

### Description

The DC2500G35 is a low profile, high performance 35dB directional coupler. This component is suitable for feed-forward amplifier and signal sampling circuits where low insertion loss, high directivity is required. It can be used in power applications up to 250 Watts.

Parts have been subjected to rigorous qualification testing and they are using materials with coefficients of thermal expansion (CTE) compatible with common substrates such as FR4, G-10, RF-35, RO4350B and polyimide.



### Features:

- 2400-2500 MHz
- low insertion loss, 0.15 dB Typ.
- high power, up to 250W.
- DC current pass through input to output

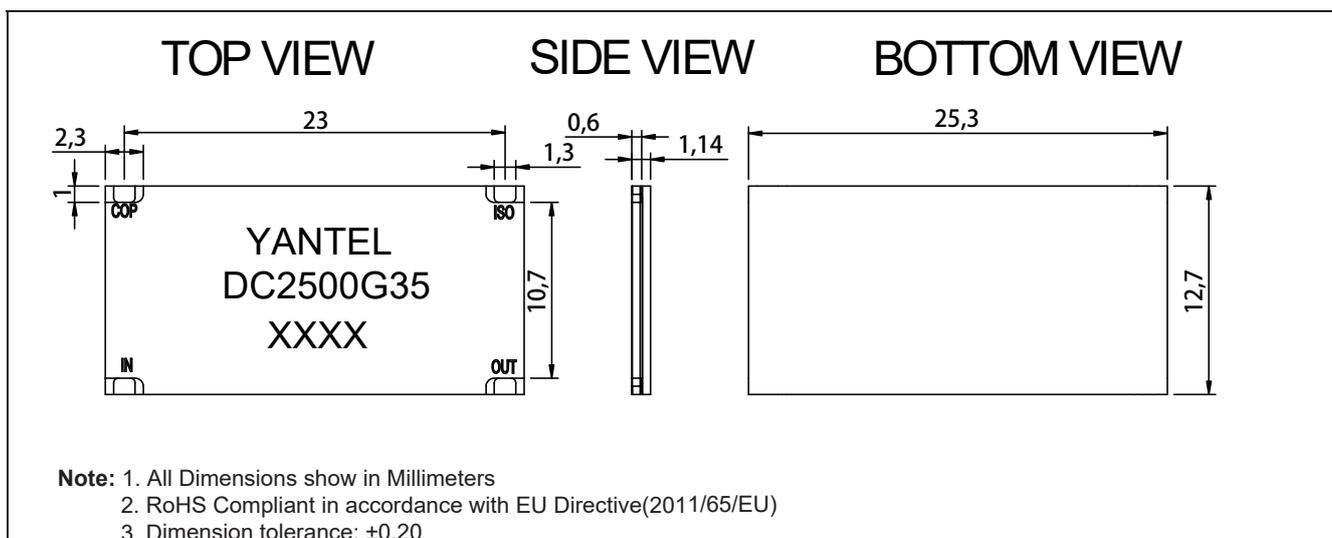
### Electrical Specifications

Frequency MHz	Coupling dB	Directivity dB Min	Coupling flatness dB
2400~2500	35±1.5	19.5	0-1
<b>Insertion Loss</b> dB Max	<b>Power</b> Avg. CW Watts	<b>Operating Temp.</b> °C	
0.20	250	-55 to +125	

Note:

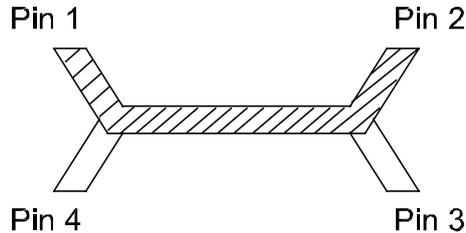
1. All above test data resulting from specify demo board.
2. Insertion loss has removed the thru board loss.

