

# DP 2012 Series

## Multilayer Chip Diplexers

### Features

- ❖ Monolithic structure including one low-pass and one band-pass filters with loss pole at adjacent passband.
- ❖ RoHS compliant.



### Applications

- ❖ Dual-band / dual-mode LTE mobile communication.

### Specifications

| Part Number  | Passband (MHz) | Insertion Loss(dB)                                   | Return Loss(dB)      | Attenuation (dB)                     | Isolation (dB)  |
|--|----------------|--|----------------------|--------------------------------------|---|
| <b>DP2012-R1746KA</b>  | 617 - 960      | 0.35 max. / 0.17 typ. @ 25°C<br>0.50 max. @ -40~85°C | 10min. /<br>13 typ.  | 17 min. / 20 typ.<br>@3300 - 3400MHz | 25min. / 30 typ.<br>@617 - 960MHz<br>25 min. / 30 typ.<br>@1427 - 1511MHz<br>25 min. / 30 typ.<br>@1710 - 2170MHz<br>25 min. / 30 typ.<br>@2170 - 2690MHz<br>17 min. / 20 typ.<br>@3300 - 3400MHz<br>17 min. / 20 typ.<br>@3400 - 3800MHz<br>22 min. / 25 typ.<br>@5150 - 5925MHz |
|  | 1427 - 1511    | 0.45 max. / 0.29 typ. @ 25°C<br>0.60 max. @ -40~85°C |                      |                                      |   |
|  | 1710 - 2170    | 0.75 max. / 0.57 typ. @ 25°C<br>0.90 max. @ -40~85°C | 10 min. /<br>12 typ. | 17 min. / 20 typ.<br>@3400 - 3800MHz |   |
|  | 2300 - 2496    | 1.1 max. / 0.85 typ. @ 25°C<br>1.25 max. @ -40~85°C  |                      | 22 min. / 25 typ.<br>@5150 - 5925MHz |   |
|  | 2496 - 2690    | 1.3 max. / 1.15 typ. @ 25°C<br>1.45 max. @ -40~85°C  |                      |                                      |   |
|  | 3300 - 3400    | 1.3max. / 1.2 typ. @ 25°C<br>1.45 max. @ -40~85°C    | 10 min. /<br>12 typ. | 25 min. / 30 typ.<br>@617 - 960MHz   |   |
|  | 3400 - 3800    | 1.1 max. / 0.97 typ. @ 25°C<br>1.25 max. @ -40~85°C  |                      | 25 min. / 30 typ.<br>@1427 - 1511MHz |   |
|  | 5150 - 5925    | 0.9 max. / 0.72 typ. @ 25°C<br>1.05 max. @ -40~85°C  |                      | 25 min. / 30 typ.<br>@1710 - 2170MHz |   |
| 23 min. / 28 typ.<br>@2170 - 2690MHz<br>10 min. / 15 typ.<br>@10300 - 11850MHz<br>15 min. / 20 typ.<br>@15450 - 17775MHz |                |  |                      |                                      |   |

Q'ty/Reel (pcs) : 4,000  
 Operating Temperature Range : -40 ~ +85 °C  
 Storage Temperature Range : -40 ~ +85 °C  
 Storage Period : 12 months max.  
 Power Capacity : 3W max.

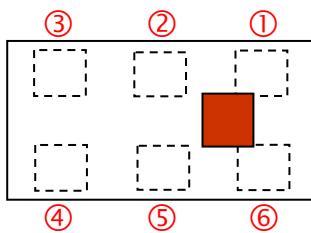
### Part Number

**DP 2012 - R 1746 KA □ /LF**

①      ②      ③      ④      ⑤      ⑥      ⑦

|                      |               |                        |                           |
|----------------------|---------------|------------------------|---------------------------|
| ① Type               | DP : Diplexer | ② Dimensions ( L × W ) | 2.0 × 1.2 mm              |
| ③ Material Code      | R             | ④ Frequency Range      | 1746=1700MHz /4600MHz     |
| ⑤ Specification Code | KA            | ⑥ Packaging            | T: Tape & Reel<br>B: Bulk |
| ⑦ Soldering          | /LF=lead-free |                        |                           |

