



GRAND-DUCHÉ DE LUXEMBOURG

Ministère du Développement durable  
et des Infrastructures  
Département des Transports

L-2938 Luxembourg

SOCIÉTÉ NATIONALE DE  
CERTIFICATION ET D'HOMOLOGATION

s.à r.l.

Registre de Commerce: B 27180



L-5201 Sandweiler

Référence: E13\*10R00\*10R04\*13509\*00

Annexes: - Rapport Technique  
- Fiche de Renseignements du constructeur

Sandweiler, le 22 décembre 2014

Communication concernant:<sup>(2)</sup>

Communication concerning:



- la délivrance d'une homologation

approval granted

- l'extension d'homologation

approval extended

- le refus d'homologation

approval refused

- le retrait d'homologation

approval withdrawn

- l'arrêt définitif de la production

production definitely discontinued

d'un type de sous-ensemble électrique/électronique<sup>(2)</sup> en ce qui concerne le Règlement N° 10

of a type of electrical/electronic sub-assembly with regard to Regulation N° 10


Numéro d'homologation par type:

Approval number:

E13\*10R00\*10R04\*13509\*00

Marque d'homologation:

Approval mark:

 10R - 04 13509

1. **Fabricant: (marque commerciale du constructeur):**  
Make (trade name of manufacturer): planTEC
2. **Type:**  
Type: planTEC-GPS high gain
- Dénomination(s) commerciale(s) générale(s):**  
General commercial description(s): Not applicable
- Version(s)/Variante(s):**  
Version(s)/Variant(s): Not applicable
3. **Moyens d'identification du type, s'ils sont marqués sur le véhicule / composant / entité technique<sup>(2)</sup>:**  
Means of identification of type, if marked on the vehicle / component / separate technical unit: Refer to item 6.
- 3.1. **Emplacement de ce marquage:**  
Location of that marking: Refer to item 6.

4. **Catégorie du véhicule:**  
Category of vehicle: Not applicable
5. **Nom et adresse du constructeur:**  
Name and address of manufacturer: REEL Reinheimer Elektronik GmbH  
Felsweg 6A  
D – 35435 Wettenberg
6. **Dans le cas de composants ou d'entités techniques, emplacement et procédé de fixation de la marque de réception CEE:**  
In the case of components and separate technical units, location and method of affixing of the ECE approval mark: Sticker fixed on upper side power line
7. **Adresse(s) de l' (des) usine(s) d'assemblage:**  
Address(es) of assembly plant(s): REEL Reinheimer Elektronik GmbH  
Felsweg 6A  
D – 35435 Wettenberg
8. **Informations supplémentaires (s'il y a lieu):**  
Additional informations (where applicable): See appendix
9. **Autorité déléguée:**  
*Assigned authority:* *Société Nationale de Certification et d'Homologation*  
*L-5201 Sandweiler*
- Service technique responsable de l'exécution des essais:**  
Technical service responsible for carrying out the tests: Luxcontrol S.A.  
B.P. 349  
L-4004 Esch-sur-Alzette
10. **Date du rapport d'essai:**  
Date of test report: 15.12.2014
11. **Numéro du rapport d'essai:**  
Number of test report: LCA 54 0400 002 14
12. **Remarques (s'il y a lieu):**  
Remarks (if any): See appendix

13. **Lieu:** Sandweiler  
Place:

14. **Date:** 22 décembre 2014  
Date:

15. **Signature:**  
Signature:

Pour le Département des Transports



**Marco FELTES**  
Inspecteur principal 1<sup>er</sup> en rang

Pour la SNCH



**Claude LIESCH**  
Directeur



16. **L'index de l'ensemble des renseignements déposé chez l'autorité de réception, qui peut être obtenu sur demande, est joint.**

The index to the information package lodged with the approval authority, which may be obtained on request, is attached.

See index to type-approval report

17. **Raison(s) de l'extension:** Not applicable  
Reason(s) for extension:

<sup>2</sup> **Biffer la mention inutile**  
Strike out what does not apply

## Appendice

Appendix

**au certificat d'homologation par type N° E13\*10R00\*10R04\*13509\*00**  
 to type-approval certificate N° E13\*10R00\*10R04\*13509\*00  
**concernant l'homologation par type d'un sous ensemble électrique/électronique selon le Règlement N° 10.**  
 concerning the type-approval of an electrical/electronic sub-assembly under Regulation N° 10.

- |               |  |  |
|---------------|--|--|
| <b>1.</b>     | <b>Informations supplémentaires.</b><br>Additional information.  |  |
| <b>1.1.</b>   | <b>Tension nominale du système électrique [V]:</b><br>Electrical system rated voltage [V]:   | 3 to 5V d.c. (supplied over transmission cable)                            |
|               | <b>Masse:</b><br>Ground:   | Negative   |
| <b>1.2.</b>   | <b>Ce SEEE peut être utilisé sur n'importe quel type de véhicule avec les restrictions suivantes:</b><br>This ESA can be used on any vehicle type with the following restrictions:   | Not applicable   |
| <b>1.2.1.</b> | <b>Conditions d'installation, s'il y a lieu:</b><br>Installation conditions, if any:   | Not applicable   |
| <b>1.3.</b>   | <b>CE SEEE peut seulement être utilisé sur les types de véhicules suivants:</b><br>This ESA can be used only on the following vehicle types:   | Not applicable   |
| <b>1.3.1.</b> | <b>Conditions d'installation, s'il y a lieu:</b><br>Installation conditions, if any:   | Not applicable   |
| <b>1.4.</b>   | <b>La (les) méthode(s) spécifique(s) d'essais utilisée(s) et les bandes de fréquences couvertes pour déterminer l'immunité étai(ent): (indiquez s'il vous plaît à partir de l'annexe 9 la méthode précise utilisée).</b><br>The specific test method(s) used and the frequency ranges covered to determine immunity were: (Please specify precise method used from annex 9). | Not applicable   |
| <b>1.5.</b>   | <b>Laboratoire accrédité au titre de la norme ISO 17025 et reconnu par l'autorité d'homologation chargé d'effectuer les essais:</b><br>Laboratory accredited to ISO 17025 and recognized by the Approval Authority responsible for carrying out the tests:   | m. dudde hochfrequenz-technik<br>Rottland 5<br>D – 51429 Bergisch Gladbach |
| <b>2.</b>     | <b>Commentaires:</b><br>Remarks:   | None   |



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L-5201 Sandweiler

**Référence:** E13\*10R00\*10R04\*13509\*00

**Annexes:** - Rapport Technique  
- Fiche de Renseignements du constructeur

Sandweiler, le 22 décembre 2014

## Index du dossier d'homologation

Index to type-approval report

	<b>Numéro d'homologation:</b> Approval number:	E13*10R00*10R04*13509*00
	<b>Révision:</b> Revision:	00
	<b>Marque de fabrication ou de commerce:</b> Trade name or mark:	<i>planTEc</i>
	<b>Type:</b> Type:	<i>planTEc-GPS high gain</i>
<b>1.</b>	<b>Procès-verbal d'essai:</b> Test report:	N° LCA 54 0400 002 14
	- Technical report:	Page 1 to 6
	- Index:	Annex A – Page 1
<b>2.</b>	<b>Dossier du constructeur:</b> Report of the manufacturer:	Annex B
	- Manufacturer's information document:	Page 1 to 19
<b>3.</b>	<b>Autres documents annexés:</b> Other documents annexed:	Not applicable
<b>4.</b>	<b>Date de délivrance de l'homologation initiale:</b> Date of issue of initial type approval:	22.12.2014
<b>5.</b>	<b>Date de la dernière délivrance de pages révisées:</b> Date of last issue of revised pages:	Not applicable
<b>6.</b>	<b>Date de la dernière délivrance d'une homologation révisée:</b> Date of last extension:	Not applicable

## TECHNICAL REPORT

No.: LCA 54 0400 002 14

Inspection concerning the

### Radio Interference (Electromagnetic Compatibility of vehicles)

performed according to

**ECE – Regulation No. 10**

Type: **planTEc-GPS high gain**  
Manufacturer: **REEL Reinheimer Elektronik GmbH**  
**Felsweg 6**  
**D – 35435 Wettenberg**

**Extension -- to ECE Type Approval no.: not applicable**

#### Index:

1. General	Page	2
2. Inspections and their results	Page	4
3. Evaluation of test results	Page	5
4. Statement of compliance	Page	6
Annex (beginning with an index)		

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...



**1. General**

**1.1. Test Provisions**

The inspection was carried out according to the requirements of ECE-Regulation No. 10 including Supplement 2 to the 04 series of amendments, which entered into force on 15.7.2013.

**1.2. Information concerning the electronic component and the requested approval**

The statements below apply to the previous ECE type-approval as referred to on page 1.

