

Datasheet

Multilayer Ceramic Balun Transformer, GSM850/GSM900/DCS1800/ PCS1900/TD SCDMA Bands B34 Band Working Frequency RFBLN 2012 (0805) Series

RS Stock number 884-2262

FEATURES

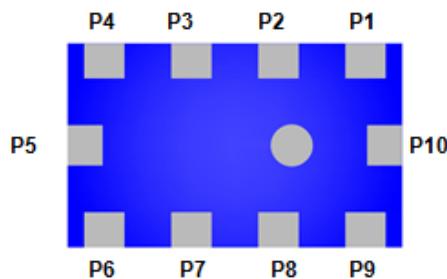
1. Miniature footprint: 2.0 X 1.2 X 0.9 mm³
2. Integrate 2 different working band devices into one package
3. Low Insertion Loss
4. Low in band Amplitude and Phase imbalance enable high performance wireless system operation
5. LTCC process
6. Second harmonic suppression
7. ISM band suppression

APPLICATIONS

1. GSM 850/ GSM 900/ DCS1800/PCS1900/TD2025 Band RF application.
2. Unbalance to balance conversion.

CONSTRUCTION

Top view



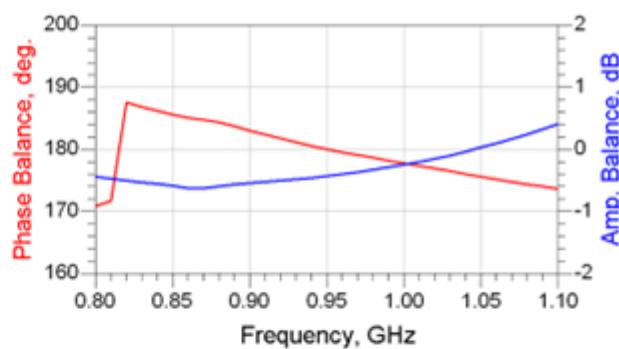
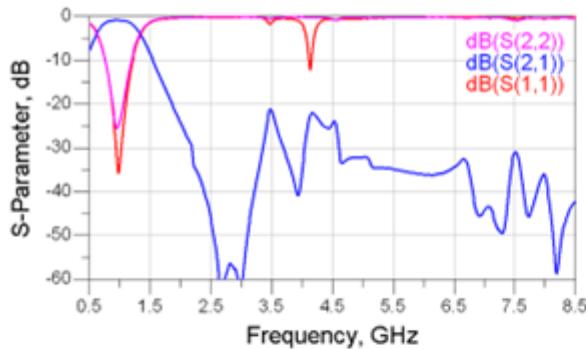
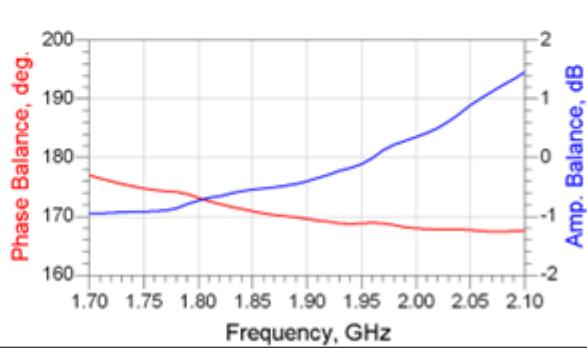
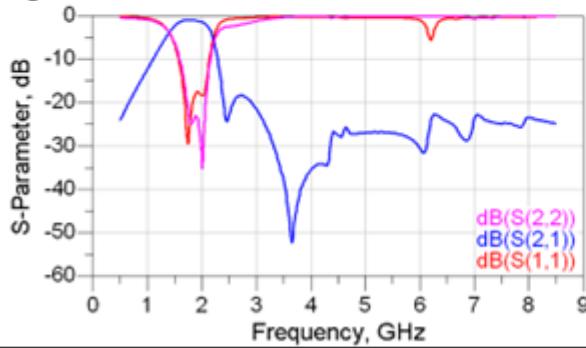
| PIN | Connection | PIN | Connection |
|-----|-------------------|-----|-----------------|
| P1 | Unbalance Port_LB | P6 | Balance Port_HB |
| P2 | GND | P7 | Balance Port_HB |
| P3 | GND | P8 | Balance Port_LB |
| P4 | Unbalance Port_HB | P9 | Balance Port_LB |
| P5 | GND | P10 | GND |

