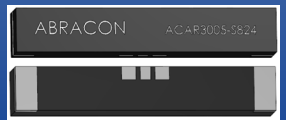


2G/3G/GSM Ceramic Chip Antenna



ACAR3005-S824



30.0 x 5.0 x 5.0 mm
RoHS/RoHS II Compliant
MSL = N/A

Features

- 824~960 MHz, 1710~2170 MHz band support
- Covering GSM850, GSM900, DCS, PCS, & UMTS
- 2G/3G/GSM support
- Omnidirectional pattern
- Linear polarization

Applications

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

Electrical Characteristics

| Item | Spec | |
|-----------------------|--|----|
| Working Frequency | 824~960 MHz, 1710~2170 MHz | |
| Dimension | 30.0 × 5.0 × 5.0 mm | |
| VSWR | 3 max (depends on the special environment) | |
| Polarization | Linear | |
| Impedance | 50 Ω | |
| Operating Temperature | -40~85°C | |
| Termination | Ag (Environmentally-Friendly Pb Free) | |
| Efficiency(%) | 824~960 MHz | 55 |
| | 1710~2170 MHz | 60 |

* Evaluation board size 40.0 x 120.0 mm²

* Actual electrical value will depend on customer ground plane size

2G/3G/GSM Ceramic Chip Antenna

ABRACON ACAR3005-S824

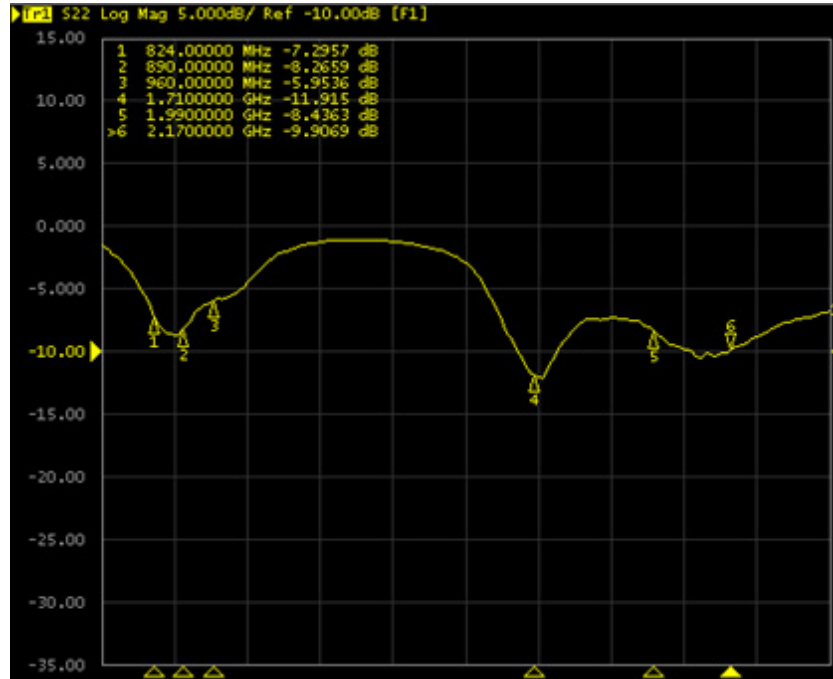


ACAR3005-S824



30.0 x 5.0 x 5.0 mm
RoHS/RoHS II Compliant
MSL = N/A

Return Loss Characteristics



2G/3G/GSM Ceramic Chip Antenna



ACAR3005-S824

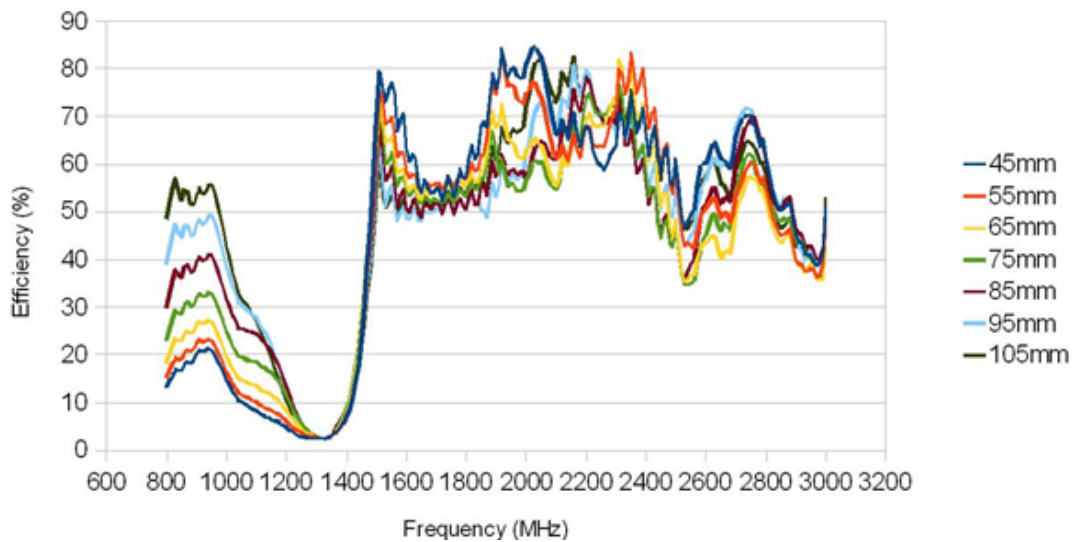


30.0 x 5.0 x 5.0 mm
RoHS/RoHS II Compliant
MSL = N/A

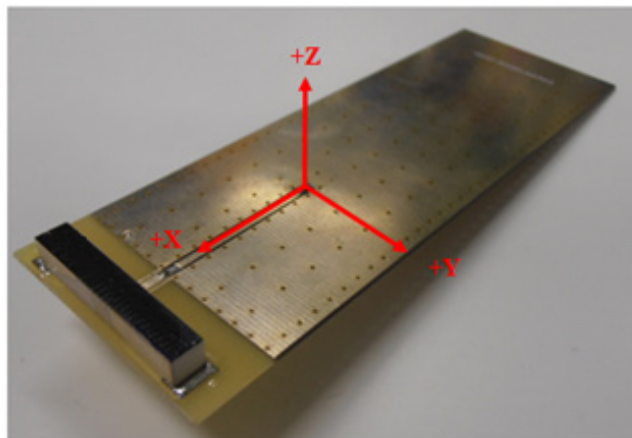
Gain and Efficiency

(Ground length: 107mm)

| Peak Gain Parameter Summary | | | | | | | | | | |
|-----------------------------|-----------|-------|-------|-------|-----------|-------|-----------|-------|-------------|-------|
| Band | GSM (MHz) | | | | DCS (MHz) | | PCS (MHz) | | WCDMA (MHz) | |
| | 824 | 890 | 880 | 960 | 1710 | 1880 | 1850 | 1990 | 2110 | 2170 |
| Peak Gain(dBi) | 0.77 | 0.10 | 0.55 | -0.18 | 2.08 | 1.78 | 2.12 | 2.70 | 3.03 | 3.12 |
| Efficiency(%) | 59.4 | 53.15 | 54.12 | 54.57 | 54.42 | 53.18 | 53.90 | 58.94 | 66.10 | 63.80 |



