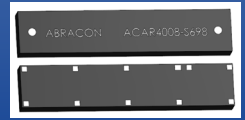


4G/LTE Ceramic Chip Antenna



ACAR4008-S698



40.0 x 8.0 x 3.2 mm
RoHS/RoHS II Compliant
MSL = N/A

Features

- 4G/LTE full band coverage (700~960 MHz, 1710~2170 MHz, 2500~2700MHz)
- 2G/3G/GSM support
- Compact size
- Linear polarization

Applications

- IoT
- M2M
- 4G/LTE/3G/2G/GSM applications
- Telecommunications
- Networking
- Wireless modules
- Mobile devices
- Consumer electronics
- Broadband cellular connectivity
- Video and surveillance

Electrical Characteristics

Item	Spec
Working Frequency	700~960 MHz , 1710~2170 MHz , 2500~2700MHz
VSWR	< 4.0 (depends on the special environment)*
Polarization	Linear
Impedance	50 Ω
Operating Temperature	-40~85 °C
Termination	Ag (Environmentally-Friendly Pb Free)

* Evaluation board size 45.0 x 105.0 mm²

* Actual electrical value will depend on customer ground plane size

4G/LTE Ceramic Chip Antenna

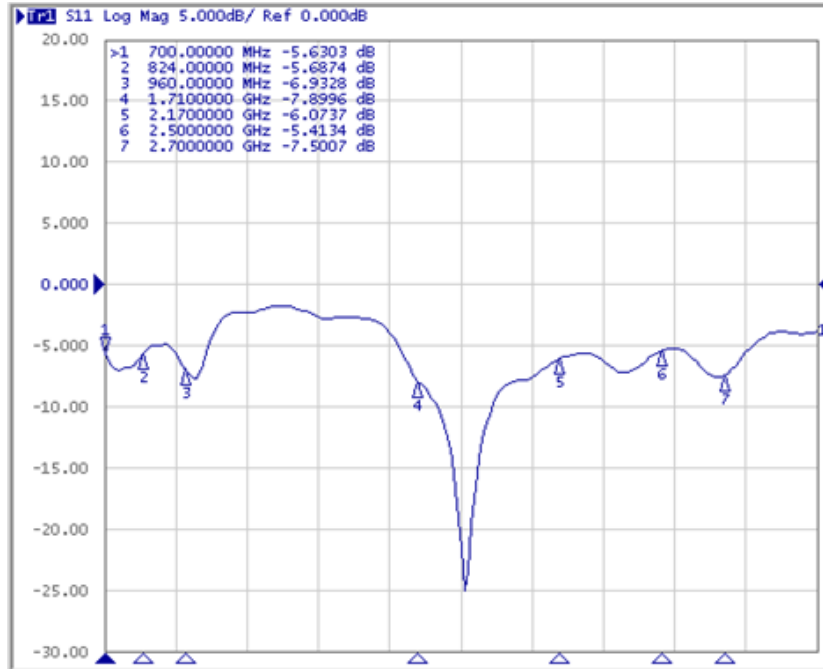


ACAR4008-S698



40.0 x 8.0 x 3.2 mm
RoHS/RoHS II Compliant
MSL = N/A

S11 Response Curve



VSWR Response



4G/LTE Ceramic Chip Antenna

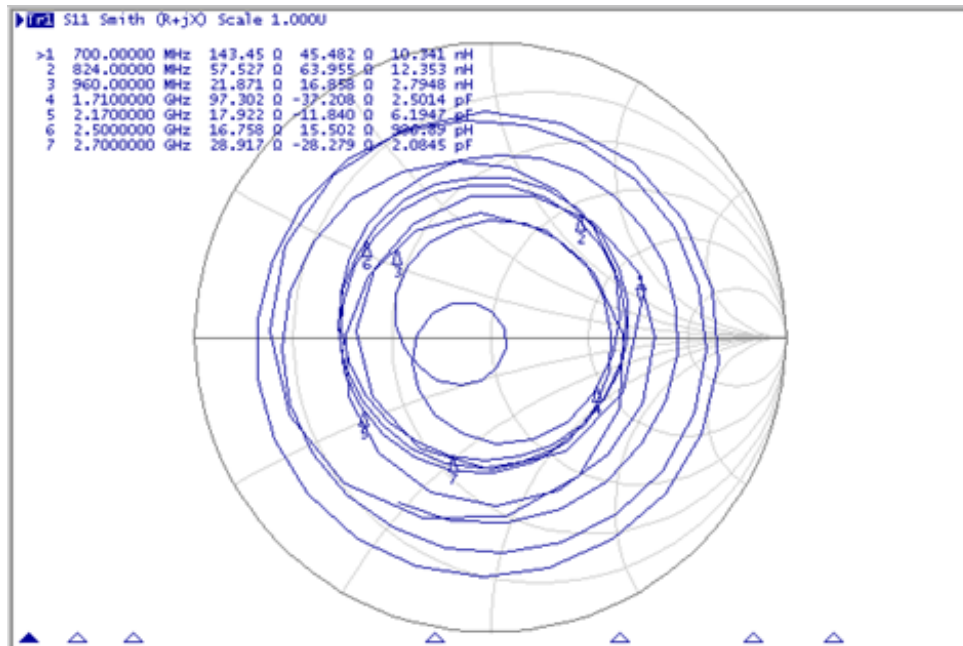


ACAR4008-S698



40.0 x 8.0 x 3.2 mm
RoHS/RoHS II Compliant
MSL = N/A

Smith Chart Response

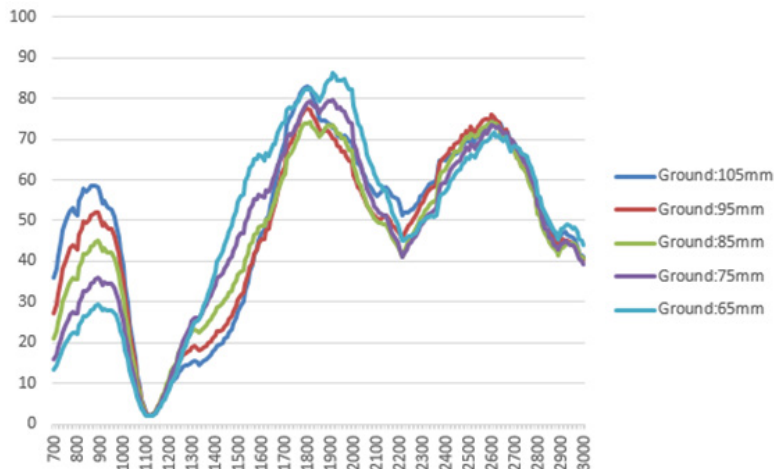


Gain and Efficiency

(Ground length: 105mm)

Antenna Parameter Summary										
Band	700	824	890	960	1710	1850	1990	2170	2500	2700
Peak Gain(dBi)	-1.55	0.1	0.33	-0.16	4.10	3.79	2.75	2.27	2.74	1.75
Efficiency(%)	35.78	56.34	58.14	50.82	73.61	75.01	69.64	55.96	69.45	68.84

Reference efficiency data with different ground plane length:



4G/LTE Ceramic Chip Antenna

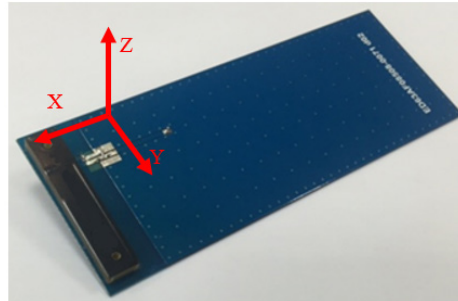


ACAR4008-S698

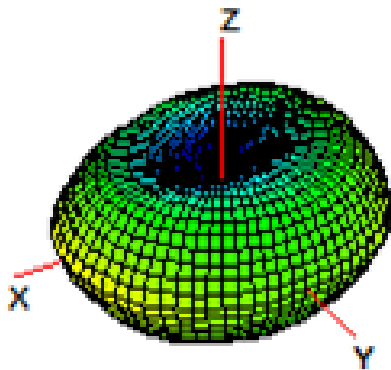


40.0 x 8.0 x 3.2 mm
RoHS/RoHS II Compliant
MSL = N/A

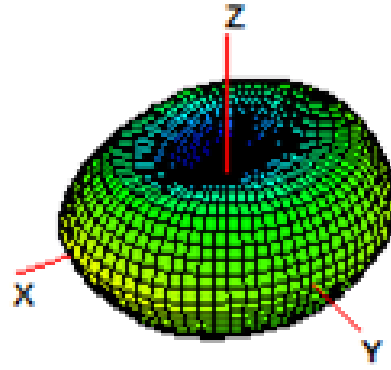
3D Radiation Pattern



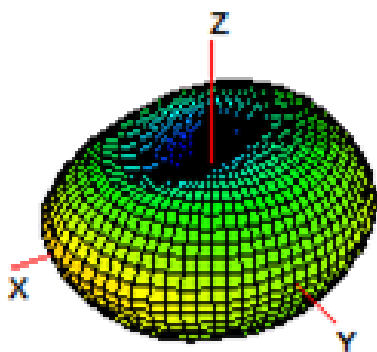
700MHz



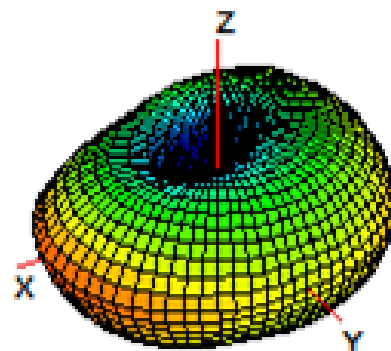
824MHz



890MHz



960MHz



4G/LTE Ceramic Chip Antenna

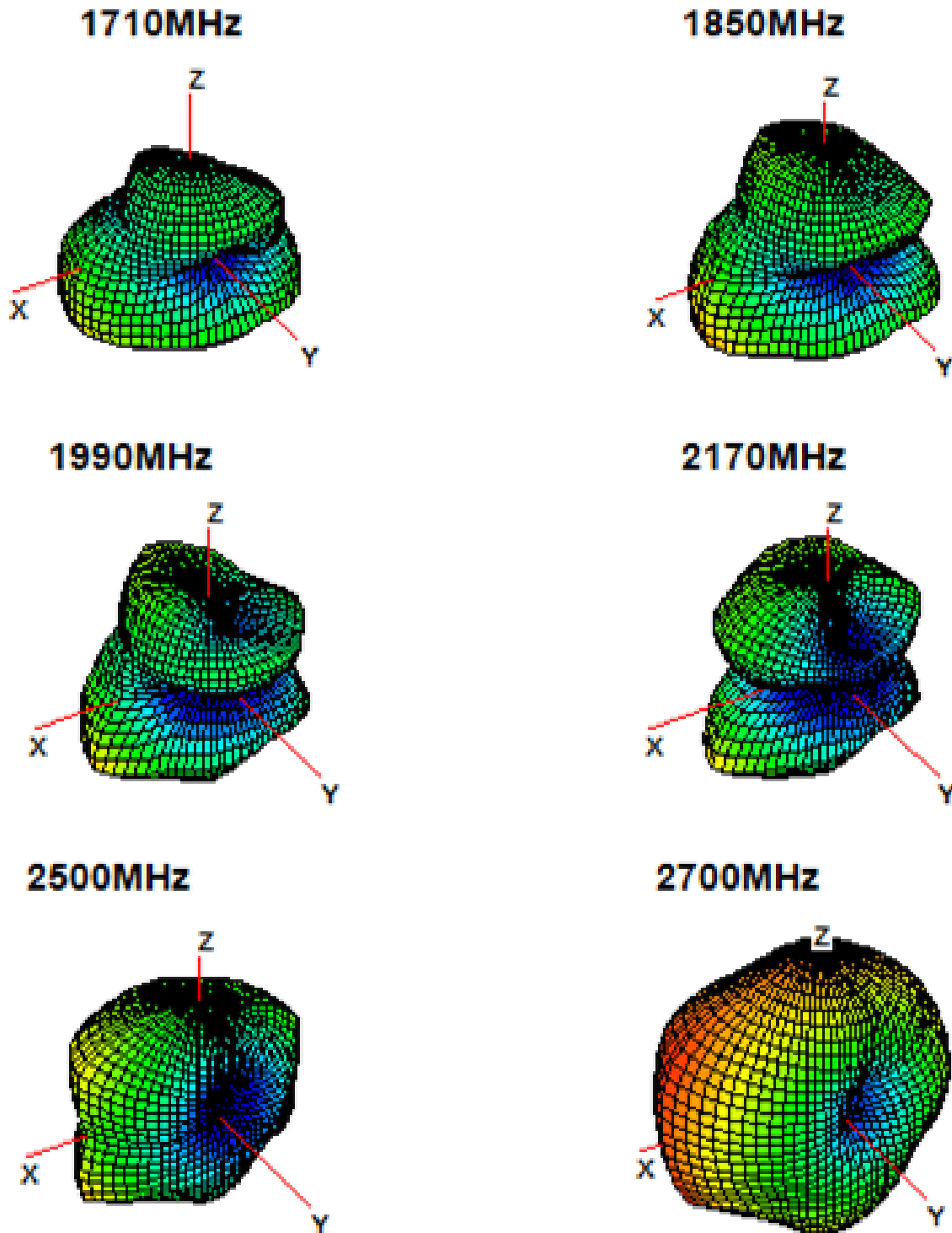