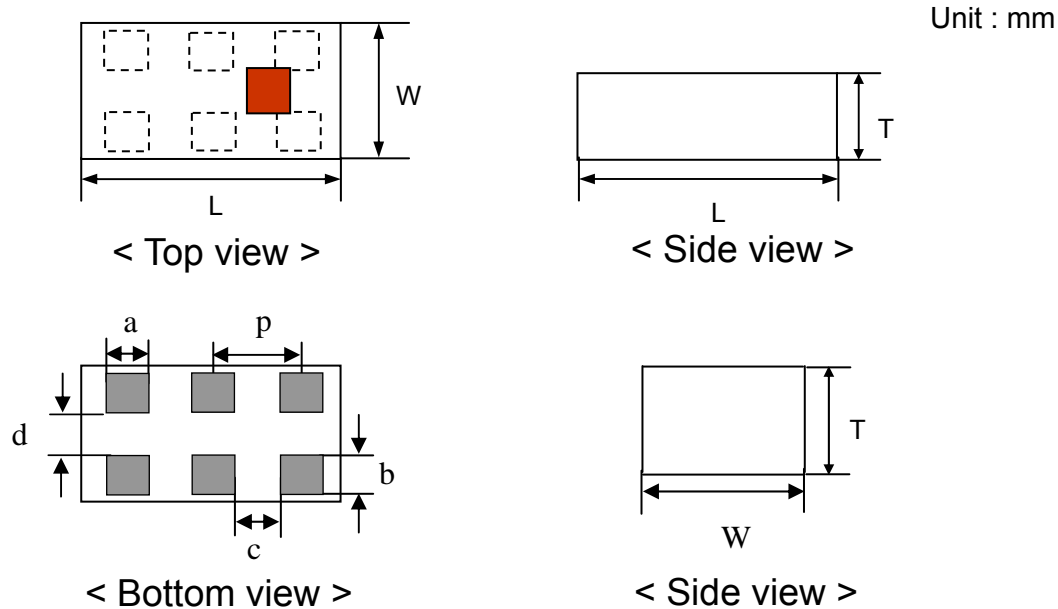
### Terminal Configuration



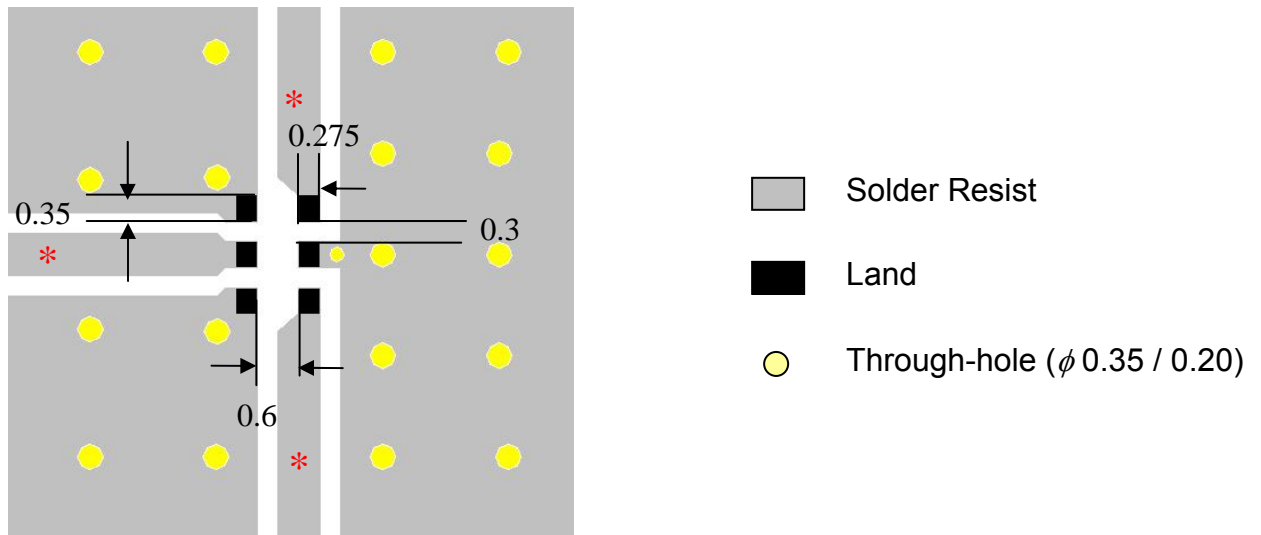
| No. | Terminal Name | No. | Terminal Name     |
|-----|---------------|-----|-------------------|
| ①   | GND           | ④   | Higher Freq. Port |
| ②   | Common Port   | ⑤   | GND               |
| ③   | GND           | ⑥   | Lower Freq. Port  |