**1.2.1. [ ] Numbering according to the communication concerning the approval of ECE-R10**

[1.] Make (trade name of manufacturer):

**planTEc**

[2.] Type and general commercial description(s):

**Type: planTEc-GPS high gain**

**Version: --**

**Variants: --**

[3.] Means of identification of type, if marked on the ~~vehicle~~ / component / ~~separate technical unit~~

**See item [6.]**

[3.1.] Location of that marking:

**See item [6.]**

[4.] Category of vehicle:

**Not applicable**

[5.] Name and address of manufacturer:

**REEL Reinheimer Elektronik GmbH**

**Felsweg 6A**

**D – 35435 Wettenberg**

[6.] In the case of components and separate technical units, location and method of affixing of the ECE type-approval mark:

**Sticker fixed on upper side power line**



- [7.] Address(es) of assembly plant(s):  
**REEL Reinheimer Elektronik GmbH  
Felsweg 6A  
D – 35435 Wettenberg**
- [17.] Reasons for extension:  
**not applicable**
- 1.2.2. [] Numbering according to the communication concerning the approval of ECE-R10, Appendix to Annex 3B
- [1.] Additional information:
- [1.1.] Electrical system rated voltage:  
**3 - 5 V d.c., negative earth**
- [1.2.] This ESA can only be used on any vehicle type with the following restrictions:
- [1.2.1.] Installation conditions, if any:  
**not applicable**
- [1.3.] This ESA can only be used on the following vehicle types:
- [1.3.1.] Installation conditions, if any:  
**not applicable**
- [1.4.] The specific test method(s) used and the frequency ranges covered to determine immunity were:  
**not applicable**
- [1.5.] Laboratory accredited to ISO 17025 and recognised by the approval authority responsible for carrying out the tests:  
**m. dudde hochfrequenz-technik  
Rottland 5  
D – 51429 Bergisch Gladbach**
- [2.] Remarks:  
**not applicable**





## 2. Inspections and their results

### 2.1. Version of the tested equipment

The following variants have been used for testing (if not stated in part 1.2.1. of this report):

- not applicable

### 2.2. Inspection items

	Inspector	Location of test:	Date of receipt of test item:	Date of test:
Main rep.	<b>P. Wax</b>	<b>See item [1.5.]</b>	<b>21.8.2014</b>	<b>18.9. – 26.9.2014</b>

#### 2.2.1. Test results

##### 2.2.1.1. Broadband electromagnetic radiation:

Results of the measurement are in accordance with Annex 7 of ECE-R10:

Test facility : **outdoor / indoor**  
Signal strength measured over the frequency range 30 to 1000 MHz : **requirements fulfilled**

##### 2.2.1.2. Narrowband electromagnetic radiation:

Results of the measurement are in accordance with Annex 8 of ECE-R10:

Test facility : **outdoor / indoor**  
Signal strength measured over the frequency range 30 to 1000 MHz : **requirements fulfilled**

##### 2.2.1.3. Immunity of ESA to electromagnetic radiation

**This ESA has no 'immunity related functions' and is exempted as set out in item 6.10.3. of the Regulation.**

##### 2.2.1.4. Immunity to transient disturbances conducted along supply lines:

**not applicable, the ESA is not switched, does not contain switches or does not include inductive loads.**

##### 2.2.1.5. Emission of conducted disturbances:

**not applicable, the ESA is not switched, does not contain switches or does not include inductive loads.**

### 2.3. Remarks

Inspection results are only applicable to items, which have been tested.



**2.4. Test facilities**

Calibration of measuring and test equipment used to carry out the inspections is in accordance with the ECE-Regulation stated in 1.1. of this report and with ISO 17025.

Inspectors stated under 2.2. of this report were in charge of performing and/or evaluating the tests.

**3. Evaluation of test results**

**3.1. Variants and equipment covered**

The tests carried out cover the following variations as far as these are relevant for the electromagnetic compatibility:

- not applicable

**3.2. Remarks**

**3.2.1. General**

Not applicable



4. **Statement of compliance**

The inspections items and measurements carried out have shown the compliance of the vehicle type described in this report and the attached Annex with the requirements of ECE-Regulation No. 10 including Supplement 2 to the 04 series of amendments, which entered into force on 15.7.2013.

Esch/Alzette, 15 December 2014

Luxcontrol s.a.  
Service Homologation-automobile

Paul Wax  
**Ingénieur-Inspecteur**

David Durazzi  
**Ingénieur-Inspecteur**

**Annex**



Index to the information package, including a summary in chronological order, concerning extensions and/or amendments

**ECE type-approval No.:** --

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### **Main Report**

Technical Report No.: LCA 54 0400 002 14 Pages 1 to 6

Composition of the Annex:

A: Index Page 1

B: Information folder Pages 1 to 19

### **Index to the information folder:**

- manufacturer's information document (pages 1)
  - description and drawings of the component (pages 2 to 19)
-

## Annex 2B

# INFORMATION DOCUMENT FOR TYPE APPROVAL OF AN ELECTRIC/ELECTRONIC SUB-ASSEMBLY WITH RESPECT TO ELECTROMAGNETIC COMPATIBILITY

The following information, if applicable, shall be supplied in triplicate and must include a list of contents. Any drawings shall be supplied in appropriate scale and in sufficient detail on size A4 or on a folder of A4 format. Photographs, if any, shall show sufficient detail.

If the systems, components or separate technical units have electronic controls, information concerning their performance shall be supplied.

1. Make (trade name of manufacturer): ...planTEc.....

2. Type: ..planTEc - GPS high gain.....

3. Means of identification of type, if marked on the component/separate technical unit: 1/

3.1. Location of that marking: ..on the label, this is mounted on the antenna cable.....

4. Name and address of manufacturer: REEL Reinheimer Elektronik GmbH, Felsweg 6A, 35435 Wettenberg.....

Name and address of authorized representative, if any: ...../.....

5. In the case of components and separate technical units, location and method of affixing of the approval mark: .....

6. Address(es) of assembly plant(s): Felsweg 6A, D-35435 Wettenberg.....

7. This ESA shall be approved as a component/STU 2/

8. Any restrictions of use and conditions for fitting: ...../.....

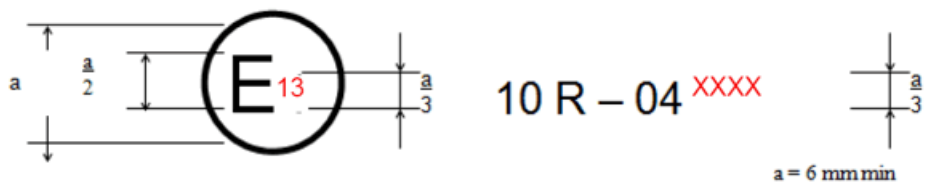
9. Electrical system rated voltage: ..3 to 5..... V, positive/negative 2/ ground.

Appendix 1:

Description of the ESA chosen to represent the type (electronic block diagram and list of main component constituting the ESA (e.g. make and type of microprocessor, crystal, etc.).

Appendix 2:

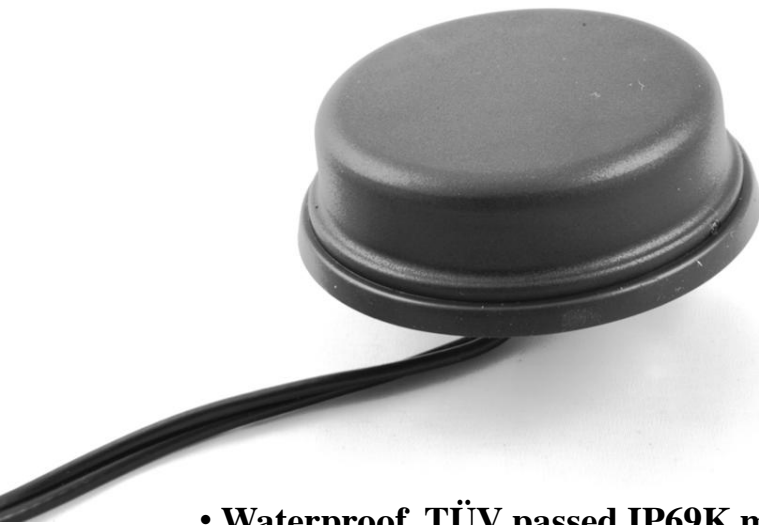
Relevant test report(s) supplied by the manufacturer from a test laboratory accredited to ISO 17025 and recognized by the Approval Authority for the purpose of drawing up the type approval certificate.