DIMENSIONS

| Figure | Symbol | Dimension (mm) |
|-------------|--------|----------------|
| Top view | L | 2.00 ± 0.10 |
| | W | 1.25 ± 0.10 |
| | T | 0.95 ± 0.10 |
| | A | 0.125 ± 0.10 |
| | B | 0.25 ± 0.10 |
| | C | 0.25 ± 0.10 |
| | D | 0.50 ± 0.10 |
| | E | 0.475 ± 0.10 |
| | F | 0.30 ± 0.10 |
| | G | 0.20 ± 0.10 |
| Bottom view | H | 0.20 ± 0.10 |
| | A | 0.125 ± 0.10 |
| | B | 0.25 ± 0.10 |
| | C | 0.25 ± 0.10 |
| Side view | D | 0.50 ± 0.10 |
| | E | 0.475 ± 0.10 |

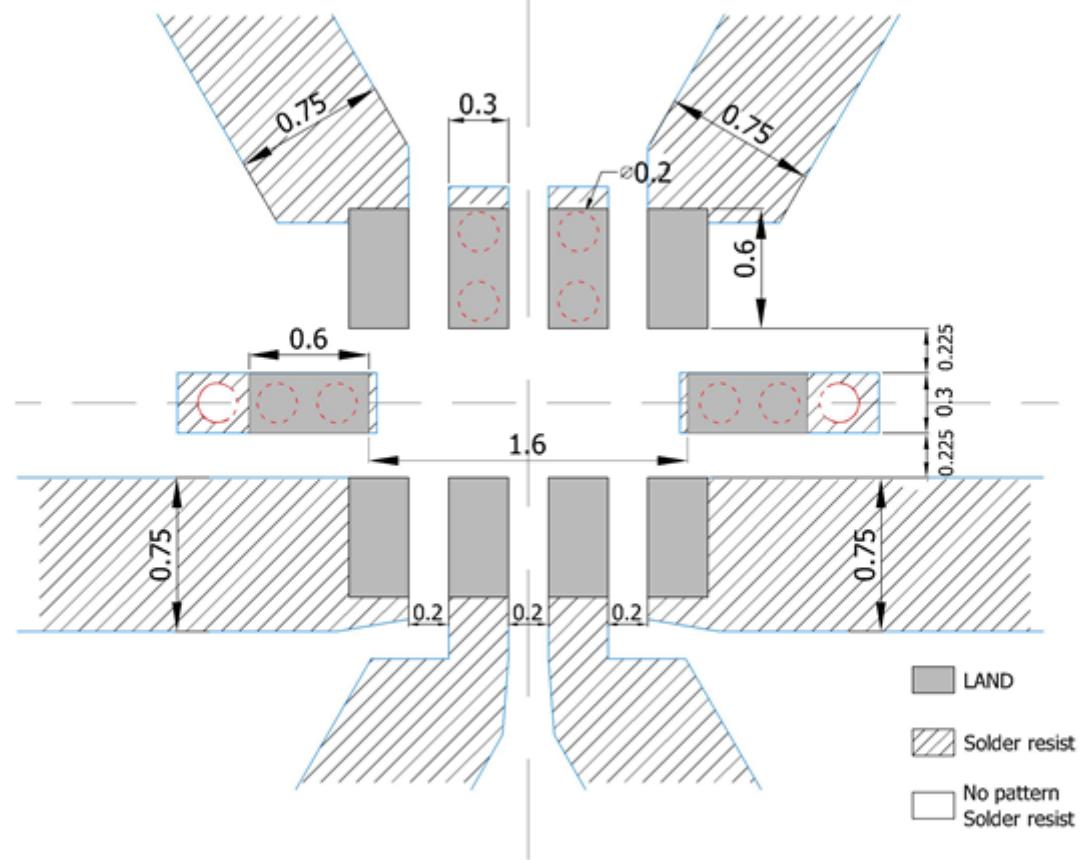
ELECTRICAL CHARACTERISTICS

| RFBLN2012090BM5T25 | Specification L-Band | Specification H-Band |
|-----------------------------|--|--|
| Frequency range (MHz) | 869~960 | 1805~2025 |
| Insertion Loss (dB) | 1.1 max | 1.8 max |
| VSWR | 2 Max | 2 Max |
| Impedance (Unbalanced) | 50 Ω | 50 Ω |
| Impedance (Balanced) | 200 Ω | 200 Ω |
| Phase Difference | $180^\circ \pm 10^\circ$ | $180^\circ \pm 15^\circ$ |
| Amplitude balance (dB max.) | 2 Max | 2 Max |
| Attenuation (dB min.) | 10 dB @ 1738 ~ 1920MHz 20 dB @ 2400 ~ 2500MHz 20 dB @ 2607 ~ 2880MHz | 15 dB @ 2400 ~ 2500MHz 20 dB @ 3610 ~ 3980MHz 20 dB @ 5415 ~ 5970MHz |
| Operation Temperature Range | -40°C ~ +85°C | |

