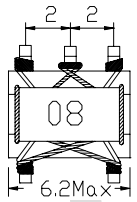
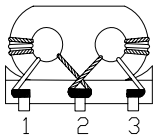
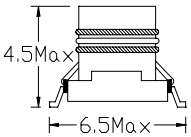
## EXTERNAL DIMENSIONS

(Unit: m/m)




| Part Number | Winding Turns | Operating Frequency Range | Insertion Loss | Pin Connection Fig. |
|---|---|---|---|---|
| **Double Balanced Mixer** | | | | |
| RF-5-1003 | 3x4 | 8MHz~800MHz | 3.5 dB Max. | 1 |
| RF-5-1005 | 2x4 | 400MHz~1.3GHz | 4 dB Max. | 1 |
| RF-5-1008 | 4x4 | 6MHz~600MHz | 2.5 dB Max. | 1 |
| RF-5-1011 | 5x4 | 5MHz~500MHz | 2 dB Max. | 1 |
| RF-5-1012 | 1x4 | 50MHz~400MHz | 10 dB Max. | 1 |
| RF-5-1013 | 2x4 | 10MHz~1.0GHz | 6 dB Max. | 1 |
| **Frequency Mixer** | **Pri Sec** | | | |
| RF-5-1024 | 3 x 2 3 | 3.5MHz~470MHz | 3 dB Max. | 2 |
| RF-5-1052 | 2 x 2 2 | 9MHz~350MHz | 3 dB Max. | 2 |
| RF-5-1085 | 1 x 2 1 | — | 3 dB Max. | 2 |
| RF-5-1086 | 4 x 2 4 | 2.2MHz~400MHz | 3 dB Max | 2 |
| RF-5-1087 | 5 x 2 5 | 1.5MHz~300MHz | 3 dB Max | 2 |
| **Distributor** | | | | |
| RF-5-1014 | — | 20MHz~600MHz | IN to OUT-1,2 4.5 dB Max. OUT-1 to OUT-2 (ISOLATION) 10 dB Min. | 3 |
| **Directional Coupler** | | | | |
| RF-5-1006 | 5 | 6MHz~600MHz | IN to OUT-1 0.9 dB Max. IN to OUT-2 13~16 dB | 4 |
| RF-5-1007 | 6 | 6MHz~600MHz | IN to OUT-1 0.8 dB Max. IN to OUT-2 15~17 dB | 4 |
| RF-5-1015 | 4 | 6MHz~600MHz | IN to OUT-1 1.3 dB Max. IN to OUT-2 11~14 dB | 4 |

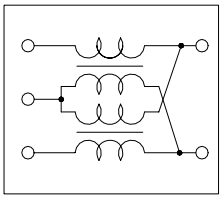
## Features

- Pair wire coil for high stability.
- Base pin terminal treated, allowing mounting “as is” on a PCB

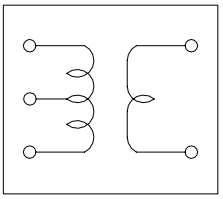
## Applications

- Double balance mixers, broad-band transformers, impedance transformers, etc.

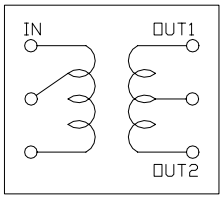
## Pin Connection



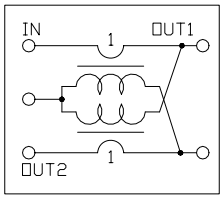
Double Balanced Mixer
Fig.1



Transformer
Fig.2



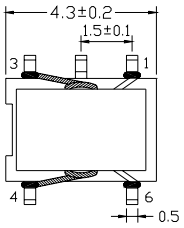

Distributor
Fig.3

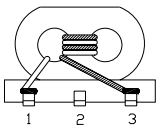


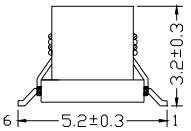

Directional Coupler
Fig.4

## EXTERNAL DIMENSIONS

(Unit: m/m)




| Part Number | Winding Turns | Operating Frequency Range (MHz) | Insertion Loss (dB) | Pin Connection Fig. |
|---|---|---|---|---|
| **Double Balanced Mixer** | | | | |
| RF-3-1007A | 2 | 25MHz ~ 2000MHz | 3 | 1 |
| RF-3-1009A | 3 | 6MHz ~ 2000MHz | 3 | 1 |
| RF-3-1006A | 3 | 150MHz ~ 2300MHz | 3 | 1 |
| RF-3-1010A | 4 | 3.5MHz ~ 2000MHz | 3 | 1 |
| RF-3-1018A | 5 | 2MHz ~ 2000MHz | 3 | 1 |
| **Frequency mixer** | | | | |
| RF-3-1025A | 1 | — | | 2 |
| RF-3-1019A | 2 | 8MHz ~ 750MHz | 3 | 2 |
| RF-3-1026A | 3 | 3.5MHz ~ 700MHz | 3 | 2 |
| **Balun transformer** | | | | |
| RF-3-1021A | 1.5 | 20MHz ~ 750 MHz | 3 | 3 |
| RF-3-1022A | 2.5 | 4.5MHz ~ 3300MHz | 3 | 3 |
| RF-3-1023A | 3.5 | 2.3MHz ~ 2700MHz | 3 | 3 |
| RF-3-1024A | 4.5 | 1.5MHz ~ 2400MHz | 3 | 3 |
| DISTRIBUTOR | | | | |
| RF-3-1079A | 2 | 1300MHz ~ 1700MHz | IN to OUT-1,2 4.5dB Max. | 4 |
| RF-3-1076A | 3 | 800MHz ~ 1000MHz | OUT-1 to OUT-2 (ISOLATION) 15dB Min. | 4 |

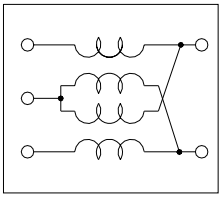
## Features

- Pair wire coil for high stability.
- Base pin terminal treated, allowing mounting “as is” on a PCB

## Applications

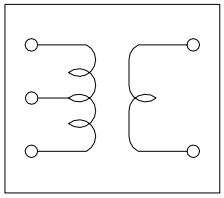
- Double balance mixers, broad-band transformers, impedance transformers, etc.

