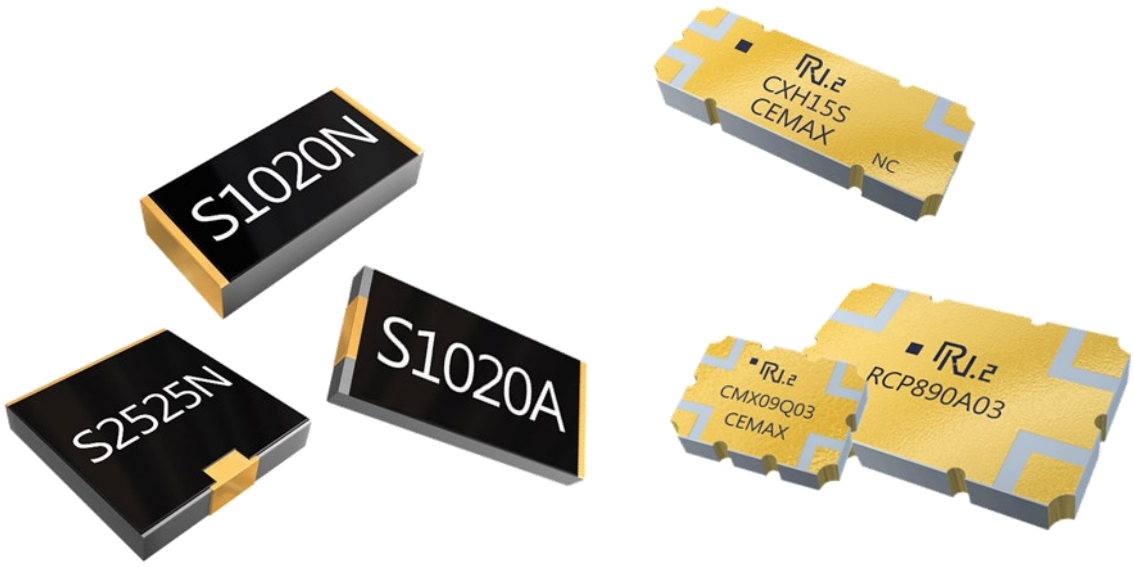
WWW.RN2.CO.KR



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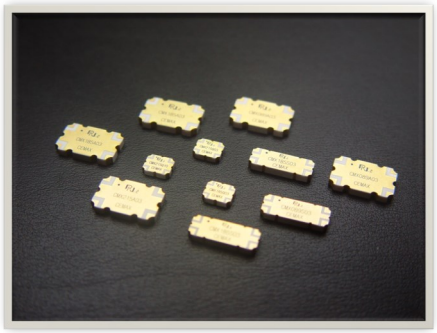
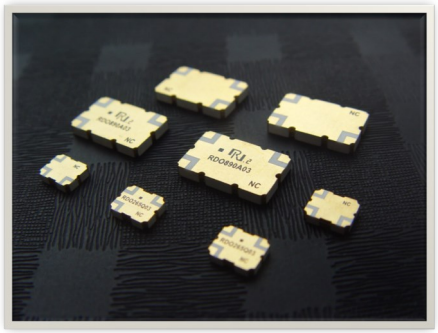
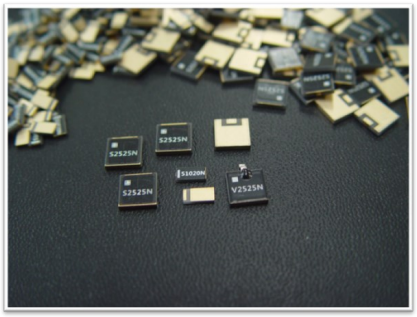
Product Lines



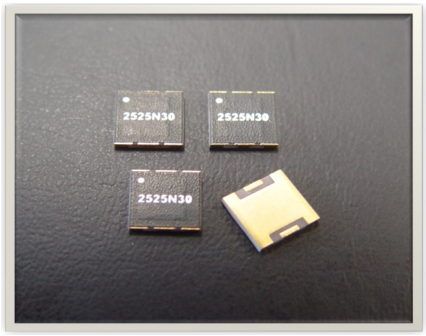
- 90 Deg Hybrid Couplers
- 90 Deg Asymmetric Couplers
- Directional Couplers
- Broadband Couplers



- Doherty Combiners
- Broadband Doherty Combiners

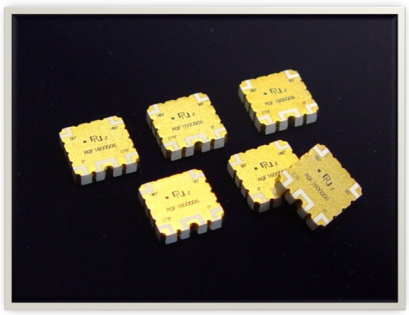


- Terminations



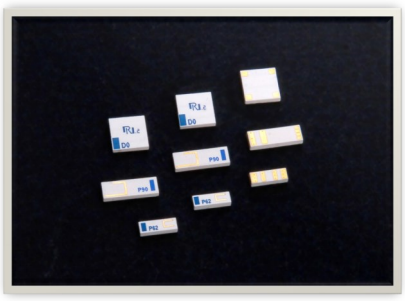
- Attenuators

- Delay Lines



- Quadrifilars

- Chip Power Dividers & Combiners



- Chip Filter & Antenna

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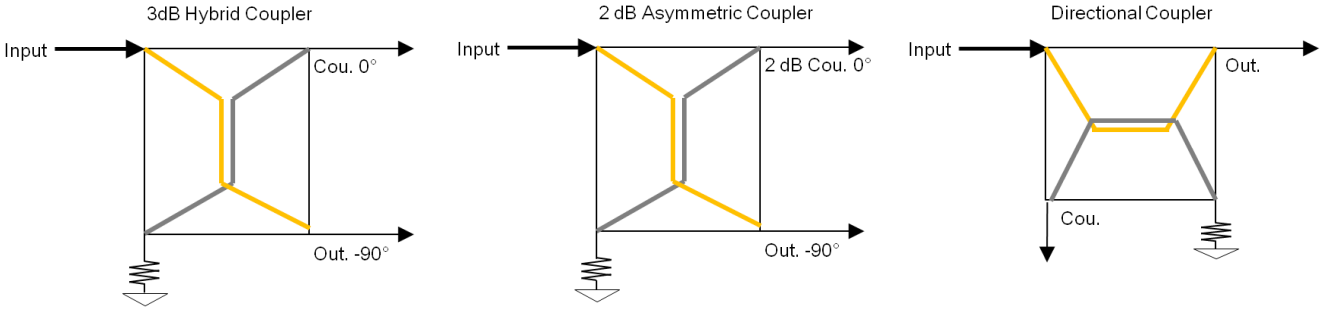
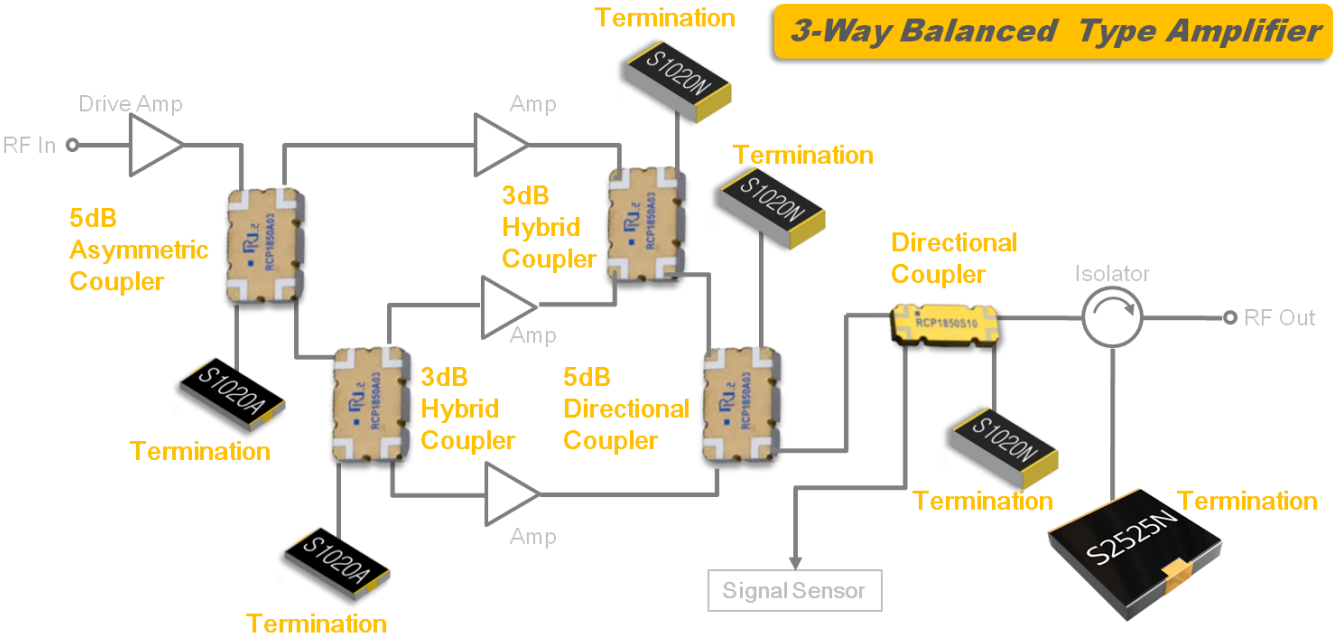
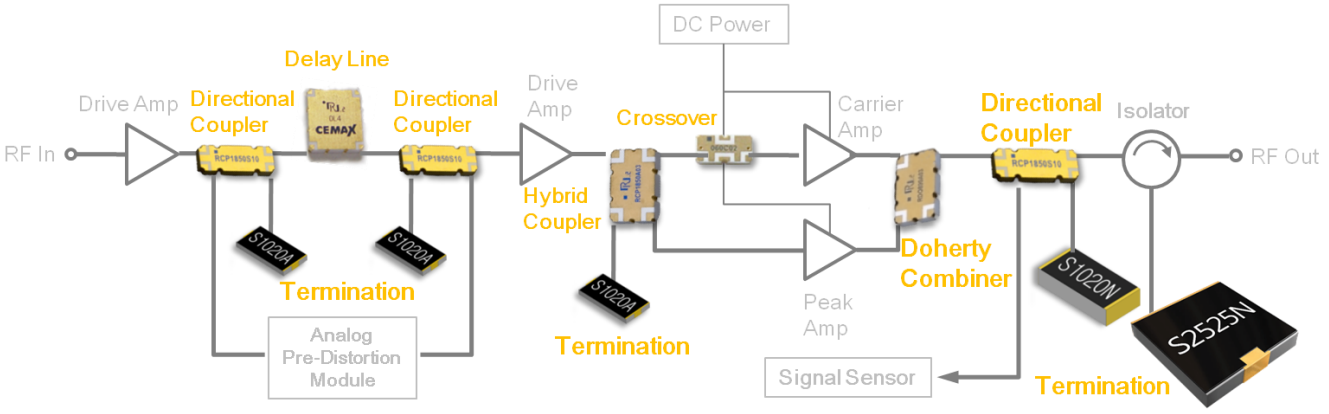
Schematic Drawing