3D Radiation Pattern



2G/3G/GSM Ceramic Chip Antenna

ABRACON ACAR3005-S824

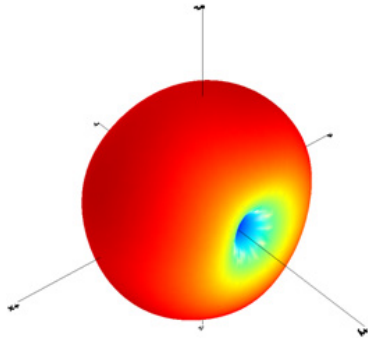


ACAR3005-S824

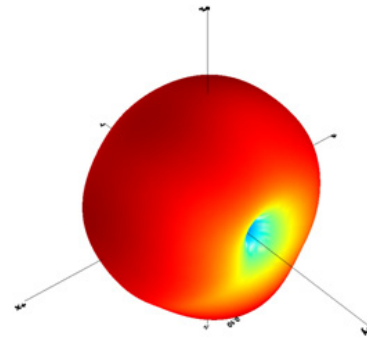


30.0 x 5.0 x 5.0 mm
RoHS/RoHS II Compliant
MSL = N/A

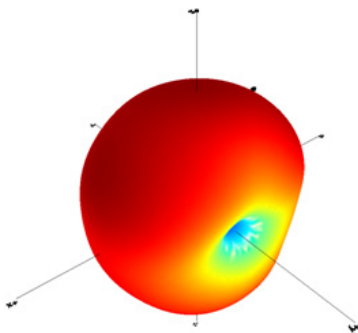
3D Radiation Pattern



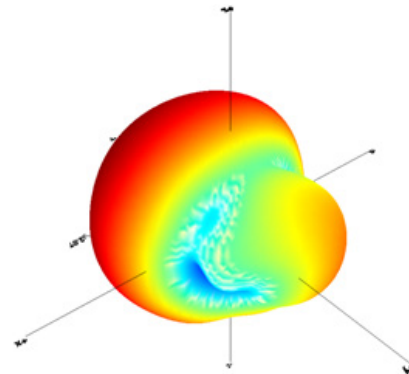
824MHz



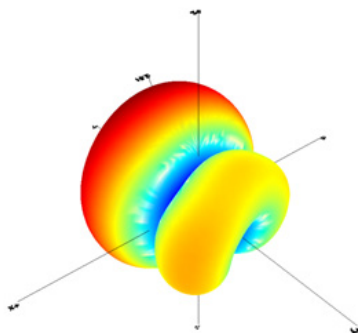
890MHz



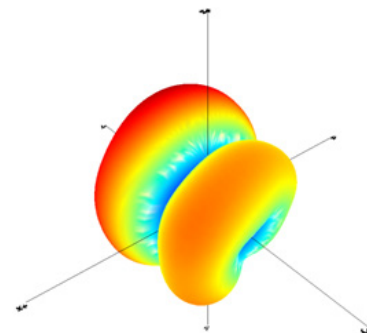
960MHz



1710MHz



