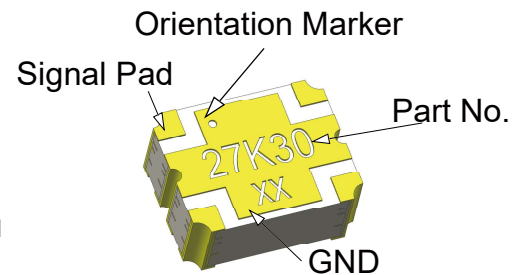


Description

The DC27K30 is a low profile, high performance 30dB directional coupler in a new easy to use, manufacturing friendly surface mount package. It is designed for LTE and 5G wireless communications frequency bands. The DC27K30 is designed particularly for power and frequency detection, as well as for VSWR monitoring, where tightly controlled coupling and low insertion loss is required.

Parts have been subjected to rigorous qualification testing and they are manufactured using materials with coefficients of thermal expansion (CTE) compatible with common substrates such as FR4, G-10, RF-35, RO4003 and polyimide. Produced with 6 of 6 RoHS compliant tin immersion finish.



Features:

- 2200-3300MHz
- Very Low Loss
- Tight Coupling
- High Directivity
- Production Friendly
- Tape and Reel
- Lead Free
- LTE and 5G

Electrical Specifications

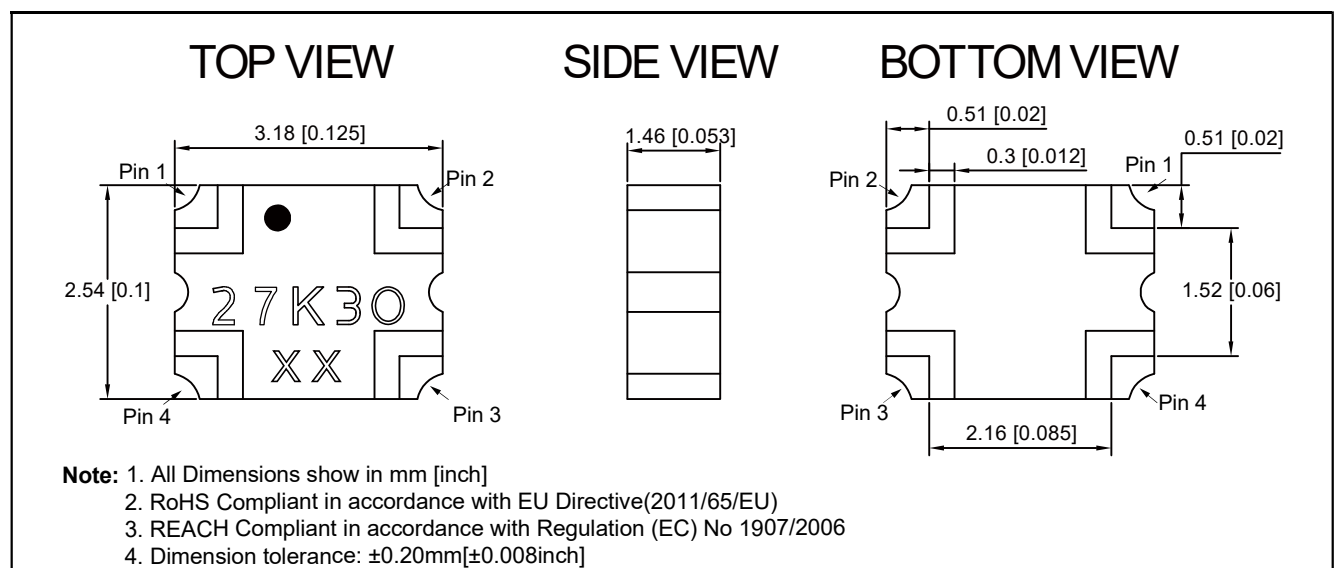
Frequency MHz	Coupling dB	Directivity dB Min	VSWR Max : 1
2200-2900	30.0±1.5	20.0	1.22
2200-3300	30.0±1.5	18	1.22

Insertion Loss dB Max	Power Avg. CW Watts at 105°C	Operating Temp. °C
0.075	40	-55 to +150
0.075	40	-55 to +150

Notes:

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

Mechanical Outline



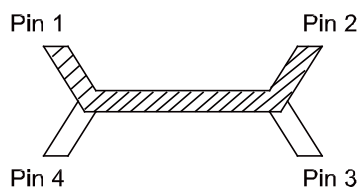
Yantel Corporation

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Tel: 86-755-8355-1886 Fax: 86-755-8355-2533

For detailed performance specs & shopping online see Yantel web site : www.yantel-corp.com

Directional Coupler Pin Configuration

The DC27K30 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:



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

Note: The direct port has a DC connection to the input port and the coupled port has a DC connection to the isolated port.