3-Way Balanced Type Amplifier



Analog Pre-Distortion Doherty amplifier



Better power capability and better performance under high temperature

- Better power capability (200W at 6.35x5.08mm/0.25x0.2inch package)
- Better thermal capability (Operating Temp: -55°C ~ +125°C)

Manufacturer	Base material	Thermal Conductivity (W/mK)	Tanδ
RN2	Ceramic	2.0	0.002
Others	PTFE	0.5 ~ 0.7	0.0015 ~ 0.0025

Reliable Quality

- Entire production line from raw material to substrate
- 100% quantity inspection
- Eco-friendly (RoHS compliance / Pb-free)

Fast Time to Market

- Capability for design of material & Circuits & Process
- Cumulative technology and global business experience
- Quick delivery (Lead time 6 weeks for ordinary PO)
- Over 100 kinds of off-the-shelf standard parts

Part number configuration

CMX 09 Q 03 S 1020 N

Product
CMX, RCP = Coupler
CXH, RDO = Doherty Combiner
CXD = Power Divider
ATS = Attenuator
RQF = Quadrifilar
RCA = Chip Antenna

Frequency (MHz)
07, 750 = 700~800
09, 890 = 815~960
19, 1850 = 1700~2000
21, 2150 = 2000~2300
25, 2500 = 2300~2700
35, 3500 = 3300~3700
55, 5500 = 5000~6000

Size (mm)
P = 2.00 x 1.25
C = 6.00 x 3.00
Q = 6.35 x 5.08
S = 14.2 x 5.08
A = 14.2 x 8.89
B = 25.4 x 12.7

Output
(Coupler)
02 = 2dB
03 = 3dB
05 = 5dB
10 = 10dB
20 = 20dB
30 = 30dB

(Power Divider)
02 = 2-way

Termination type
S = Surface Mount Termination
T = Ag Lead attached (Straight)
V = Ag Lead attached (Step)

Size (inches)
[width x length]
1206 = 0.120 x 0.060
1020 = 0.100 x 0.200
2525 = 0.250 x 0.250

Substrate type
A = Alumina
N = Aluminum Nitride

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90 Deg Hybrid Couplers

Part Number	Frequency (MHz)	Dimension (mm)	Power (W)	Amp. Bal. (dB)	Isolation (dB)	I.L. (dB)	VSWR (Max:1)	Phase Bal. (Degrees)
RCP200B03	180 ~ 210	25.4 x 12.7 x 1.9	200	±0.30	20	0.30	1.20	90 ± 3.0
RCP200B03N	180 ~ 210	34.0 x 17.0 x 2.5	300	±0.30	20	0.30	1.20	90 ± 3.0
RCP350D03N	225 ~ 512	16.5 x 12.2 x 1.9	200	±0.50	20	0.30	1.28	90 ± 3.0
RCP450A03	380 ~ 520	14.2 x 8.9 x 1.9	200	±0.15	20	0.30	1.20	90 ± 3.0
RCP450D03N	380 ~ 520	16.5 x 12.2 x 1.7	200	±0.20	23	0.20	1.15	90 ± 2.0
RCP650A03	470 ~ 860	14.2 x 8.9 x 1.9	200	±0.35	23	0.20	1.20	90 ± 3.0
RCP650B03N	470 ~ 860	34.0 x 17.0 x 2.5	500	±0.30	23	0.15	1.30	90 ± 3.0
RCP890Q03	815 ~ 960	6.35 x 5.08 x 1.9	80	±0.30	18	0.35	1.20	90 ± 3.0
RCP890S03N	815 ~ 960	14.2 x 5.08 x 1.9	100	±0.20	21	0.20	1.20	90 ± 3.0
RCP890A03	815 ~ 960	14.2 x 8.9 x 1.9	200	±0.15	23	0.15	1.20	90 ± 2.0
RCP890D03	815 ~ 960	16.5 x 12.2 x 2.5	200	±0.30	21	0.12	1.20	90 ± 3.0
RCP890B03	815 ~ 960	25.4 x 12.7 x 2.5	300	±0.30	21	0.12	1.20	90 ± 3.0
RCP1000Q03	960 ~ 1100	6.35 x 5.08 x 1.9	80	±0.30	20	0.35	1.20	90 ± 3.0
RCP1500Q03	1200 ~ 1700	6.35 x 5.08 x 1.5	80	±0.30	20	0.25	1.20	90 ± 3.0
RCP1500G03	1000 ~ 2000	14.2 x 8.9 x 1.9	200	±0.30	20	0.20	1.20	90 ± 3.0
RCP1850Q03N	1700 ~ 2000	6.35 x 5.08 x 1.27	180	±0.22	23	0.15	1.15	90 ± 3.0
RCP1850S03N	1700 ~ 2000	14.2 x 5.08 x 1.9	100	±0.12	23	0.15	1.20	90 ± 2.0
RCP1850A03	1700 ~ 2000	14.2 x 8.9 x 1.9	200	±0.15	25	0.15	1.20	90 ± 2.0
RCP1850B03N	1700 ~ 2000	25.4 x 12.7 x 2.5	300	±0.30	21	0.12	1.20	90 ± 3.0
RCP2150Q03	1900 ~ 2300	6.35 x 5.08 x 1.5	80	±0.30	20	0.20	1.20	90 ± 3.0
RCP2150S03	2000 ~ 2300	14.2 x 5.08 x 1.9	100	±0.30	23	0.15	1.20	90 ± 2.0
RCP2150A03	1800 ~ 2300	14.2 x 8.9 x 1.9	200	±0.25	23	0.15	1.20	90 ± 3.0
RCP2150B03N	2000 ~ 2300	25.4 x 12.7 x 2.5	300	±0.30	20	0.12	1.20	90 ± 3.0
RCP2250C03	1700 ~ 2400	6.0 x 3.0 x 1.0	20	±0.25	25	0.20	1.20	90 ± 3.0
RCP2300Q03	2200 ~ 2400	6.35 x 5.08 x 1.5	80	±0.30	20	0.20	1.20	90 ± 3.0
RCP2300S03	2200 ~ 2400	14.2 x 5.08 x 1.9	100	±0.30	23	0.15	1.20	90 ± 2.0
RCP2500S03	2300 ~ 2700	14.2 x 5.08 x 1.9	100	±0.15	23	0.15	1.20	90 ± 3.0
RCP2500A03	2300 ~ 2700	14.2 x 8.9 x 1.9	130	±0.15	25	0.13	1.20	90 ± 3.0
RCP2500B03N	2300 ~ 2800	25.4 x 12.7 x 2.5	130	±0.30	20	0.20	1.20	90 ± 5.0
RCP2600C03	2400 ~ 2800	6.0 x 3.0 x 1.5	20	±0.25	23	0.25	1.20	90 ± 2.0
RCP2650Q03	2400 ~ 2800	6.35 x 5.08 x 1.5	80	±0.30	20	0.20	1.20	90 ± 3.0
RCP2650S03	2400 ~ 2800	14.2 x 5.08 x 1.9	100	±0.30	23	0.15	1.20	90 ± 3.0
RCP3000A03	2700 ~ 3100	14.2 x 8.9 x 1.9	100	±0.15	25	0.15	1.20	90 ± 3.0
RCP3500Q03	3300 ~ 3800	6.35 x 5.08 x 1.5	80	±0.30	20	0.30	1.20	90 ± 3.0
RCP3500A03	3400 ~ 3600	14.2 x 8.9 x 1.9	85	±0.15	20	0.20	1.20	90 ± 3.0
RCP4500Q03	4300 ~ 4700	6.35 x 5.08 x 1.5	80	±0.30	14	0.60	1.40	90 ± 3.0

90 Deg Asymmetric Couplers

Part Number	Frequency (MHz)	Dimension (mm)	Power (W)	Coupling (dB)	Directivity (dB)	I.L. (dB)	VSWR (Max:1)	Phase Bal. (Degrees)
RCP750A05	650 ~ 800	14.2 x 8.9 x 1.9	200	5.0 ± 0.35	21	0.19	1.20	90 ± 3.0
RCP890A05	815 ~ 960	14.2 x 8.9 x 1.9	200	5.0 ± 0.35	21	0.19	1.20	90 ± 5.0
RCP1850A05	1700 ~ 2000	14.2 x 8.9 x 1.9	200	5.0 ± 0.25	23	0.15	1.15	90 ± 3.0
RCP2150A05	2000 ~ 2300	14.2 x 8.9 x 1.9	200	5.0 ± 0.20	21	0.15	1.20	90 ± 3.0
RCP2500A05	2300 ~ 2700	14.2 x 8.9 x 1.9	200	5.0 ± 0.25	20	0.15	1.20	90 ± 3.0
RCP2500Q1P5	2300 ~ 2700	6.35 x 5.08 x 2.0	80	1.75 ± 0.25	20	0.20	1.20	90 ± 5.0
RCP2500Q2P5	2300 ~ 2700	6.35 x 5.08 x 1.5	80	2.4 ± 0.25	20	0.20	1.20	90 ± 3.0
RCP2500Q04	2300 ~ 2700	6.35 x 5.08 x 1.5	80	4.0 ± 0.25	20	0.15	1.20	90 ± 3.0
RCP3500A05	3400 ~ 3600	14.2 x 8.9 x 1.9	100	5.0 ± 0.25	20	0.15	1.20	90 ± 5.0

