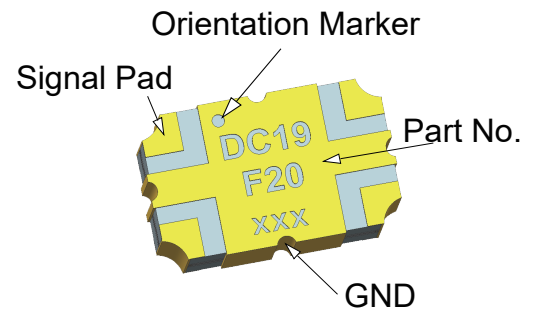


### Description

The products are widely used in China and global 4G/5G base station, 5G network coverage, BeiDou navigation antenna, vehicle-mounted high-precision navigation (unmanned) antenna and other applications. The products have miniaturization, low-loss, wide-bandwidth, high power density, high reliability, high cost-effective and other competitive advantages.



### Features:

- 1400-2700 MHz
- 4G/5G base station
- High Power
- Very Low Loss
- Tight Amplitude Balance
- High Isolation
- Production Friendly
- Tape and Reel

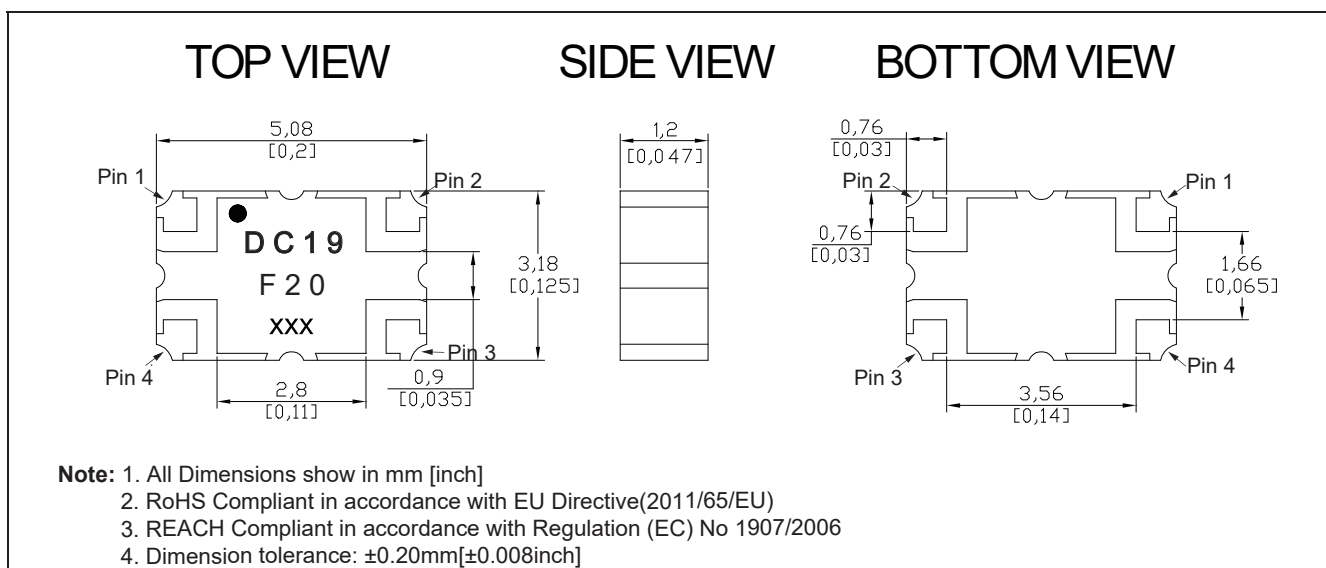
### Electrical Specifications

Frequency	Coupling	Directivity	VSWR
MHz	dB	dB Min	Max : 1
1400 - 2700	20.0±1.5	16.0	1.35
1700 - 2200	19.5±1.0	16.0	1.35
1805 - 1880	19.5±0.5	16.5	1.35
1930 - 1990	19.5±1.0	16.5	1.35
2110 - 2170	19.5±1.0	17.5	1.27
Insertion Loss	Power	Operating Temp.	
dB Max	Avg. CW Watts	°C	
0.30	25	-55 to +95	
0.30	25	-55 to +95	
0.25	25	-55 to +95	
0.25	25	-55 to +95	
0.30	25	-55 to +95	

