Splitter

Splitter is used for dividing local power in a mobile phone . It is positioned ahead of VCO output and sends the local power to Rx/Tx parts separately. Output signals have mutually the same phase and amplitude.

General Features

-Available in the 700MHz to 1.9GHz frequency range.
- Low loss and high isolation
- Ultra-small size and lightweight SMDs.
- Available in tape and reel packings for automatic mounting.
- Operating temperature: -35℃ to +85℃
- Recommended Matching Capacitor
  : 3pF for CIP21T701NE : 2pF for CIP21(or 31)T901NE : 1pF for CIP21(or 31)T182NE
- Reflow soldering available.

Applications

- Dividing local power in a mobile phone.

Part Numbering

CI	P	21	T	901	N	E
❶	❷	❸	❹	❺	❻	❼

❶ Abbreviation of Splitter
❷ Series
❸ Dimension
❹ Material
❺ Frequency Band for Application
❻ Thickness Option

❷ SERIES

CODE	DESCRIPTION OF CODE
P	CHIP SPLITTER

❸ DIMENSION

CODE	L	W	T
21	2.0±0.2	1.25±0.2	1.0±0.2
31	3.2±0.2	1.60±0.2	1.0±0.2

❹ MATERIAL

CODE	DESCRIPTION OF CODE
T	MATERIAL FOR HIGH FREQUENCY

❺ FREQUENCY BAND FOR APPLICATION

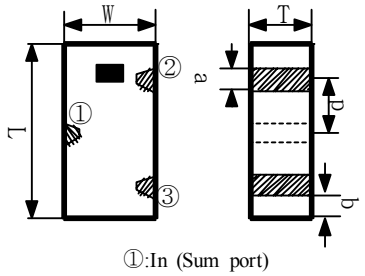
Frequency band is identified by 3 digits. The first and second digits identify the first and second significant figures of the frequency. The third digit identified the multiplier

example) 901 : 90 × 101 = 900MHz
182 : 18 × 102 = 1800MHz

❻ THICKNESS OPTION

CODE	DESCRIPTION OF CODE
N	Standard thickness
A	Thinner than standard thickness
B	Thicker than standard thickness

APPEARANCE AND DIMENSON



①:In (Sum port)
②:Out-1
③:Out-2

CODE	DIMENSION (mm)					
	L	W	T	a	b	p
21	2.0±0.2	1.25±0.2	1.0±0.2	0.3+0.2/-0.1	0.2±0.1	0.65±0.05
31	3.2±0.2	1.60±0.2	1.0±0.2	0.4±0.2	0.45±0.2	0.95±0.1

CARACTERISTIC LINE UP

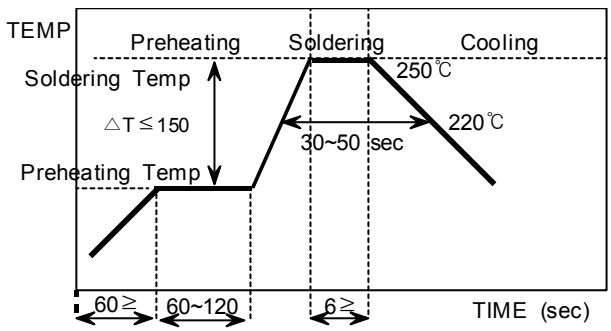
Product	Insertion Loss	Isolation	VSWR	Dimension	Thickness
CIP31T901NE	0.3dB	23dB	1.3	3.2X1.6mm	1.0mm
CIP31T182NE	0.3dB	23dB	1.3	3.2X1.6mm	1.0mm
CIP21T901NE	0.3dB	23dB	1.3	2.0X1.2mm	1.0mm
CIP21T182NE	0.3dB	23dB	1.3	2.0X1.2mm	1.0mm