Directional Couplers

Part Number	Frequency	Dimension	Power	Coupling	Directivity	I.L.	VSWR
RCP890Q05	815 ~ 960	6.35 x 5.08 x 1.6	80	5 ± 0.50	18	0.40	1.30
RCP1000Q05	960 ~ 1100	6.35 x 5.08 x 1.9	80	5 ± 0.40	20	0.35	1.20
RCP1500Q05	1200 ~ 1700	6.35 x 5.08 x 1.5	80	5 ± 0.40	17	0.30	1.20
RCP2150Q05	2000 ~ 2400	6.35 x 5.08 x 1.0	80	5 ± 0.35	20	0.30	1.20
RCP200B10	180 ~ 210	25.4 x 12.7 x 1.9	200	10 ± 1.0	18	0.30	1.20
RCP890Q10	815 ~ 960	6.35 x 5.08 x 1.3	80	10 ± 1.0	15	0.30	1.30
RCP890A10	815 ~ 960	14.2 x 8.9 x 1.9	200	10 ± 0.6	20	0.15	1.20
RCP1400Q10	1200 ~ 1700	6.35 x 5.08 x 1.5	80	10 ± 1.0	20	0.25	1.20
RCP1400S10	1150 ~ 1650	14.2 x 5.08 x 1.9	100	10 ± 0.8	18	0.20	1.20
RCP1850Q10	1700 ~ 2000	6.35 x 5.08 x 1.0	80	10 ± 1.0	20	0.20	1.20
RCP1850S10	1700 ~ 2000	14.2 x 5.08 x 1.9	100	10 ± 1.0	20	0.20	1.20
RCP1850A10	1700 ~ 2000	14.2 x 8.9 x 1.9	200	10 ± 0.6	23	0.15	1.15
RCP2150Q10	2000 ~ 2400	6.35 x 5.08 x 1.0	80	10 ± 1.0	20	0.20	1.20
RCP2150S10	2000 ~ 2300	14.2 x 5.08 x 1.9	100	10 ± 1.0	20	0.20	1.20
RCP2150A10	1300 ~ 2700	14.2 x 8.9 x 1.9	200	10.1 ± 2.2	18	0.25	1.45
RCP2250C10	2100 ~ 2400	6.0 x 3.0 x 1.0	20	10 ± 0.8	20	0.50	1.20
RCP2300Q10	2200 ~ 2400	6.35 x 5.08 x 1.0	80	10 ± 1.0	20	0.20	1.20
RCP2300S10	2200 ~ 2400	14.2 x 5.08 x 1.9	100	10 ± 1.0	20	0.20	1.20
RCP2500S10	2300 ~ 2700	14.2 x 5.08 x 1.9	100	10 ± 0.5	20	0.14	1.19
RCP2500A10	2300 ~ 2700	14.2 x 8.9 x 1.9	170	10 ± 1.0	25	0.20	1.20
RCP2650Q10	2400 ~ 2800	6.35 x 5.08 x 1.0	80	10 ± 1.0	20	0.20	1.20
RCP3500Q10	3300 ~ 3800	6.35 x 5.08 x 1.0	80	10 ± 1.0	18	0.20	1.20

Directional Couplers

Part Number	Frequency (MHz)	Dimension (mm)	Power (W)	Coupling (dB)	Directivity (dB)	I.L. (dB)	VSWR (Max:1)
RCP350D20N	225 ~ 512	16.5 x 12.2 x 1.7	200	20 ± 1.5	16	0.25	1.30
RCP450Q20	340 ~ 520	6.35 x 5.08 x 1.5	80	20 ± 2.0	15	0.30	1.30
RCP890Q20	815 ~ 960	6.35 x 5.08 x 1.5	80	20 ± 1.0	20	0.30	1.20
RCP890S20N	700 ~ 1000	14.2 x 5.08 x 1.9	230	20 ± 1.0	23	0.075	1.12
RCP890A20	815 ~ 960	14.2 x 8.9 x 1.9	200	20 ± 0.6	23	0.15	1.15
RCP1850Q20	1700 ~ 2000	6.35 x 5.08 x 1.0	80	20 ± 1.0	18	0.20	1.20
RCP1850A20	1300 ~ 2100	14.2 x 8.9 x 1.9	200	20 ± 3.2	13	0.25	2.20
RCP2150Q20	2000 ~ 2300	6.35 x 5.08 x 1.0	80	20 ± 1.0	18	0.20	1.20
RCP2150A20	2000 ~ 2300	14.2 x 8.9 x 1.9	200	20 ± 0.6	23	0.15	1.15
RCP2500Q20	2300 ~ 2700	6.35 x 5.08 x 1.0	80	20 ± 1.0	20	0.20	1.20
RCP3500Q20	3400 ~ 3600	6.35 x 5.08 x 1.0	80	20 ± 1.0	20	0.22	1.20
RCP5500C20	5000 ~ 6000	6.0 x 3.0 x 1.0	1	20 ± 0.75	14	0.50	1.40
RCP200B30	180 ~ 210	25.4 x 12.7 x 1.9	200	30 ± 1.0	18	0.30	1.20
RCP400S30N	350 ~ 520	14.2 x 5.08 x 1.9	100	30 ± 1.0	16	0.20	1.10
RCP890Q30N	800 ~ 1000	6.35 x 5.08 x 2.0	150	30 ± 1.5	20	0.10	1.15
RCP890A30	815 ~ 960	14.2 x 8.9 x 1.9	200	30 ± 1.5	18	0.20	1.20
RCP1500A30	1200 ~ 1700	14.2 x 8.9 x 1.9	200	30 ± 1.5	20	0.20	1.20
RCP2150A30	2000 ~ 2300	14.2 x 8.9 x 2.0	200	30 ± 0.6	18	0.20	1.15
RCP2500Q30	2300 ~ 2700	6.35 x 5.08 x 1.0	80	30 ± 1.25	18	0.20	1.20
RCP2500A30	2300 ~ 2700	14.2 x 8.9 x 2.0	200	30 ± 1.5	18	0.20	1.20
RCP4500Q30	4300 ~ 4700	6.35 x 5.08 x 1.0	80	30 ± 2.0	8	0.50	1.40

Broadband Couplers

Part Number	Frequency (MHz)	Dimension (mm)	Power (W)	Amp. Bal. (dB)	Isolation (dB)	I.L. (dB)	VSWR (Max:1)	Phase Bal. (Degrees)
CMXW15B03	600 ~ 2700	25.4 x 12.7 x 2.5	60	±0.80	15	0.60	1.43	90 ± 5
RCP1500W03S	500 ~ 2600	45 x 10 x 2.5	100	±0.80	15	0.70	1.50	90 ± 5
RCP1900W03	800 ~ 3000	50 x 10 x 2.5	100	±0.70	18	0.50	1.30	90 ± 5
RCP4000W03	2000 ~ 6000	25 x 7.0 x 2.5	100	±0.80	13	0.50	1.67	90 ± 5

Part Number	Frequency (MHz)	Dimension (mm)	Power (W)	Coupling (dB)	Flatness (dB)	Directivity (dB)	I.L. (dB)	VSWR (Max:1)
RCP1900W10	800 ~ 3000	50 x 10 x 2.0	100	10 ± 1	± 0.7	18	0.40	1.67
RCP4000W10	2000 ~ 6000	22.5 x 7.0 x 2.0	100	10 ± 1	± 0.5	18	0.50	2.10

CEMAX is RN2 Technologies' new generation coupler brand.

CEMAX provides engineers with optimized solution for AMP design.

- Own developed raw material
- Patented circuit design
- Low loss and high power

CEMAX-series

90 Deg Hybrid Couplers

Part Number	Frequency (MHz)	Dimension (mm)	Power (W)	Amp. Bal. (dB)	Isolation (dB)	I.L. (dB)	VSWR (Max:1)	Phase Bal. (Degrees)
CMX03A03	250 ~ 470	14.2 x 8.9 x 2.0	200	± 0.80	20	0.30	1.20	90 ± 3.0
CMX06A03	470 ~ 860	14.2 x 8.9 x 2.0	300	± 0.50	23	0.20	1.15	90 ± 2.0
CMX07Q03	620 ~ 900	6.35 x 5.08 x 1.2	150	± 0.20	25	0.15	1.12	90 ± 2.0
CMX09P03	700 ~ 1000	2.00 x 1.25 x 0.75	5	± 0.60	18	0.50	1.15	90 ± 4.0
CMX09Q03	800 ~ 1000	6.35 x 5.08 x 1.5	200	± 0.25	23	0.14	1.15	90 ± 3.0
CMX09A03	700 ~ 1000	14.2 x 8.9 x 2.0	300	± 0.14	25	0.12	1.12	90 ± 2.0
CMX09S03	800 ~ 1000	14.2 x 5.08 x 2.0	200	± 0.15	27	0.15	1.17	90 ± 2.0
CMX15P03	1200 ~ 1700	2.00 x 1.25 x 0.75	5	± 0.60	20	0.50	1.20	90 ± 5.0
CMX15Q03	1200 ~ 1700	6.35 x 5.08 x 1.5	200	± 0.20	20	0.25	1.20	90 ± 3.0
CMX19P03	1700 ~ 2300	2.00 x 1.25 x 0.75	5	± 0.60	24	0.40	1.20	90 ± 5.0
CMX19Q03	1700 ~ 2000	6.35 x 5.08 x 1.5	200	± 0.20	25	0.10	1.12	90 ± 2.0
CMX19A03	1700 ~ 2000	14.2 x 8.9 x 2.0	200	± 0.20	25	0.12	1.12	90 ± 2.0
CMX21Q03	2000 ~ 2400	6.35 x 5.08 x 1.5	200	± 0.22	25	0.10	1.12	90 ± 3.0
CMX25P03	2200 ~ 2700	2.00 x 1.25 x 0.75	5	± 0.60	24	0.35	1.20	90 ± 5.0
CMX25Q03	2200 ~ 2800	6.35 x 5.08 x 1.5	80	± 0.20	23	0.12	1.12	90 ± 2.0
CMX32C03	2900 ~ 3500	6.00 x 3.00 x 1.0	20	± 0.50	18	0.50	1.30	90 ± 5.0
CMX35P03	3300 ~ 3700	2.00 x 1.25 x 0.75	5	± 0.60	20	0.30	1.20	90 ± 5.0
CMX55Q03	5000 ~ 6000	6.35 x 5.08 x 1.5	20	± 0.30	20	0.25	1.28	90 ± 3.0