### Notes:

1. All the above data are based on specified demo board.
2. Insertion loss: Thru board loss has been removed.

### Mechanical Outline



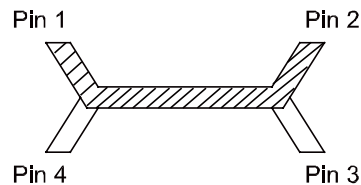
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### Directional Coupler Pin Configuration

The DC19F20 has an orientation marker to denote Pin1. Once port one has been identified the other ports are known automatically. Please see the chart below for clarification:



Pin 1	Pin 2	Pin 3	Pin 4
Input	Transmission	Isolate	Coupling
Transmission	Input	Coupling	Isolate

### Typical Performance Data (@25°C)

Frequency (MHz)	Coupling (dB)	Transmission (dB)	Insertion Loss (dB)	Directivity (dB)	Return Loss(dB)			
					S11	S22	S33	S44
1400	-20.64	-0.15	-0.11	-17.21	-18.80	-19.31	-18.13	-18.03
1465	-20.44	-0.18	-0.14	-17.05	-18.23	-18.65	-17.88	-17.86
1530	-20.17	-0.15	-0.10	-17.11	-17.72	-18.09	-17.79	-17.68
1595	-19.98	-0.20	-0.16	-17.02	-17.40	-17.61	-17.94	-17.70
1660	-19.86	-0.23	-0.18	-16.81	-17.21	-17.27	-18.24	-17.98
1725	-19.64	-0.20	-0.15	-16.97	-17.12	-17.10	-18.71	-18.40
1790	-19.46	-0.25	-0.20	-17.05	-17.15	-16.98	-19.44	-19.09
1855	-19.35	-0.23	-0.17	-17.10	-17.31	-16.93	-20.33	-19.97
1920	-19.16	-0.25	-0.20	-17.22	-17.60	-17.10	-21.67	-21.15
1985	-19.04	-0.27	-0.21	-17.47	-18.07	-17.29	-23.31	-22.83
2050	-18.92	-0.21	-0.16	-17.92	-18.63	-17.83	-25.32	-24.79
2115	-18.84	-0.32	-0.26	-18.44	-19.45	-18.46	-27.68	-27.58
2180	-18.72	-0.26	-0.20	-18.56	-20.45	-19.14	-31.03	-31.76
2245	-18.67	-0.13	-0.07	-18.96	-21.61	-20.19	-33.42	-36.82
2310	-18.73	-0.25	-0.19	-19.56	-22.97	-21.31	-33.20	-37.94
2375	-18.73	-0.26	-0.20	-20.15	-24.79	-23.25	-31.20	-33.64
2440	-18.79	-0.23	-0.17	-20.69	-26.74	-25.60	-29.48	-30.49
2505	-18.77	-0.18	-0.12	-21.35	-29.60	-28.70	-28.28	-28.30
2570	-18.94	-0.18	-0.13	-22.07	-32.45	-34.69	-28.04	-27.74
2635	-19.07	-0.24	-0.18	-23.21	-35.44	-41.81	-28.13	-27.37
2700	-19.06	-0.19	-0.13	-23.87	-35.01	-36.79	-28.92	-27.61