ACAR4008-S698



40.0 x 8.0 x 3.2 mm
RoHS/RoHS II Compliant
MSL = N/A

3D Radiation Pattern



4G/LTE Ceramic Chip Antenna



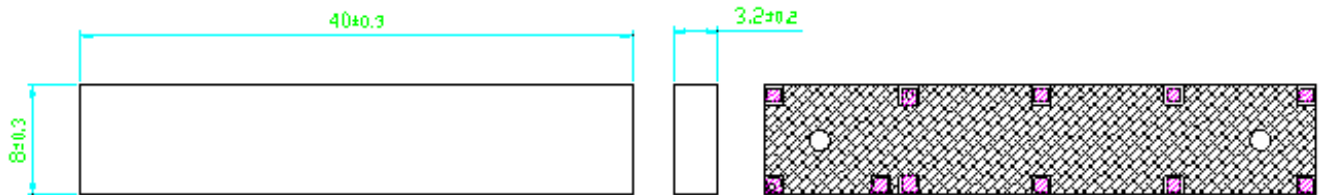
ACAR4008-S698



40.0 x 8.0 x 3.2 mm
RoHS/RoHS II Compliant
MSL = N/A

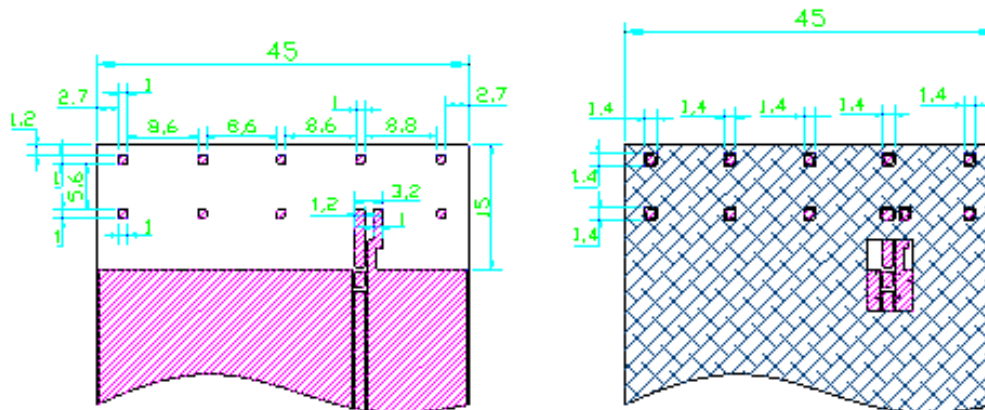
Drawings

Shape and Dimensions



Unit: mm

Recommended Foot Print for Evaluation Board



Copper layer

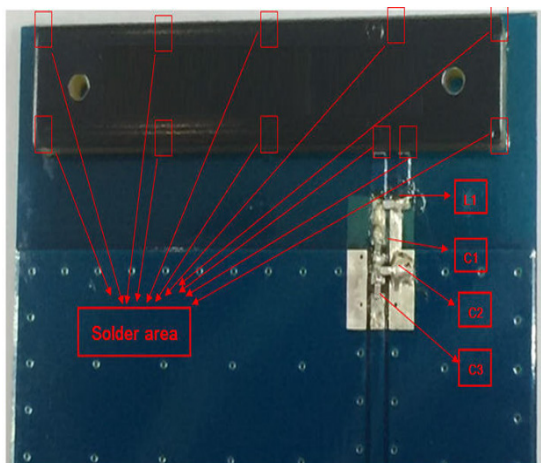
Top layer