<Top view >

### Dimensions and Recommended PC Board Pattern

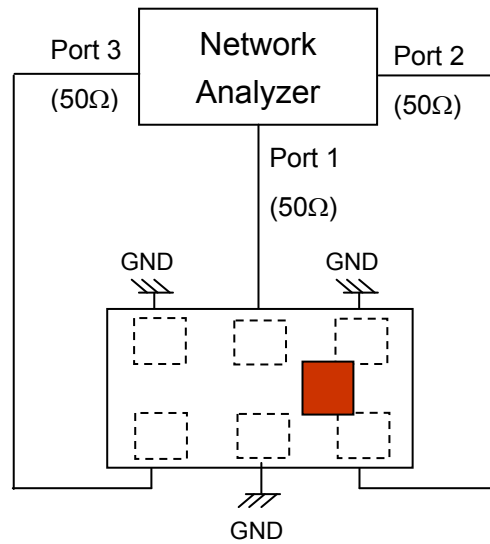


| Mark       | L           | W            | T           | a            | b             | c            | d           | p            |
|------------|-------------|--------------|-------------|--------------|---------------|--------------|-------------|--------------|
| Dimensions | 2.0<br>±0.1 | 1.25<br>±0.1 | 0.6<br>max. | 0.35<br>±0.1 | 0.275<br>±0.1 | 0.3<br>±0.15 | 0.6<br>±0.1 | 0.65<br>±0.1 |



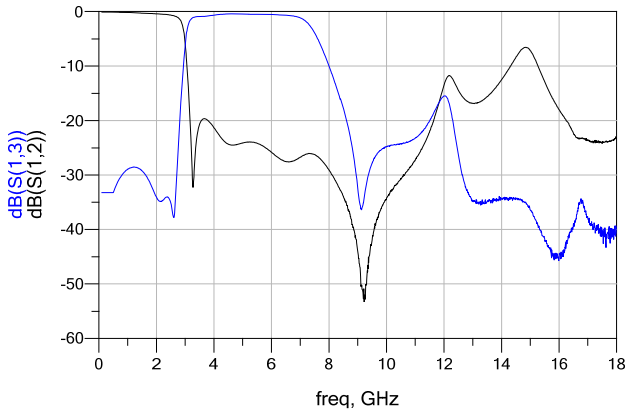
\* Line width should be designed to match  $50\Omega$  characteristic impedance, depending on PCB material and thickness.

### Measuring Diagram

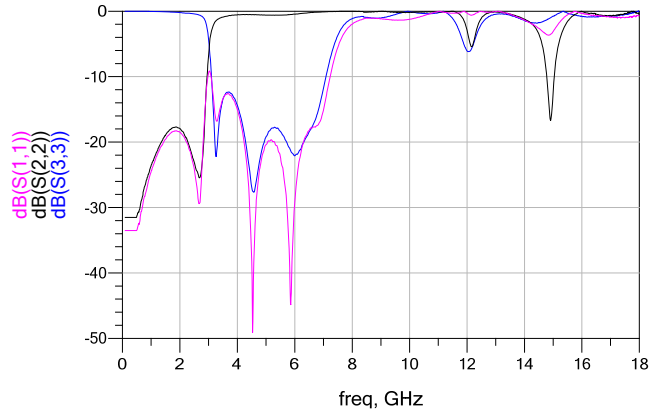


**Electrical Characteristics (T=25°C)**

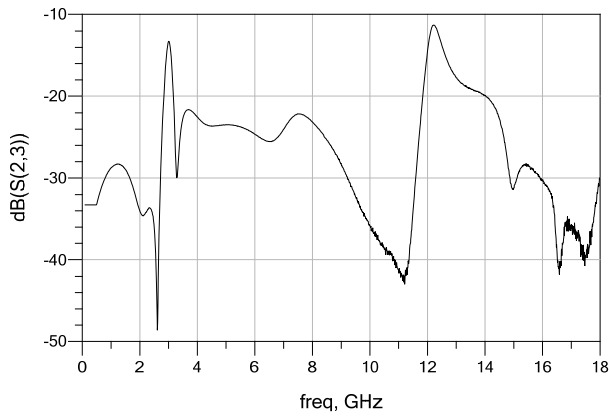
**Attenuation**



**Return Loss**



**Isolation**

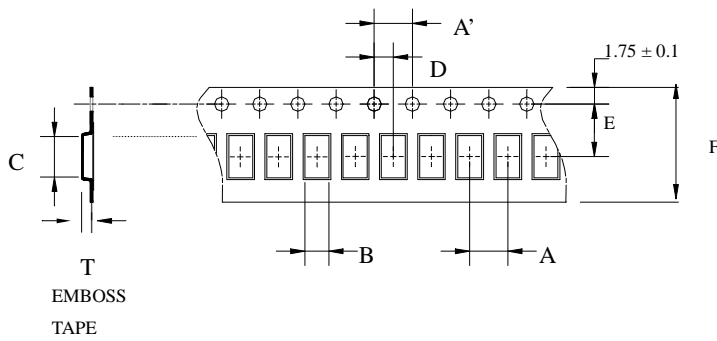


**Notes**

❖ The contents of this data sheet are subject to change without notice. Please confirm the specifications and delivery conditions when placing your order.