1990MHz



2170MHz

2G/3G/GSM Ceramic Chip Antenna

ABRACON ACAR3005-S824



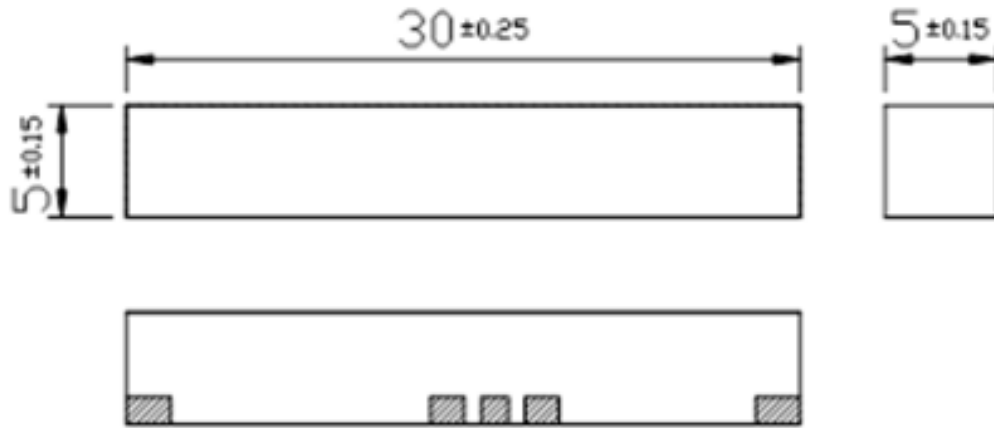
ACAR3005-S824



30.0 x 5.0 x 5.0 mm
RoHS/RoHS II Compliant
MSL = N/A

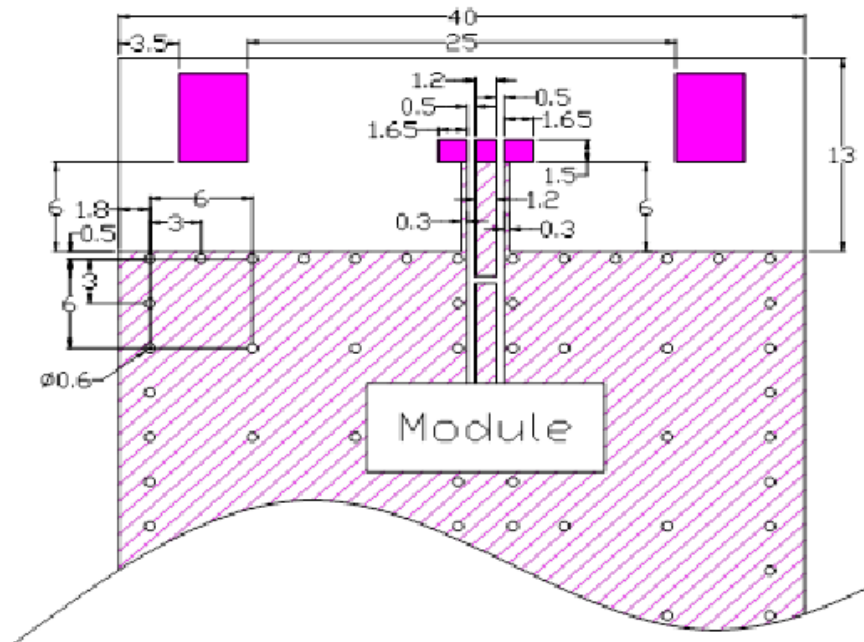
Drawings

Shape and Dimensions



Unit: mm

Recommended Foot Print for Evaluation Board



2G/3G/GSM Ceramic Chip Antenna



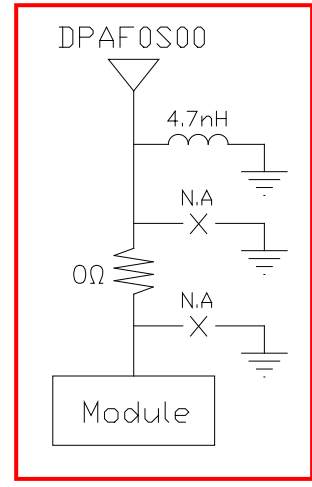
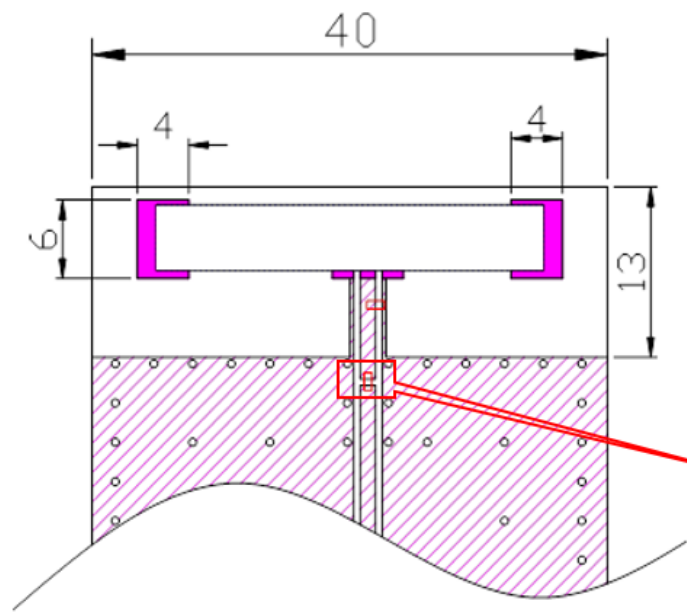
ACAR3005-S824