### Mechanical Outline



### Directional Coupler Pin Configuration

The DC2500G35 has an orientation marker to denote Pin 1. Once port one has been identified the other ports are known automatically. Please see the chart below for clarification:



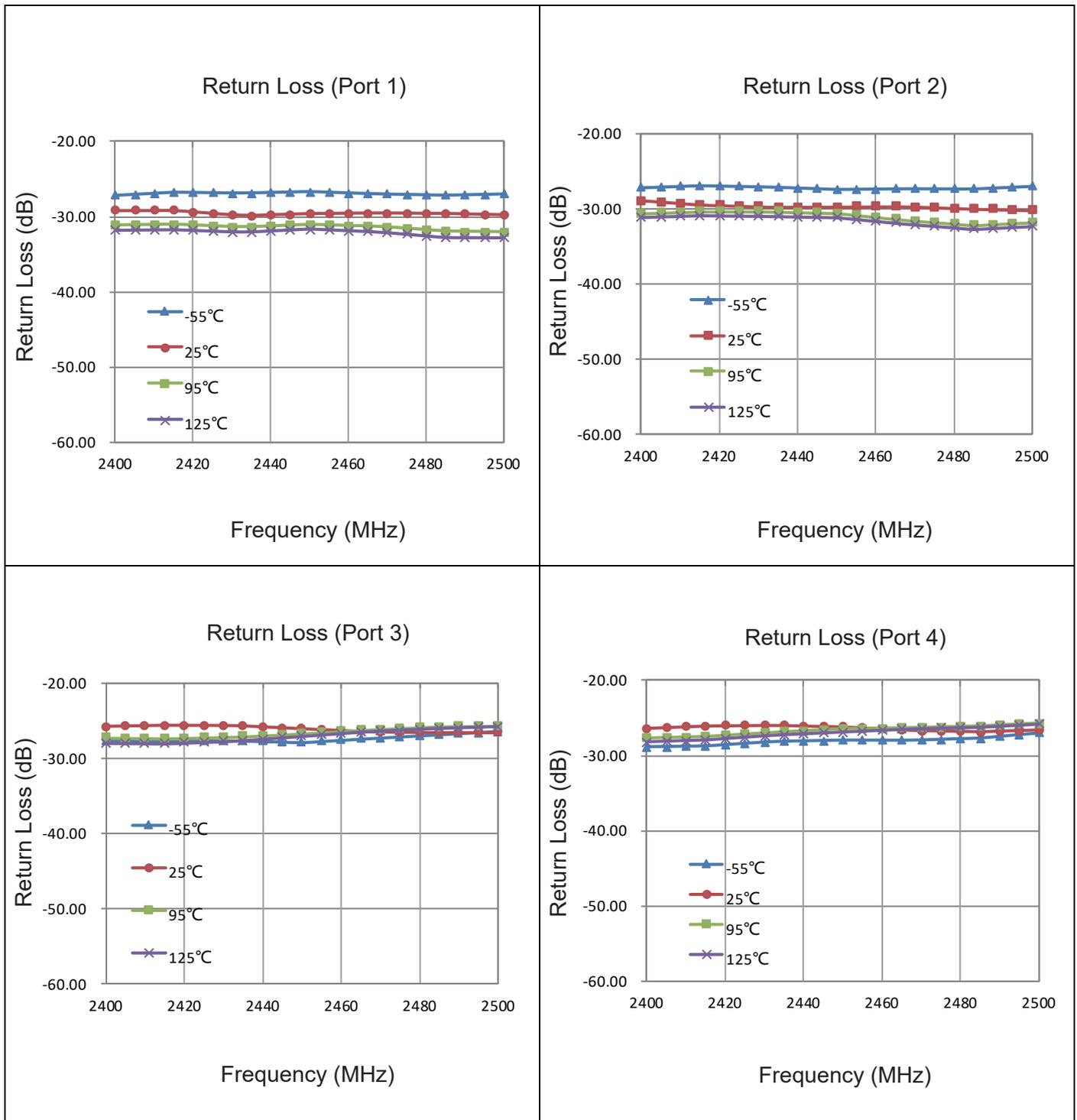
### Port Function Configurations

Input	Output	Coupled	Isolation
1	2	4	3
2	1	3	4
3	4	2	1
4	3	1	2

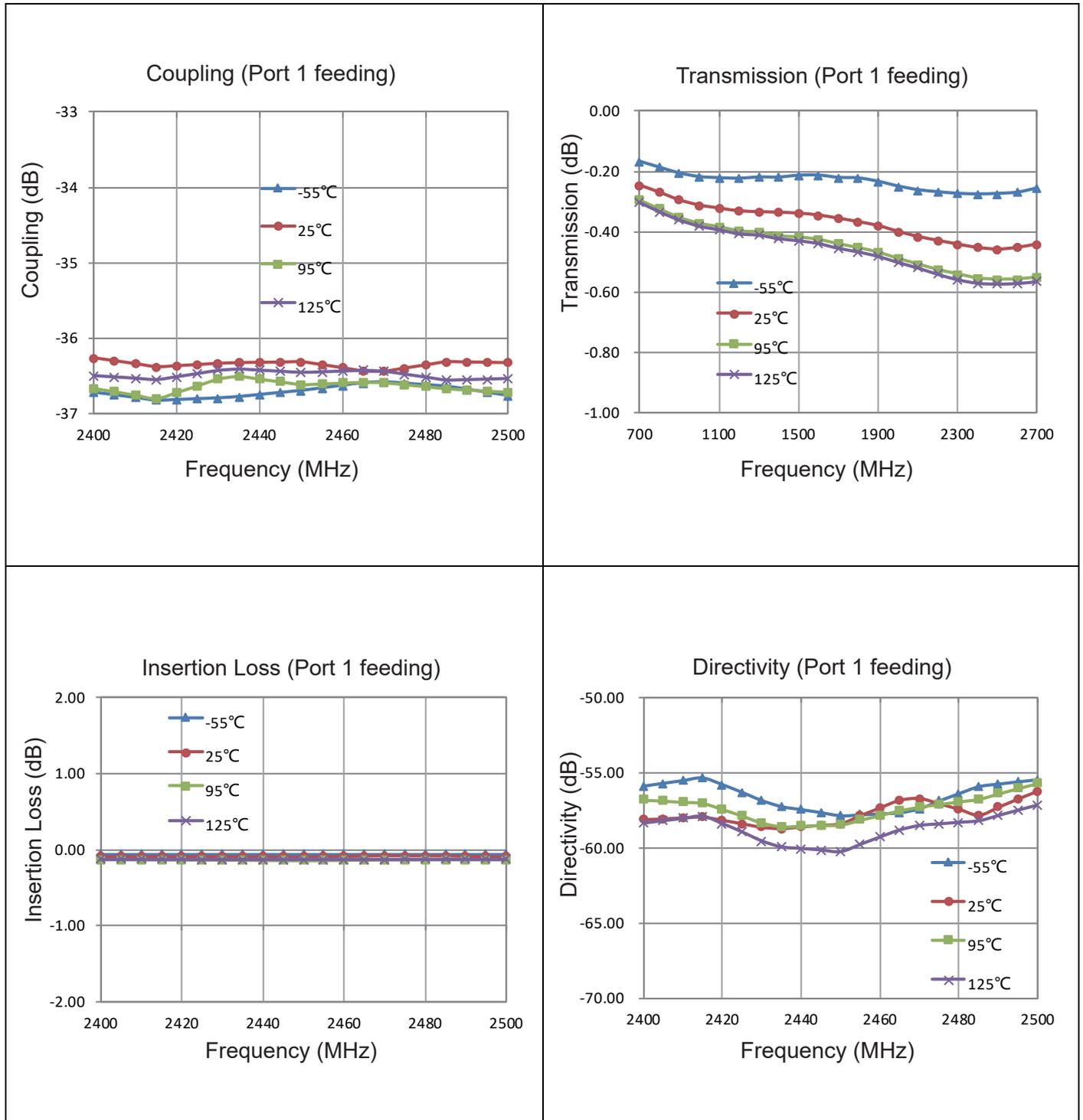
### Typical Performance Data (@25 °C)

