDECJ-STD-020B.

Table 2: Characteristics of recommended soldering profile for lead-free solder (Sn95.5Ag3.8Cu0.7).

Parameter	Rating
Ramp rate	≥ 3 K/s
Preheat	125 °C to 220 °C, 150 s to 210 s, 0.4 K/s to 1.0 K/s
T >220 °C	30 s to 70 s
T >230 °C	Min. 10 s
T >245 °C	Max. 20 s
T $\leq$ 255 °C	-
Peak temperature T_{peak}	220 °C $\pm$ 5°C
Wetting temperature T_{min}	230 °C $\pm$ 5°C for 10s $\pm$ 1s
Cooling rate	≥ 3 K/s
Soldering temperature T	Measured at solder pads

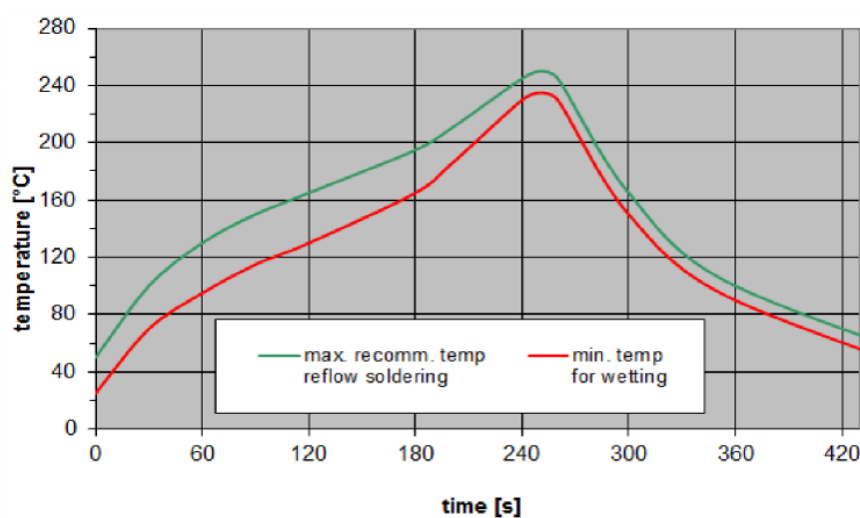


Figure 16: Drawing of reel (Recommended reflow profile for convection and infrared soldering – lead-free solder)

10 Tape and Reel

10.1 Tape

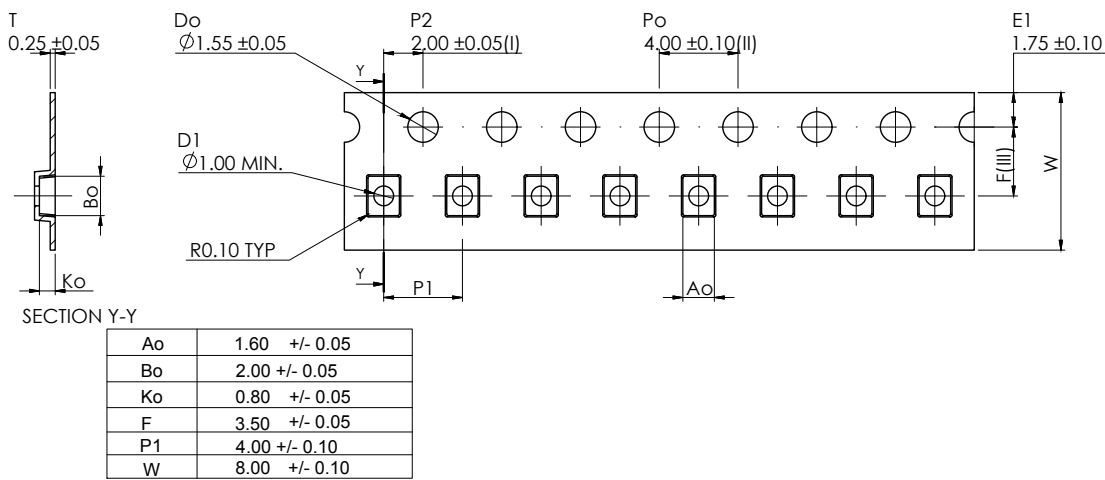


Figure 17: Drawing of tape (first-angle projection) with tape dimensions

10.2 Reel with diameter of 178 mm

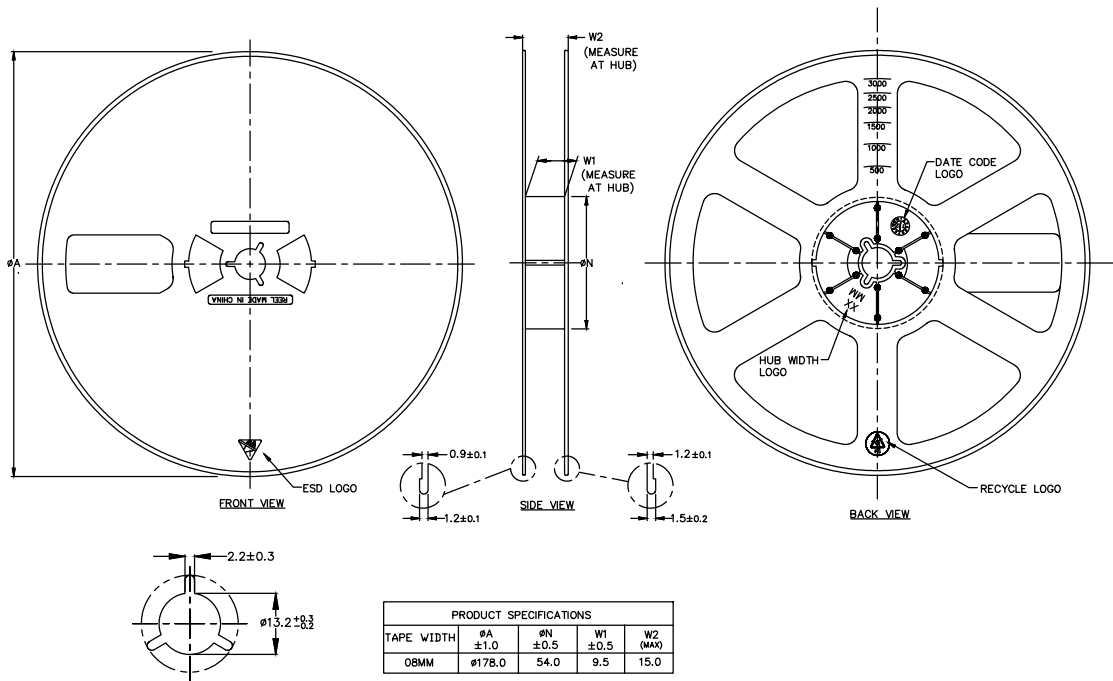


Figure 18: Drawing of reel (first-angle projection) with diameter of 180 mm