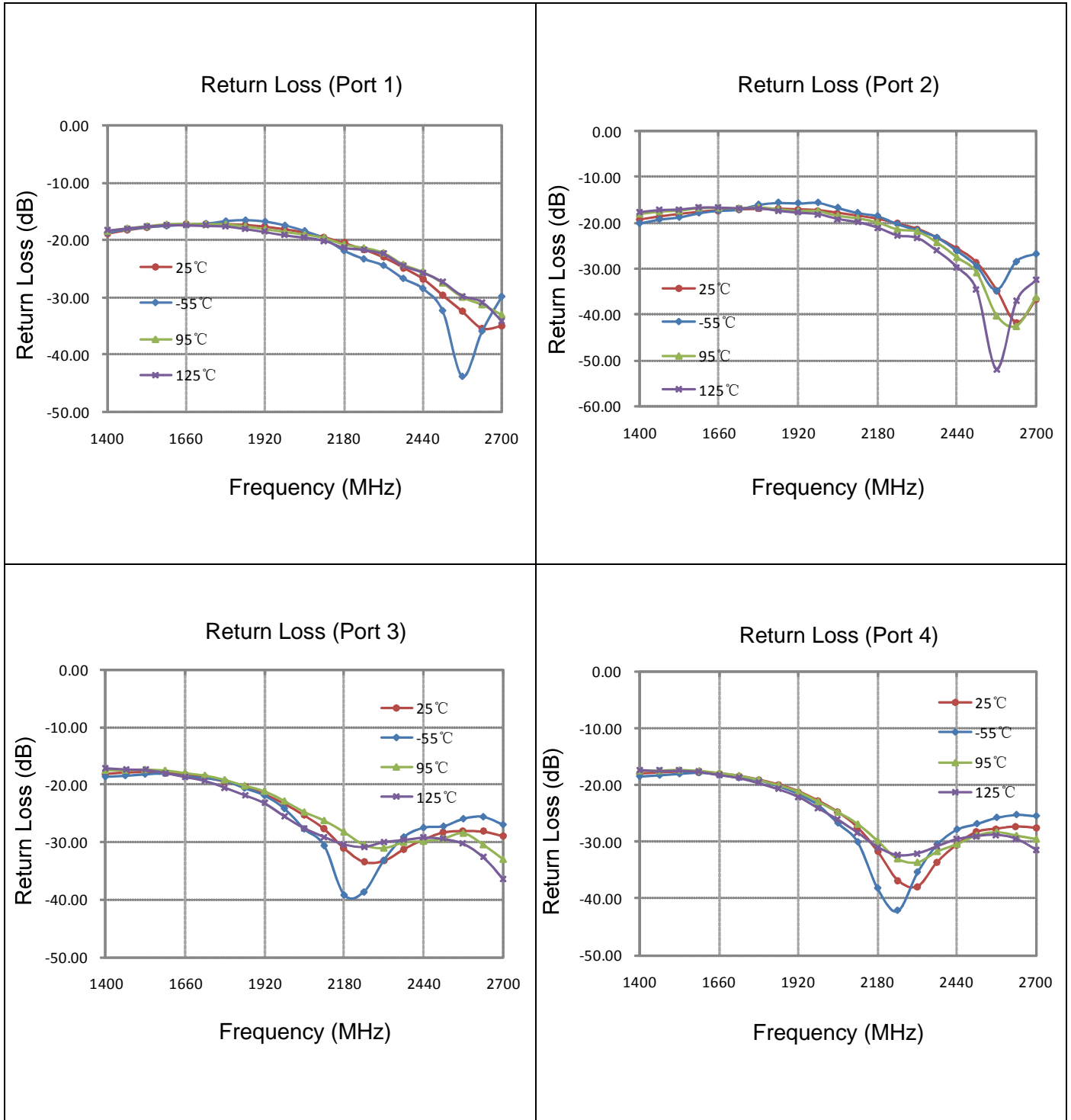
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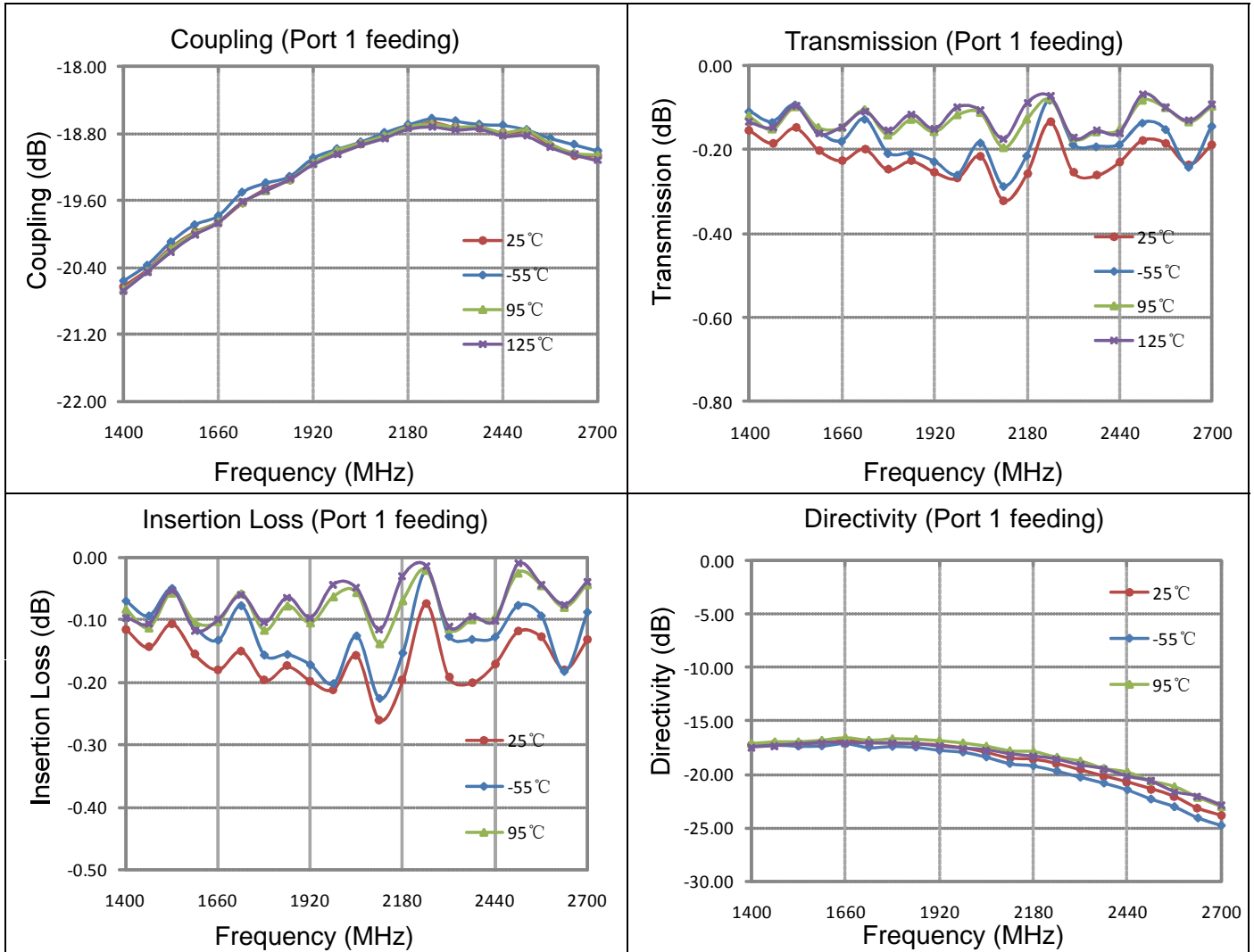
### Typical Performance (-55°C, 25°C, 95°C, 125°C:1400-2700 MHz)