Frequency (MHz)	Coupling (dB)	Transmission (dB)	Insertion Loss (dB)	Directivity (dB)	Return Loss(dB)			
					S11	S22	S33	S44
2400	-36.27	-0.09	-0.09	-21.69	-29.13	-28.98	-25.75	-26.36
2405	-36.30	-0.09	-0.09	-21.60	-29.13	-29.15	-25.71	-26.25
2410	-36.34	-0.09	-0.09	-21.50	-29.12	-29.32	-25.68	-26.13
2415	-36.38	-0.09	-0.09	-21.41	-29.12	-29.50	-25.64	-26.02
2420	-36.37	-0.09	-0.09	-21.63	-29.32	-29.59	-25.64	-25.98
2425	-36.35	-0.09	-0.09	-21.87	-29.55	-29.66	-25.65	-25.95
2430	-36.34	-0.09	-0.09	-22.12	-29.78	-29.74	-25.66	-25.92
2435	-36.33	-0.09	-0.09	-22.22	-29.87	-29.78	-25.71	-25.94
2440	-36.32	-0.09	-0.09	-22.11	-29.77	-29.78	-25.81	-26.01
2445	-36.32	-0.09	-0.09	-22.01	-29.68	-29.77	-25.92	-26.08
2450	-36.32	-0.09	-0.09	-21.90	-29.59	-29.76	-26.03	-26.16
2455	-36.35	-0.09	-0.09	-21.33	-29.56	-29.75	-26.13	-26.30
2460	-36.39	-0.09	-0.09	-20.76	-29.53	-29.74	-26.23	-26.45
2465	-36.43	-0.09	-0.09	-20.23	-29.50	-29.73	-26.33	-26.59
2470	-36.44	-0.09	-0.09	-20.11	-29.49	-29.76	-26.40	-26.70
2475	-36.40	-0.09	-0.09	-20.50	-29.52	-29.85	-26.42	-26.76
2480	-36.36	-0.09	-0.09	-20.91	-29.54	-29.93	-26.45	-26.81
2485	-36.32	-0.09	-0.09	-21.33	-29.57	-30.02	-26.47	-26.86
2490	-36.32	-0.09	-0.09	-20.80	-29.63	-30.08	-26.47	-26.78
2495	-36.32	-0.09	-0.09	-20.25	-29.70	-30.13	-26.47	-26.69
2500	-36.33	-0.09	-0.09	-19.73	-29.77	-30.19	-26.47	-26.60

### Typical Performance (-55°C,25°C,95°C,125°C: 2400-2500 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.

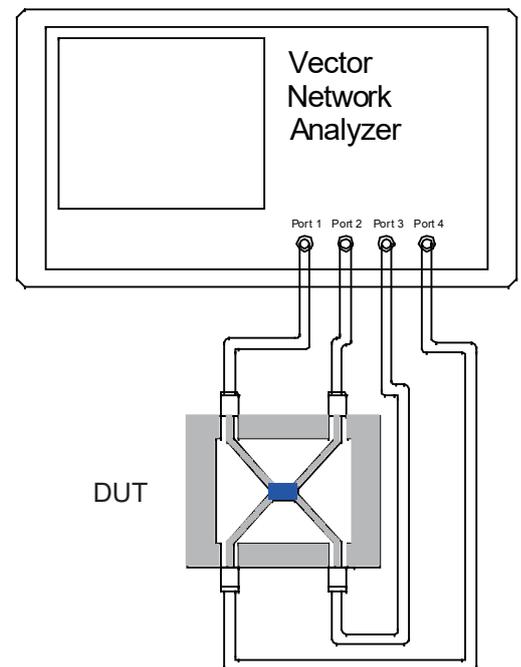
### Test Method

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.