Typical Electrical Chart
Low Band :

High Band :


SOLDER LAND PATTERN

Figure



Unit: mm

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

RELIABILITY TEST

| Test item | Test condition / Test method | Specification |
|--|--|---|
| Solderability JIS C 0050-4.6 JESD22-B102D | *Solder bath temperature : $235 \pm 5^\circ\text{C}$ *Immersion time : 2 ± 0.5 sec Solder : Sn3Ag0.5Cu for lead-free | At least 95% of a surface of each terminal electrode must be covered by fresh solder. |
| Leaching (Resistance to dissolution of metallization) IEC 60068-2-58 | *Solder bath temperature : $260 \pm 5^\circ\text{C}$ *Leaching immersion time : 30 ± 0.5 sec Solder : SN63A | Loss of metallization on the edges of each electrode shall not exceed 25%. |
| Resistance to soldering heat JIS C 0050-5.4 | *Preheating temperature : $120 \sim 150^\circ\text{C}$, 1 minute. *Solder temperature : $270 \pm 5^\circ\text{C}$ *Immersion time : 10 ± 1 sec Solder : Sn3Ag0.5Cu for lead-free Measurement to be made after keeping at room temperature for 24 ± 2 hrs | No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within $-40 \sim 85^\circ\text{C}$. Loss of metallization on the edges of each electrode shall not exceed 25%. |
| Drop Test JIS C 0044 Customer's specification. | *Height : 75 cm *Test Surface : Rigid surface of concrete or steel. *Times : 6 surfaces for each units ; 2 times for each side. | No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within $-40 \sim 85^\circ\text{C}$. |
| Vibration JIS C 0040 | *Frequency : $10\text{Hz} \sim 55\text{Hz} \sim 10\text{Hz}(1\text{min})$ *Total amplitude : 1.5mm *Test times : 6hrs.(Two hrs each in three mutually perpendicular directions) | No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within $-40 \sim 85^\circ\text{C}$. |
| Adhesive Strength of Termination JIS C 0051- 7.4.3 | *Pressurizing force : 5N(\leq 0603) ; 10N(>0603) *Testtime : 10 ± 1 sec | No remarkable damage or removal of the termination. |
| Bending test JIS C 0051- 7.4.1 | The middle part of substrate shall be pressurized by means of the pressurizing rod at a rate of about 1 mm/s per second until the deflection becomes 1mm/s and then pressure shall be maintained for 5 ± 1 sec. Measurement to be made after keeping at room temperature for 24 ± 2 hours | No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within $-40 \sim 85^\circ\text{C}$. |

| | | |
|---|--|---|
| Temperature cycle JIS C 0025 | 1. 30±3 minutes at -40°C±3°C, 2. 10~15 minutes at room temperature, 3. 30±3 minutes at +85°C±3°C, 4. 10~15 minutes at room temperature, Total 100 continuous cycles Measurement to be made after keeping at room temperature for 24±2 hrs | No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within -40 ~ 85°C. |
| High temperature JIS C 0021 | *Temperature : 85°C±2°C *Test duration : 1000+24/-0 hours Measurement to be made after keeping at room temperature for 24±2 hrs | No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within -40 ~ 85°C. |
| Humidity (steady conditions) JIS C 0022 | *Humidity : 90% to 95% R.H. *Temperature : 40±2°C *Time : 1000+24/-0 hrs. Measurement to be made after keeping at room temperature for 24±2 hrs ≈ 500hrs measuring the first data then 1000hrs data | No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within -40 ~ 85°C. |
| Low temperature JIS C 0020 | *Temperature : -40°C±2°C *Test duration : 1000+24/-0 hours Measurement to be made after keeping at room temperature for 24±2 hrs | No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within -40 ~ 85°C. |

SOLDERING CONDITION

Typical examples of soldering processes that provide reliable joints without any damage are given in Fig 2.