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CEMAX-series

90 Deg Asymmetric Couplers

Part Number	Frequency (MHz)	Dimension (mm)	Power (W)	Coupling (dB)	Directivity (dB)	I.L. (dB)	VSWR (Max:1)	Phase Bal. (Degrees)
CMX04A05	400 ~ 500	14.2 x 8.9 x 2.0	200	5.0 ± 0.20	20	0.22	1.20	90±2.0
CMX07Q01	600 ~ 900	6.35 x 5.08 x 1.5	150	1.40 ± 0.30	20	0.25	1.20	90±3.0
CMX09A1P5	700 ~ 900	14.2 x 8.9 x 2.0	80	2.0 ± 0.15	18	0.30	1.20	90±3.0
CMX09Q02	800 ~ 1000	6.35 x 5.08 x 1.5	150	1.95 ± 0.25	20	0.25	1.20	90±3.0
CMX09Q05	800 ~ 1000	6.35 x 5.08 x 1.5	200	5.0 ± 0.20	25	0.12	1.11	90±2.0
CMX19Q02	1700 ~ 2000	6.35 x 5.08 x 1.5	150	1.95 ± 0.25	20	0.25	1.20	90±3.0
CMX19Q05	1700 ~ 2000	6.35 x 5.08 x 1.5	200	5.0 ± 0.20	25	0.10	1.12	90±2.0
CMX21P05	1700 ~ 2200	2.00 x 1.25 x 0.75	2	5.0 ± 0.50	18	0.35	1.30	90±5.0
CMX21Q02	2000 ~ 2300	6.35 x 5.08 x 1.5	80	2.0 ± 0.30	20	0.20	1.20	90±5.0
CMX21Q05	2000 ~ 2300	6.35 x 5.08 x 1.5	200	5.0 ± 0.20	25	0.10	1.12	90±3.0
CMX25Q02	2300 ~ 2700	6.35 x 5.08 x 1.5	80	1.95 ± 0.25	18	0.25	1.20	90±5.0
CMX25Q05	2300 ~ 2700	6.35 x 5.08 x 1.5	200	5.0 ± 0.30	23	0.10	1.12	90±2.0
CMX35Q02	3400 ~ 3600	6.35 x 5.08 x 1.5	80	1.75 ± 0.25	16	0.30	1.30	90±6.0
CMX35Q05	3300 ~ 3700	6.35 x 5.08 x 1.5	80	5.0 ± 0.35	20	0.20	1.20	90±3.0

CEMAX-series

Directional Couplers

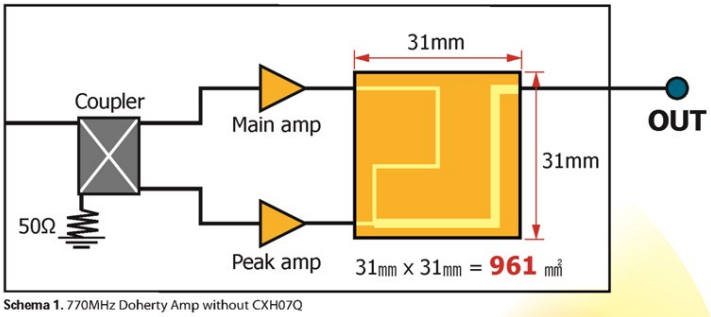
Part Number	Frequency (MHz)	Dimension (mm)	Power (W)	Coupling (dB)	Directivity (dB)	I.L. (dB)	VSWR (Max:1)
CMX04A10	340 ~ 520	14.2 x 8.9 x 2.0	200	10.0 ± 1.5	18	0.25	1.20
CMX07Q10	600 ~ 900	6.35 x 5.08 x 1.50	200	10.0 ± 0.8	17	0.20	1.20
CMX21P10	1700 ~ 2200	2.00 x 1.25 x 0.75	2	10.0 ± 1.2	16	0.35	1.30
CMX09P20	700 ~ 1000	2.00 x 1.25 x 0.75	3	21.5 ± 1.5	20	0.15	1.20
CMX14Q20	800 ~ 2200	6.35 x 5.08 x 1.50	200	22.0 ± 2.0	20	0.12	1.40
CMX19P20	1700 ~ 2200	2.00 x 1.25 x 0.75	3	20.5 ± 1.0	20	0.15	1.20
CMX19S20	1400 ~ 2700	14.2 x 5.08 x 2.0	300	20.0 ± 1.0	30	0.05	1.08
CMX30P20	2300 ~ 3700	2.00 x1.25 x 0.75	3	19.5 ± 1.0	14.9	0.14	1.20
CMX09C30	700 ~ 1000	6.00 x 3.00 x 1.0	20	30 ± 1.5	18	0.20	1.22
CMX09Q30	700 ~ 1000	6.35 x 5.08 x 1.5	200	30 ± 1.0	23	0.06	1.12
CMX09A30	700 ~ 1000	14.2 x 8.9 x 2.0	300	30 ± 1.0	20	0.10	1.20
CMX19C30	1400 ~ 2700	6.00 x 3.00 x 1.0	20	30 ± 1.5	18	0.10	1.30
CMX19Q30	1400 ~ 2700	6.35 x 5.08 x 1.2	200	30 ± 1.5	23	0.08	1.12
CMX19A30	1200 ~ 2700	14.2 x 8.9 x 2.0	300	30 ± 2.0	20	0.12	1.20
CMX35C30	3300 ~ 3800	6.00 x 3.00 x 1.0	20	30 ± 1.5	18	0.25	1.40
CMX35Q30	3300 ~ 3700	6.35 x 5.08 x 1.5	30	30 ± 1.5	20	0.18	1.43

CEMAX-series

Doherty Combiners

Part number	Frequency (MHz)	Dimension (mm)	Power (W)	Amp. Bal. (dB)	I.L. (dB)	VSWR (Max:1)	Phase Bal. (Degrees)
CXH07C	770 ~ 780	6.00 x 3.00 x 1.0	20	±0.30	0.50	1.20	90 ± 5
CXH07Q	745 ~ 755	6.35 x 5.08 x 1.0	40	±0.15	0.30	1.30	90 ± 3
CXH07S	745 ~ 755	14.2 x 5.08 x 2.0	200	±0.12	0.15	1.20	90 ± 3
CXH08C	865 ~ 875	6.00 x 3.00 x 1.0	20	±0.30	0.50	1.20	90 ± 5
CXH08S	860 ~ 870	14.2 x 5.08 x 2.0	200	±0.20	0.20	1.20	90 ± 3
CXH09Q	925 ~ 960	6.35 x 5.08 x 1.0	40	±0.20	0.25	1.20	90 ± 3
CXH09S	920 ~ 960	14.2 x 5.08 x 2.0	200	±0.12	0.15	1.13	90 ± 3
CXH15Q	1465 ~ 1515	6.35 x 5.08 x 1.0	40	±0.20	0.20	1.20	90 ± 3
CXH15S	1465 ~ 1515	14.2 x 5.08 x 2.0	200	±0.12	0.15	1.20	90 ± 3
CXH16S	1525 ~ 1559	14.2 x 5.08 x 2.0	200	±0.12	0.15	1.20	90 ± 3
CXH18C	1880 ~ 1880	6.00 x 3.00 x 1.0	20	±0.30	0.40	1.30	90 ± 5
CXH20A	1800 ~ 2200	14.2 x 8.89 x 2.0	150	±0.30	0.40	1.50	90 ± 5
CXH19Q	1930 ~ 1990	6.35 x 5.08 x 1.0	40	±0.20	0.20	1.20	90 ± 3
CXH19S	1930 ~ 1990	14.2 x 5.08 x 2.0	200	±0.12	0.15	1.20	90 ± 3
CXH21C	2110 ~ 2170	6.00 x 3.00 x 1.0	20	±0.30	0.40	1.30	90 ± 5
CXH21Q	2110 ~ 2170	6.35 x 5.08 x 1.0	40	±0.20	0.20	1.20	90 ± 3
CXH21S	2110 ~ 2170	14.2 x 5.08 x 2.0	200	±0.12	0.15	1.20	90 ± 3
CXH35C	3400 ~ 3600	6.00 x 3.00 x 1.0	20	±0.50	0.50	1.20	90 ± 6

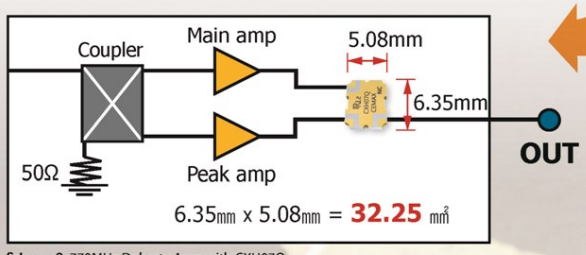
The Doherty amplifier offers improved efficiency compared to balanced amplifiers.
The heart of the Doherty amplifier is the Doherty combiner, shown below.



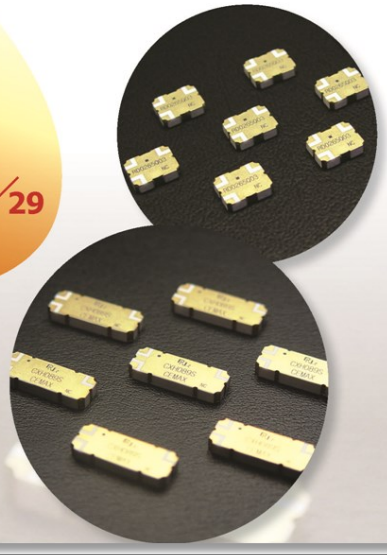
Schema 1. 770MHz Doherty Amp without CXH07Q

You don't need any longer a huge copper pattern on PCB base.
Our Doherty Combiner enables your design not only to fulfill low insertion loss, but also to maximize space utilization.