## Pin Connection



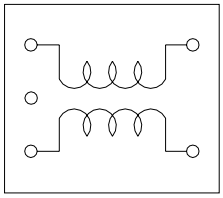
Double Balanced

Fig.1



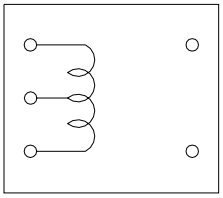
Mixer Transformer

Fig.2



Balun Transformer

Fig.3

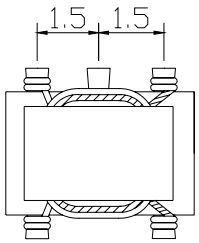


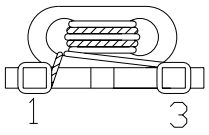
Distributor

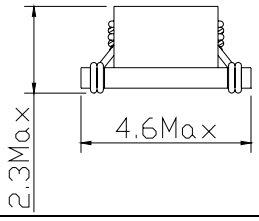
Fig.4

## EXTERNAL DIMENSIONS

(Unit:m/m)



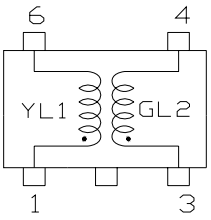



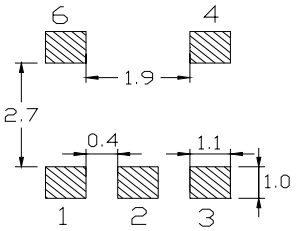

| Part Number | Insertion Loss | $I_{DC}$(A) Max | $R_{DC}$(Ω) Max | Impedance (Typical) | Withstand Voltage |
|---|---|---|---|---|---|
| RF-3L-371 | 0.3 MHz 6±2 dB<br>1 MHz 7±2 dB<br>10 MHz 18±3 dB<br>40 MHz 2±3 dB | 0.25 | 0.35 | 370Ω @ 1 MHz<br>1100Ω @ 10 MHz | 150VAC |

## Features:

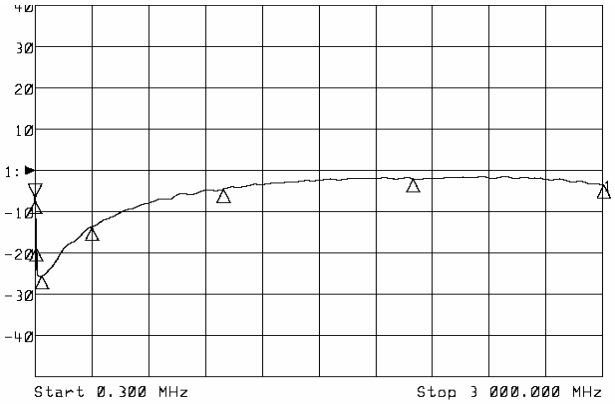
- Low profile: 2.3mm(Max).
- Common mode impedance of 370Ω at 1MHz , 1100Ω at 10MHz.
- Operating temperature Range:-25℃~ +85℃.
- Suitable for reflow soldering.

## Circuit & Pad: (Top View)

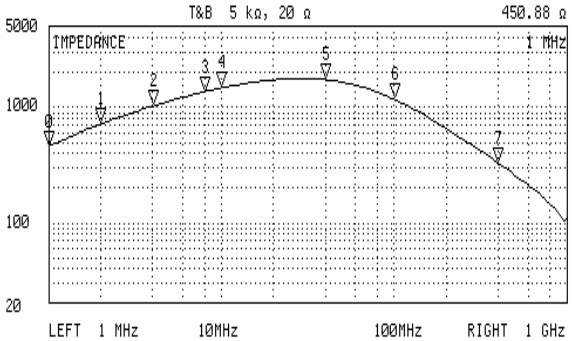



## Insertion Loss& Impedance




| 1:Mkr (MHz) | dB | 2:Mkr (MHz) | dB |
|---|---|---|---|
| 1> 0.3000 | -6.398 | | |
| 2: 1.0000 | -7.281 | | |
| 3: 10.0000 | -18.631 | | |
| 4: 40.0000 | -25.561 | | |
| 5: 300.0000 | -13.679 | | |
| 6: 1000.0000 | -4.441 | | |
| 7: 2000.0000 | -2.041 | | |
| 8: 3000.0000 | -3.510 | | |

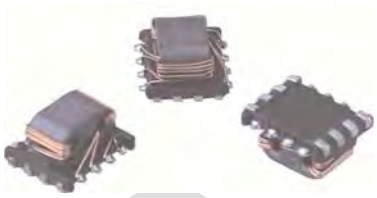


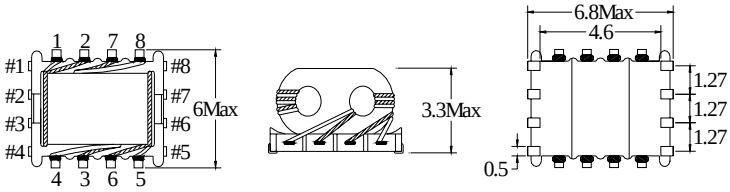

| N | STIMULUS | VAL |
|---|---|---|
| 0 | 1 MHz | 450.88 Ω |
| 1 | 2 MHz | 712.06 Ω |
| 2 | 4 MHz | 1.0158 kΩ |
| 3 | 8 MHz | 1.3516 kΩ |
| 4 | 10 MHz | 1.4581 kΩ |
| 5 | 40 MHz | 1.7185 kΩ |
| 6 | 100 MHz | 1.1605 kΩ |
| 7 | 400 MHz | 327.47 Ω |

# Common Choke – LRF009 ForIEEE1394/USB2.0

## EXTERNAL DIMENSIONS

(Unit:m/m)






| Part Number | Insertion Loss | $I_{DC}$ (A)Max | $R_{DC}$ (Ω)Max | Impedance (Typical) | Withstand Voltage |
|---|---|---|---|---|---|
| LRF009-221 | 50MHz 2.8 dB±2.0dB<br>100MHz 7.3 dB±2.5dB<br>300MHz 12.0dB±3.0dB<br>500MHz 14.0dB±3.0dB | 0.65 | 0.3 | 220Ω @ 100MHz<br>420Ω @ 400MHz | $50V_{DC}$ |

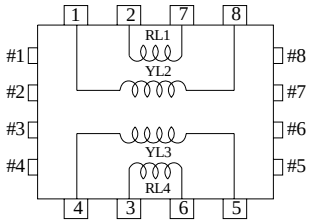
## Features:

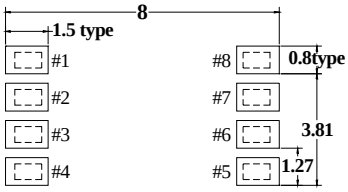
- Low profile: 3.3mm(Max).
- Common mode impedance of 220Ω at 100MHz ,420Ω at 400MHz.
- Operating temperature Range: -25℃~+85℃.
- Suitable for reflow soldering.