30.0 x 5.0 x 5.0 mm
RoHS/RoHS II Compliant
MSL = N/A

Antenna Environment on Demo Board

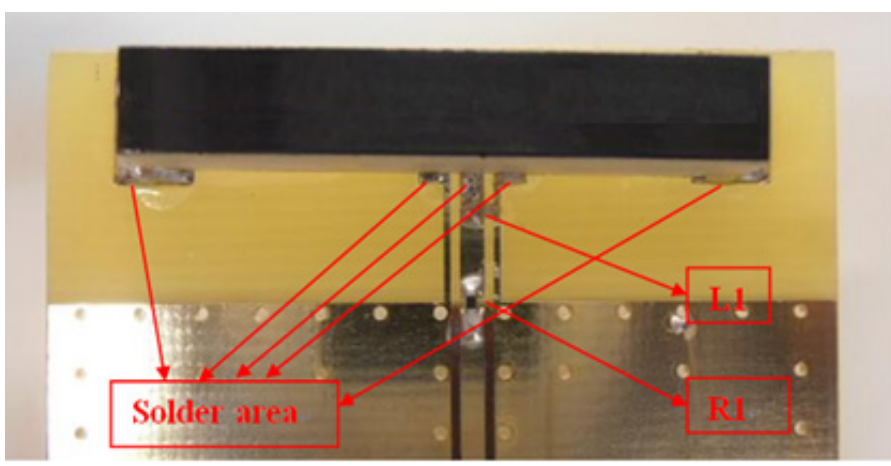
Matching Circuit



Pi type matching

A pi type matching circuit is needed between antenna and module.

Unit: mm



| Circuit Symbol | Size | Description |
|----------------|------|----------------|
| L1 | 0402 | 4.7nH Inductor |
| R1 | 0402 | 0 Ω |