※ 901 : $90X10^1$ = 900MHz
182 : $18X10^2$= 1800MHz

RELIABILITY TEST CONDITION

NO	ITEM	CONDITION	SPECIFICATION
1	THERMAL SHOCK	TEMP. CYCLE OF THE FOLLOWING BE SUBJECT FOR 100CYCLES. -40℃,30min ↔ +85℃,30min	ELECTRICAL CHARACTERISTICS SHALL BE SATISFIED.
2	HUMIDITY RESISTANCE	+40±3℃, RELATIVE HUMIDITY 90~95% FOR 1000hours.	ELECTRICAL CHARACTERISTICS SHALL BE SATISFIED.
3	HIGH TEMPERATURE RESISTANCE	+125±3℃ FOR 1000hours.	ELECTRICAL CHARACTERISTICS SHALL BE SATISFIED.
4	LOW TEMPERATURE RESISTANCE	-40±3℃ FOR 1000hours.	ELECTRICAL CHARACTERISTICS SHALL BE SATISFIED.
5	SOLDERABILITY	Soldering temp.: 245±5℃ Immersion time: 4±1sec.	At least 90% of the termination on each should be covered with solder.
6	RESISTANCE TO SOLDERING HEAT	Preheat : 100~130℃, 60~120sec Peak Temperature : 250℃ max. Specimens are soldered twice with the above condition then kept in room temperature and humidity for 24 hours before measurements. Temperature profile is as below	ELECTRICAL CHARACTERISTICS SHALL BE SATISFIED. WITHOUT DISTINCT DEFORMATION IN APPEARANCE.

※ Temperature profile

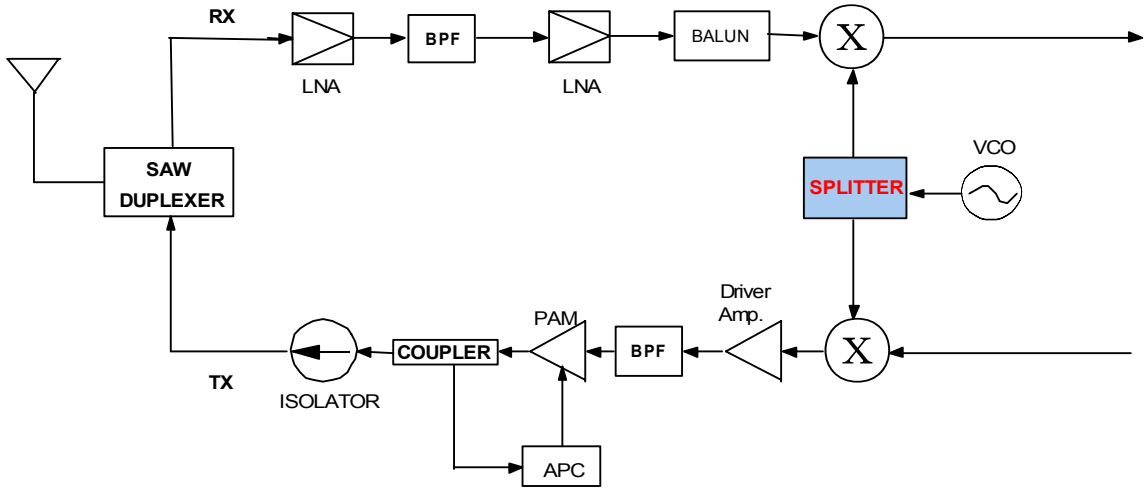


Splitter

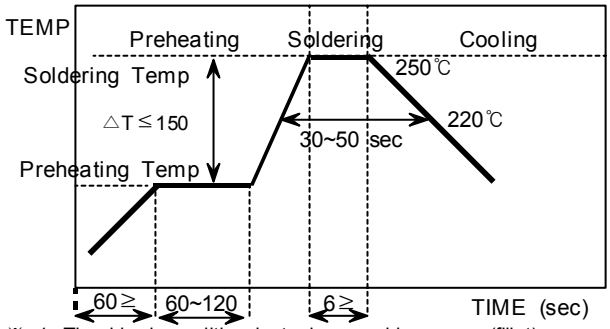
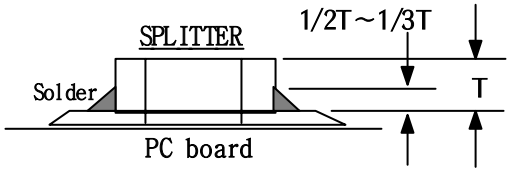
BLOCK DIAGRAM