1/29

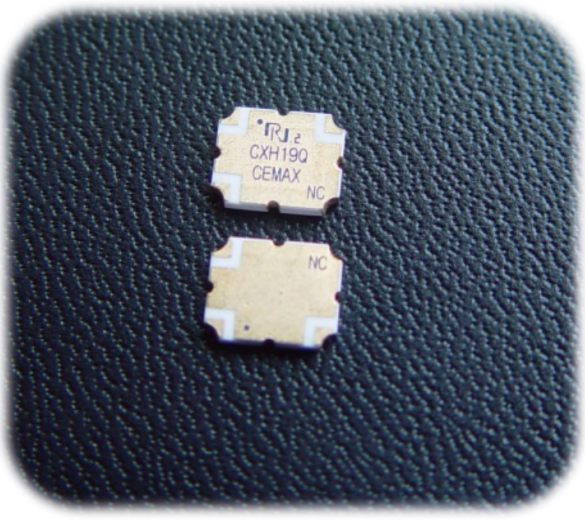


Schema 2. 770MHz Doherty Amp with CXH07Q

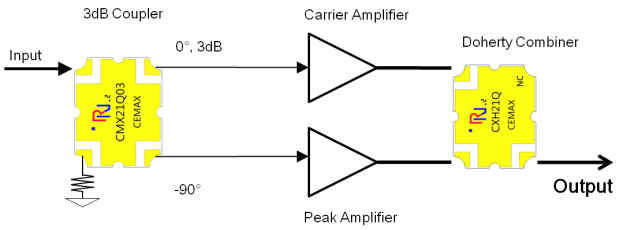


Doherty Combiners

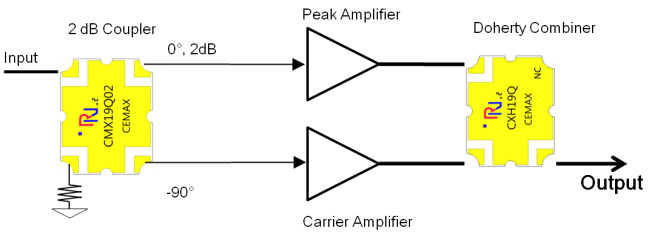
Part number	Frequency (MHz)	Dimension (mm)	Power (W)	Amp. Bal. (dB)	I.L. (dB)	VSWR (Max:1)	Phase Bal. (Degrees)
RDO750A03	690 ~ 815	14.2 x 8.9 x 1.9	200	±0.30	0.20	1.20	90 ± 15
RDO890A03	815 ~ 960	14.2 x 8.9 x 1.9	200	±0.30	0.20	1.20	90 ± 15
RDO2150A03	1800 ~ 2300	14.2 x 8.9 x 1.9	200	±0.30	0.20	1.20	90 ± 20
RDO2650Q03	2400 ~ 2800	6.35 x 5.08 x 1.0	80	±0.30	0.20	1.20	90 ± 20