2G/3G/GSM Ceramic Chip Antenna

ABRACON ACAR3005-S824

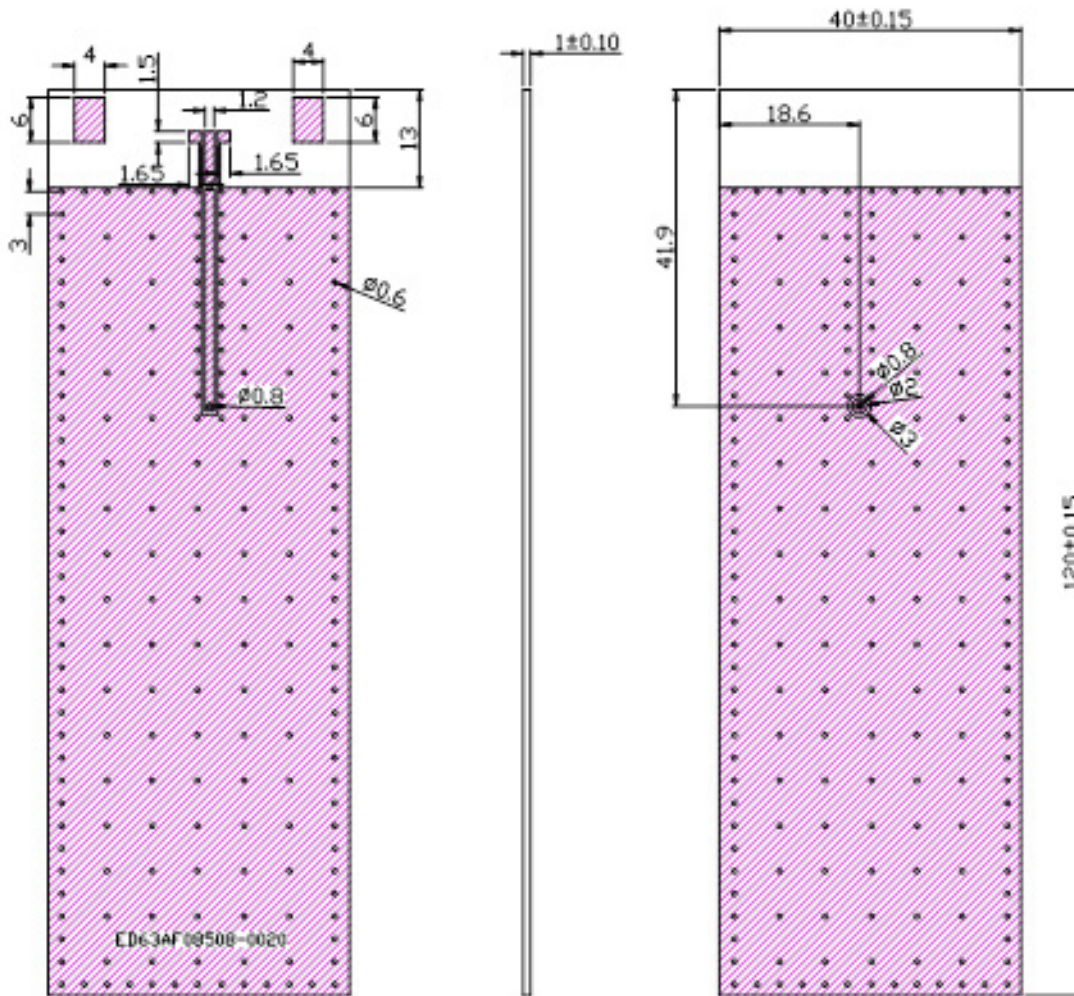


ACAR3005-S824



30.0 x 5.0 x 5.0 mm
RoHS/RoHS II Compliant
MSL = N/A

Test Board Dimensions



Unit: mm

Environmental Conditions