## Applications:

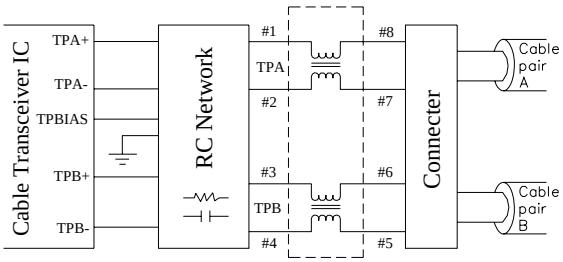
- LRF009-221 Series is a dual wound common mode choke w/c is ideal for NOISE ATTENUATION in a twisted pair cable interfaces as well as IEEE1394 & USB2.0 applications. An excellent impedance balance between two sets of twisted pairs is achieved by winding across a single core .
- One LRF009-221 common mode choke coil per interface port is possible with this dual winding configurations.

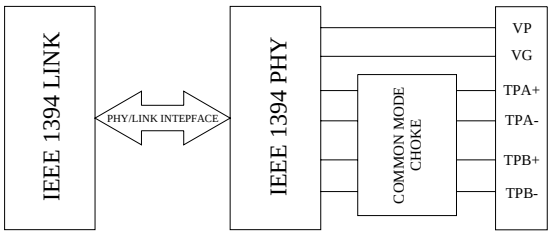
## Circuit(Top View) & Pad:



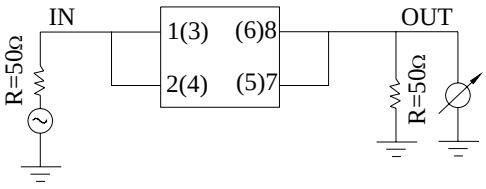




## Twisted Pair Cable Interface & IEEE 1394 Port:

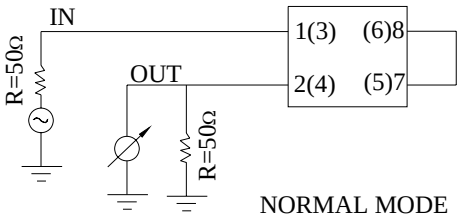


## Test Mode：

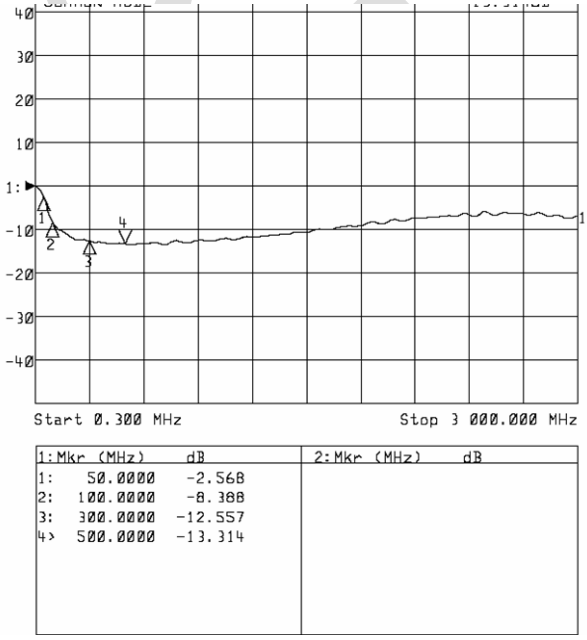


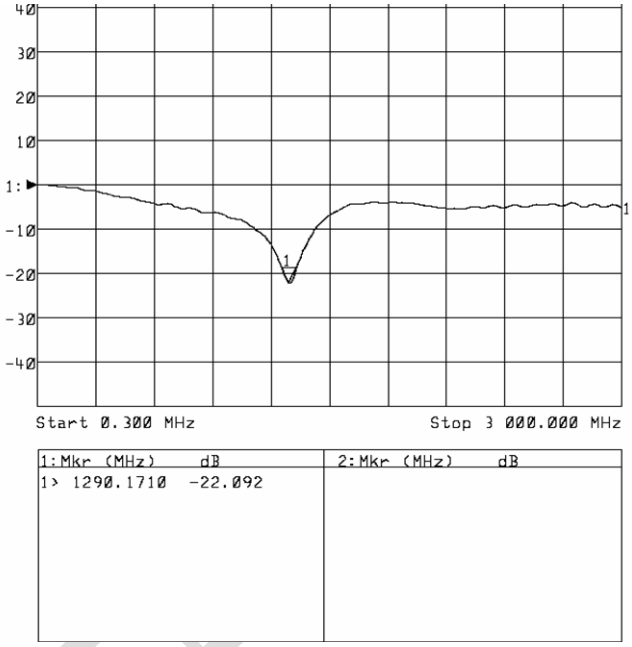

COMMON MODE



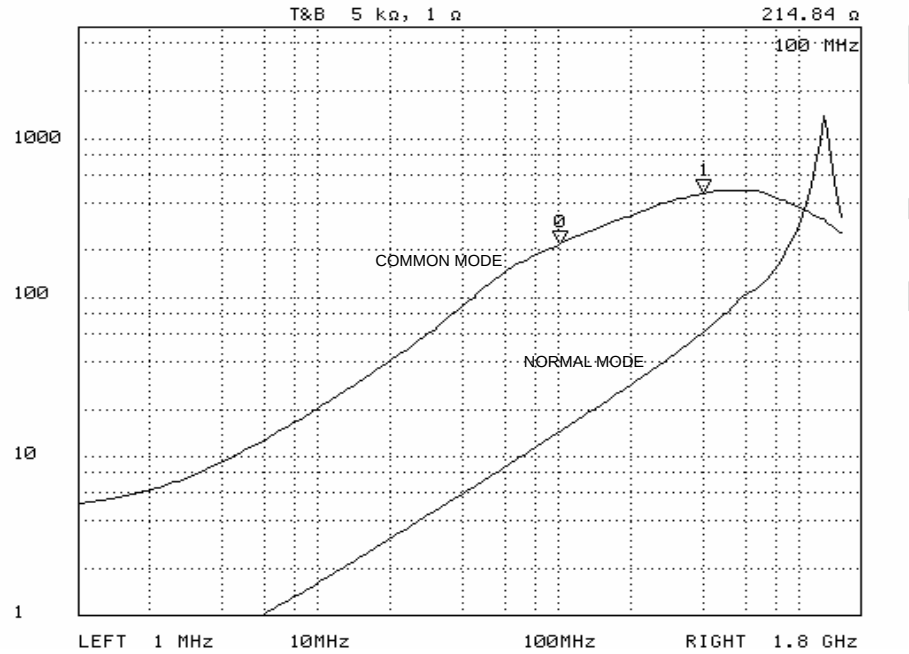

NORMAL MODE

## Insertion Loss：




## | Z | - F：

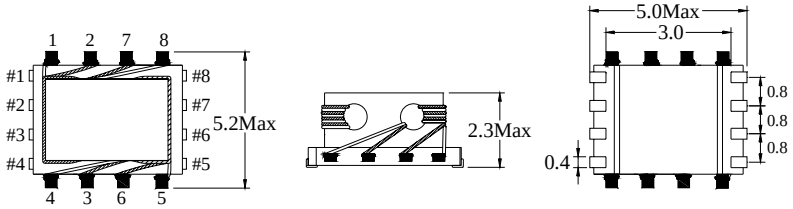


SHINHOM

# Common Choke –LRF019 For IEEE1394/USB2.0

## EXTERNAL DIMENSIONS

(Unit:m/m)




| Part Number | Insertion Loss | | $R_{DC}$ (Ω)Max | Impedance (Typical) | Withstand Voltage |
|---|---|---|---|---|---|
| LRF019T-221 | 50MHz<br>100MHz<br>300MHz<br>500MHz | 2.0 dB±1.0dB<br>6.0 dB±2.0dB<br>12.0 dB±2.5dB<br>14.0 dB±3.0dB | 0.12 | 220Ω @ 100MHz<br>500Ω @ 400MHz | $50V_{DC}$ |

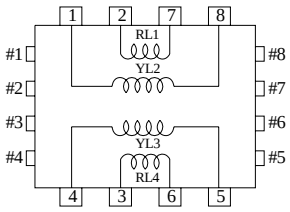
## Features:

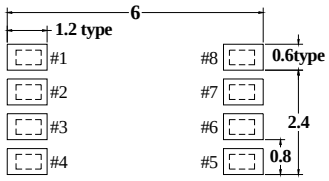
- Low profile: 2.3mm(Max).
- Common mode impedance of 220Ω at 100MHz , 500Ω at 400MHz .
- Operating temperature Range: -25℃~+85℃.
- Suitable for reflow soldering.

## Applications:

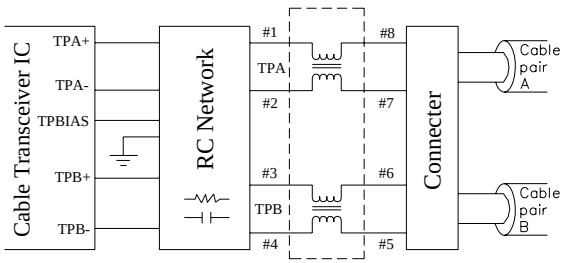
- LRF019T-221 is a dual wound common mode choke w/c is ideal for NOISE ATTENUATION in a twisted pair cable interfaces as well as IEEE1394 & USB2.0 applications. An excellent impedance balance between two sets of twisted pairs is achieved by winding across a single core .
- One LRF019T-221 common mode choke coil per interface port is possible with this dual winding configurations.

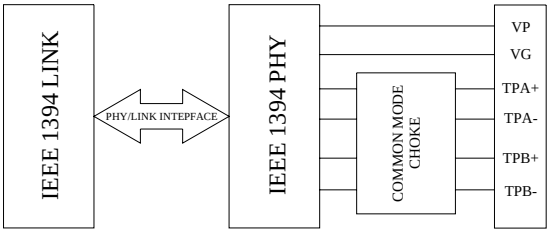
## Circuit(Top View) & Pad:



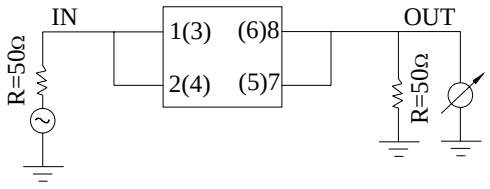




## Twisted Pair Cable Interface & IEEE 1394 Port:

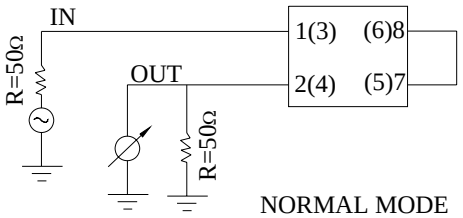


## Test Mode：

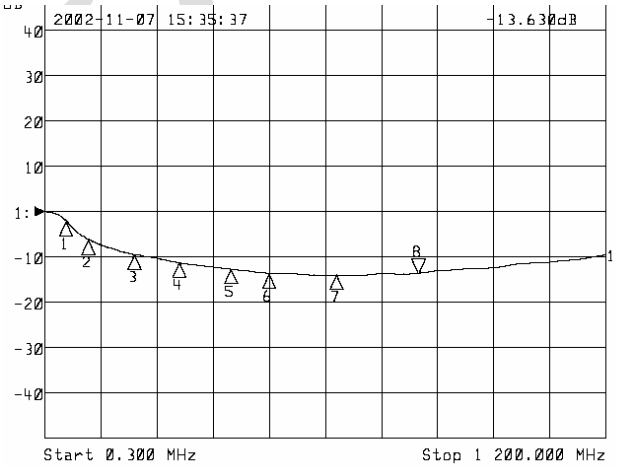



COMMON MODE

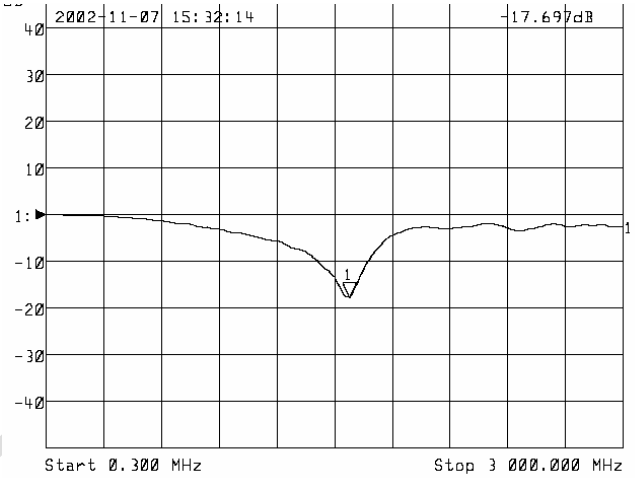



NORMAL MODE

## Insertion Loss：

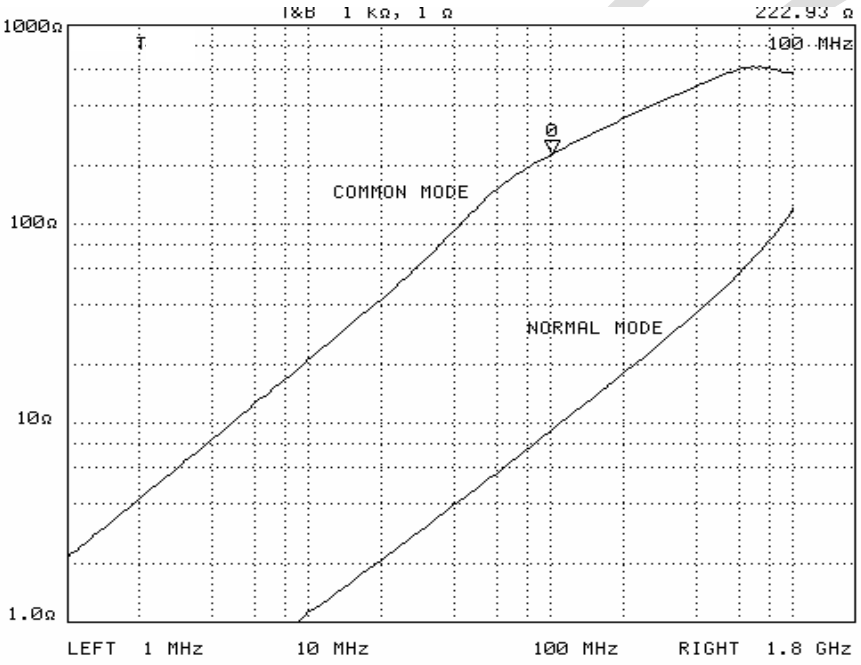



| 1:Mkr (MHz) | dB | 2:Mkr (MHz) | dB |
|---|---|---|---|
| 1: 48.0000 | -2.151 | | |
| 2: 96.0000 | -6.183 | | |
| 3: 192.0000 | -9.481 | | |
| 4: 288.0000 | -11.318 | | |
| 5: 400.0000 | -12.763 | | |
| 6: 480.0000 | -13.650 | | |
| 7: 624.0000 | -14.107 | | |
| 8> 800.0000 | -13.630 | | |




| 1:Mkr (MHz) | dB | 2:Mkr (MHz) | dB |
|---|---|---|---|
| 1> 1575.1425 | -17.697 | | |

## |Z| - F：

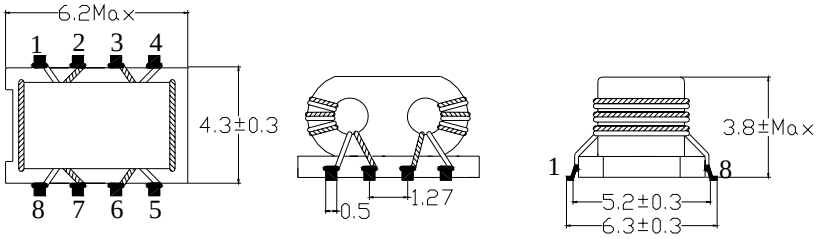


SHINHOM

# Common Choke – LRF018 For IEEE1394/USB2.0

## EXTERNAL DIMENSIONS

(Unit:m/m)




| Part Number | Insertion Loss (HP-8711C) | | | |
|---|---|---|---|---|
| | 50MHz | 100MHz | 300MHz | 500MHz |
| LRF018T-331 | 3.0dB±1.0dB | 9.0dB±2.0dB | 15.0dB±3.0dB | 17.0dB±3.0dB |
| LRF018T-181 | 1.3dB±1.0dB | 5.0dB±2.0dB | 10.0dB±3.0dB | 12.0dB±3.0dB |
| LRF018T-900 | 0.9dB±0.5dB | 2.6dB±1.0dB | 5.4dB±2.0dB | 7.0dB±2.0dB |
| LRF018T-560 | 6.5dB±2.5dB | 12dB±3.0dB | 18dB±3.0dB | 19dB±3.0dB |

| Part Number | $I_{DC}$ | $R_{DC}$ | Impedance Common Mode (Typ.)(HP-4395A) | Rated Voltage | Wistanding Voltage (CH-901) | Insulation Resistance (CH-702A) |
|---|---|---|---|---|---|---|
| LRF018T-331 | 0.5A (Max) | 0.10Ω (Max) | 330Ω @ 100MHz<br>740Ω @ 400MHz | DC 80V | AC150V/ 2mA/1min AT WINDING TO WINDING | DC100V/ 10MΩMin AT WINDING TO WINDING |
| LRF018T-181 | 0.5A (Max) | 0.09Ω (Max) | 180Ω @ 100MHz<br>420Ω @ 400MHz | | | |
| LRF018T-900 | 0.5A (Max) | 0.08Ω (Max) | 90Ω @ 100MHz<br>180Ω @ 400MHz | | | |
| LRF018T-560 | 0.5A (Max) | 0.12Ω (Max) | 560Ω @ 100MHz<br>860Ω @ 400MHz | | | |

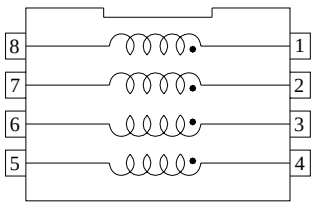
## Features:

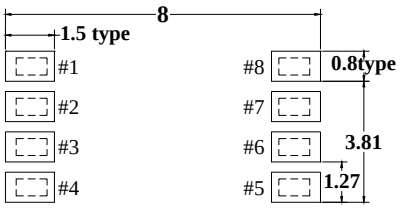
- Low profile: 3.8mm(Max).
- Common mode impedance of 88~556Ω at 100MHz ,176~860Ω at 400MHz.
- Operating temperature Range: -25℃~+85℃.
- Suitable for reflow soldering.