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**Typical Performance (-55°C, 25°C, 95°C & 125°C: 1400-2700 MHz)**

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### Description of Measured Specifications

Parameter	Description
<b>VSWR</b>	Voltage standing wave ratio, the impedance match to 50 $\Omega$ , the ideal value is 1:1.
<b>Return Loss</b>	Loss of signal power resulting from the reflection caused by discontinuity of transmission line.
<b>Insertion Loss</b>	The input power divided by sum of power at the coupling port & transmission port.
<b>Coupling</b>	The input power divided by the power at coupling port.
<b>Transmission</b>	The input power divided by the power at transmission port.
<b>Directivity</b>	The power at the coupling port divided by the power at the isolated.

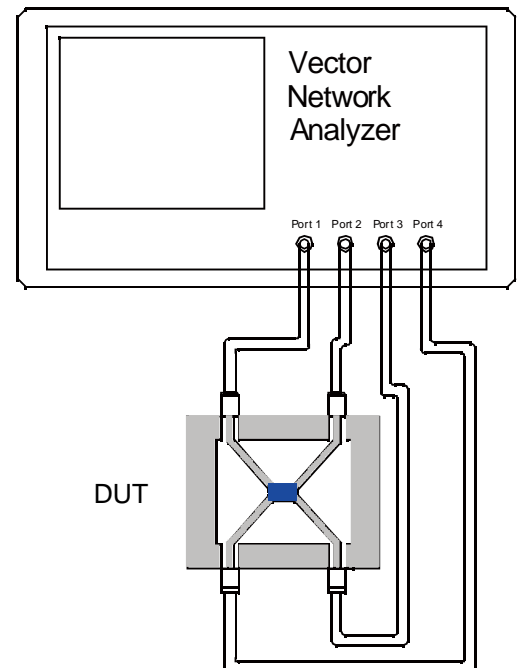
### Test Method

1. Calibrating your vector network analyzer.
2. Connect the VNA 4 Port to DUT respectively.
3. Measure the data of coupling through port 1 to port 4(S41).
4. Measure the data of transmission through port 1 to port 2(S21).
5. Measure the data of isolation through port 1 to port 3(S31).
6. Measure the data of return loss port 1, port 2, port 3 & port 4.
7. According to the above data to calculate insertion loss, directivity.