Solder area

Solder mask

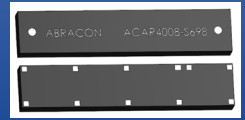
Top layer

Tolerances unless otherwise specified ± 0.1 mm
t,w=Unique dimensioning according to your PCB.



Circuit Symbol	Size	Description
L1	0402	6.8nH Inductor
C1	0402	6.8pF Capacitor
C2	0402	1.2pF Capacitor
C3	0402	6.8pF Capacitor

4G/LTE Ceramic Chip Antenna



ACAR4008-S698



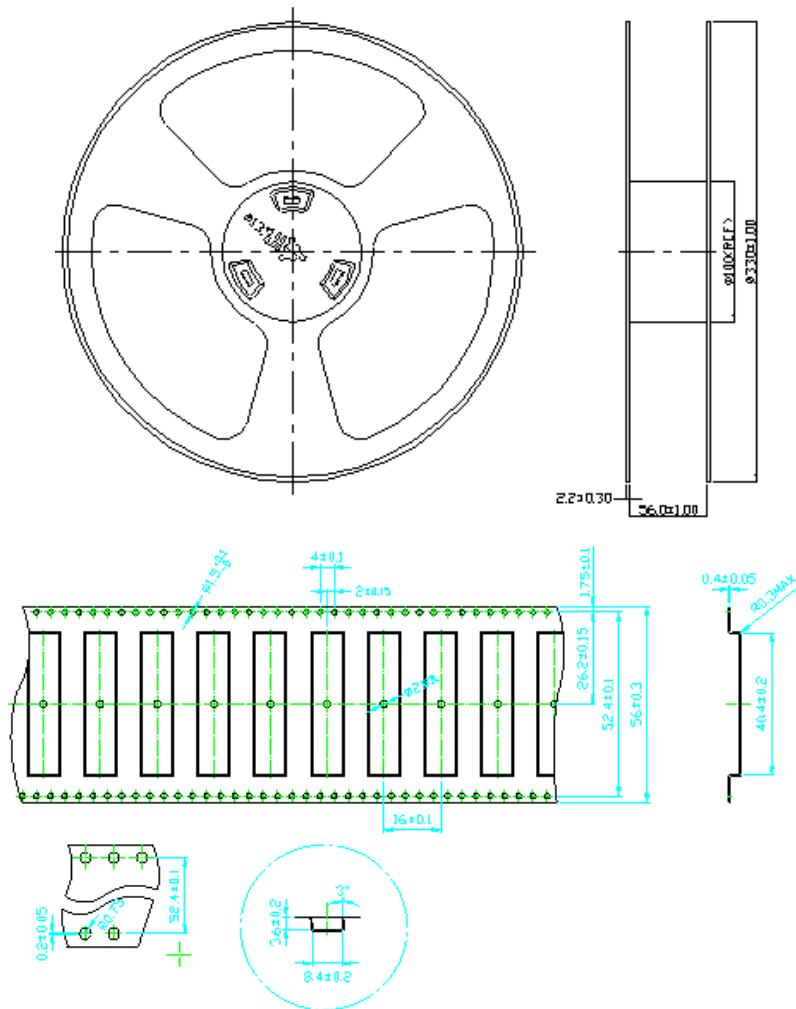
40.0 x 8.0 x 3.2 mm
RoHS/RoHS II Compliant
MSL = N/A