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

2G/3G/GSM Ceramic Chip Antenna

ABRACON ACAR3005-S824



ACAR3005-S824



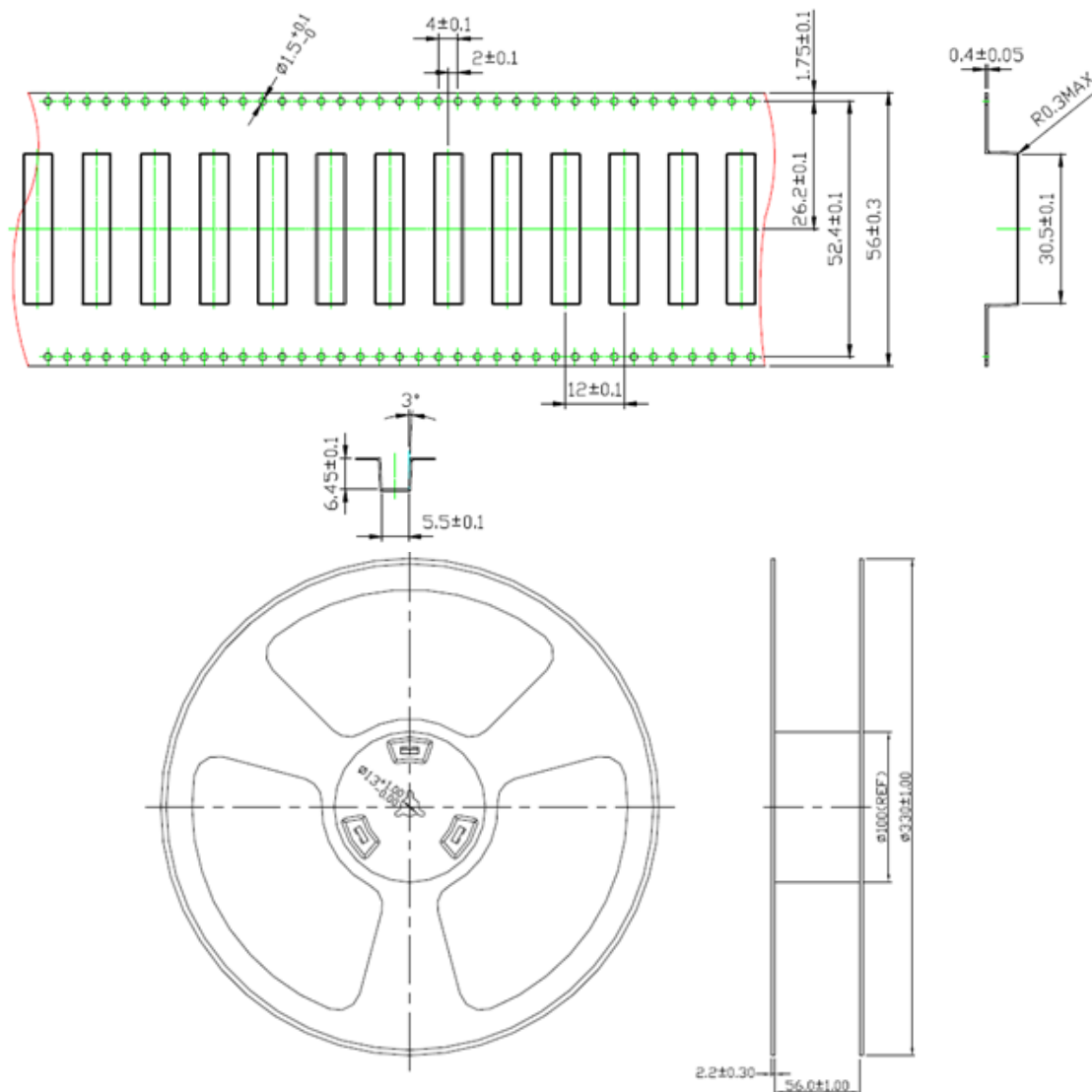
30.0 x 5.0 x 5.0 mm
RoHS/RoHS II Compliant
MSL = N/A