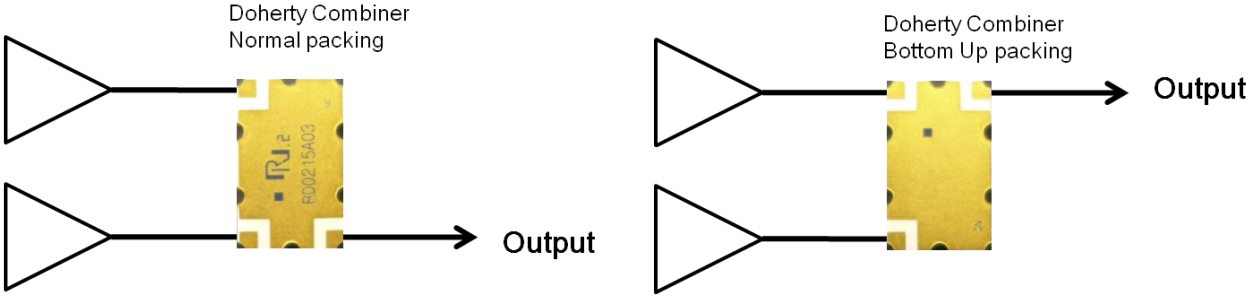
3dB coupler with doherty combiner

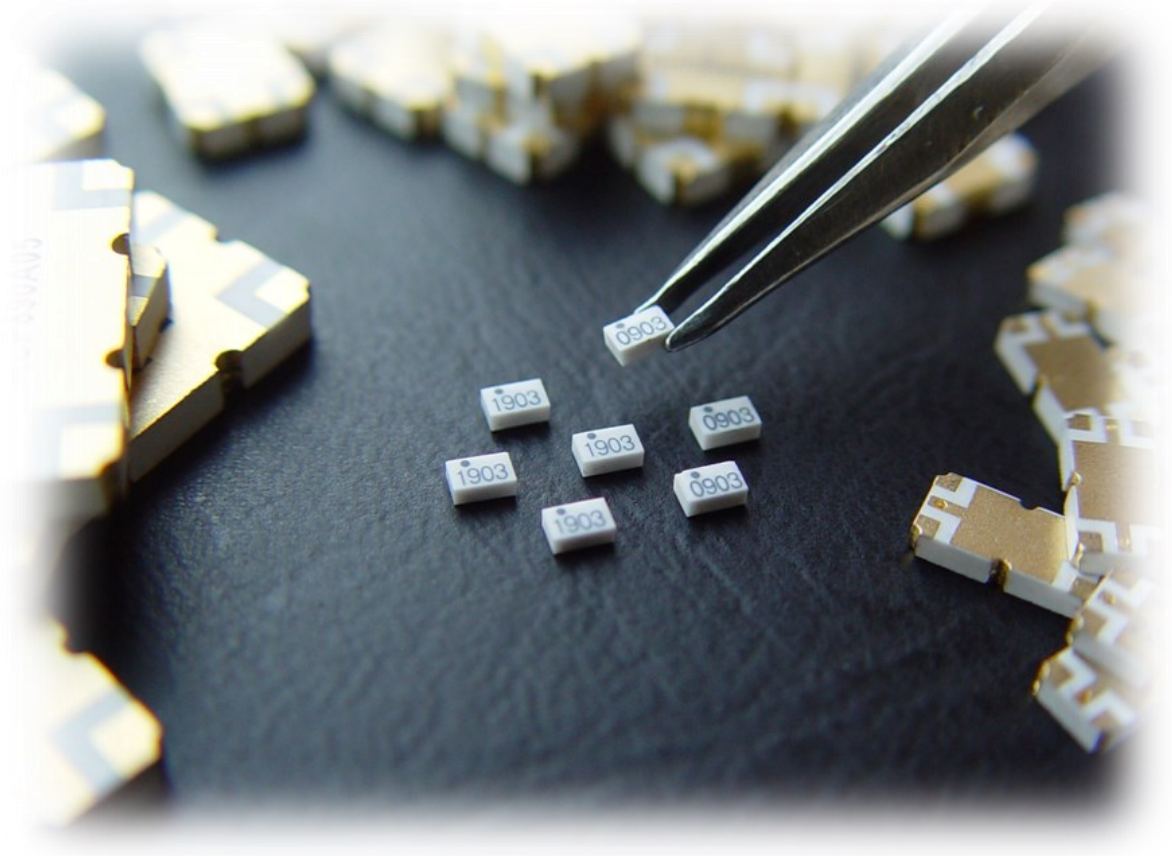


2dB coupler with doherty combiner



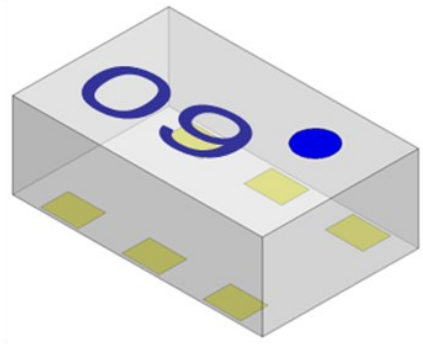
Bottom Up Usage Possible

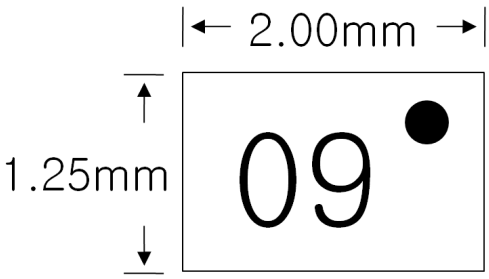


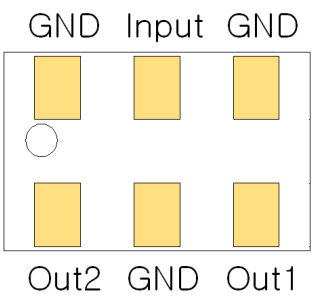


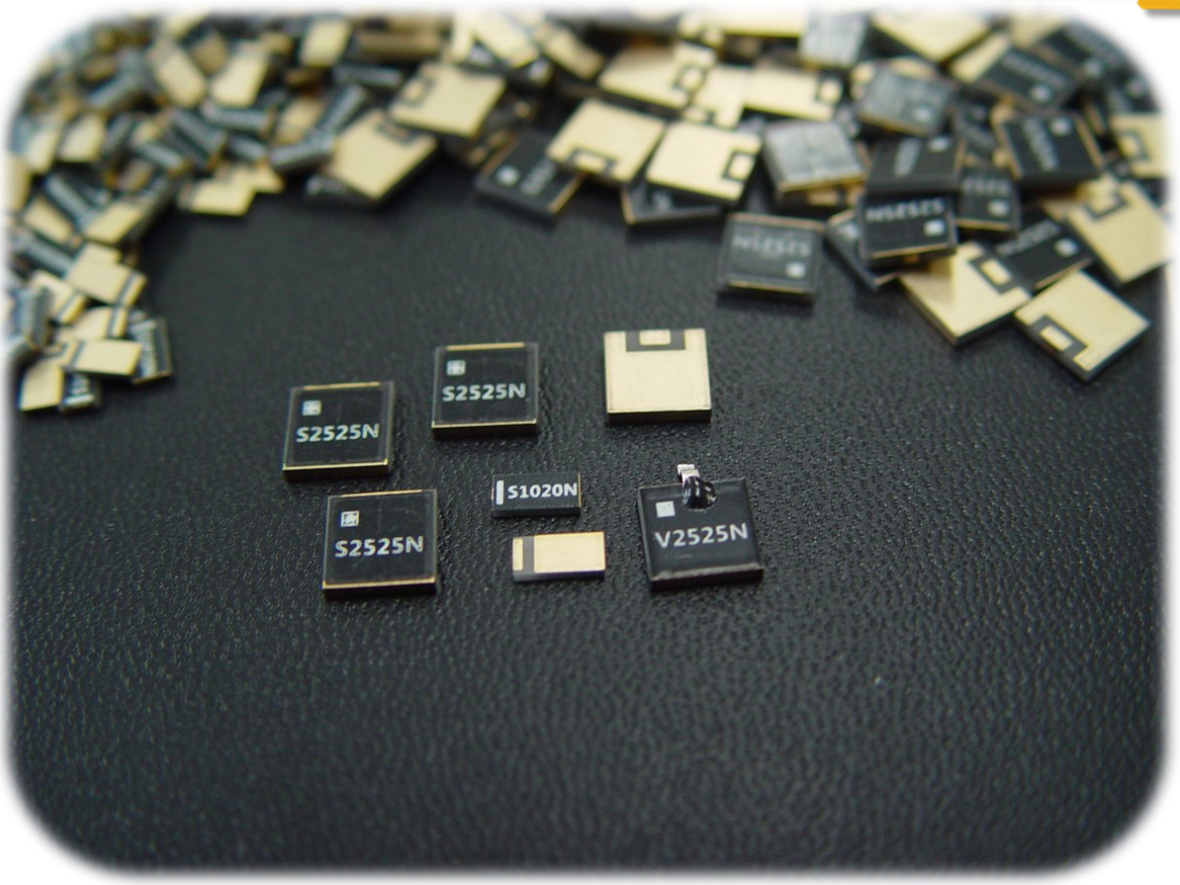
Chip Power Dividers & Combiners

Part number	Frequency (MHz)	Dimension (mm)	Power (W)	Amp. Bal. (dB)	Isolation (dB)	I.L. (dB)	VSWR [In] (Max:1)	VSWR [Out] (Max:1)
CXD090S02	800 ~ 1000	14.2 x 5.08 x 2.0	30	±0.1	18	0.23	1.30	1.30
CXD09P02	800 ~ 1000	2.00 x 1.25 x 0.8	2	±0.3	16	0.40	1.50	1.22
CXDW15D02	500 ~ 2500	12.2 x 16.5 x 1.9	10	±0.2	10	0.80	1.70	1.70
CXD15P02	900 ~ 2200	2.00 x 1.25 x 0.8	2	±0.3	11	0.70	1.78	1.43
CXD21P02	1700 ~ 2200	2.00 x 1.25 x 0.7	2	±0.3	18	0.60	1.58	1.22
CXD21A03	1800 ~ 2700	14.2 x 8.9 x 1.9	10	±0.35	N/A	0.45	2.00	1.50
CXD25P02	2300 ~ 2800	2.00 x 1.25 x 0.7	2	±0.3	17	0.50	1.43	1.22
CXD35P02	3300 ~ 3800	2.00 x 1.25 x 0.7	2	±0.3	17	0.50	1.43	1.22



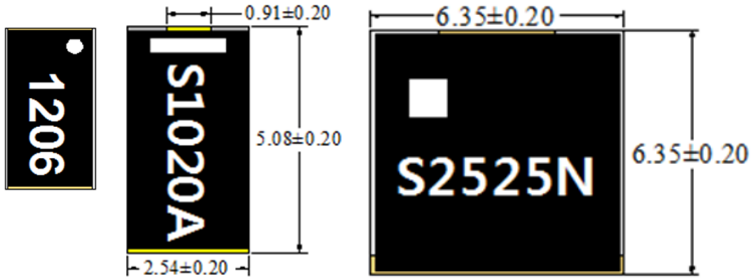


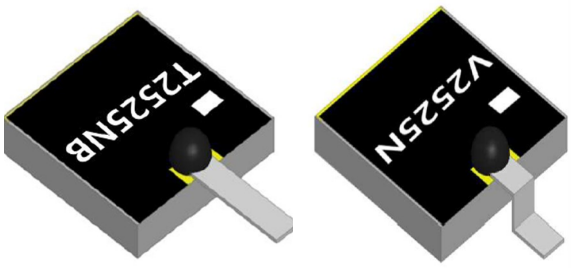




Terminations

Part number	Frequency (MHz)	Dimension (mm)	Power (W)	Impedance (ohms)	VSWR (Max:1)
S1206N	DC ~ 6000	3.05 x 1.52 x 0.38	8	50 ± 2%	1.20
S1020A	DC ~ 4000	2.54 x 5.08 x 0.5	16	50 ± 2%	1.20
S1020N	DC ~ 6000	2.54 x 5.08 x 0.64	50	50 ± 2%	1.15
S2525N100	DC ~ 4000	6.35 x 6.35 x 1.0	100	50 ± 2%	1.20
S2525N	DC ~ 4000	6.35 x 6.35 x 1.0	150	50 ± 2%	1.11
T2525NB	DC ~ 3000	6.35 x 6.35 x 1.5	100	50 ± 2%	1.20
V2525N	DC ~ 3000	6.35 x 6.35 x 1.0	150	50 ± 2%	1.20
T3737NB	DC ~ 2300	9.52 x 9.52 x 1.5	250	50 ± 3%	1.20
V3737NB	DC ~ 2300	9.52 x 9.52 x 1.5	250	50 ± 2%	1.20





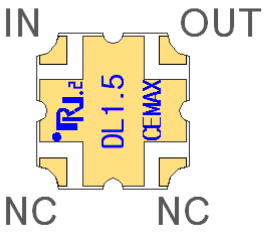
Delay Lines

Part number	Frequency (MHz)	Group Delay (ns)			Insertion Loss (dB)			Return Loss (dB)			Dimension (mm)
		0.5ns	1.0ns	1.5ns	0.5ns	1.0ns	1.5ns	0.5ns	1.0ns	1.5ns	
DL1.5	500 ~ 700	0.50 ± 0.10	0.95 ± 0.08	1.5 ± 0.15	0.6	1.0	1.0	20	20	20	5.08 x 5.08 x 2.40
	700 ~ 1000	0.50 ± 0.15	0.90 ± 0.10	1.6 ± 0.05	0.8	1.4	1.7	18	20	20	
	1000 ~ 1400	0.45 ± 0.10	0.65 ± 0.20	1.3 ± 0.10	0.8	1.4	1.4	20	20	14	
	1400 ~ 1800	0.45 ± 0.10	0.90 ± 0.15	1.5 ± 0.20	1.0	1.5	1.9	14	15	14	
	1800 ~ 2100	0.35 ± 0.30	0.20 ± 0.20	1.3 ± 0.10	1.3	1.4	1.9	12	15	15	
	2100 ~ 2800	0.45 ± 0.15	0.95 ± 0.20	1.35 ± 0.10	1.5	2.0	2.5	12	12	10	

DL1.5

3 delay lines (0.5/1.0/1.5ns) in 1 package

<0.5ns>



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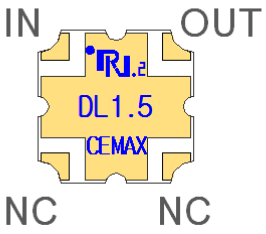

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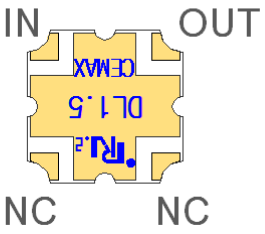
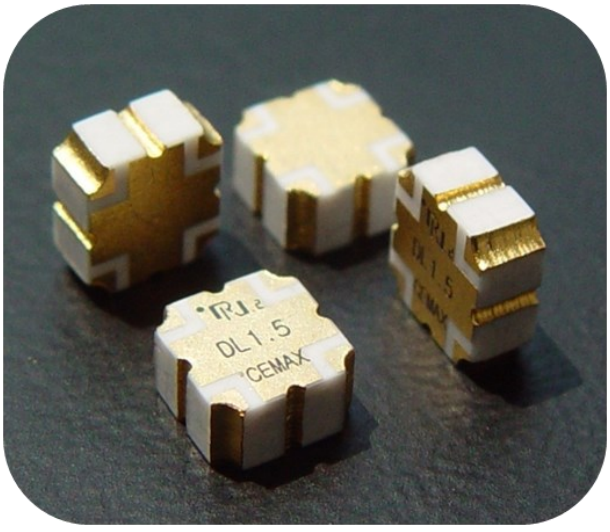
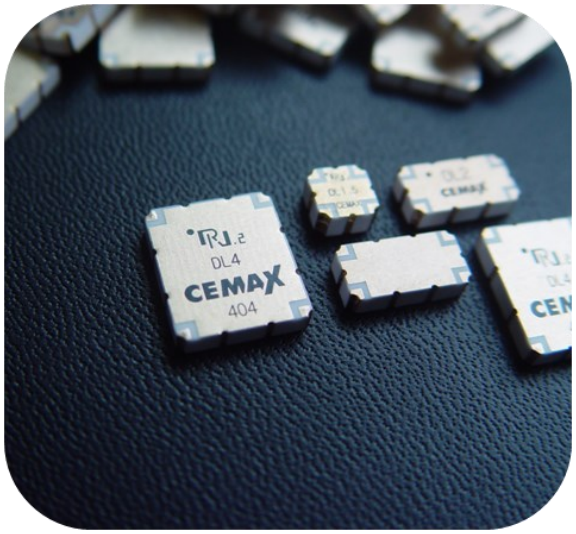
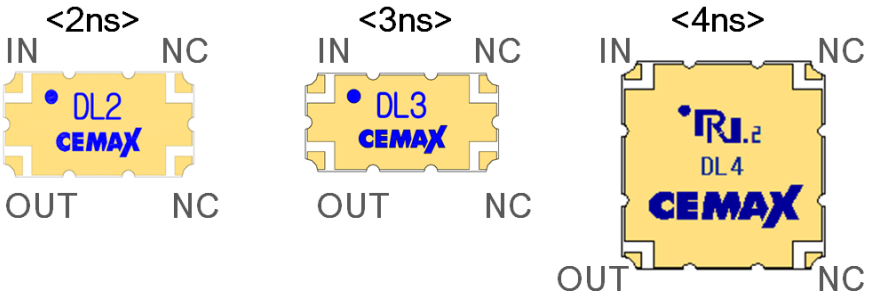