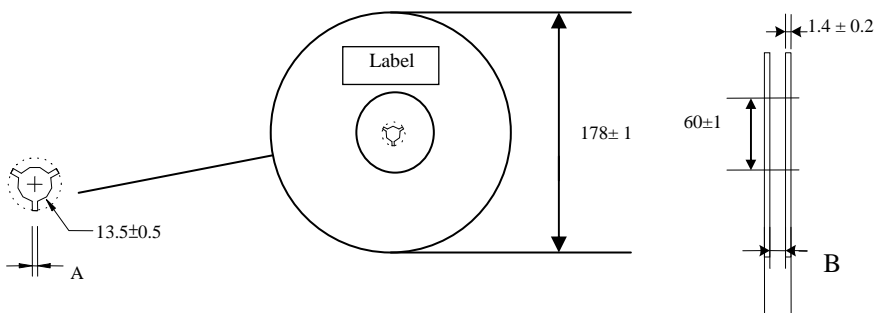
## Taping Specifications

### ❖Tape Dimensions (Unit: mm) & Quantity



| Type | A    | A'   | B     | C     | D    | E    | F    | T     | Quantity/reel | Tape material         |
|------|------|------|-------|-------|------|------|------|-------|---------------|-----------------------|
| 2012 | 4.0± | 4.0± | 1.35± | 2.15± | 2.0± | 3.5± | 8.0± | 0.65± | 4,000pcs      | Plastic<br>(Embossed) |
|      | 0.1  | 0.1  | 0.05  | 0.05  | 0.05 | 0.1  | 0.1  | 0.05  |               |                       |

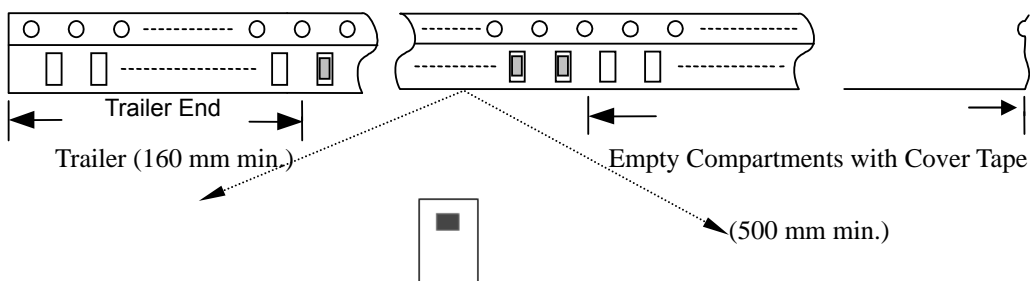
### ❖Reel Dimensions (Unit: mm)



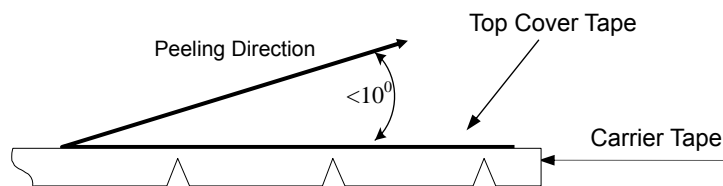
Label: Customer's Name,  
ACX P/N, Q'ty, Date,  
ACX Corp.

| Type | A       | B       |
|------|---------|---------|
| 2012 | 2.3±0.5 | 9.0±0.3 |

### ❖Leader and Trailer Tape



❖ **Peel-off Force**



Peel-off force should be in the range of 0.1 – 0.6 N at a peel-off speed of  $300 \pm 10$  mm/min .

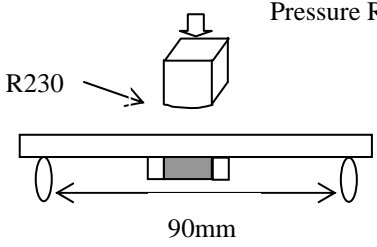
❖ **Storage Conditions**

- (1) Temperature: 5 ~35°C , relative humidity (RH): 45~75%.
- (2) Non-corrosive environment

**Notes**

❖ The contents of this data sheet are subject to change without notice. Please confirm the specifications and delivery conditions when placing your order.