Environmental Conditions

Parameters	Description
Operating Temperature Range	-40°C to + 85°C
Relative Humidity	0 ~ 95% RH @ +40°C
Storage Temperature Range	-40°C to + 85°C

Packaging

1. Blister tape to IEC 286-3, polyester
2. 1000 pcs/reel
3. 370*360*275 mm (3000 pcs/Carton)
4. GW – 7.1 Kg



Unit: mm

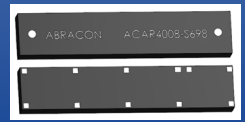


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4G/LTE Ceramic Chip Antenna

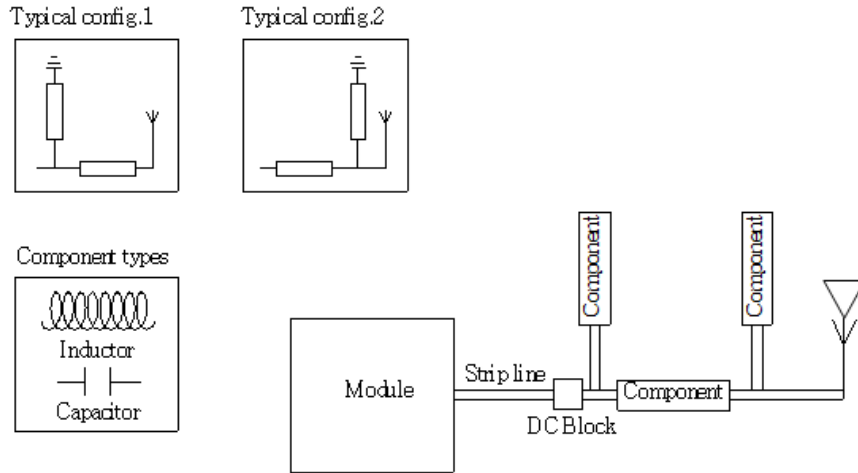


ACAR4008-S698



40.0 x 8.0 x 3.2 mm
RoHS/RoHS II Compliant
MSL = N/A

Transmission Line and Matching



The matching network has to be individually designed using one, two, or three components.

Recommended Reflow Soldering Profile

Abrakon products can be assembled following Pb-free assembly. According to the Standard IPC/JEDEC J-STD-020C, the temperature profile suggested is as follow:

Phase	Profile features	Pb-Free Assembly (SnAgCu)
PREHEAT	-Temperature Min(Tsmin) -Temperature Max(Tsmax) -Time(ts) form (Tsmin to Tsmax)	150°C 200°C 60-120 seconds
RAMP-UP	Avg. Ramp-up Rate (Tsmax to TP)	3°C/second(max)
REFLOW	-Temperature(TL) -Total Time above TL (t L)	217°C 30-100 seconds
PEAK	-Temperature(TP) -Time(tp)	260°C 10-20 second
RAMP-DOWN	Rate	6°C/ second max.
Time from 25°C to Peak Temperature		8 minutes max.
Composition of solder paste		96.5Sn/3Ag/0.5Cu
Solder Paste Model		SHENMAO PF606-P26