#### Note:

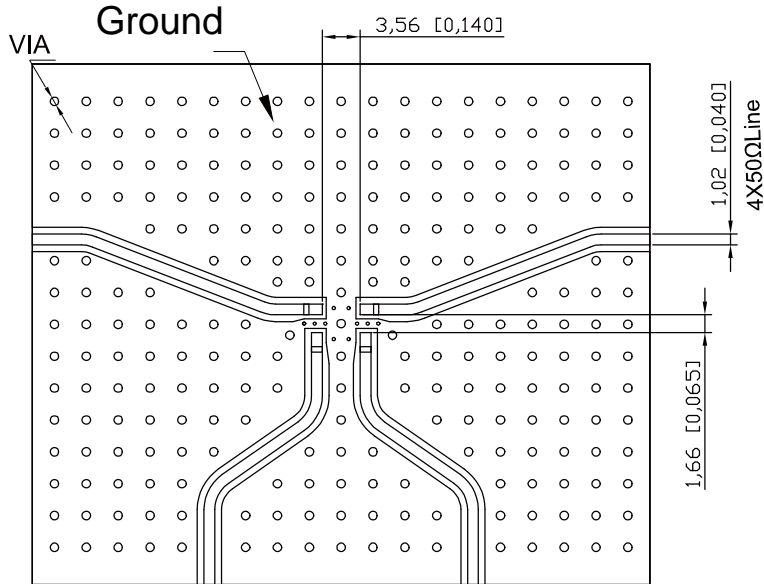
1. When calculating insertion loss at room temperature, coupling & transmission data both need remove demo board loss. Please see demo board loss data below the table :

Frequency Range(MHz)	Demo Board Loss (dB) @25 $^{\circ}$ C
<b>470-860</b>	0.06~0.10
<b>800-1000</b>	0.10~0.15
<b>1200-1700</b>	0.15~0.20
<b>1700-2000</b>	0.20~0.25
<b>2000-2300</b>	0.20~0.25
<b>2300-2700</b>	0.25~0.30



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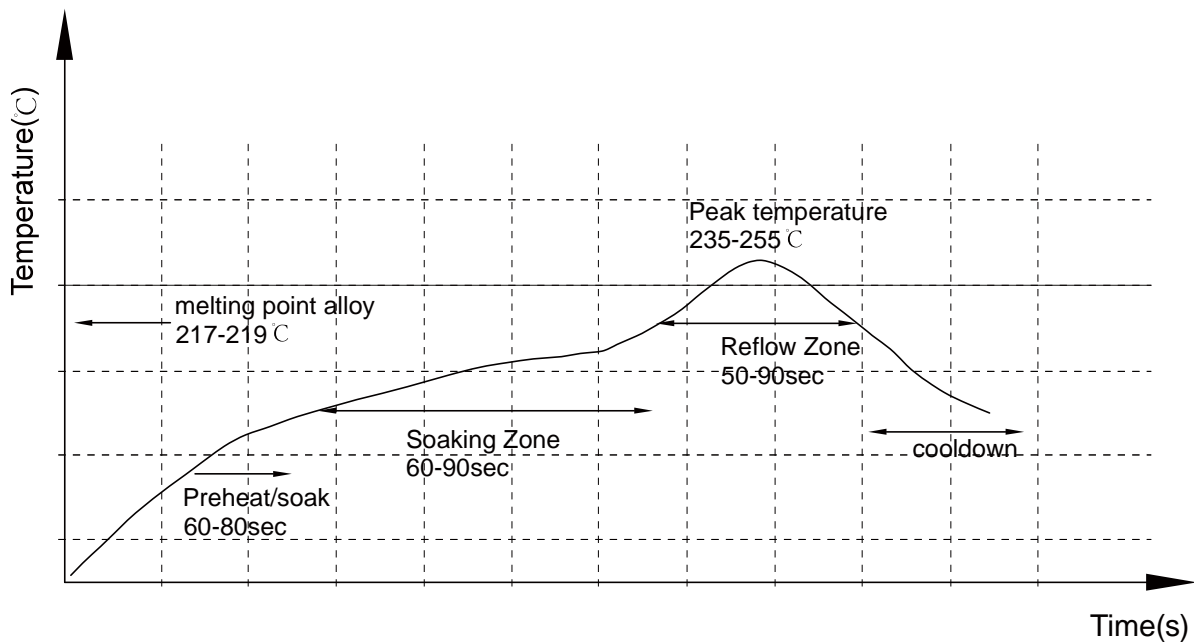
### Recommended PCB Layout



#### NOTE:

1. 50Ω line width is shown above designing from  $\epsilon_r=3.66$  THK=20mil copper 1 OZ
2. Bottom side of the PCB is continuous ground plane.
3. All dimensions shown in mm [inch].