● FREQUENCY SEPARATOR IN DUAL BAND PHONE

CDMA/PCS



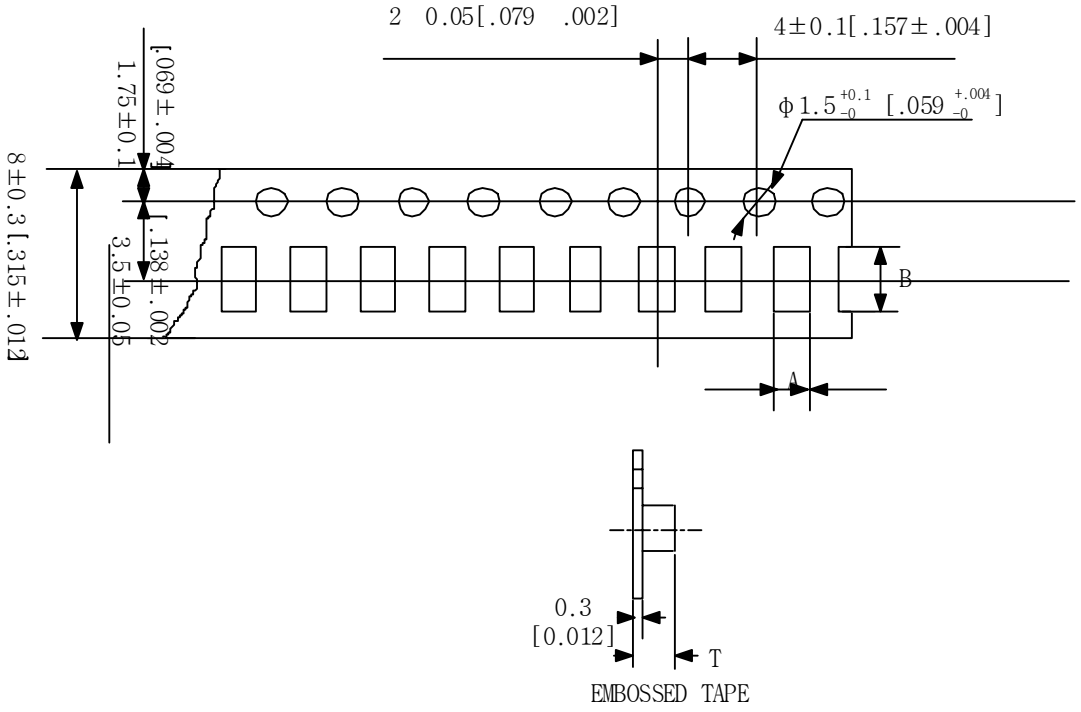
APPLICATION MANUAL

STAGE	PRECAUTION	TECHNICAL CONSIDERATION
1. Soldering	▶ Soldering 1. Temperature, time, amount of solder, etc. are specified in accordance with the following recommended conditions.	1-1. Preheating when soldering Heating : Splitter should be preheated within 100 to 130℃ of the soldering. Cooling : The temperature difference between the components and cleaning process should not be greater than 100℃. Splitter is susceptible to thermal shock when exposed to rapid or concentrated heating or rapid cooling. Therefore, the soldering process must be conducted with a great care so as to prevent malfunction of the components due to excessive thermal shock.. ※ Recommended conditions for soldering [Reflow soldering] Temperature Profile  ※ 1. The ideal condition is to have solder mass (fillet) controlled to 1/2 to 1/3 of the thickness of the Splitter, as shown below:  2. Because excessive dwell times can detrimentally affect solderability, soldering duration should be kept as close to recommended times as possible.
2. Cleaning	▶ Cleaning conditions 1. When cleaning the PC board after the splitters are all mounted, select the appropriate cleaning solution according to the type of flux used and purpose of the cleaning(e.g. to remove soldering flux or other materials from the production process.) 2. Cleaning conditions should be determined after verifying, through a test run, that the cleaning process does not affect the splitter's characteristics.	1. The use of inappropriate solutions can cause foreign substances such as flux residue to adhere to the splitter, resulting in a degradation of the splitter's electrical properties (especially insulation resistance). 2. Inappropriate cleaning conditions (insufficient or excessive cleaning) may detrimentally affect the performance of the splitters. (1)Excessive cleaning In the case of ultrasonic cleaning, too much power output can cause excessive vibration of the PC board which may lead to the cracking of the splitter or the soldered portion, or decrease the terminal electrodes' strength. Thus the following conditions should be carefully checked; Ultrasonic output Below 20 w/l Ultrasonic frequency Below 40 kHz Ultrasonic washing period 5 min. or less

STAGE	PRECAUTION	TECHNICAL CONSIDERATION
3. Post cleaning processes	▶ Application of resin coatings, molding, etc. to the PCB and components. 1. With some type of resins a decomposition gas or chemical reaction vapor may remain inside the resin during the hardening period or while left under normal storage conditions resulting in the deterioration of the splitter's performance. 2. When a resin's hardening temperature is higher than the splitter's operating temperature, the stresses generated by the excess heat may lead to splitter damage or destruction. 3. Stress caused by a resin's temperature generated expansion and contraction may damage splitters The use of such resins, molding materials etc. is not recommended.	
4. Storage conditions	▶ Storage 1. To maintain the solderability of terminal electrodes and to keep the packaging material in good condition, care must be taken to control temperature and humidity in the storage area. Humidity should especially be kept as low as possible. Recommended conditions Ambient temperature Below 40℃ Humidity Below 70% RH The ambient temperature must be kept below 30℃. Even under ideal storage conditions splitter electrode solderability decreases as time passes, so splitters should be used within 6 months from the time of delivery. ※ The packaging material should be kept where no chlorine or sulfur exists in the air	1. If the parts are stocked in a high temperature and humidity environment, problems such as reduced solderability caused by oxidation of terminal electrodes and deterioration of taping/packaging materials may take place. For this reason, components should be used within 6 months from the time of delivery. If exceeding the above period, please check solderability before using the splitters