## Planar Combination Antenna K70ZAR

GSM 850/900/1800/1900 MHz + UMTS + GPS high gain

Roof Mount



- **Waterproof TÜV passed IP69K mounted**
- **Antenna available in black, white and blue other colours on demand**
- **Including 868 MHz – services and DECT**
- **Our products are RoHS- and REACH-conform**



## Technical Data

### GSM

Frequency Range	850/900/1800/1900 + 2100 MHz
VSWR*	< 2.0
Peak Gain*	+5 dBi typ. (900 MHz) +3 dBi typ. (1800 MHz) +1 dBi typ. (2100 MHz)
Power max.	10 W
Diagnostic resistor	10 k $\Omega$ (others on request)

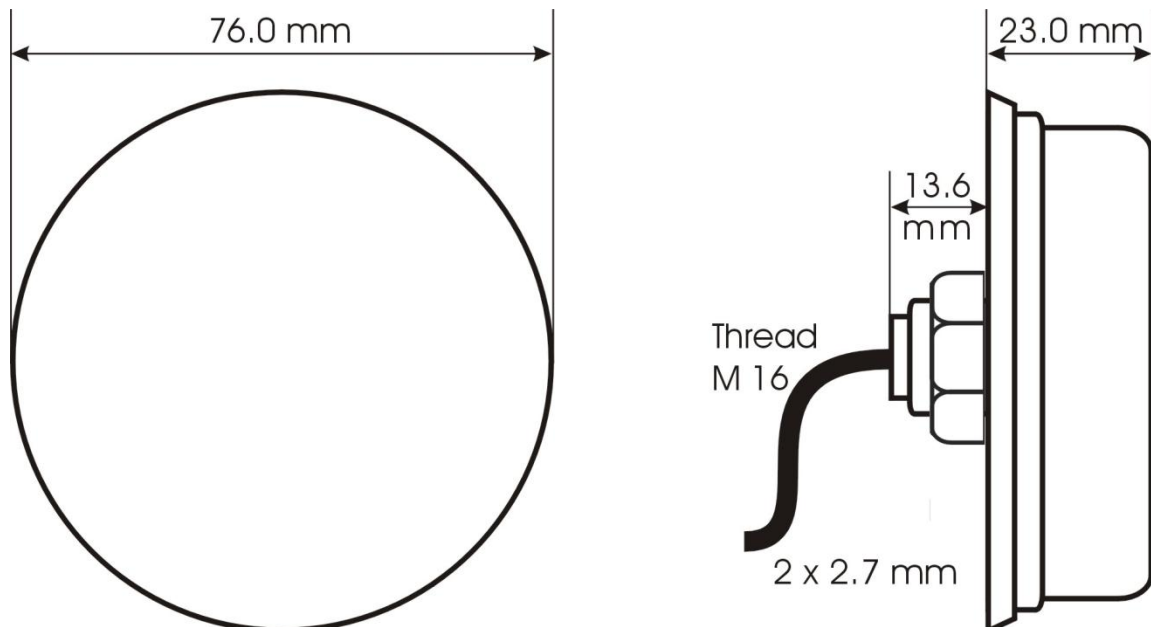
### GPS

Frequency	1575.42 MHz
VSWR	1.5 typ.
Peak Gain	25 dBi typ.
Power Supply	3V to 5V; 25mA typ.
$V_{DD}$ max.	+10V <sub>DC</sub>
Input Power max.	+17dBm
Current max.	30mA

\* Measured with 0.6m cable on 30x30cm ground plane

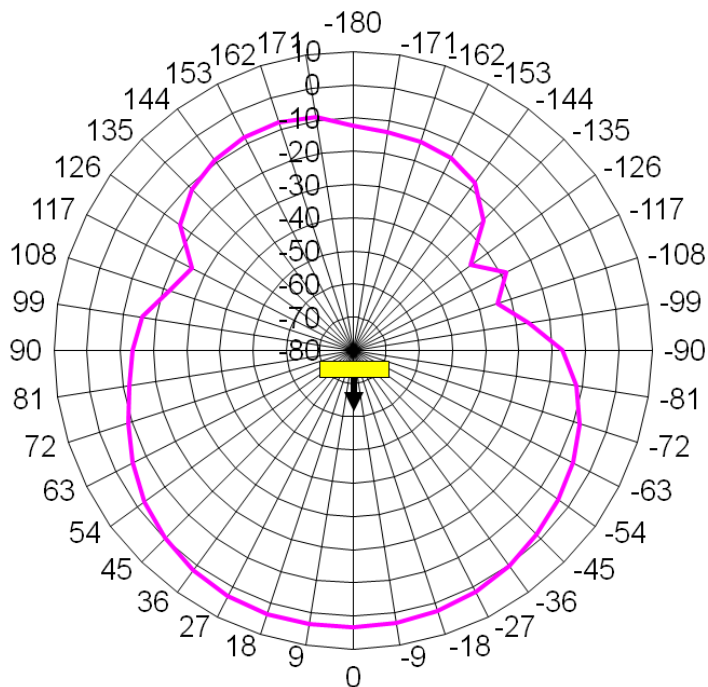
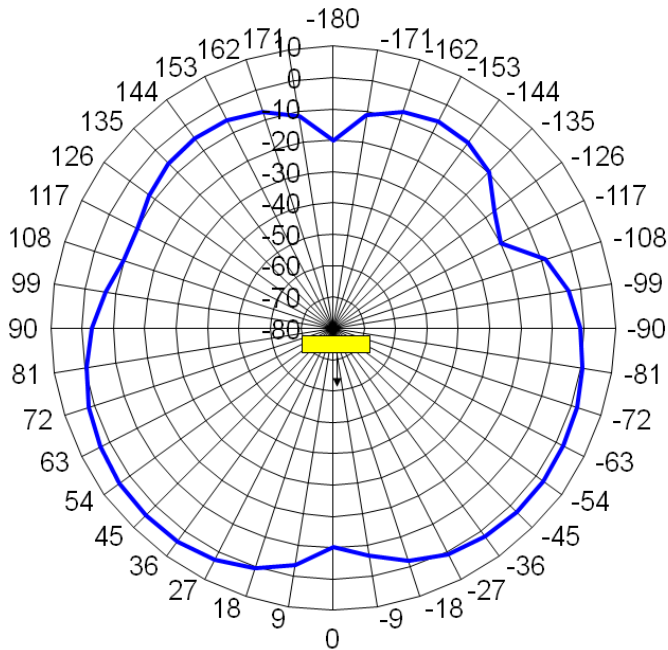
## Mechanical Data

Dimensions ( $\varnothing$ xH)	ca. 76 mm x 23 mm
Temperature Range	-40°C to +85°C (operating temperature)
Connection (Standard)	ca. 3m connecting cable RG174 with GSM/FME(f); GPS/SMA(m) Other cablelengths and connectors see ordering example and connector list in Internet



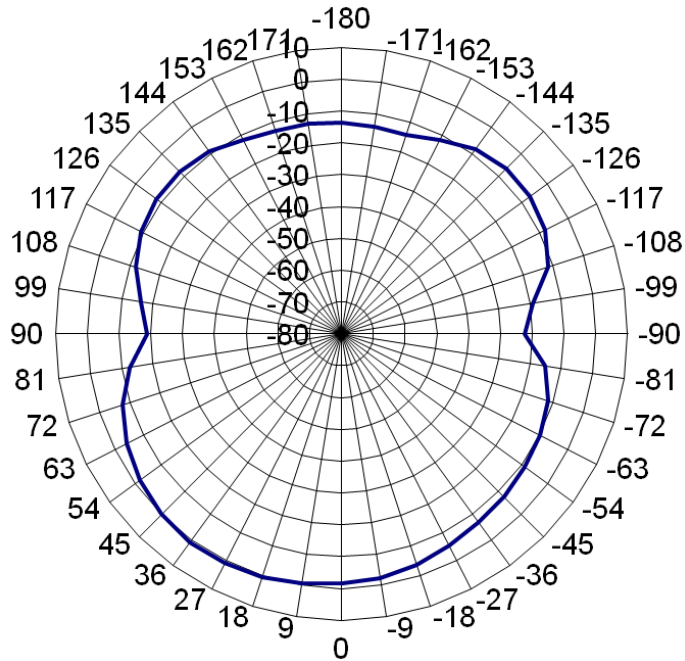


### Radiation diagram (typ.)\*



\* Measured with 0.6m cable on 30x30cm ground plane

### Radiation diagram (typ.)\*



GSM 2100 MHz  
 Peak Gain: +1 dBi

\* Measured with 0.6m cable on 30x30cm ground plane

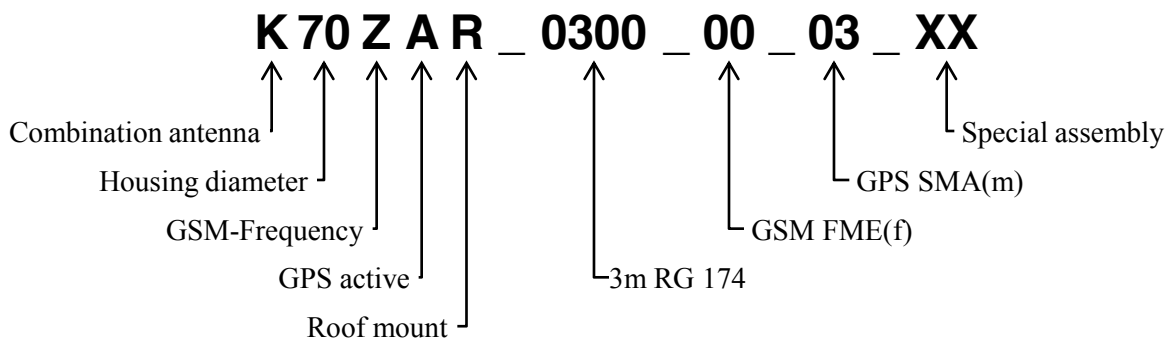
## Accrediation

<input checked="" type="checkbox"/>	E-Code	<b>e 13</b> 02 1510	high gain (A)
<input type="checkbox"/>	E-Code	<b>e 13</b> 02 1509	low gain (L)
<input type="checkbox"/>	E-Code	<b>e 13</b> 03 6371	low current (V)

## Mounting Instructions

- No extra ground planes are necessary for this antenna (ground plane inside).
- Mountable on all clean, smooth and rust free surfaces.
- Tightening torque on M16 nut is min. 4Nm to max. 6Nm
- Mounting bore hole is Ø 16mm (+2mm/-0mm)
- Alternatively the bottom is available as aluminum diecast with tightening torque 12 Nm to max. 15 Nm (AL).
- Mounting on a separate support possible, if the cable entrance is watertide.
- Antenna available with waterproof cable entrance (PW or AW).