### Reflow Profile



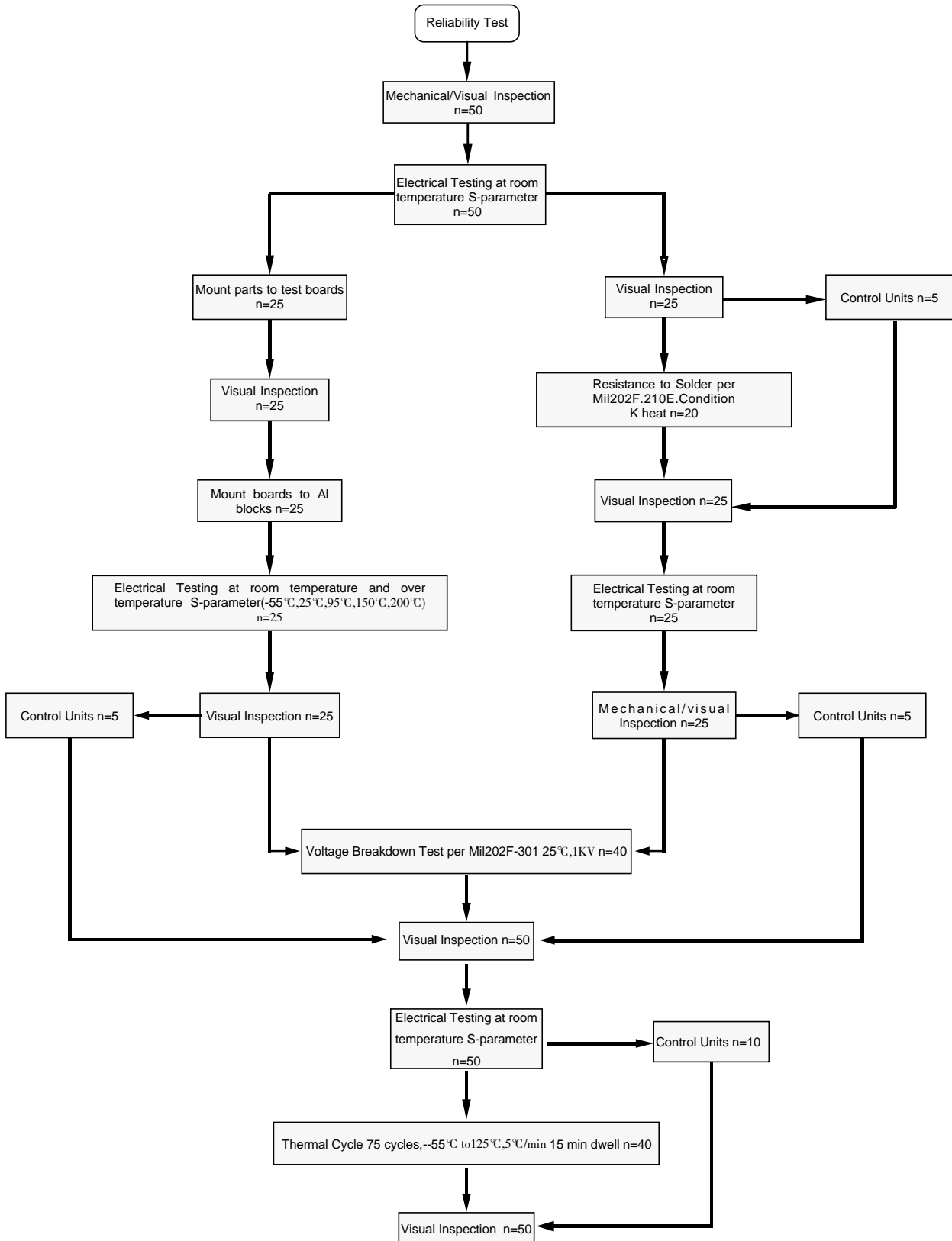
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### Reliability Test Flow



