

APPROVAL SHEET

RFBLN 1005 (0402) Series – RoHS Compliance

MULTILAYER CERAMIC BALUN TRANSFORMER

Halogens Free Product

LTE 900MHz Band Application Band Working Frequency

P/N: RFBLN10050G9D0T

*Contents in this sheet are subject to change without prior notice.

FEATURES

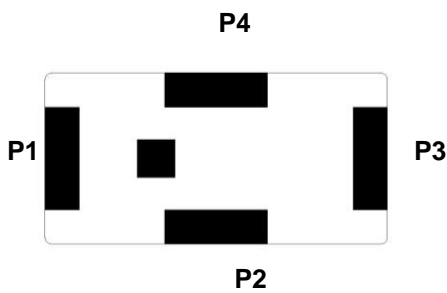
1. Miniature footprint: 1.0 X 0.5X 0.4 mm³
2. Low Insertion Loss
3. Low in-band amplitude and phase imbalance enhances system performance
4. LTCC process

APPLICATIONS

1. For LTE B20/B28 application

CONSTRUCTION

Top view



PIN	Connection	PIN	Connection
1	Balanced port	3	Balanced port
2	Unbalanced port	4	GND

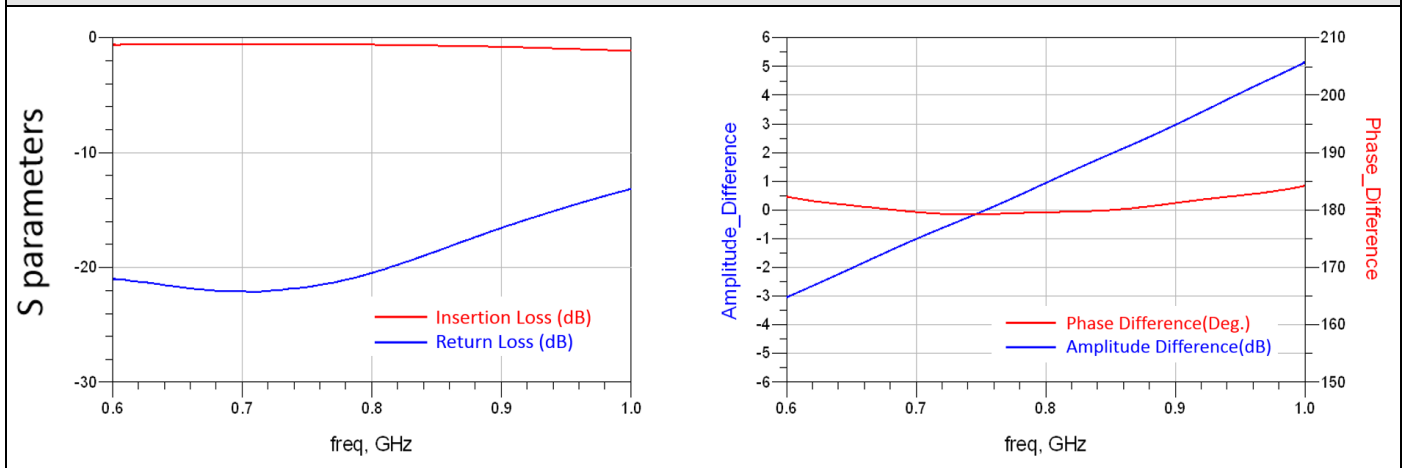
DIMENSIONS

Figure	Symbol	Dimension (mm)
<p>The figure shows three views of the component with dimension lines: <ul style="list-style-type: none"> Bottom view: Shows length L and width W. Top view: Shows length L and width W. Side view: Shows thickness T and height E. Another side view: Shows dimensions A and B. Other dimensions: D (width of top pad), C (height of top pad), and E (height of bottom pad). </p>	L	1.00 ± 0.10
	W	0.50 ± 0.10
	T	0.50 max.
	A	0.35 ± 0.10
	B	0.30 ± 0.10
	C	0.15 ± 0.10
	D	0.15 ± 0.10
	E	0.30 ± 0.10