## Ordering example



## Warranty

The lawful warranty conditions apply.

# MAALSS0042



Low Noise Amplifier  
1.575 GHz

Rev. V1

## Features

- Low Noise Figure: 1.15 dB
- High Gain: 27 dB
- Low Power Consumption: 5V, 20 mA
- High Dynamic Range
- Lead-Free SOIC-8 Package
- 100% Matte Tin Plating over Copper
- Halogen-Free "Green" Mold Compound
- 260°C Reflow Compatible
- RoHS\* Compliant Version of AM50-0002

## Description

M/A-COM's MAALSS0042 is a high performance GaAs MMIC low noise amplifier in a lead-free SOIC 8-lead surface mount plastic package. The MAALSS0042 employs a monolithic 3-stage self-bias design and a simple external matching network to obtain minimum noise figure.

The MAALSS0042 is ideally suited for use where low noise figure, high gain, high dynamic range and low power consumption are required. Typical applications include receiver front ends in the Global Positioning System (GPS) market, as well as standard gain blocks, buffer amps, driver amps, and IF amps in both fixed and portable systems.

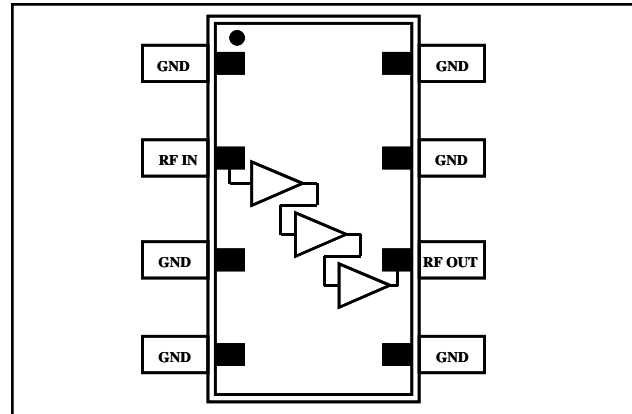
M/A-COM'S MAALSS0042 is fabricated using a mature 0.5-micron gate length GaAs process. The process features full passivation for increased performance reliability.

## Ordering Information <sup>1,2</sup>

Part Number	Package
MAALSS0042	Bulk Packaging
MAALSS0042TR-3000	3000 piece reel
MAALSS0042SMB	Sample Test Board

1. Reference Application Note M513 for reel size information.
2. Die quantity varies.

## Functional Diagram



## Pin Configuration <sup>3,4,5</sup>

Pin No.	Pin Name	Description
1	GND	Ground
2	RF IN	RF Input
3	GND	Ground
4	GND	Ground
5	GND	Ground
6	RF OUT	RF Output, V <sub>DD</sub>
7	GND	Ground
8	GND	Ground

3. Pins 1, 3, 4, 5, 7, and 8 must be RF and DC grounded (see Recommended PCB Configuration).
4. Pin 2 is the RF input and must be connected to the simple matching network shown in the Application Schematic.
5. Pin 6 is the RF output. V<sub>DD</sub> is also applied on Pin 6.

## Absolute Maximum Ratings <sup>6,7</sup>

Parameter	Absolute Maximum
V <sub>DD</sub>	+10 VDC
Input Power	17 dBm
Channel Temperature <sup>8</sup>	+150 °C
Operating Temperature	-40 °C to +85 °C
Storage Temperature	-65 °C to +150 °C

6. Exceeding any one or combination of these limits may cause permanent damage to this device.
7. M/A-COM does not recommend sustained operation near these survivability limits.
8. Typical thermal resistance (θ<sub>jc</sub>) = +165 °C/W

\* Restrictions on Hazardous Substances, European Union Directive 2002/95/EC.

**ADVANCED:** Data Sheets contain information regarding a product M/A-COM Technology Solutions is considering for development. Performance is based on target specifications, simulated results, and/or prototype measurements. Commitment to develop is not guaranteed.

**PRELIMINARY:** Data Sheets contain information regarding a product M/A-COM Technology Solutions has under development. Performance is based on engineering tests. Specifications are typical. Mechanical outline has been fixed. Engineering samples and/or test data may be available. Commitment to produce in volume is not guaranteed.

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  - **Asia/Pacific** Tel: 81.44.844.8296 / Fax: 81.44.844.8298
- Visit [www.macomtech.com](http://www.macomtech.com) for additional data sheets and product information.

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# MAALSS0042



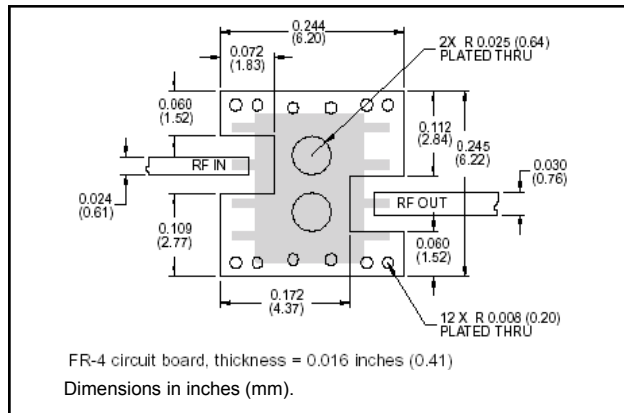
Low Noise Amplifier  
1.575 GHz

Rev. V1

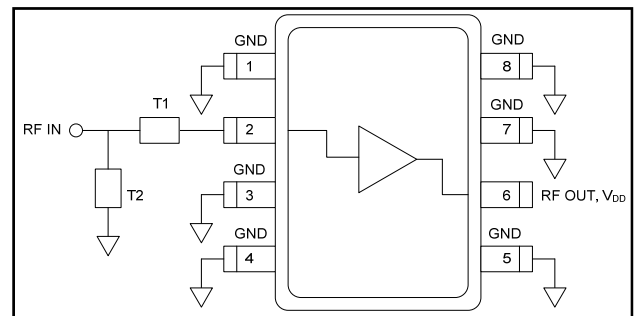
**Electrical Specifications:**  $T_A = +25^\circ\text{C}$ ,  $V_{DD} = +5\text{ V}$ ,  $Z_0 = 50\ \Omega$

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Gain	$F = 1.575\text{ GHz}$ , $P_{IN} = -35\text{ dBm}$	dB	25	27	29
Noise Figure	$F = 1.575\text{ GHz}$ , $P_{IN} = -35\text{ dBm}$	dB	-	1.15	1.4
Input VSWR	$F = 1.575\text{ GHz}$ , $P_{IN} = -35\text{ dBm}$	Ratio	-	2.0:1	-
Output VSWR	$F = 1.575\text{ GHz}$ , $P_{IN} = -35\text{ dBm}$	Ratio	-	1.5:1	-
Output P1dB	$F = 1.575\text{ GHz}$	dBm	-	1	-
Input $IP_3$	$F = 1.575\text{ GHz}$ , $P_{IN} = -35\text{ dBm}$	dBm	-	-14	-
Reverse Isolation	$F = 1.575\text{ GHz}$ , $P_{IN} = -35\text{ dBm}$	dB	-	48	-
Bias Current	—	mA	15	20	25

## Recommended PCB Configuration

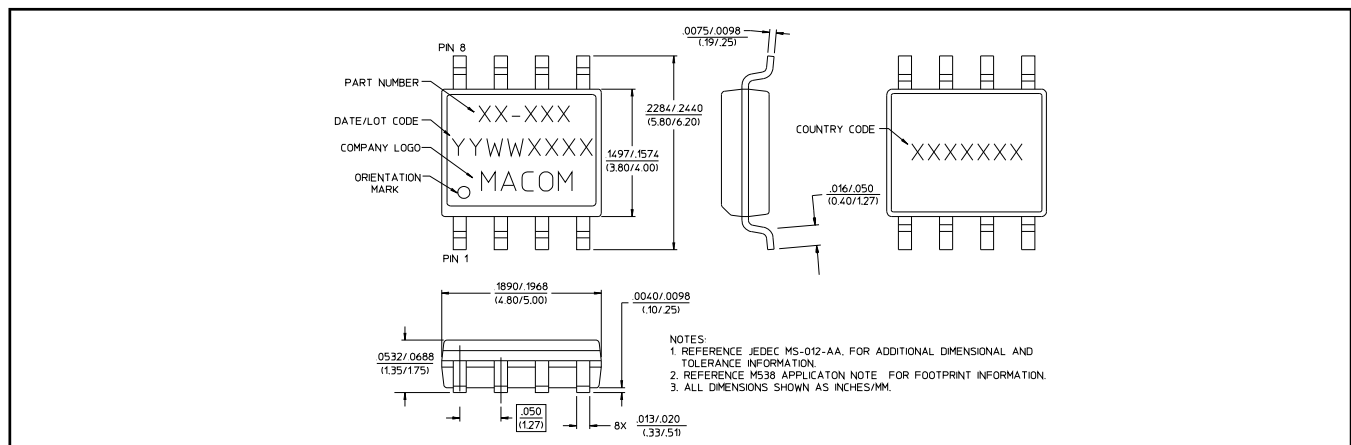


## Application Schematic



Frequency = 1.575 GHz		
	Impedance	Electrical Length
T1	57.2 $\Omega$	36.0°
T2	82.7 $\Omega$	16.2°

## Lead-Free SOIC-8†



† Reference Application Note M538 for lead-free solder reflow recommendations.  
Meets JEDEC moisture sensitivity level 1 requirements.