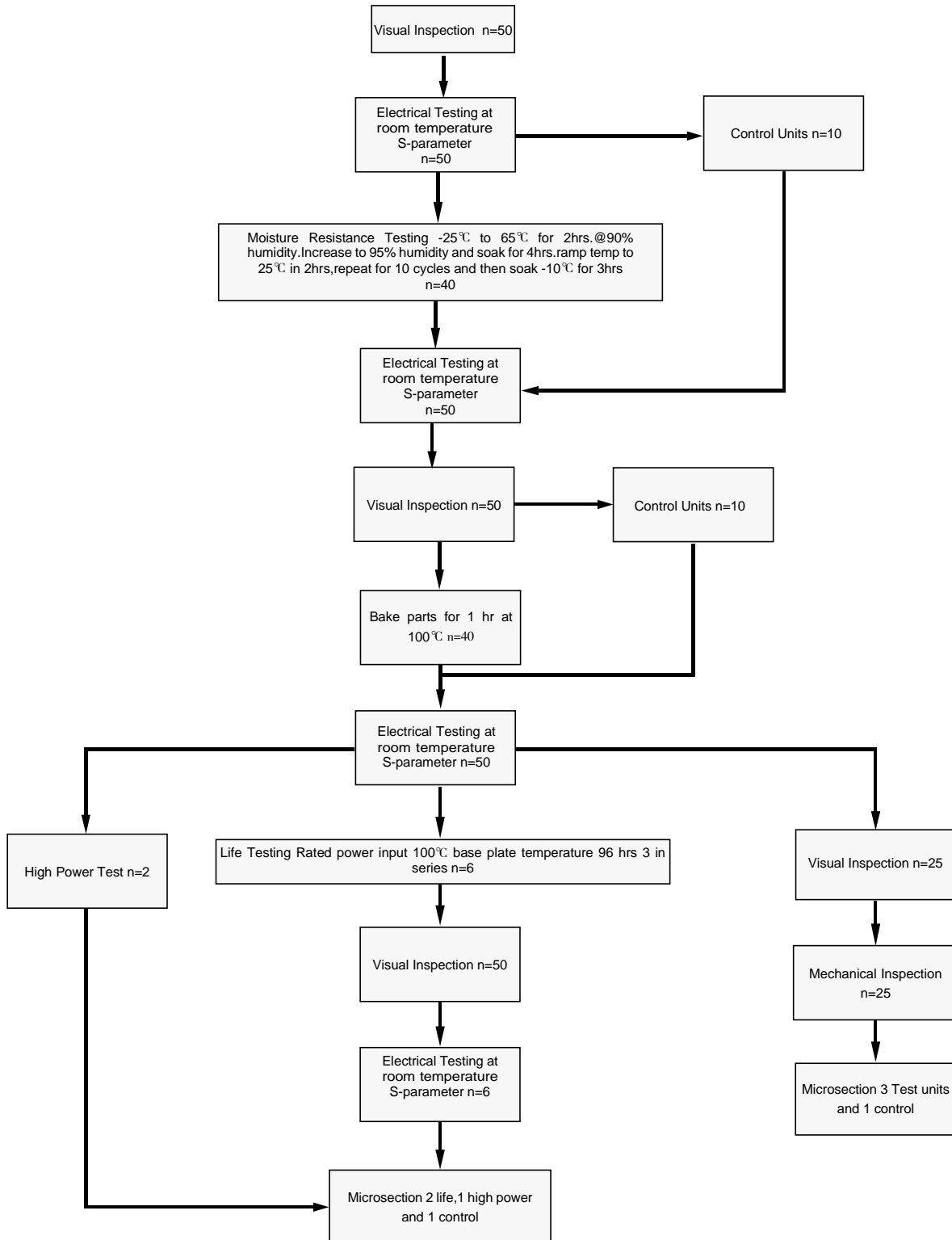
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### Reliability Test Flow



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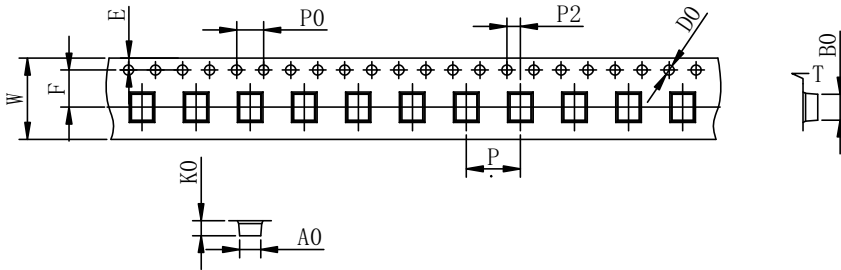
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### Tape and Reel Drawing