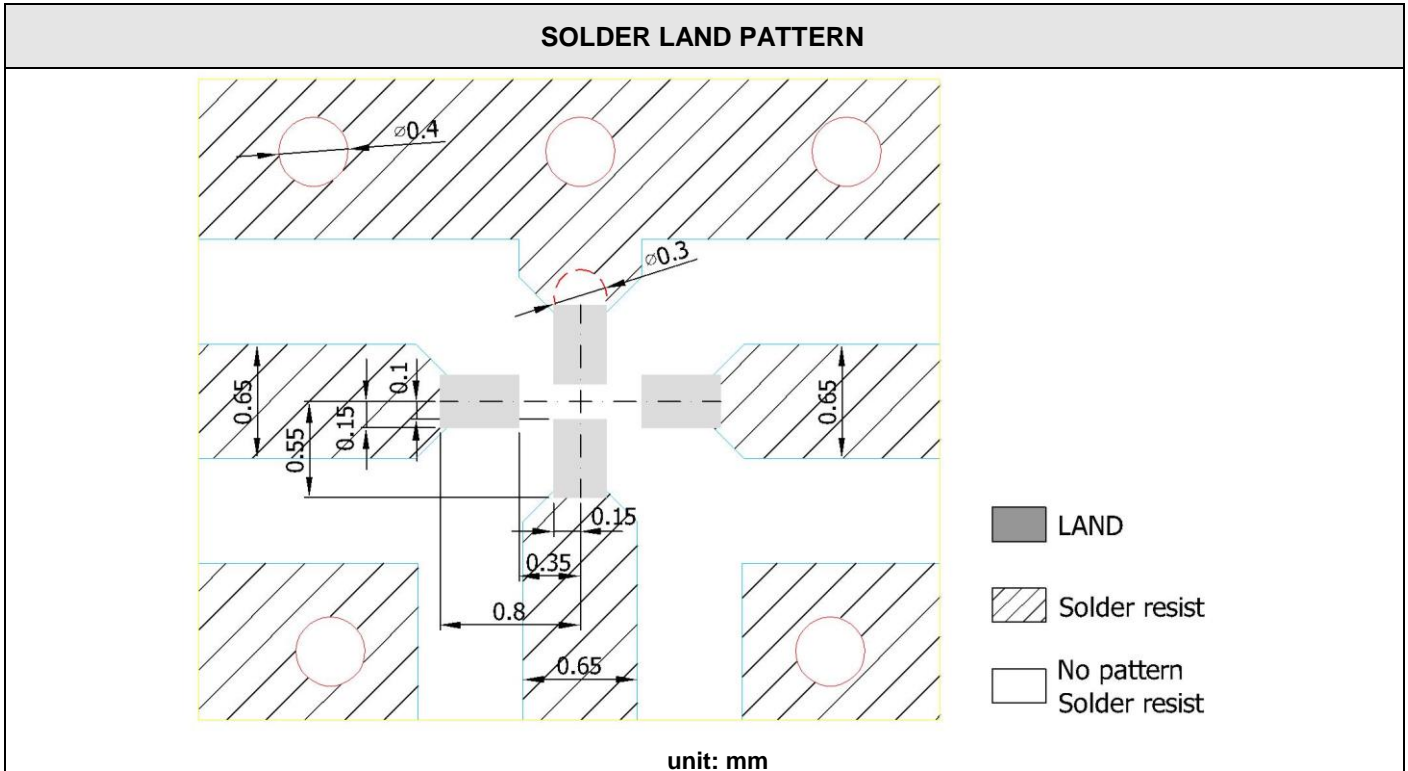
ELECTRICAL CHARACTERISTICS

RFBLN10050G9D0T	Specification
Frequency Range	699 ~ 960 MHz
VSWR	2.0
Insertion Loss	1.1 dB max. at +25°C 1.3 dB max. at -40~+85°C
Unbalanced Impedance	50 Ω
Balanced Impedance	100 Ω
Phase Difference	180° ± 10°
Amplitude Difference	4.8 dB
Operation Temperature Range	-40°C ~ +85°C

TYPICAL ELECTRICAL PERFORMANCE



SOLDER LAND PATTERN



Line width to be designed to match 50 Ω characteristic impedance, depending on PCB material and thickness. D1 and D2 are the grounding through holes.

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 : $5\text{N}(\leq 0603)$; $10\text{N}(>0603)$ *Test time : 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 $-40\sim 85^{\circ}\text{C}$.

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<p>Temperature cycle JIS C 0025</p>	<p>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</p>	<p>No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within -40 ~ 85°C.</p>
<p>High temperature JIS C 0021</p>	<p>*Temperature : 85°C±2°C *Test duration : 1000+24/-0 hours Measurement to be made after keeping at room temperature for 24±2 hrs</p>	<p>No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within -40 ~ 85°C.</p>
<p>Humidity (steady conditions) JIS C 0022</p>	<p>*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</p>	<p>No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within -40 ~ 85°C.</p>
<p>Low temperature JIS C 0020</p>	<p>*Temperature : -40°C±2°C *Test duration : 1000+24/-0 hours Measurement to be made after keeping at room temperature for 24±2 hrs</p>	<p>No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within -40 ~ 85°C.</p>