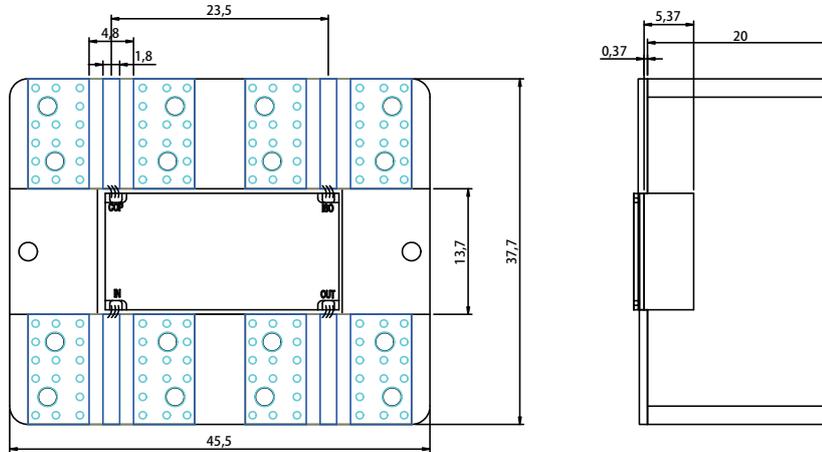
Note:

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°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