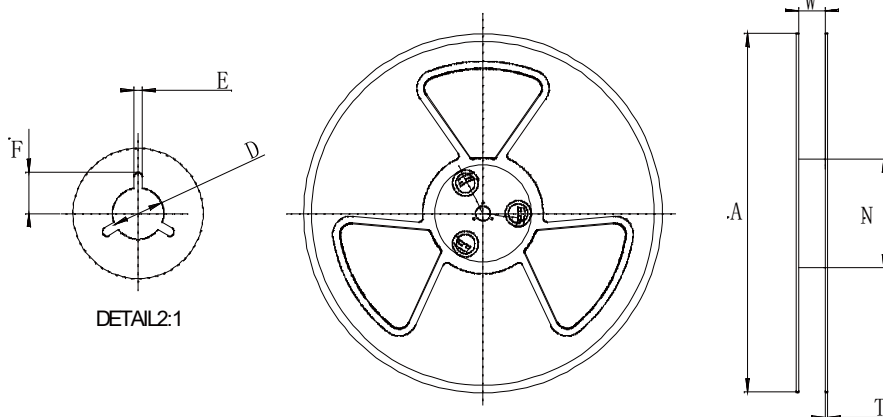
 Feeding Direction
   



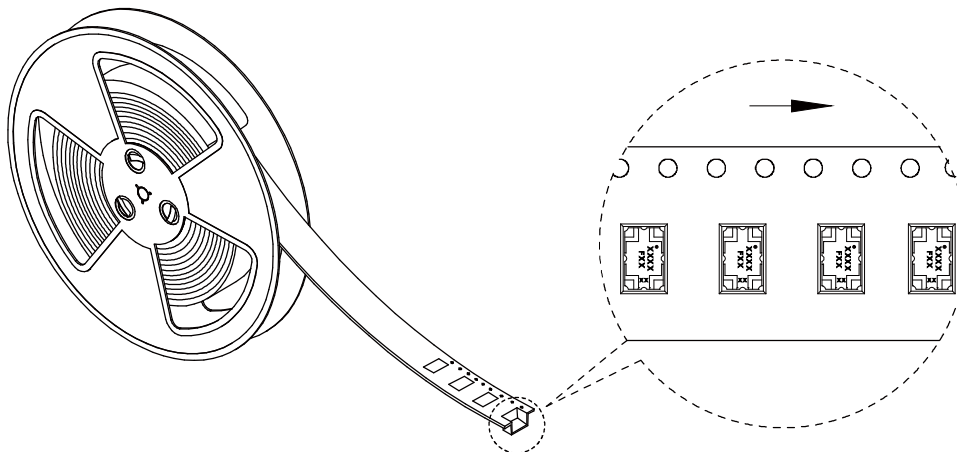
ITEM	W	A0	B0	K0	K1	P	F	E	D	P0	P2	t	7'
DIM(mm)	12.0	3.45	5.35	1.5		8	5.5	1.75	1.50	4.00	2.00	0.30	P/R
TOLE	+0.30 -0.30	+0.10 -0.10	+0.10 -0.10	+0.10 -0.10	+0.10 -0.10	+0.10 -0.10	+0.10 -0.10	+0.10 -0.10	+0.10 -0.00	+0.10 -0.10	+0.10 -0.10	+0.05 -0.05	1000pcs

Notice:

- A.10 Sprocket hole pitch cumulative tolerance is 0.2mm.
- B. Carrier camber shall be not more than 1mm per 100mm through a length of 250mm.
- C. All dimensions meet EIA-418-B requirements.
- D. A0 & B0 measured as indicated.
- E. K0 measured from a place on the inside bottom of the pocket to top surface of carrier.
- F. Material: PE 100
- G. Thickness: 0.30±0.05mm
- H. 1000 units (maximum) / T&R



Symbol	Dimensions(mm)
W	12.5±0.4
A	177±0.5
N	63±0.3
T	1.8±0.2
E	2.1±0.3
F	10.75±0.3
D	13.5+0.5/-0.2



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