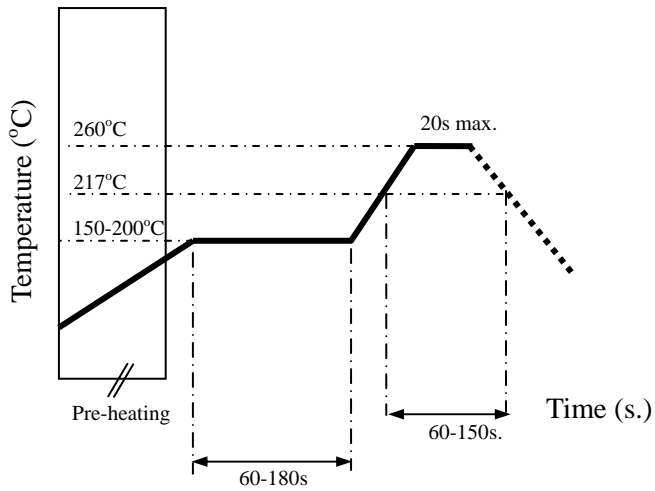
## Mechanical & Environmental Characteristics

| Item   | Requirements   | Procedure  |
|--|--|--|
| Solderability                                | <ol style="list-style-type: none"> <li>No apparent damage</li> <li>More than 95% of the terminal electrode shall be covered with new solder</li> </ol> | <ol style="list-style-type: none"> <li>Preheat: <math>120 \pm 5^\circ\text{C}</math></li> <li>Solder: <math>245 \pm 5^\circ\text{C}</math> for <math>5 \pm 1</math> sec</li> </ol>   |
| Soldering strength<br>(Termination Adhesion) | <ol style="list-style-type: none"> <li>10N minimum</li> </ol>  | <ol style="list-style-type: none"> <li>Solder specimen onto test jig.</li> <li>Apply push force at 0.5mm/s until electrode pads are peeled off or ceramic are broken. Pushing force is applied to longitude direction</li> </ol>   |
| Deflection<br>(Substrate Bending)            | <ol style="list-style-type: none"> <li>No apparent damage</li> </ol>   | <ol style="list-style-type: none"> <li>Solder specimen onto test jig (FR4, 1.6mm) using the recommend soldering profile.</li> <li>Apply a bending force of 2mm deflection</li> </ol>  |
| Heat/Humidity Resistance                     | <ol style="list-style-type: none"> <li>No apparent damage</li> <li>Fulfill the electrical specification after test</li> </ol>                          | <ol style="list-style-type: none"> <li>Temperature: <math>85 \pm 2^\circ\text{C}</math></li> <li>Humidity: 90% ~ 95% RH</li> <li>Duration: <math>1000 \pm 48</math>hrs</li> <li>Recovery: 1-2hrs</li> </ol>  |
| Thermal shock<br>(Temperature Cycle)         | <ol style="list-style-type: none"> <li>No apparent damage</li> <li>Fulfill the electrical specification after test</li> </ol>                          | <ol style="list-style-type: none"> <li>One cycle/step 1 : <math>125 \pm 5^\circ\text{C}</math> for 30 min<br/>step 2 : <math>-40 \pm 5^\circ\text{C}</math> for 30 min</li> <li>No of cycles : 100</li> <li>Recovery: 1-2 hrs</li> </ol>                                 |
| Low Temperature Resistance                   | <ol style="list-style-type: none"> <li>No apparent damage</li> <li>Fulfill the electrical specification after test</li> </ol>                          | <ol style="list-style-type: none"> <li>Temperature: <math>-40 \pm 5^\circ\text{C}</math></li> <li>Duration: <math>500 \pm 24</math>hrs</li> <li>Recovery: 1-2hrs</li> </ol>  |

## Soldering Conditions

### ❖ Typical Soldering Profile for Lead-free Process

Reflow Soldering :



## Notes

❖ The contents of this data sheet are subject to change without notice. Please confirm the specifications and delivery conditions when placing your order.

### **Advanced Ceramic X Corp.**

16 Tzu Chiang Road, Hsinchu Industrial District Hsinchu Hsien 303, Taiwan

TEL:886-3-5987008 FAX:886-3-5987001

E-mail: [acx@acxc.com.tw](mailto:acx@acxc.com.tw)

<http://www.acxc.com.tw>