For optimum IL and power handling performance, use Pin 1 or Pin 2 as inputs.

Description of Measured Specifications

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

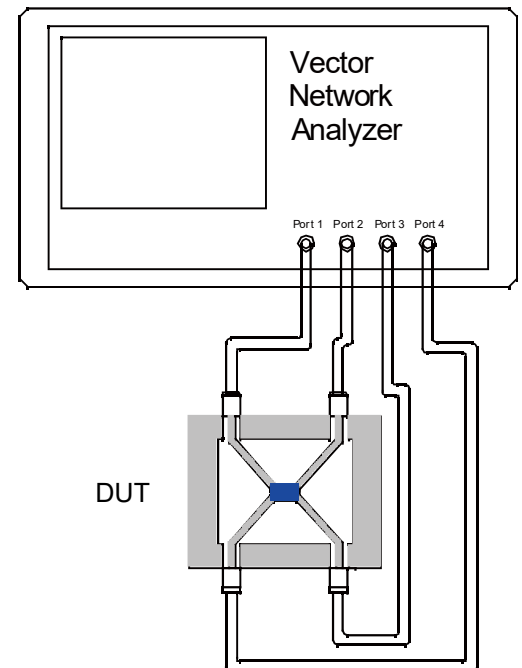
Test Method

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.

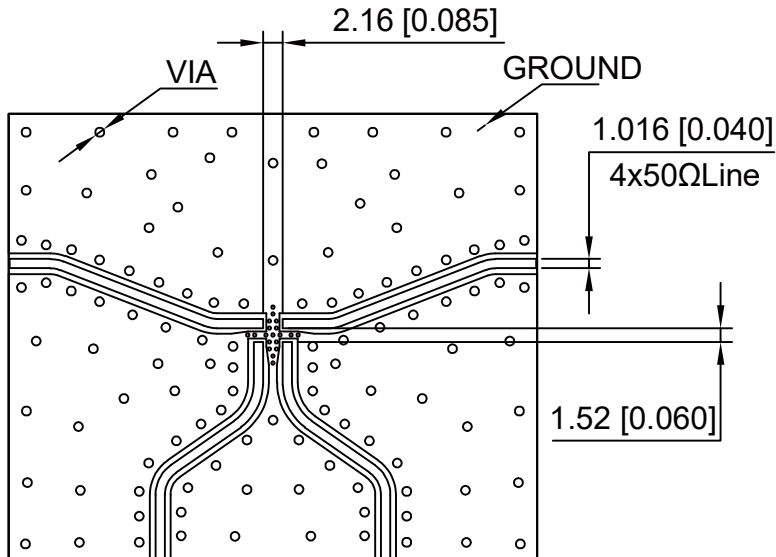
Note:

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℃
470-860	0.06~0.10
800-1000	0.10~0.15
1200-1700	0.15~0.20
1700-2000	0.20~0.25
2000-2300	0.20~0.25
2300-2700	0.25~0.30