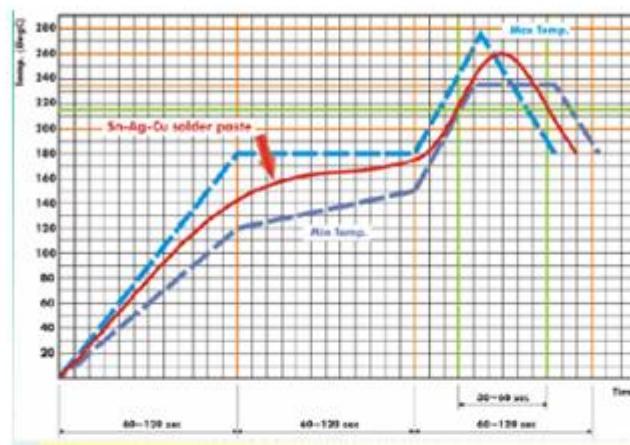


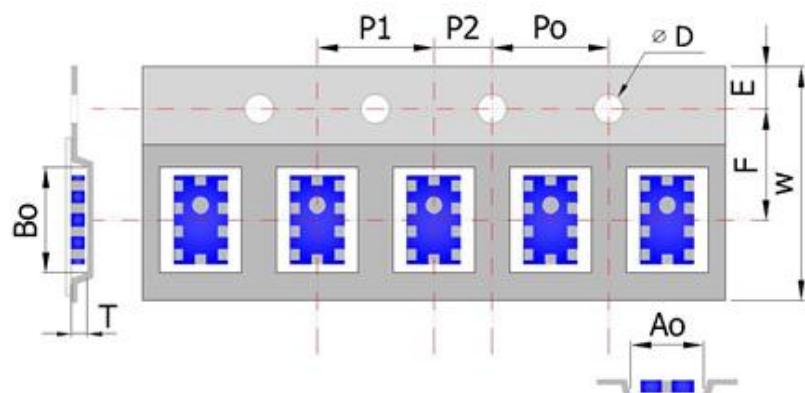
Fig2. Infrared soldering profile

ORDERING CODE

| RF | BLN | 201209 | 0 | B | M5T25 |
|---------------------|----------------------------|---|---|--|------------------------------|
| Walsin RF device | Product Code BLN: BALUN | Dimension code Per 2 digits of Length, Width, Thickness: e.g.: 201209= Length 20, Width 12, Thickness 09 | Unit of dimension 0 : 0.1 mm 1 : 1.0 mm | Application B: GSM850/ GSM900/DCS1800/ PCS1900 quad band | Specification Design Code |

Minimum Ordering Quantity: 2000 pcs per reel.

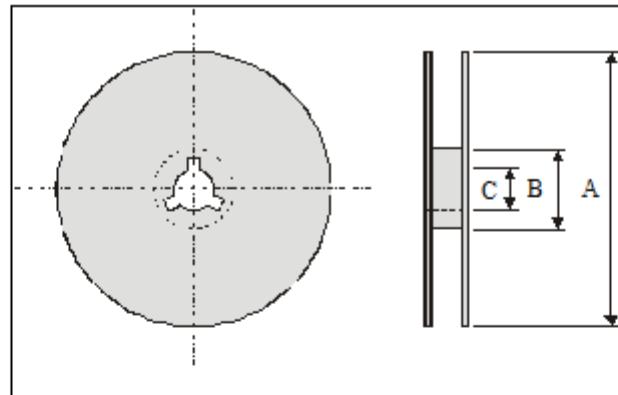
PACKAGING



Plastic Tape specifications (unit: mm)

| Index | Ao | Bo | ΦD | T | W |
|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Dimension(mm) | 1.40 ± 0.10 | 2.30 ± 0.10 | 1.55 ± 0.10 | 1.10 ± 0.10 | 8.0 ± 0.10 |
| Index | E | F | Po | P1 | P2 |
| Dimension(mm) | 1.75 ± 0.10 | 3.50 ± 0.05 | 4.00 ± 0.10 | 4.00 ± 0.10 | 2.00 ± 0.10 |

Reel dimensions



| Index | A | B | C |
|---------------|------|-------|-------|
| Dimension(mm) | Φ178 | Φ60.0 | Φ13.5 |

Taping Quantity: 2000 pieces per 7" reel

CAUTION OF HANDLING

Limitation of Applications

Please contact us before using our products for the applications listed below which require especially high reliability for the prevention of defects, which might directly cause damage to the third party's life, body or property.

- (1) Aircraft equipment
- (2) Aerospace equipment
- (3) Undersea equipment
- (4) Medical equipment
- (5) Disaster prevention / crime prevention equipment
- (6) Traffic signal equipment
- (7) Transportation equipment (vehicles, trains, ships, etc.)
- (8) Applications of similar complexity and/or reliability requirements to the applications listed in the above.

Storage condition

- (1) Products should be used in 6 months from the day of WALSIN outgoing inspection, which can be confirmed.
- (2) Storage environment condition.
 - Products should be storage in the warehouse on the following conditions.
 - Temperature : -10 to +40°C
 - Humidity : 30 to 70% relative humidity
 - Don't keep products in corrosive gases such as sulfur. Chlorine gas or acid or it may cause oxidization of electrode, resulting in poor solderability.
 - Products should be storage on the palette for the prevention of the influence from humidity, dust and so on.
 - Products should be storage in the warehouse without heat shock, vibration, direct sunlight and so on.
 - Products should be storage under the airtight packaged condition.