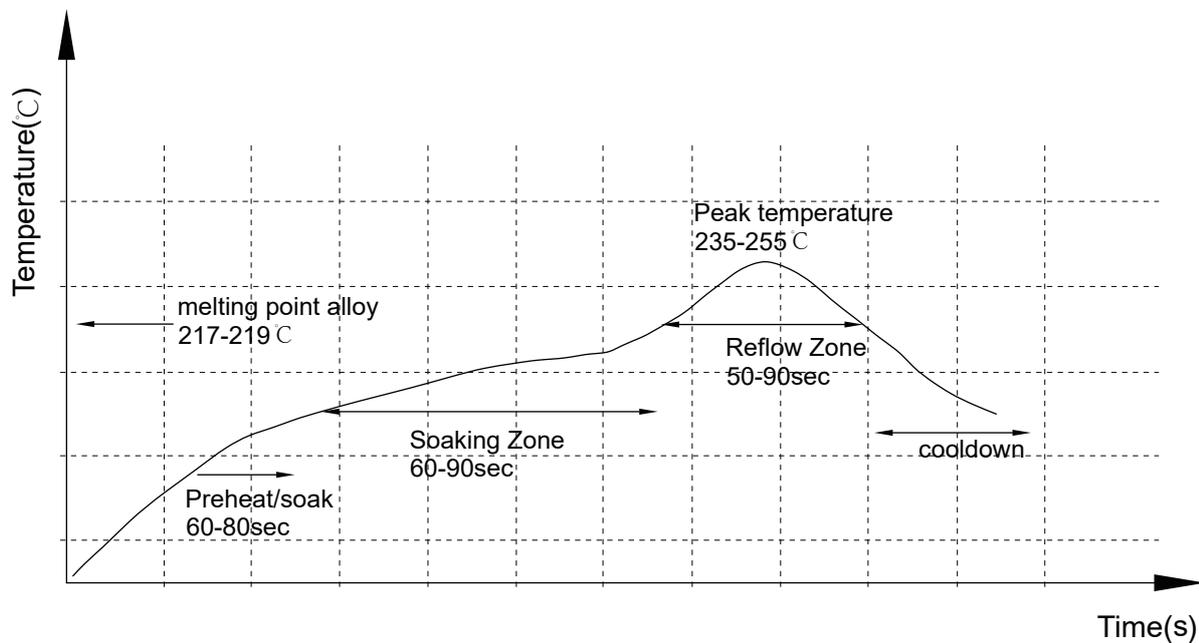
### Recommended PCB Layout



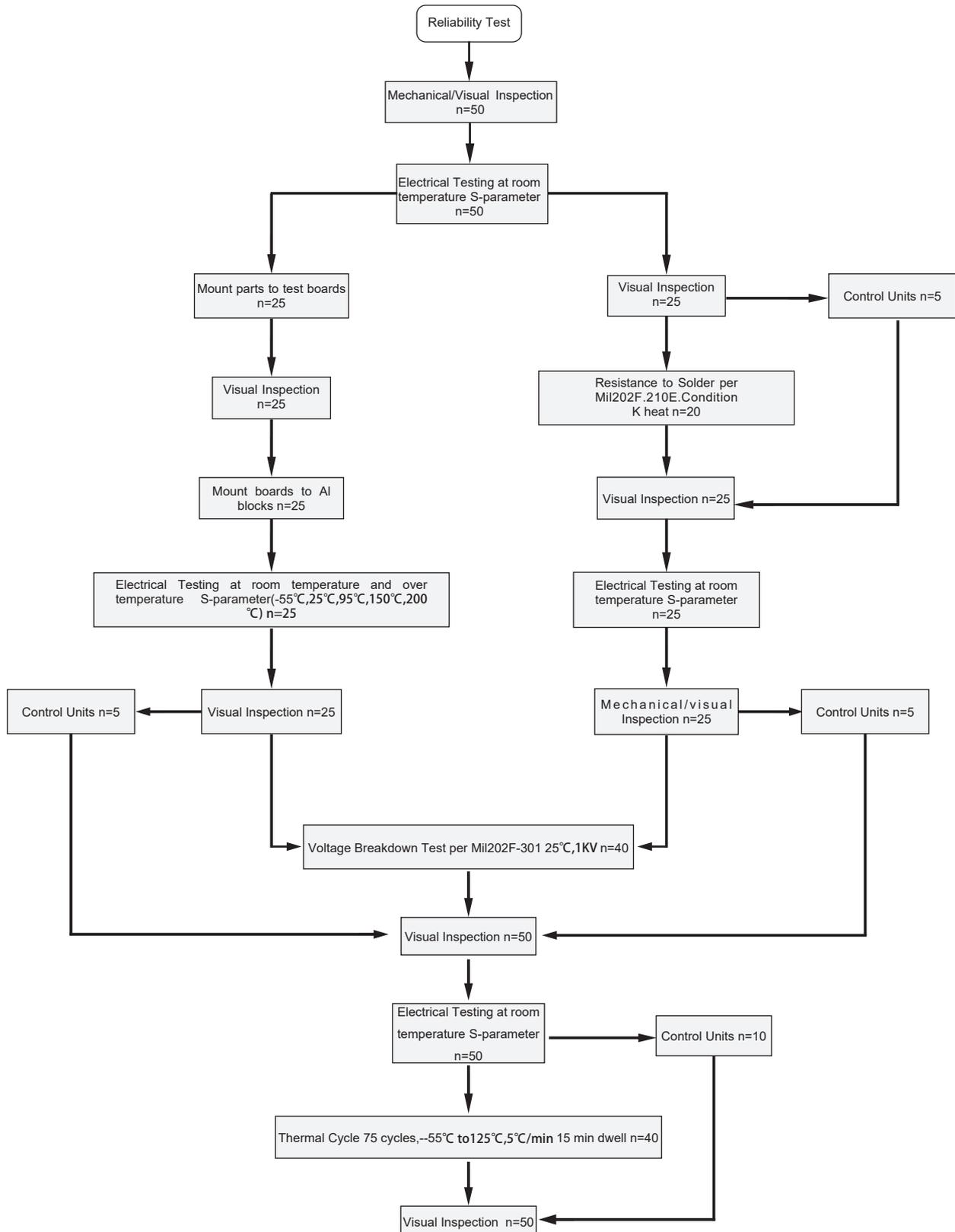
NOTE:

TRACE WIDTH IS SHOWN FOR ROGERS RO4003 WITH DIELECTRIC THICKNESS 32mil; COPPER: 1 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.