2

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# MAALSS0042

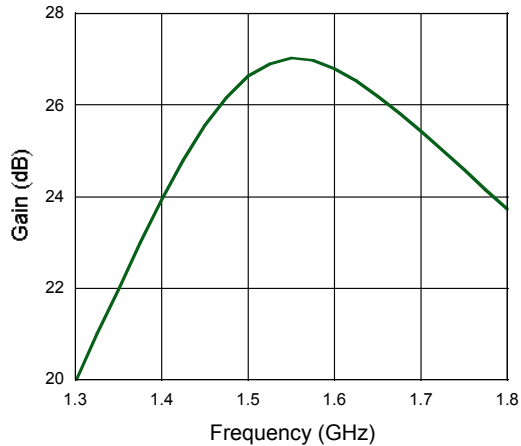


## Low Noise Amplifier 1.575 GHz

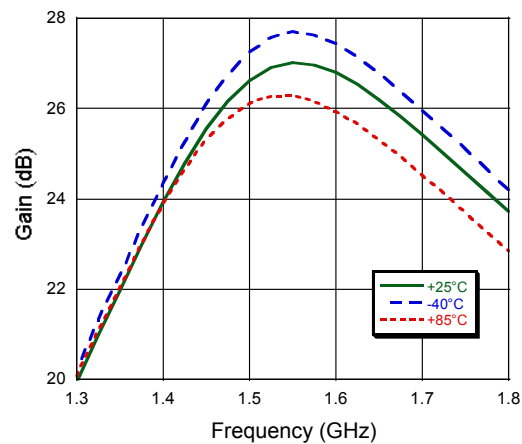
Rev. V1

### Typical Performance

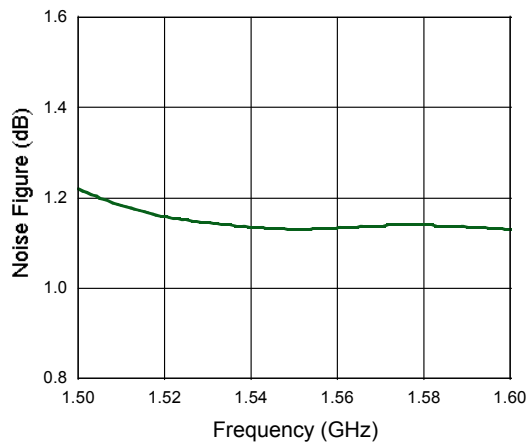
Gain,  $T_A = +25^\circ\text{C}$



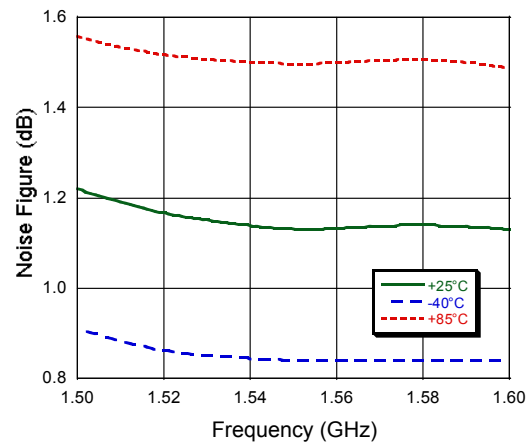
Gain over Temperature



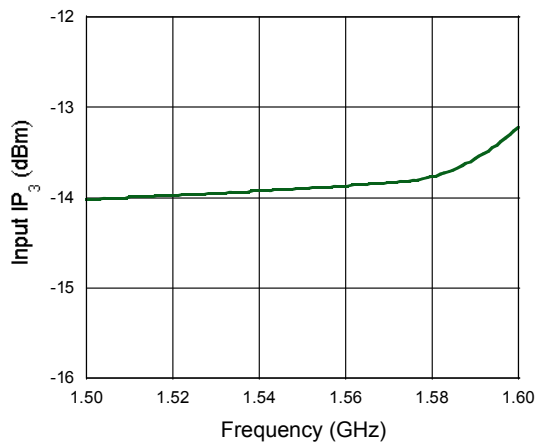
Noise Figure,  $T_A = +25^\circ\text{C}$



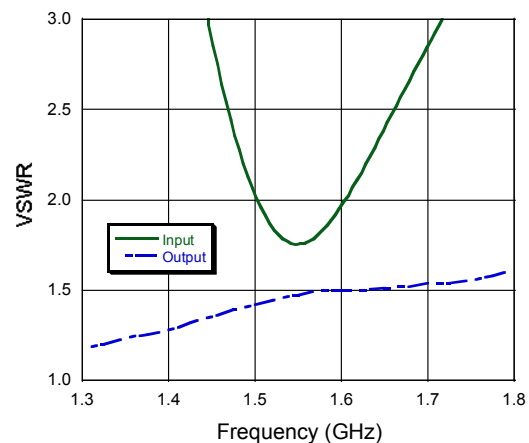
Noise Figure over Temperature



Input  $IP_3$ ,  $T_A = +25^\circ\text{C}$



VSWR,  $T_A = +25^\circ\text{C}$



3

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捷嘉電子(中國)有限公司  
CHEQUERS ELECTRONIC (CHINA) LIMITED

RoHS Compliant

### DIELECTRIC FILTER SPECIFICATION

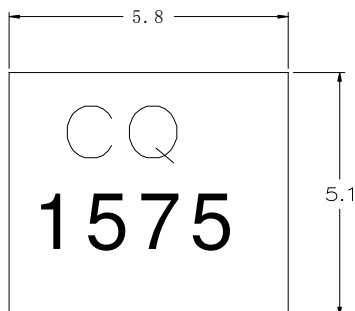
<b>Part No.</b>	DF2C1575P02BCSS-1	<b>Written by</b>	<b>Checked by</b>	<b>Approval</b>
<b>Customer</b>		<i>Tuyeqin</i>	Zhao	<i>fiam</i>
<b>Spec No.</b>	2.982.1652-B			
<b>Issue Date</b>	2014/03/24			

#### ELECTRICAL SPECIFICATIONS

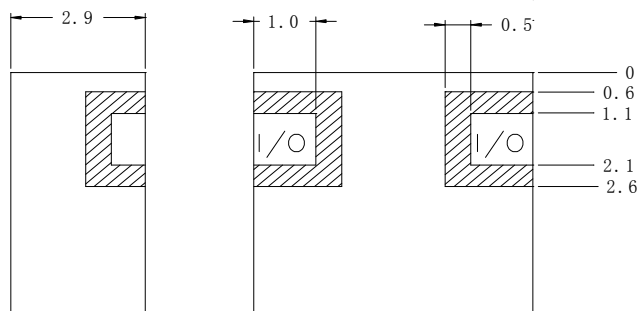
ITEM	SPEC	Unit
1	Center Frequency [fo]	1575.42
2	Bandwidth [BW]	fo ± 1.0
3	Insertion Loss in BW	2.5 max.
4	Ripple in BW	0.5 max.
5	VSWR in BW	2.0 :1 max
6	In/Out Impedance	50Ω
7	Attenuation [Absolute Value]	15 dB min. @ Fo -50 MHz 15 dB min. @ Fo +50 MHz
8	Operation Temperature Range	-40°C to +85°C
9	Measurement Jig	MF32R
10	Quantity	-