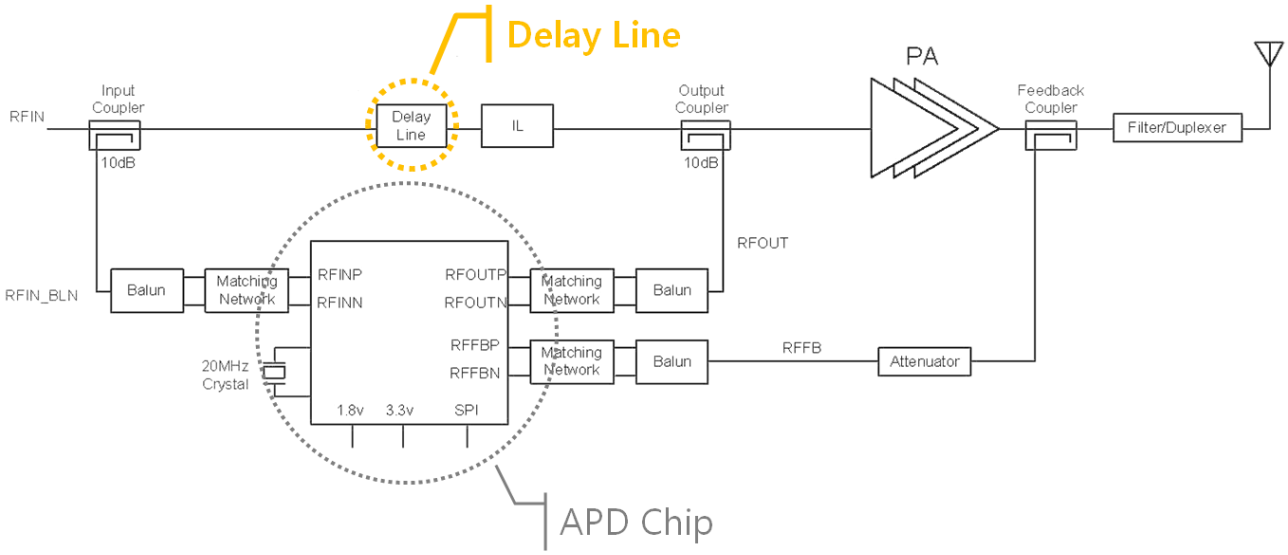




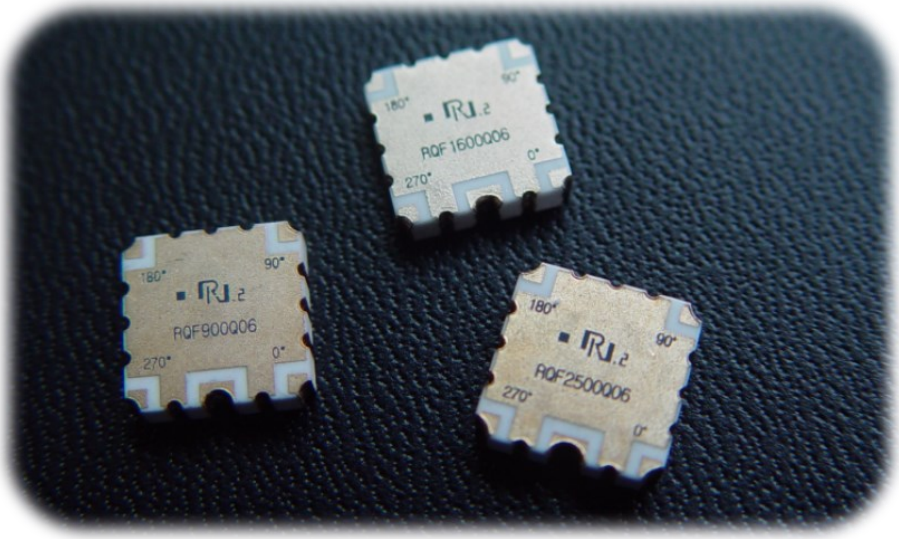
Delay Lines

Part number	Frequency (MHz)	Group Delay (ns)	Insertion Loss (dB)	Return Loss (dB)	Dimension (mm)
DL2	300 ~ 1500	2.00 ± 0.20	0.9	20	10.16 x 5.08 x 2.00
	1500 ~ 2700	2.00 ± 0.20	1.1	14	
DL3	300 ~ 700	3.00 ± 0.20	2.3	20	10.00 x 5.00 x 1.80
	700 ~ 2200	3.05 ± 0.25	4.3	15	
	2200 ~ 2700	3.20 ± 0.25	5.2	15	
DL4	300 ~ 700	3.95 ± 0.10	1.9	20	10.16 x 11.83 x 2.00
	700 ~ 1000	3.95 ± 0.10	2.3	20	
	1000 ~ 1400	3.97 ± 0.10	2.8	20	
	1400 ~ 1800	4.03 ± 0.10	3.4	17	
	1800 ~ 2100	4.11 ± 0.10	3.8	18	
	2100 ~ 2800	4.20 ± 0.20	4.6	15	





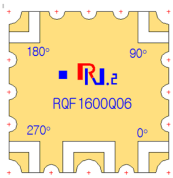
[Schematic of Analog Pre-Distortion Amplifier]

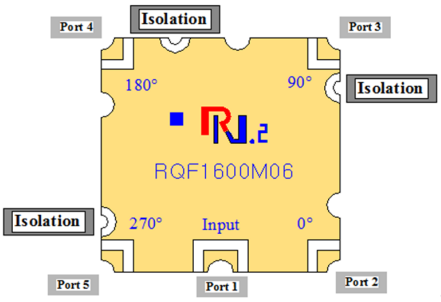


Quadrifilars (4-phase antenna feeder)

Part number	Frequency (MHz)	Dimension (mm)	Amp. Bal. (dB)	Isolation (dB)	I.L. (dB)	VSWR (Max:1)	Phase Bal. (Degrees)
RQF900Q06	865 ~ 930	8.0 x 8.0 x 1.8	±0.6	17	0.75	1.3	90 ± 7
RQF1200Q06	1165 ~ 1300	8.0 x 8.0 x 1.8	±0.5	20	0.80	1.3	90 ± 7
RQF1600Q06	1520 ~ 1660	8.0 x 8.0 x 1.8	±0.5	20	0.50	1.3	90 ± 5
RQF1600M06	1520 ~ 1660	14.0 x 14.0 x 1.5	±0.5	14	0.50	1.4	90 ± 5
RQF2100Q06	1980 ~ 2200	8.0 x 8.0 x 1.8	±0.6	15	0.60	1.4	90 ± 8
RQF2500Q06	2430 ~ 2570	8.0 x 8.0 x 1.8	±0.5	20	0.50	1.3	90 ± 5

[Schematic of Quadrifilar Helical GPS Antenna]





Q
Having internal resistors.
No external resistors needed.

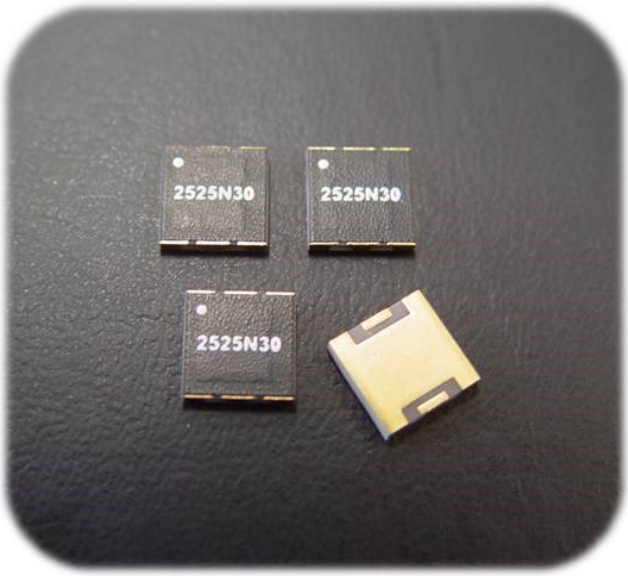
M
No internal resistors.
Need external resistors.

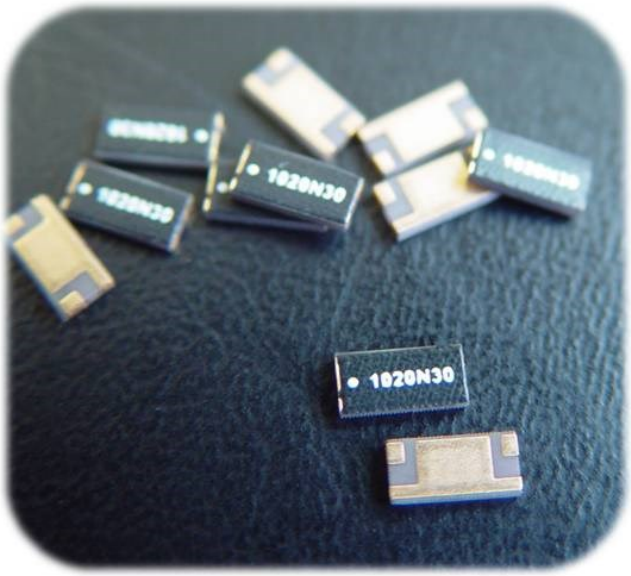
Chip Filters

Part number	Frequency (MHz)	Dimension (mm)	Insertion Loss (dB)	Power (W)	Attenuation (dB)	VSWR (Max:1)
LP09P	DC ~ 900	2.00 x 1.25 x 0.75	0.4	3	30dB @ 2Fo 20dB @ 3Fo	1.7
LP19P	DC ~ 1880	2.00 x 1.25 x 0.75	0.4	3	30dB @ 2Fo 20dB @ 3Fo	1.7
LP27P	DC ~ 2700	2.00 x 1.25 x 0.75	0.4	3	30dB @ 2Fo 20dB @ 3Fo	1.7