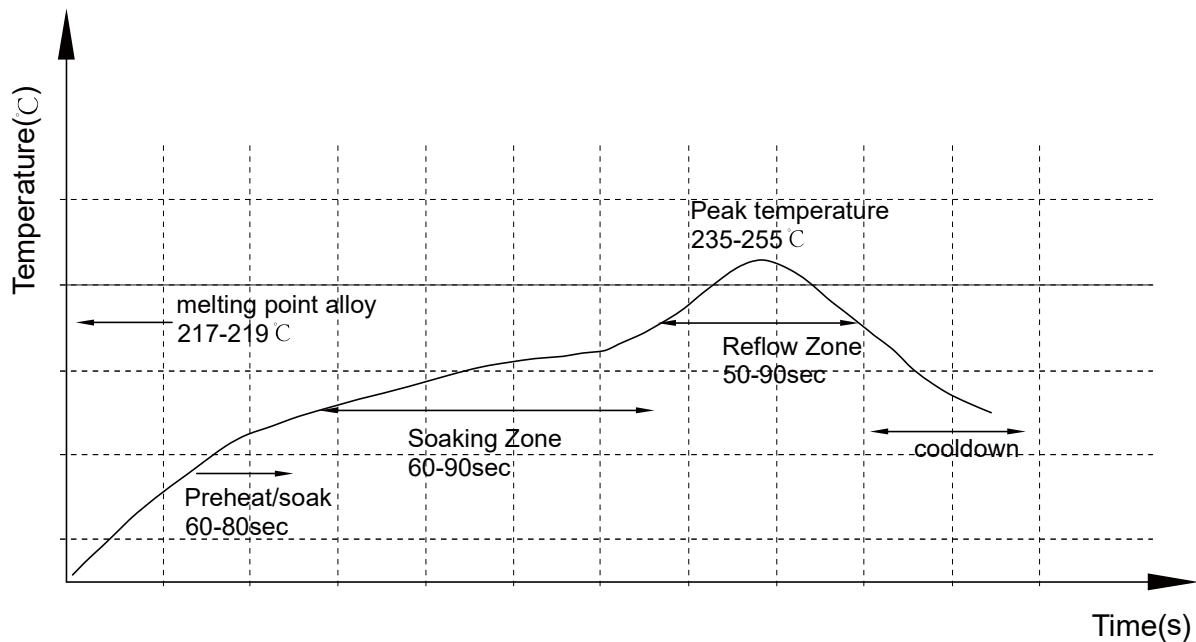
Recommended PCB Layout



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



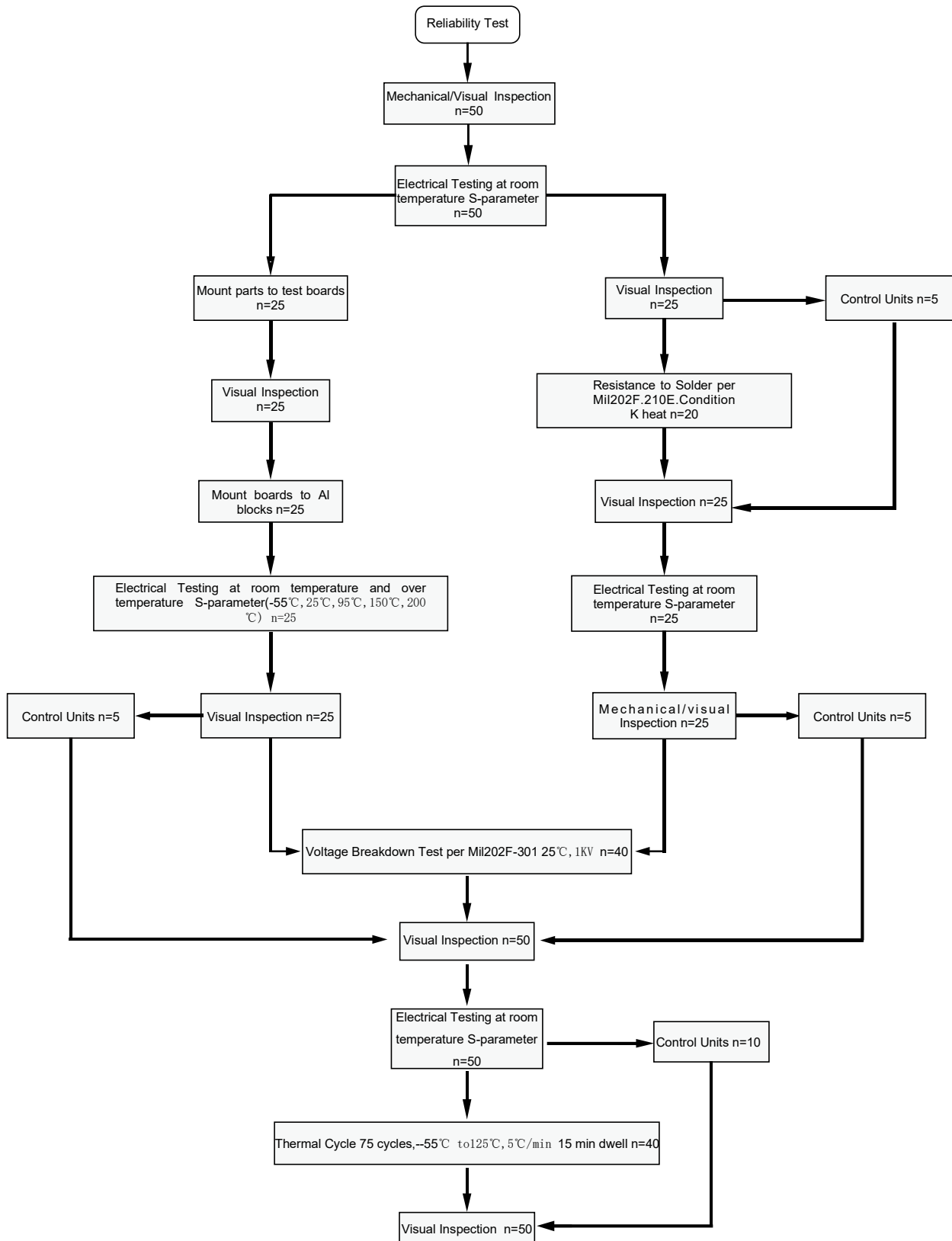
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Reliability Test Flow



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Reliability Test Flow