## Applications:

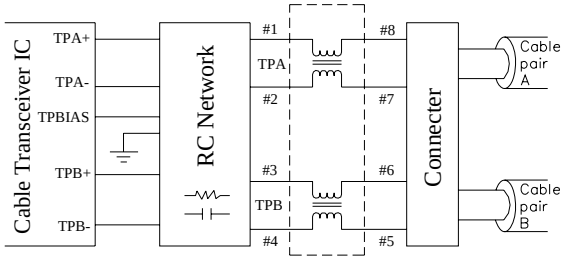
- LRF018T Series is a dual wound common mode choke w/c is ideal for NOISE ATTENUATION in a twisted pair cable interfaces as well as IEEE1394 & USB2.0 applications. An excellent impedance balance between two sets of twisted pairs is achieved by winding across a single core .
- One LRF018T common mode choke coil per interface port is possible with this dual winding configurations.

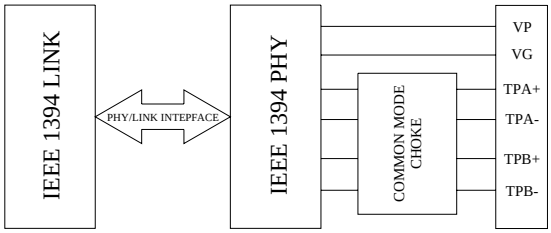
## Circuit(Top View) & Pad:



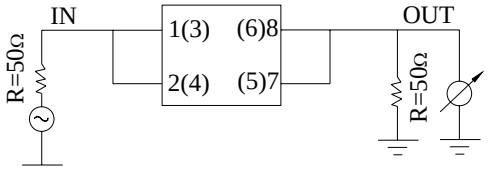



## Twisted Pair Cable Interface & IEEE 1394 Port:

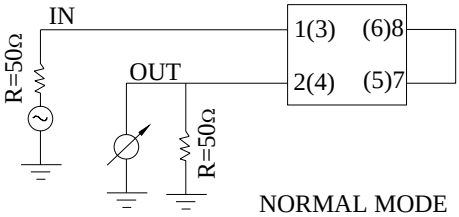



## Test Mode：

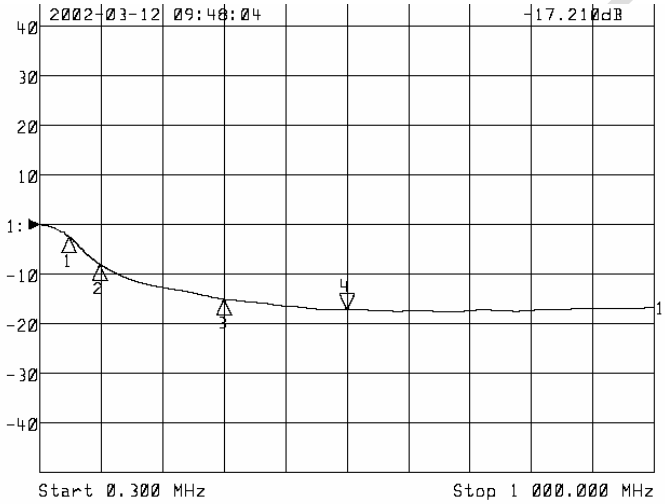



COMMON MODE

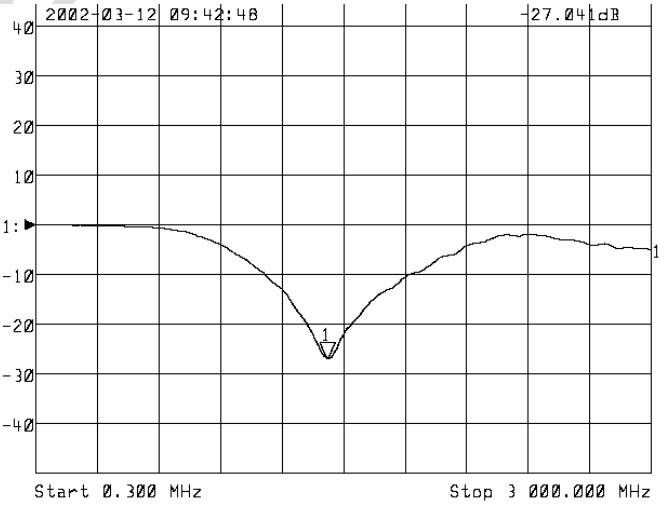



NORMAL MODE

## Insertion Loss：




| 1:Mkr (MHz) | dB | 2:Mkr (MHz) | dB |
|---|---|---|---|
| 1: 50.0000 | -2.525 | | |
| 2: 100.0000 | -8.093 | | |
| 3: 300.0000 | -15.087 | | |
| 4› 500.0000 | -17.210 | | |




| 1:Mkr (MHz) | dB | 2:Mkr (MHz) | dB |
|---|---|---|---|
| 1› 1425.1575 | -27.041 | | |

# RF Transformer For Wideband RF Applications

## RF SERIES

### FEATURES:

- RoHS peak reflow temperature rating: 245℃
- For single–ended to balanced applications
- Value–oriented construction
- Small surface mount package
- Excellent insertion loss
- Various impedance ratios available

### PACKAGING:

- Tape & Reel : 2200 /reel
- Tray: 100 /tray

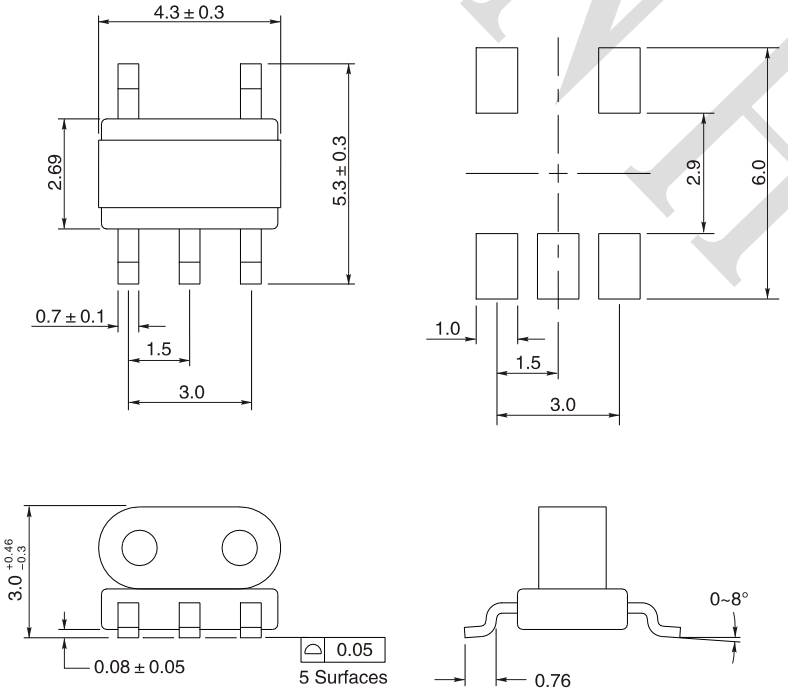
## ELECTRICAL CHARACTERISTICS:

| Part No. | Impedance ratio Pri : Sec ±2% | Turns ratio Pri : Sec ±2% | Bandwidth (MHz)Typ | Insertion loss @Midband (dB) | Schematic |
|---|---|---|---|---|---|
| RF–2078 | 1:1 | 1:1 | 5–500 | 0.6 | A |
| RF–2081 | 1:1.5CT | 1:1.2CT | 5–125 | 0.9 | B |
| RF–2156 | 1:1 | 1:1 | 2.3–2700 | 0.2 | A |

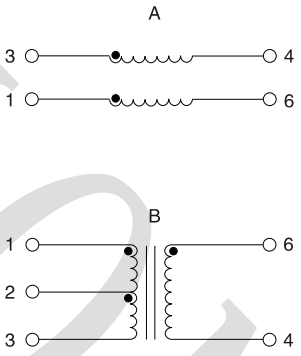
Notes:
1. Impedance and turns ratios are specified primary:secondary. (CT=Center Tap).
2. Bandwidth is referenced to midband loss.
3. These transformers are verified to operate from –40℃ to +85℃. Contact Applications Engineering for performance data.

## TECHNICAL INFORMATION & PHYSICAL CHARACTERISTICS:

**Dimensions(mm)**




**Schematic**

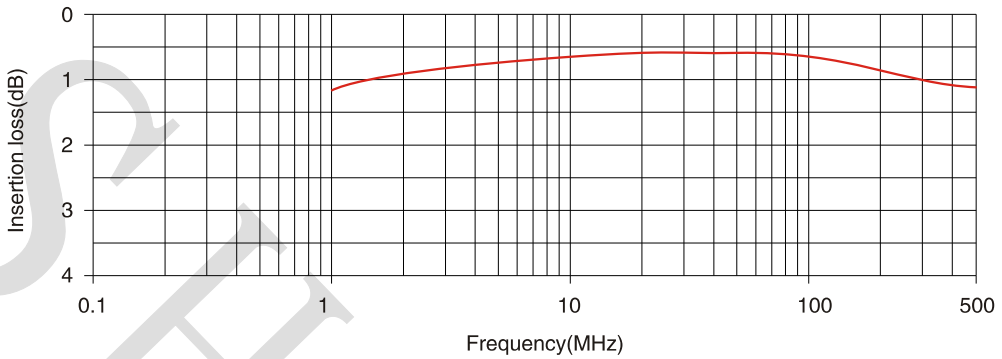



Weight . . . . . 0.43 grams
Tape & Reel . . . . . 2200 /reel
Tray . . . . . 100 /tray

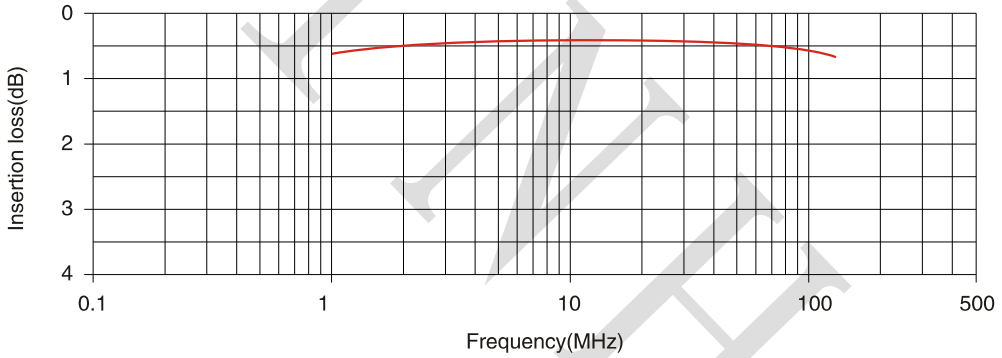
Application Notes:
1. Bandwidth specifications are typical in a 75Ω system.
2. Materials used in the products are UL94–V0 recognized. Products meet requirements of IEC 695–2–2 (Needle Flame Test).
3. For additional impedance ratios and frequency ranges, please contact Applications Engineering.

## Typical insertion loss:

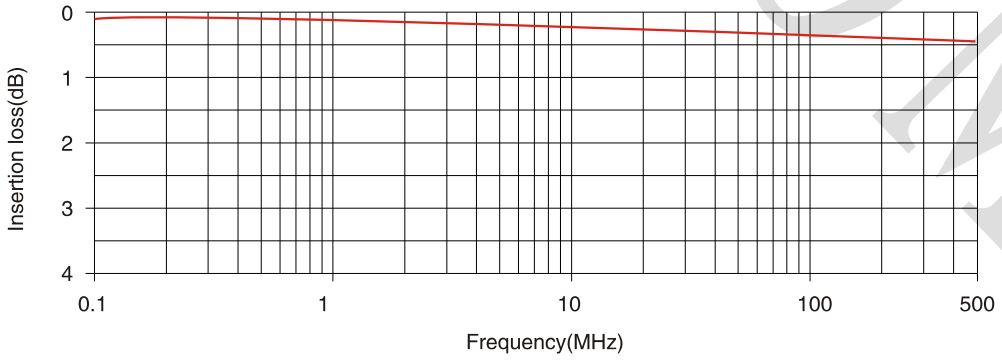
### RF-2078




### RF-2081

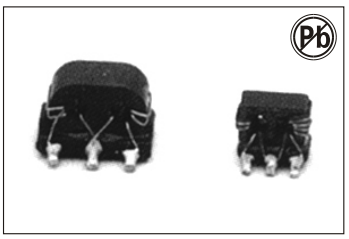



### RF-2156



# RF Transformers for Surface Mounting

# RF 5S,5SL SERIES



## FEATURES:

- Pair wire coil for high stability.
- Base pin terminal treated
- Exellent Frequency Response
- Low Profile Low Cost