Precautions

- Antenna pattern use an Ag electrode.
- Please don't use the corrosion gas (sulfur gas, chlorine gas) in the atmosphere.
- Please don't direct solder onto the gold electrode of Antenna pattern.

Packaging

1. 450pcs/reel
2. 350.0 x 340.0 x 67.0 mm (450pcs/Cartron-Inside)
3. 370.0 x 360.0 x 275.0 mm (1,350pcs/Cartron-Outside)
4. GW - 6.19KG



Unit: mm

2G/3G/GSM Ceramic Chip Antenna

ABRACON ACAR3005-S824



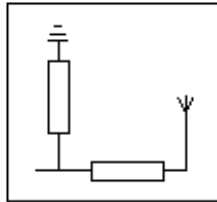
ACAR3005-S824



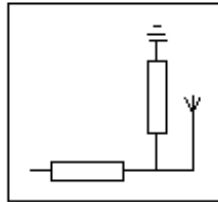
30.0 x 5.0 x 5.0 mm
RoHS/RoHS II Compliant
MSL = N/A

Transmission Line and Matching

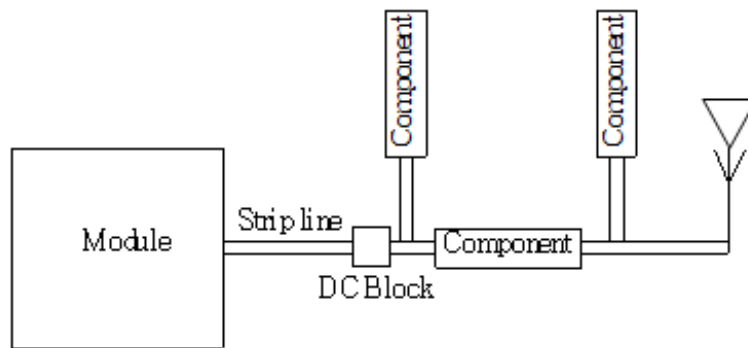
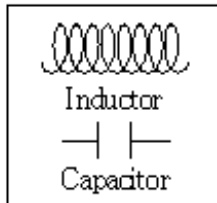
Typical config.1



Typical config.2



Component types



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 | Sn-Pb Assembly | Pb-Free Assembly (SnAgCu) |
|------------------------------------|--|----------------------------------|----------------------------------|
| PREHEAT | Avg. Ramp-up Rate (T _{max} to TP) | 3°C/second (max) | 3°C/second (max) |
| RAMP-UP | -Temperature Min(T _{Smin}) -Temperature Max(T _{Smin}) -Time(t _{Smin} to t _{Smax}) | 100°C 150°C 60-120 seconds | 100°C 150°C 60-120 seconds |
| REFLOW | -Temperature(T _L) -Total Time above T _L (t _L) | 183°C 60-150 seconds | 217°C 60-150 seconds |
| PEAK | -Temperature(T _P) -Time(t _p) | 235°C 10-30 second | 260°C 20-40 second |
| RAMP-DOWN | Rate | 6°C/ second max. | 6°C/ second max. |
| Time from 25°C to Peak Temperature | | 6 minutes max. | 8 minutes max. |