#### DIMENSIONS

TOP VIEW



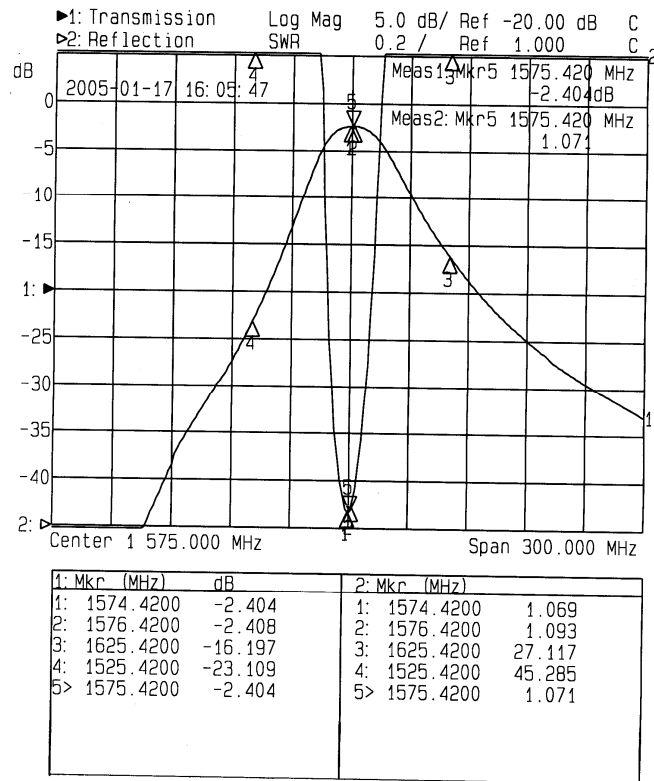
BOTTOM VIEW



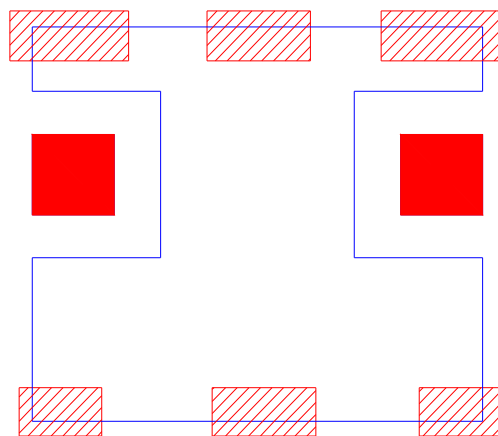
unit: mm  
tolerance: ±0.20





Graph 1



RECOMMENDED PC BOARD PATTERN



 IN-OUT PORT SOLDERING POINT  
 GROUND SOLDERING POINT

Remark: Recommending uses silver-containing solder paste for soldering.



# PA1575MZ50J4G-17-SMD-S

## Series Engineering Specification

### 1. Application

Automotive, recreational , military, marine , aviation , surveying

### 2. Typical Electrical Properties ( For Example : 1580MHz )

Characteristics	Specification	Unit	Conditions
Center Frequency $f_0$	1580.0 $\pm$ 2.0	MHz	with 50mm Square ground plane
Bandwidth	9.0 min.	MHz	Return Loss $\leq$ -10dB
Gain at Zenith	+2.5 typ.	dBic	@1580.0 MHz*
Gain at 10° elevation	-4.5 typ.	dBic	@1580.0 MHz*
Polarization	RHCP		
Impedance	50	$\Omega$	
Frequency Temperature Coefficient	0 $\pm$ 20	ppm/°C	-40°C to +85°C
Working Temperature			-40°C to +85°C

\*: Any object around the patch could affect Center Frequency  $f_0$ . INPAQ can offer technical support to decide the optimal center frequency.

\*\*::PA1575MZ50J4G-04-SMD, G: Green parts (RoHS compliance), 04 for  $f_0 = 1580$  MHz

XX	$f_0$	XX	$f_0$	XX	$f_0$	XX	$f_0$	XX	$f_0$
00	1576	10	1586	20	1596	30	1606	40	1616
01	1577	11	1587	21	1597	31	1607	41	1617
02	1578	12	1588	22	1598	32	1608	42	1618
03	1579	13	1589	23	1599	33	1609	43	1619
04	1580	14	1590	24	1600	34	1610	44	1620
05	1581	15	1591	25	1601	35	1611	45	1621
06	1582	16	1592	26	1602	36	1612	46	1622
07	1583	17	1593	27	1603	37	1613	47	1623
08	1584	18	1594	28	1604	38	1614	48	1624
09	1585	19	1595	29	1605	39	1615	49	1625

UNLESS OTHER SPECIFIED TOLERANCES ON :

X= $\pm$       X.X= $\pm$       X.XX= $\pm$   
 ANGLES= $\pm$       HOLEDIA= $\pm$

SCALE :      UNIT : mm

DRAWN BY : 詹雅萍      CHECKED BY : 馬敏勝

DESIGNED BY : 鄭大福      APPROVED BY : 曾源標



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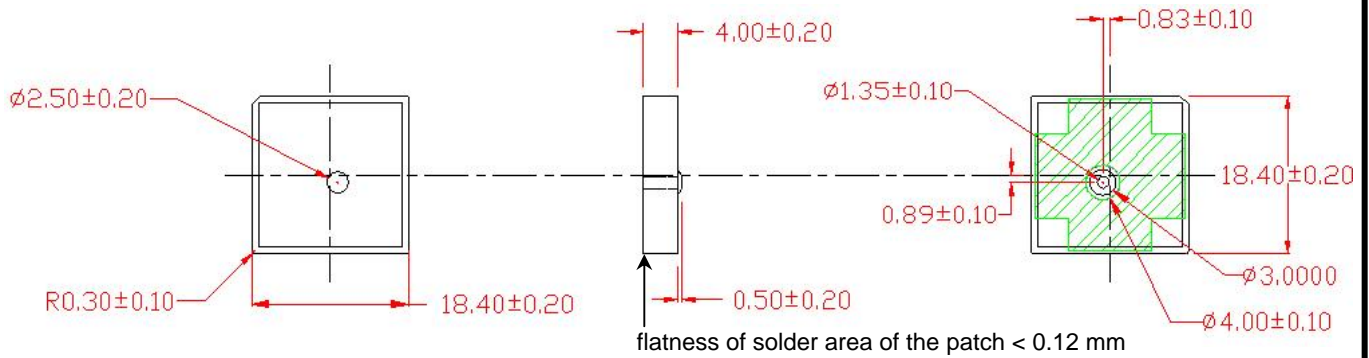
TITLE : PA1575MZ50J4G-17-SMD-S  
 Series Engineering Specification

DOCUMENT  
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ENS000062570

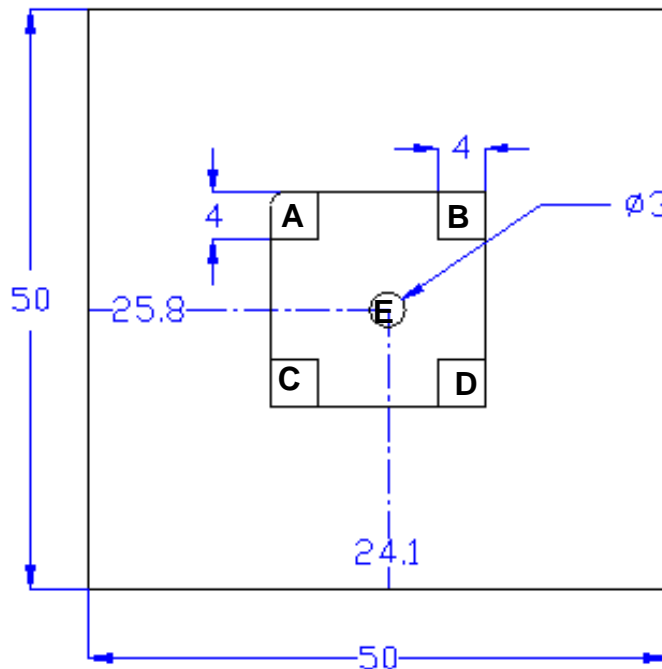
SPEC REV.  
 P0

### 3. Dimensions



Unit:mm

### 4. Test condition ground plane



A、B、C、D、E 為 SMT Solder Joint

Tolerance:±0.1mm

Unit:mm

UNLESS OTHER SPECIFIED TOLERANCES ON :

X=±      X.X=±      X.XX=±

ANGLES=±      HOLEDIA=±

SCALE :      UNIT : mm

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DESIGNED BY : 鄭大福      APPROVED BY : 曾源標

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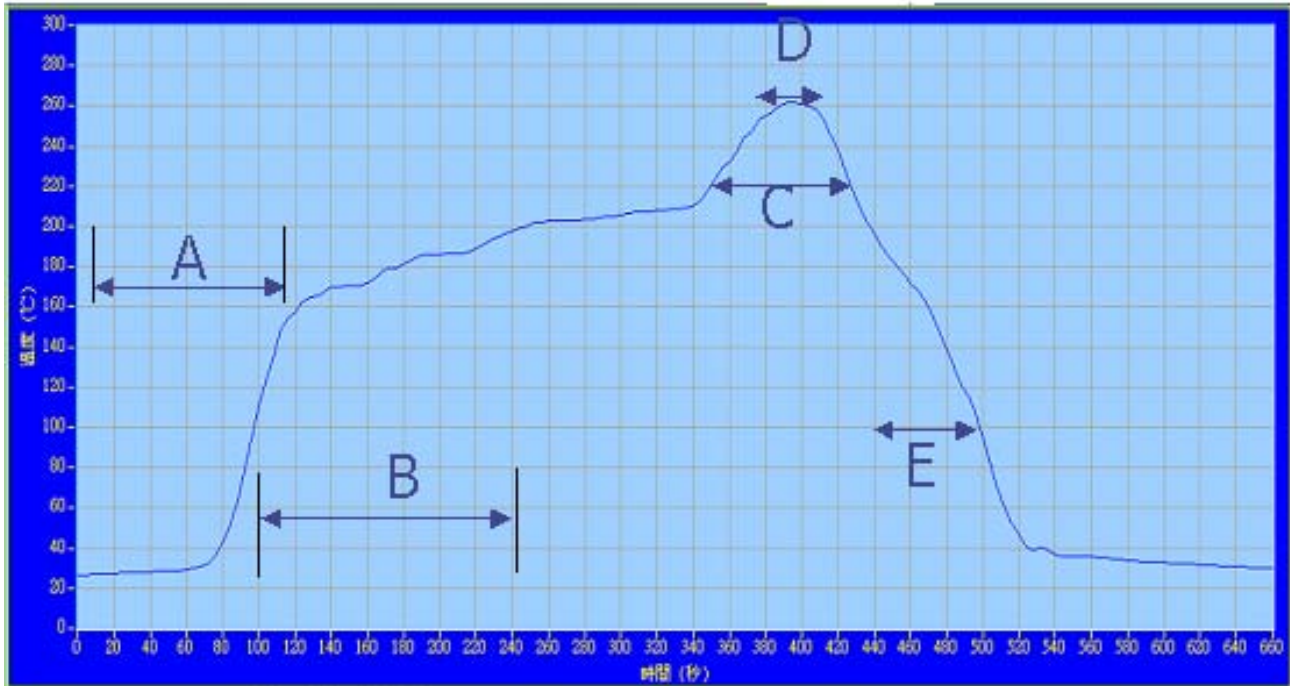
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SPEC REV.