SOLDERING CONDITION

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

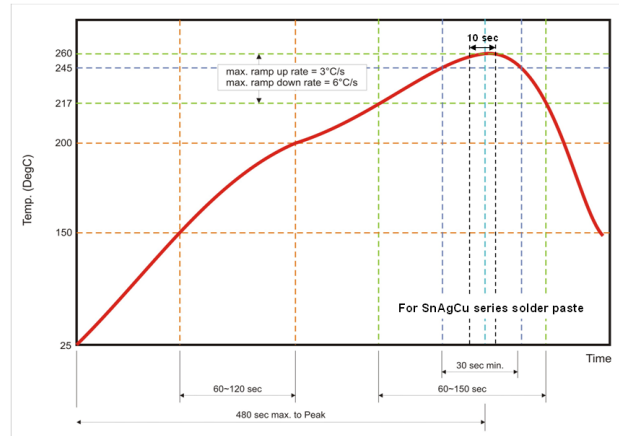


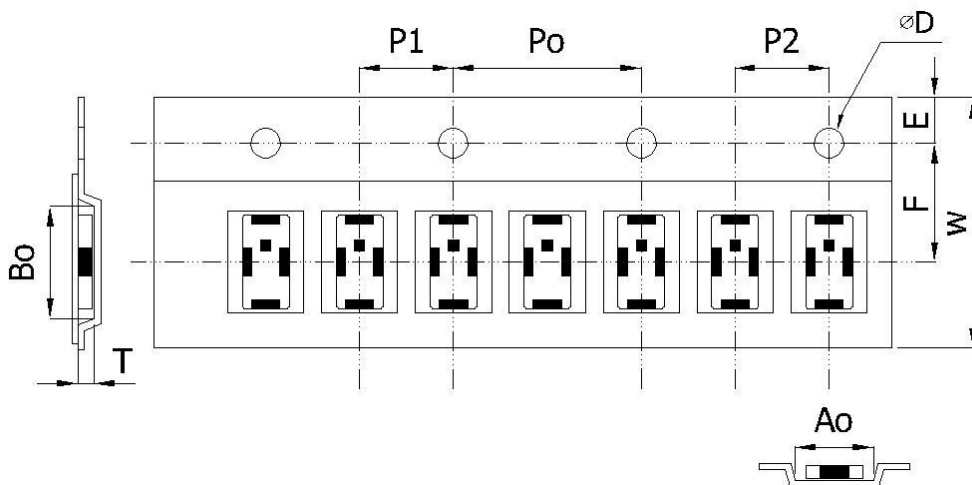
Fig 2. Infrared soldering profile

ORDERING CODE

RF Walsin RF device	BLN Product Code BLN : BALUN	1005 Dimension code Per 2 digits of Length, Width e.g. : 1005 = Length 10, Width 05	0G9 Central Frequency 0G9 :0.9 GHz	D Application D :GSM900 / DCS1800	0 Specification Design code	T Packing T : Reeled
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Minimum Ordering Quantity: 4000 pcs per reel.

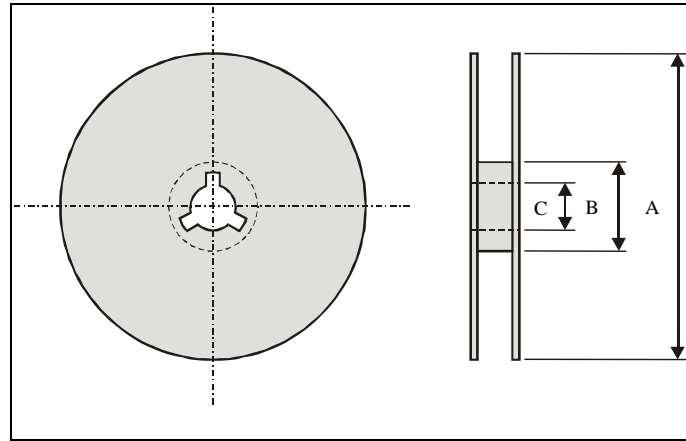
PACKAGING



Paper Tape specifications (unit :mm)

Index	Ao	Bo	φD	T	W
Dimension (mm)	0.70 ± 0.10	1.15 ± 0.10	1.50 + 0.10	0.40 ± 0.10	8.0 ± 0.30
Index	E	F	Po	P1	P2
Dimension (mm)	1.75 ± 0.10	3.50 ± 0.20	4.00 ± 0.10	2.00 ± 0.10	2.00 ± 0.10

Reel dimensions



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

Taping Quantity: 4000 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 son 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.