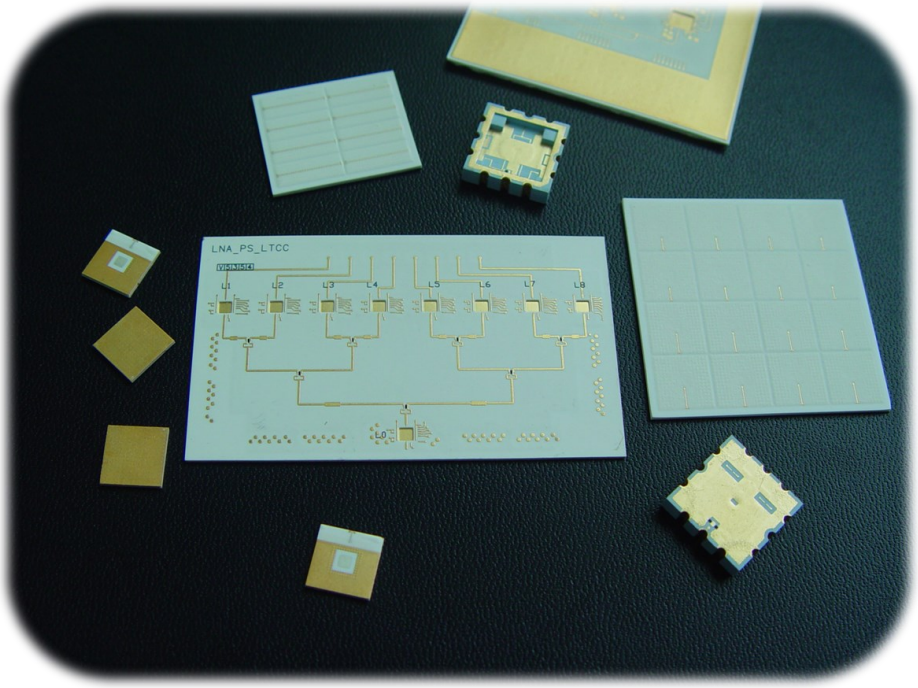
Attenuators

Part number	Frequency (MHz)	Dimension (mm)	Power (W)	Attenuation Value (dB)	VSWR (Max:1)
ATS1020N20	DC ~ 3000	2.54 x 5.08 x 0.64	30	20 ± 1.0	1.20
ATS1020N30	DC ~ 3000	2.54 x 5.08 x 0.64	30	30 ± 1.5	1.25
ATS2525N30	DC ~ 3000	6.35 x 6.35 x 1.00	100	30 ± 1.5	1.40





Foundry Service



LTCC Substrate (Customized & Circuit integrated)

❖Application

- CMOS image sensor module
- 1.5GHz GPS module
- 10GHz radar module
- 18GHz amplifier chain with a switched input
- 23GHz fresnel lens
- 60GHz RF module
- 77GHz RF module

Design Rules (general)

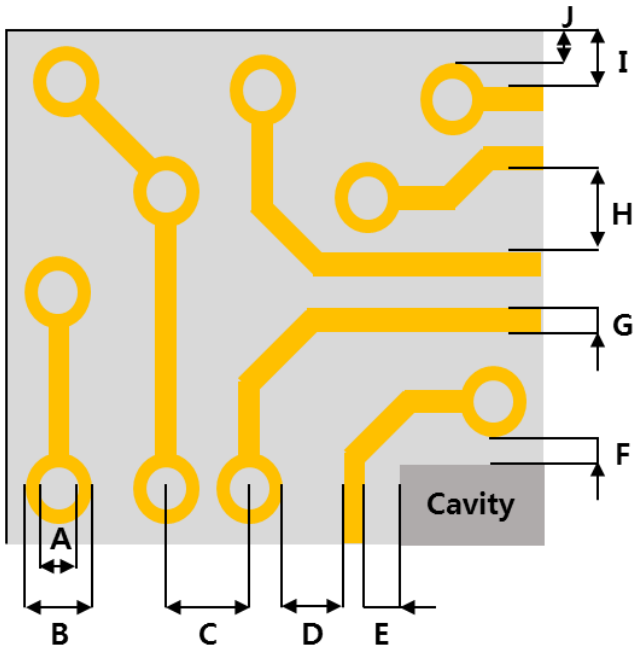
PARAMTER	STANDARD
Layer thickness	0.1mm recommend (0.05mm min) (0.01mm step to 1.0mm Ex> 0.05, 0.06, 0.07,…~1.0mm)
Layer numbers	20 max.
Total substrate thickness	0.5mm min. ~ 2.5mm max.
Substrate size	10.0x10.0cm max.
Different thickness layer stack up	Possible
Conductor (Ag) thickness	0.010~0.014mm
Conductor	Ag
Plating (SMD application)	Ni (2~4um) - Au (0.05um min.)
Plating (Wire bonding application)	Ni (3um) - Au (0,3um min.)

RN2 LTCC Material For High Frequency Application

INDEX	ITEM	STANDARD
Electrical	Dielectric constant	6.0
	Loss tangent	0.0020
Thermal & Mechanical	Thermal expansion coeff.	4~7ppm/℃
	Thermal conductivity	4.8W/mk
	Flexural strength	230MPa
	Layer thickness	0.1mm
	Total layers	15~20
	Substrate size	10x10cm max

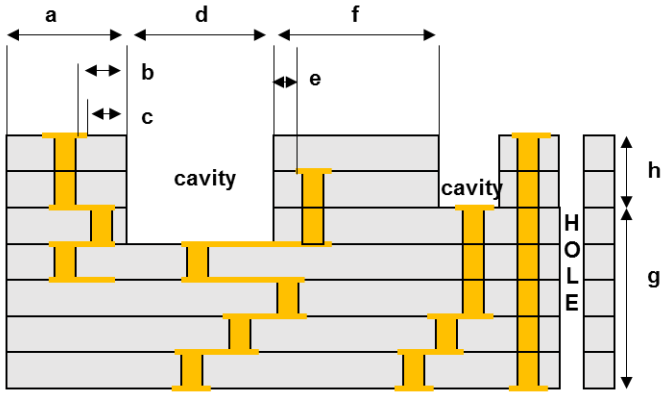
*Other materials can be used based on customer application.

Design Rules (line, via)

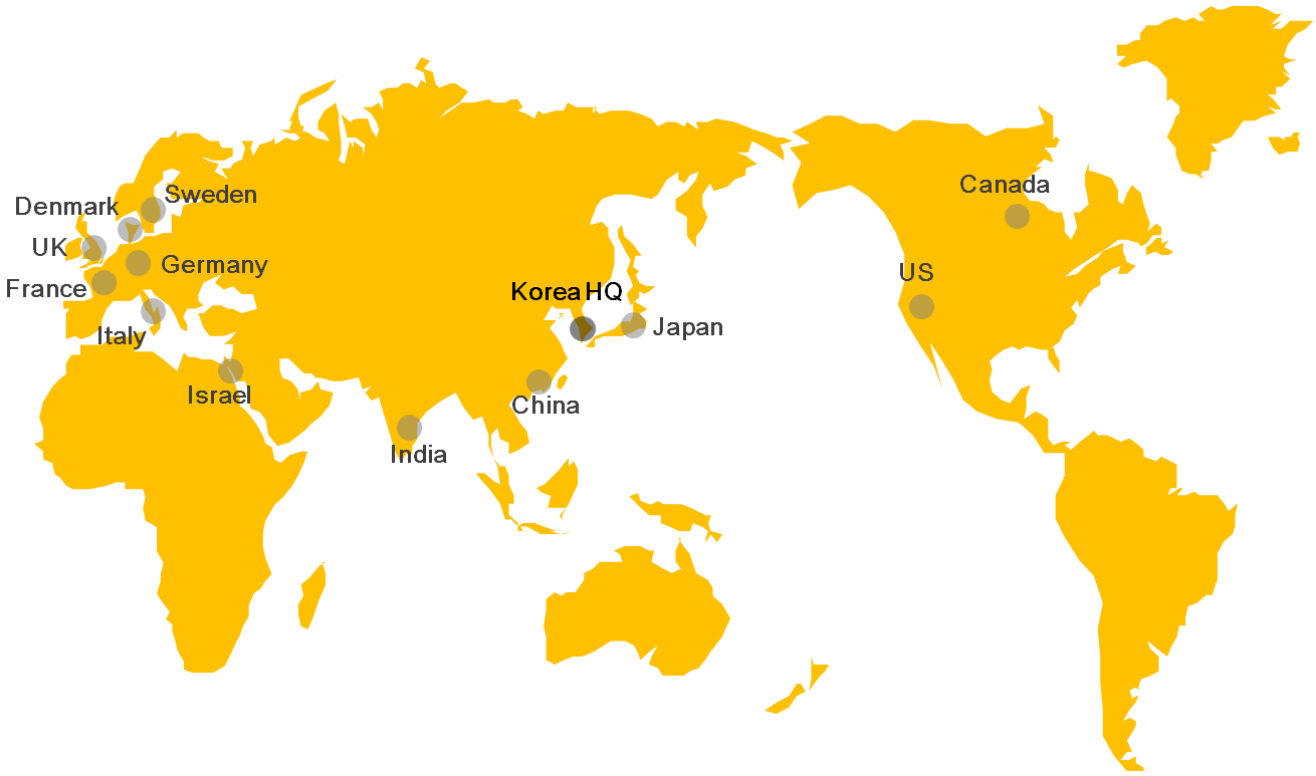


INDEX	ITEM	STANDARD
A	Via diameter	0.15mm
B	Pad diameter	0.25mm
C	Via pitch	0.45mm
D	Via pad to line	0.15mm
E	Line to cavity edge	0.20mm
F	Via cover to cavity edge	0.20mm
G	Line width	0.10mm
H	Line to line	0.10mm
I	Line to substrate edge	0.20mm
J	Via cover to substrate edge	0.20mm

Design Rules (cavity)



INDEX	ITEM	STANDARD
A	Cavity edge to substrate edge	3.00mm
B	Cavity edge to via edge	0.50mm
C	Cavity edge to top pad	0.15mm
D	Cavity size	0.8SQ
E	Cavity to inner pad	0.50mm
F	Cavity edge to cavity edge	1.50mm
G	Thickness under cavity	0.50mm min.
D/H	Cavity to wall aspect ratio	0.8



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