P0

## 5.Recommendable reflow soldering



A	rising temperature	The normal to Preheating	60s to 120s
B	Preheating	80°C to 200°C	140s to 150
C	temperature	220°C to 260°C to 220°C	80 to 90s
D	Main heating	if 260°C	20s~30s
E	Regular cooling	200°C to 100°C	1°C/s ~ 4°C/s

\* The thickness of Solder should be controlled to be higher than 0.1 mm.

UNLESS OTHER SPECIFIED TOLERANCES ON :

X=±      X.X=±      X.XX=±  
 ANGLES=±      HOLEDIA=±

SCALE :      UNIT : mm

DRAWN BY : 詹雅萍      CHECKED BY : 馬敏勝

DESIGNED BY : 鄭大福      APPROVED BY : 曾源標

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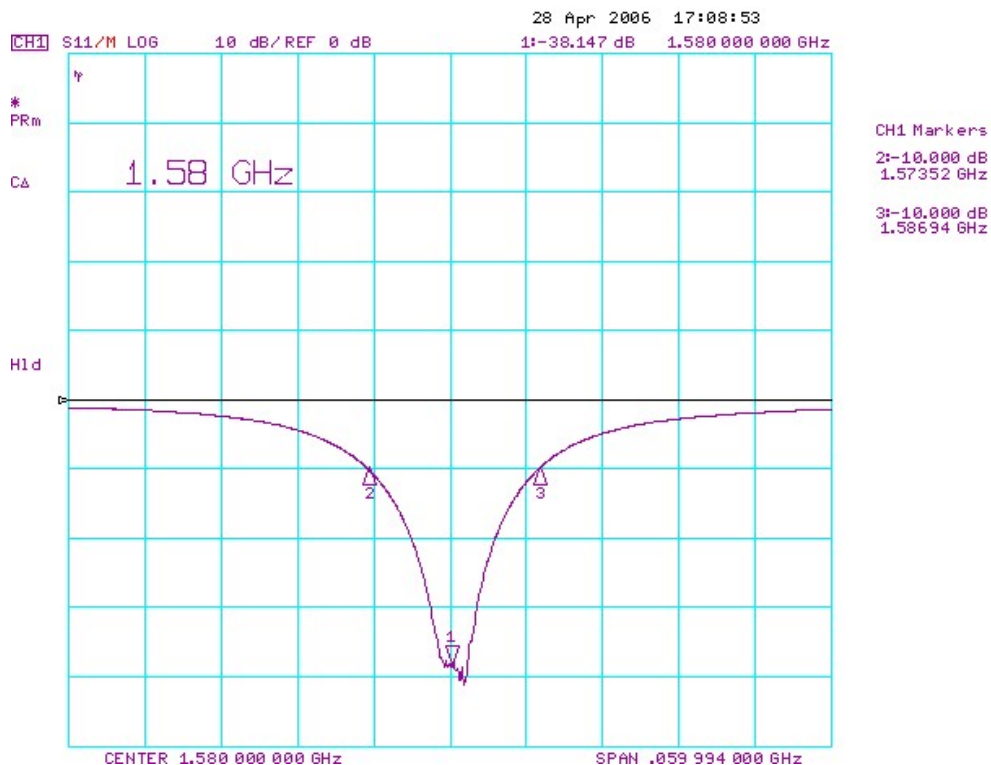
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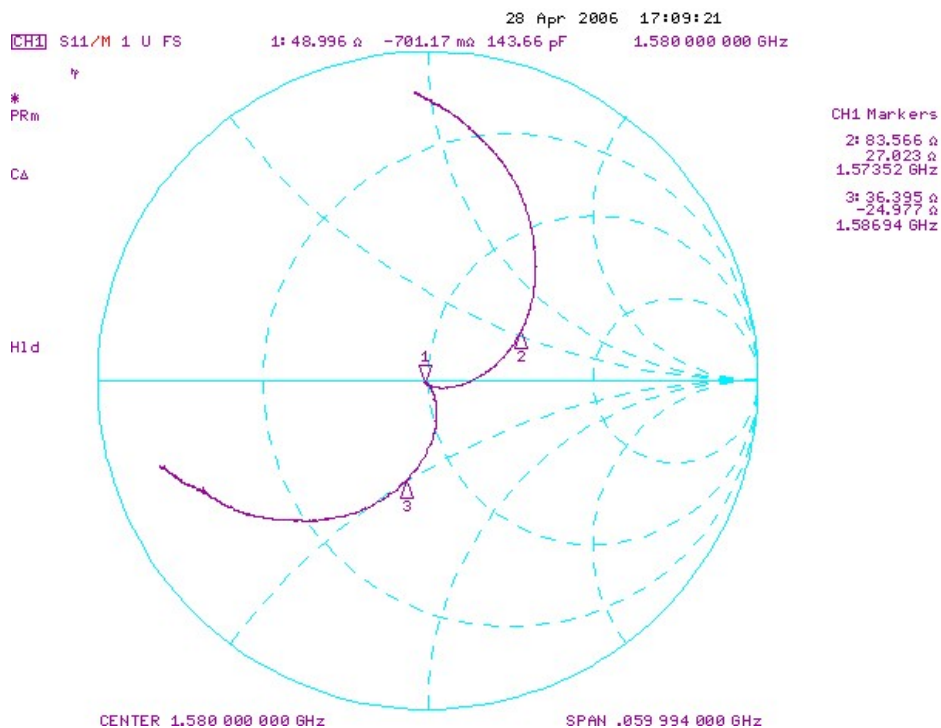
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### 6. Return Loss Characteristics ( For Example : 1580MHz )