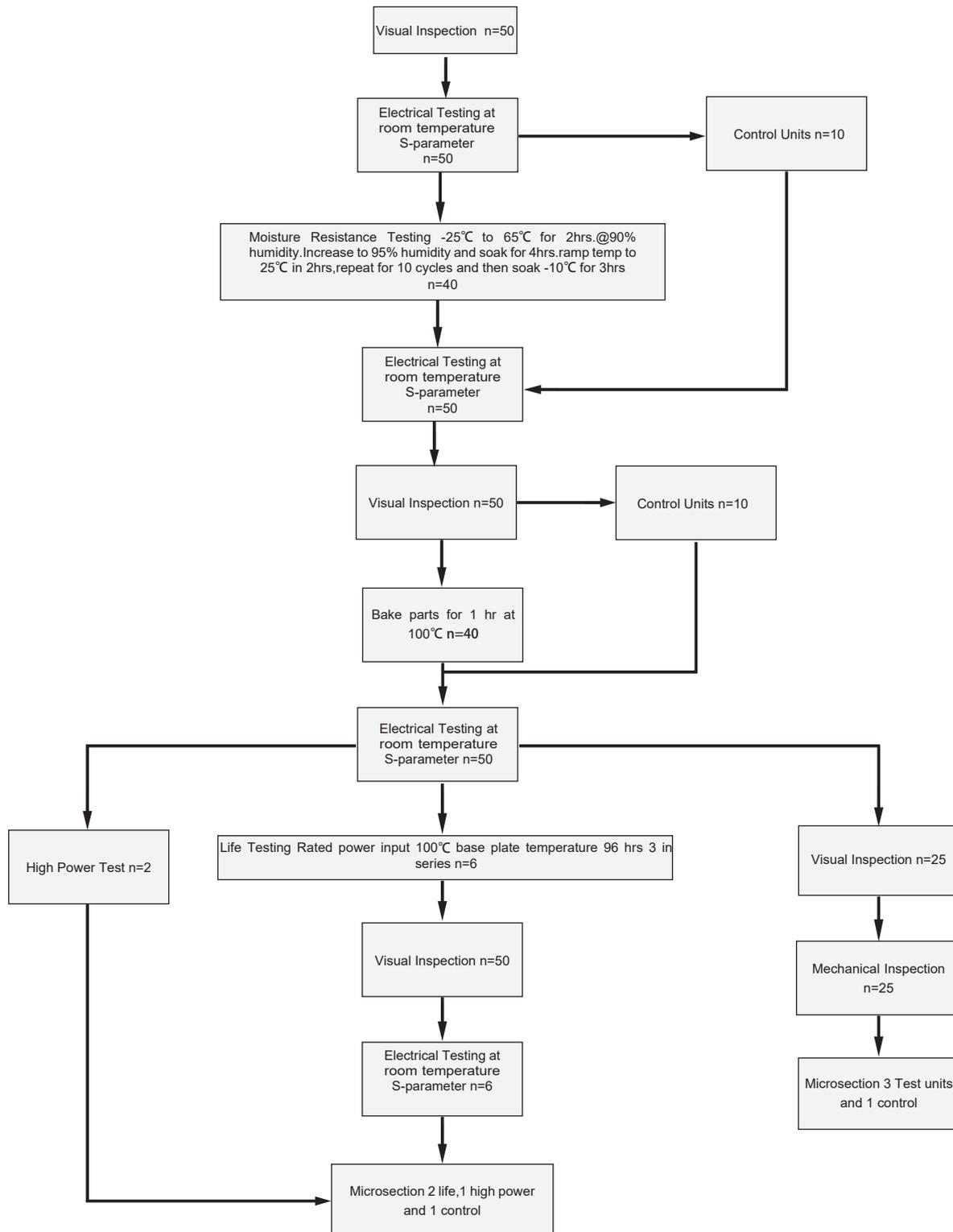
### Reflow Profile



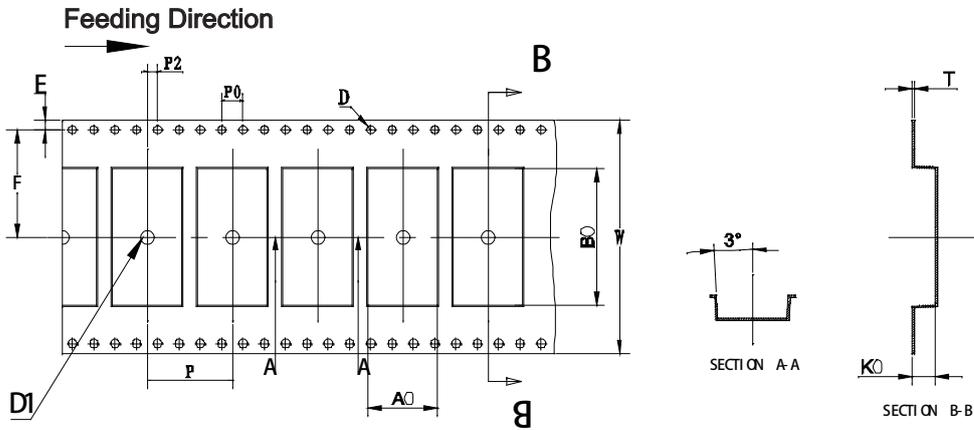
### Reliability Test Flow



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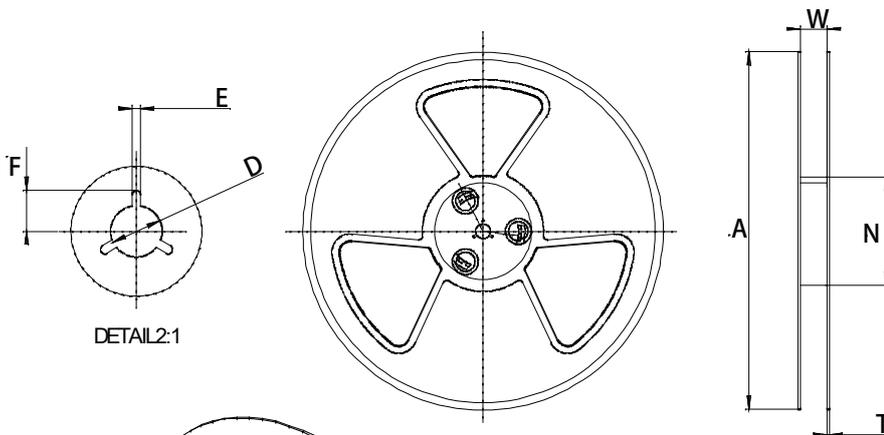
### Tape and Reel Drawing



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: 0.40±0.05mm
- H. 400 units (maximum) / T&R

ITEM	W	A0	B0	K0	P	F	E	D	D1	P0	P2	T	13"
DIM(mm)	44.00	13.2	25.90	3.60	16.00	20.20	1.75	1.50	1.50	4.00	2.00	0.40	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 -0.00	+0.10 -0.00	+0.10 -0.10	+0.15 -0.15	+0.05 -0.05	400 pcs



Symbol	Dimensions(mm)
W	44.5±0.4
A	330±0.5
N	100±0.3
T	1.8±0.2
E	2.1±0.3
F	10.75±0.3
D	13.5+0.5/-0.2