## OPTIONS:

- Bulk Packaging is Standard
- Custom design available
- dip Available

## APPLICATIONS:

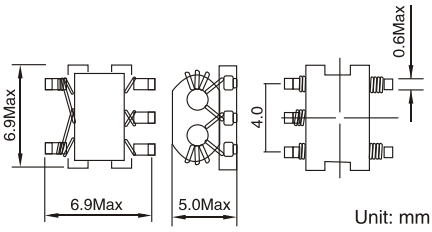
- Double balance mixers,broad–band impedance transformers
- Directional Couplers for Mixers
- Matching Power Combining and Splitting
- Step–Top box and cable modem

## STANDARD SPECIFICATIONS

| Part Number | | Number of Turns per Winding | Operating Frequency Range | Insertion Loss | Fig |
|---|---|---|---|---|---|
| Double Balanced Mixer | RF–5S–1012 | 1 | 50MHz–400MHz | 10dB max. | 1 |
| | RF–5S–1013 | 2 | 100MHz–1.0GHz | 6dB max. | 1 |
| | RF–5S–1003 | 3 | 8MHz–800MHz | 3.5dB max. | 1 |
| | RF–5S–1008 | 4 | 6MHz–600MHz | 2.5dB max. | 1 |
| | RF–5S–1011 | 5 | 5MHz–500MHz | 2dB max. | 1 |
| | RF–5S–1005 | 2 | 400MHz–1.3MHz | 4dB max. | 1 |
| Frequency Mixer | RF–5S–1085 | 1 | — | 3dB max. | 2 |
| | RF–5S–1052 | 2 | 9MHz–350MHz | 3dB max. | 2 |
| | RF–5S–1024 | 3 | 3.5MHz–470GHz | 3dB max. | 2 |
| | RF–5S–1086 | 4 | 2.2MHz–400MHz | 3dB max. | 2 |
| | RF–5S–1087 | 5 | 1.5MHz–300MHz | 3dB max. | 2 |
| Power Divider /Combiner | RF–5S–1014 | | 20MHz–600MHz | IN to OUT–1.2 4.5dB max. OUT–1 to OUT–2 (ISOLATION) 10dB min. | 6 |
| Directional Coupler | RF–5S–1015 | 4 | 6MHz–600MHz | IN to OUT–11.3dB max. IN to OUT–2.11dB –14dB | 7 |
| | RF–5S–1006 | 5 | 6MHz–600MHz | IN to OUT–10.9dB max. IN to OUT–2.13dB –16dB | 7 |
| | RF–5S–1007 | 6 | 6MHz–600MHz | IN to OUT–10.8dB max. IN to OUT–2.15dB –17dB | 7 |
| Double Balanced Mixer | RF–5SL–1001 | 2 | 30MHz–850MHz | 3dB | 1 |
| | RF–5SL–1002 | 3 | 6.5MHz–1000MHz | 3dB | 1 |
| | RF–5SL–1003 | 4 | 3.5MHz–1600MHz | 3dB | 1 |
| | RF–5SL–1004 | 5 | 2.5MHz–1500MHz | 3dB | 1 |
| Frequency Mixer | RF–5SL–1027 | 1 | — | 3dB | 2 |
| | RF–5SL–1028 | 2 | 8MHz–550MHz | 3dB | 2 |
| | RF–5SL–1029 | 3 | 3.5MHz–500MHz | 3dB | 2 |
| | RF–5SL–1030 | 4 | 2MHz–370MHz | 3dB | 2 |
| | RF–5SL–1037 | 1 | — | 3dB | 2 |
| | RF–5SL–1038 | 2 | 500MHz–850MHz | 3dB | 2 |
| | RF–5SL–1039 | 3 | 240MHz–500MHz | 3dB | 2 |
| | RF–5SL–1040 | 4 | 85MHz–380MHz | 3dB | 2 |
| Balun Transformer | RF–5SL–1048 | $1_{1/2}$ | 5.5MHz–850MHz | 3dB | 3 |
| | RF–5SL–1049 | $2_{1/2}$ | 2.5MHz–2200MHz | 3dB | 3 |
| | RF–5SL–1050 | $3_{1/2}$ | 1.2MHz–1700MHz | 3dB | 3 |
| | RF–5SL–1051 | $4_{1/2}$ | 0.8MHz–1400MHz | 3dB | 3 |
| | RF–5SL–1078 | $5_{1/2}$ | 0.6MHz–1300MHz | 3dB | 3 |
| Balun Transformer | RF–5SL–1053 | $1_{1/2}$ | 160MHz–2200MHz | 3dB | 4 |
| | RF–5SL–1017 | $2_{1/2}$ | 55MHz–1700MHz | 3dB | 4 |
| | RF–5SL–1054 | $3_{1/2}$ | 30MHz–1400MHz | 3dB | 4 |

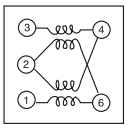
Note:1. K=±10%,M=±20%

## PHYSICAL CHARACTERISTICS

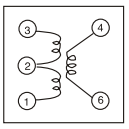



Unit: mm

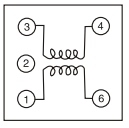
Pin Connections



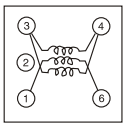
Flg.1



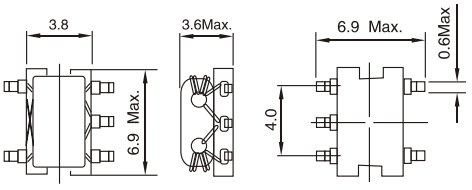
Flg.2



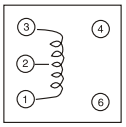
Flg.3



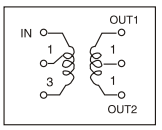
Flg.4



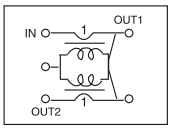

Unit: mm



Flg.5




Distributor/Flg.6




Directional Coupler/Flg.7

## TECHNICAL INFORMATION:

- Soldering methods: Wave,Reflow
- Operating Temperature: 0℃ to 70℃
- Storage Temperature: –55℃ to 125℃

Note: All specifications subject to change without notice.



SHINHOM ELECTRONICS ENTERPRISE CO.,LTD. No.100YanTa Northern Road Zip:710054 Tel:0086–29–87851838 Fax:0086–29–87851840