2G/3G/GSM Ceramic Chip Antenna

ABRACON ACAR3005-S824

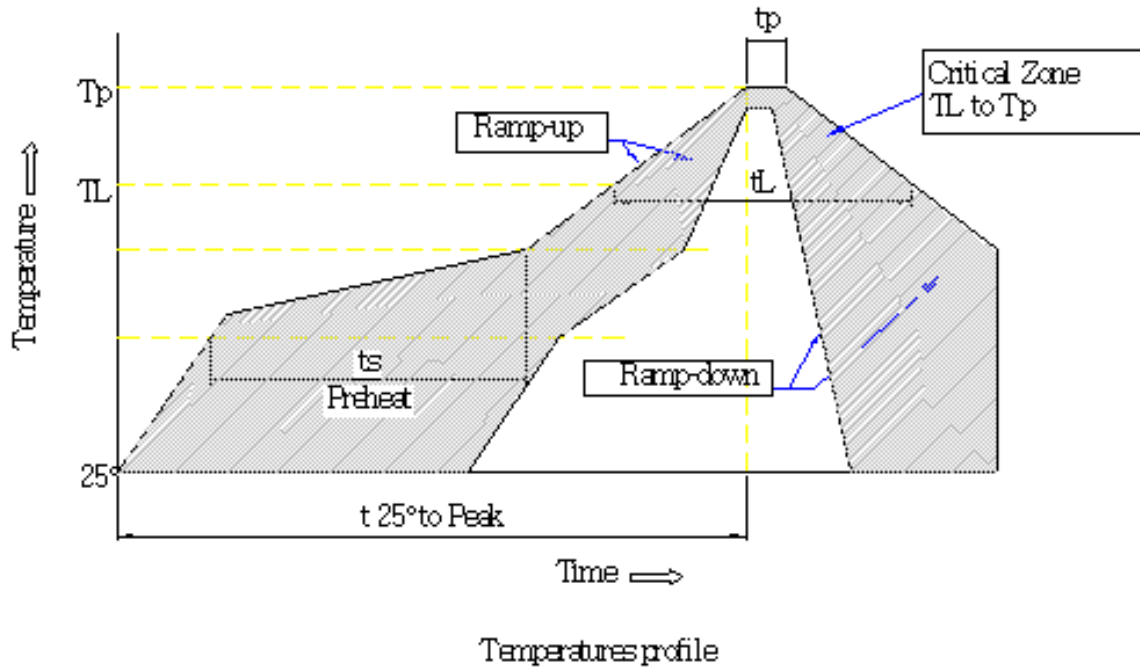


ACAR3005-S824



30.0 x 5.0 x 5.0 mm
RoHS/RoHS II Compliant
MSL = N/A

Next graphic shows temperature profile (gray zone) for the antenna assembly process in reflow ovens



ATTENTION: Abracon LLC's products are COTS – Commercial-Off-The-Shelf products; suitable for Commercial, Industrial and, where designated, Automotive Applications. Abracon's products are not specifically designed for Military, Aviation, Aerospace, Life-dependent Medical applications or any application requiring high reliability where component failure could result in loss of life and/or property. For applications requiring high reliability and/or presenting an extreme operating environment, written consent and authorization from Abracon LLC is required. Please contact Abracon LLC for more information.



5101 Hidden Creek Ln Spicewood TX 78669
Phone: 512-371-6159 | Fax: 512-351-8858
For terms and conditions of sales, please visit:
www.abracon.com

REVISED: 11.09.2018

ABRACON IS
ISO9001-2015
CERTIFIED