PACKAGING

● EMBOSSED PLASTIC TAPE



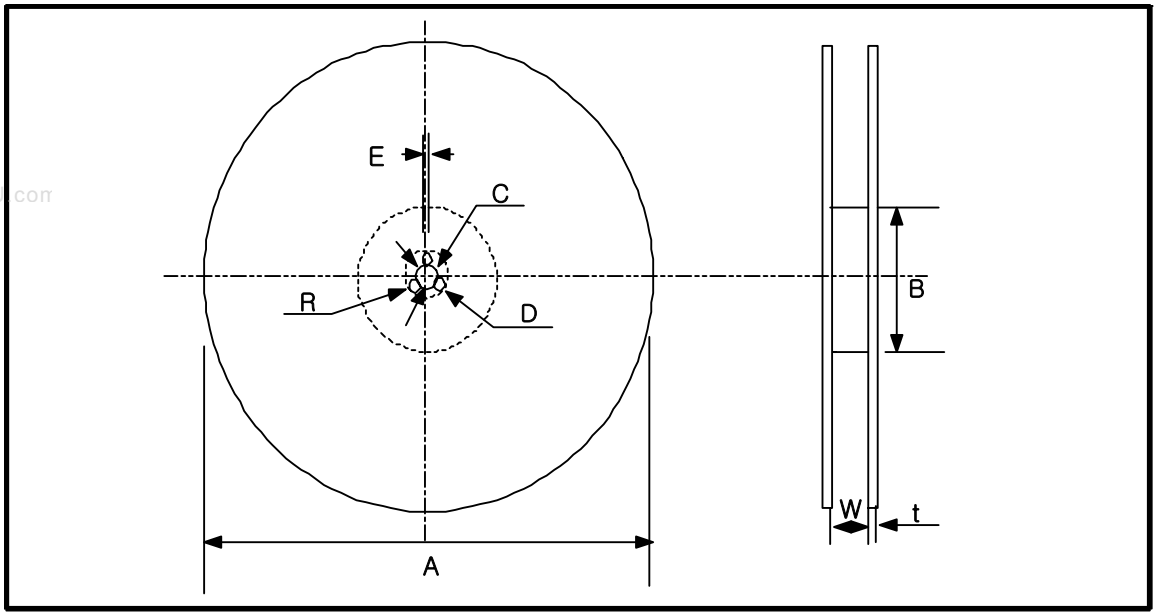
Unit : mm

TYPE	TAPE MATERIAL	A	B	T	Tc (Chip Thickness)
21	EMBOSSED TAPE	1.5±0.2 [.059±.008]	2.3±0.2 [.091±.008]	2.0 [.079]	1.0±0.2
31	EMBOSSED TAPE	2.0±0.2 [.079±.008]	3.6±0.2 [.142±.008]	2.0 [.079]	1.0±0.2

● QUANTITY

TYPE	THICKNESS OF BODY[MM]	STANDARD QUANTITY[PCS]
21	1.0	3000
31	1.0	3000

● REEL DIMENSION



unit : mm

A	B	C	D	E	W	T	R
ϕ178±2	ϕ60±5.0	Φ13±0.5	Φ21±0.8	2±0.5	10.0±1.5	0.8±0.2	1.0

NOTICE

● Report before change

If it is required to change the specifications, materials or manufacturing methods of this specified Baluns, we shall inform on written statement with its quality and reliability data before changes may occur.

● Packaging

Package includes label with below item and outgoing inspection data on customer's request.
- Part No.& Lot No.
- Quantity
- Name and logo of manufacturer

● Restriction of environmental destructive material

Baluns specified on this specification do not use any of under stated materials.
Cd, Hg, As, Br and its chemical composite, PCB and asbestos.

PBBS
PBBOs
PBDO
PBDE
PBB

● Usage of destructive materials to ozonosphere

CBaluns specified on this specification do not use any of under stated ODS materials on its manufacturing stages.

Freon
Haron
1-1-1 TCE
CCl4
HCFC