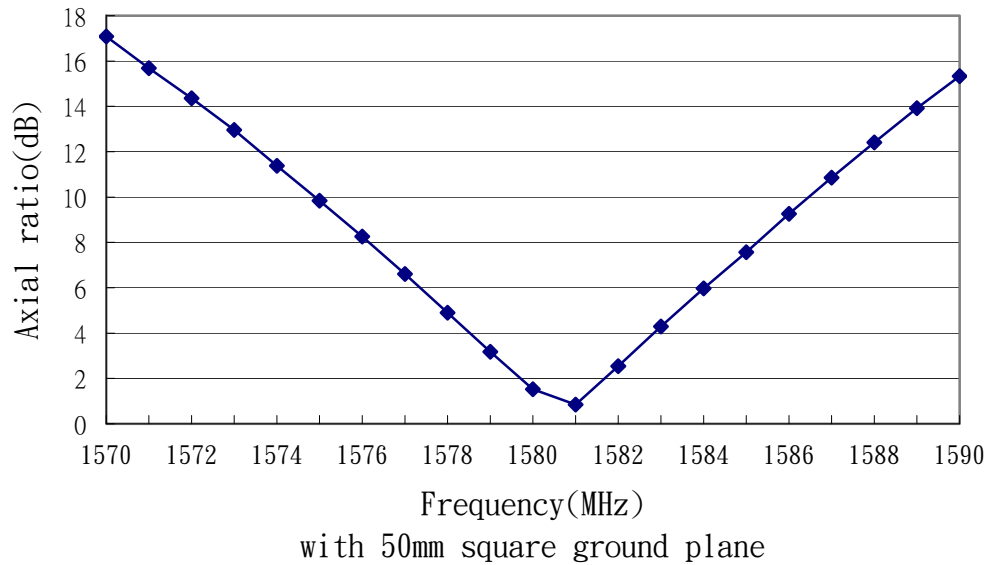


### 7. Measured Input Impedance on a Smith Chart ( For Example : 1580MHz )

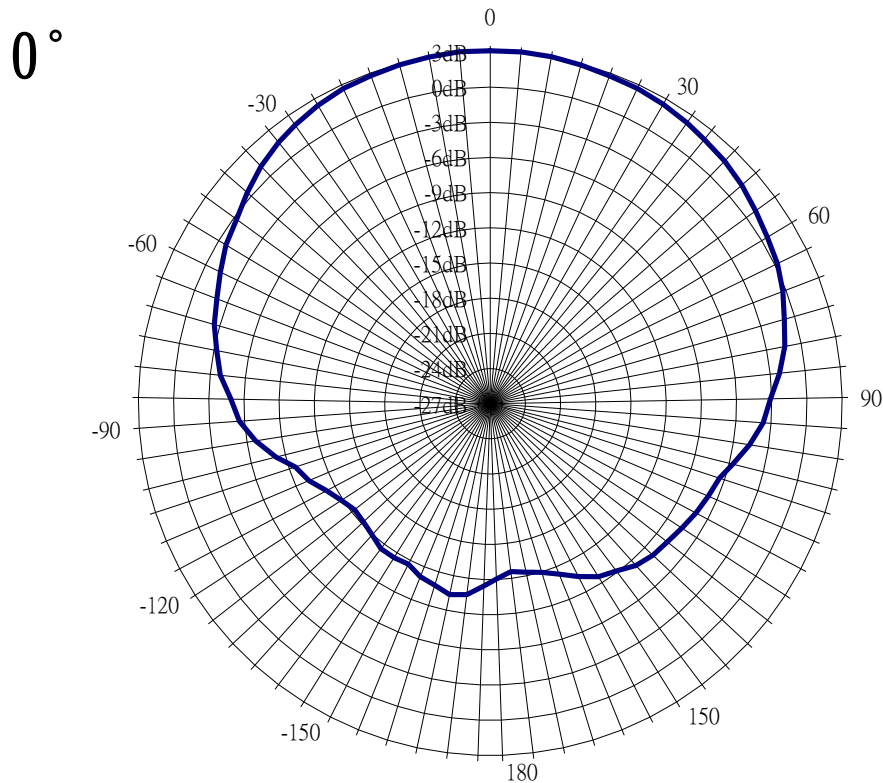


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ANGLES=±	HOLEDIA=±	THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF INPAQ TECHNOLOGY CO.,LTD.AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION
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DRAWN BY : 詹雅萍	CHECKED BY : 馬敏勝	
DESIGNED BY : 鄭大福	APPROVED BY : 曾源標	DOCUMENT NO. <b>ENS000062570</b>
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## 8. Measured Axial Ratio ( For Example : 1580MHz )



## 9. The Normalized Antenna Gain Chart (For Example:1580MHz)



UNLESS OTHER SPECIFIED TOLERANCES ON :

X=±      X.X=±      X.XX=±  
 ANGLES=±      HOLEDIA=±

SCALE :      UNIT : mm

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DESIGNED BY : 鄭大福      APPROVED BY : 曾源標

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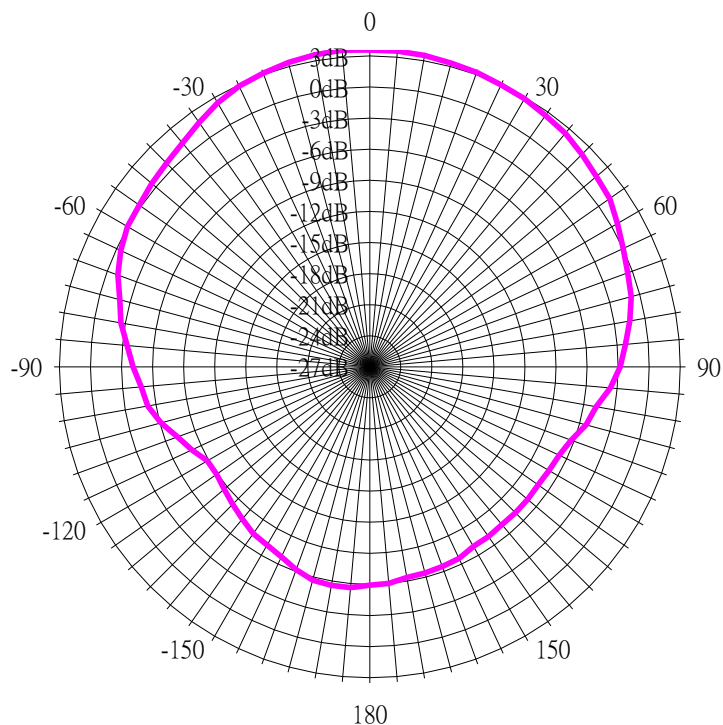
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90°

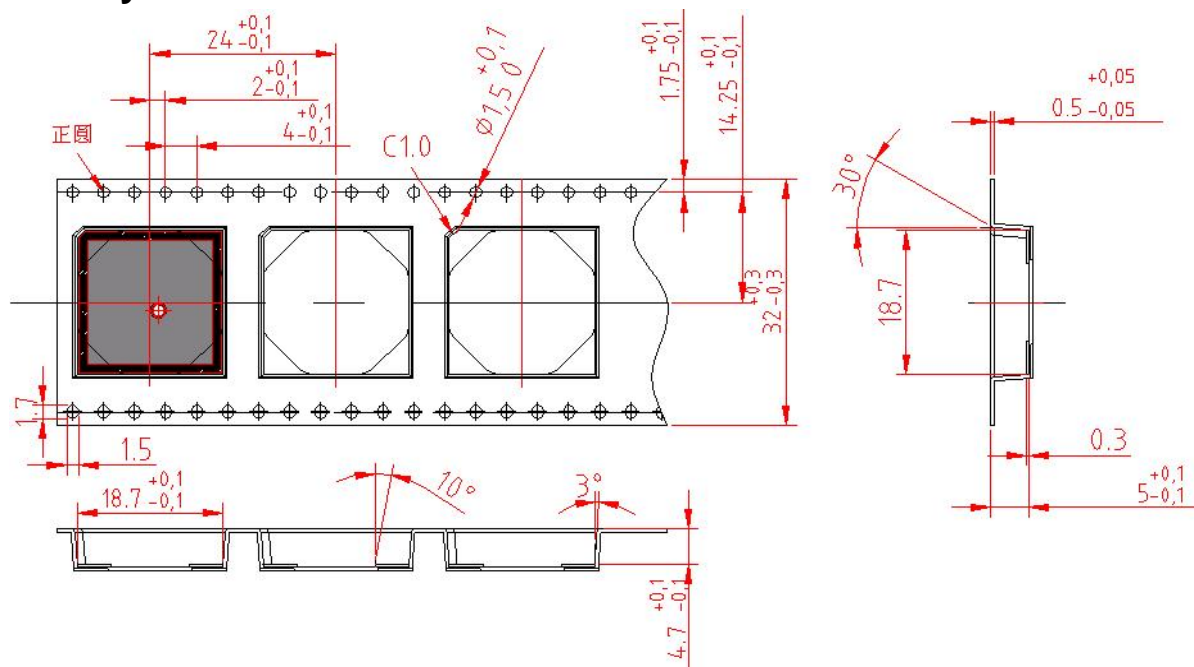


TX: Right hand circular polarized signal

Frequency = 1580MHz

Radiation Pattern (with 50mm square ground plane)

## 10. Delivery mode



UNLESS OTHER SPECIFIED TOLERANCES ON :

X=±      X.X=±      X.XX=±  
 ANGLES=±      HOLEDIA=±



INPAQ TECHNOLOGY CO., LTD.

SCALE :

UNIT : mm

DRAWN BY : 詹雅萍

CHECKED BY : 馬敏勝

DESIGNED BY : 鄭大福

APPROVED BY : 曾源標

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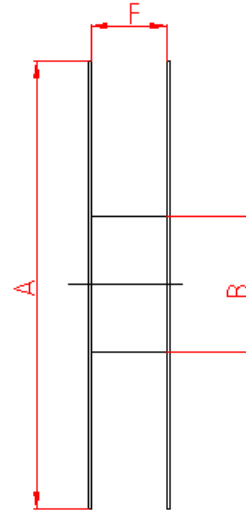
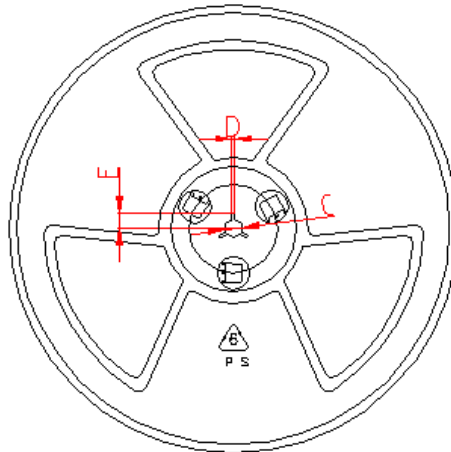
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 Series Engineering Specification

DOCUMENT  
 NO.

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SPEC REV.  
 P0

## 11. Taping Reel Dimensions



A	B	C	D	E	F
±2.0	±4.0	±0.2	±0.2	±2.0	±2.0
330	100	13.2	2	10.75	32.4

## 12. Quantity of Products in the Taping Package

(1) Standard quantity : 300Pcs/Reel

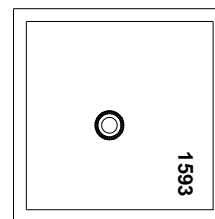
## 13. Explanation of Appendix

# PA1575MZ50J4G-17-SMD-S<sub>(1)</sub>

### (1) S is Option appendix Marking

Special Marking

1593



Patch top electrode

UNLESS OTHER SPECIFIED TOLERANCES ON :

X=±      X.X=±      X.XX=±  
 ANGLES=±      HOLEDIA=±

SCALE :      UNIT : mm

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