



# **RFDIP Series – 2520(1008)- RoHS Compliance**

### MULTILAYER CERAMIC DIPLEXER

# **Halogens Free Product**

5~1002 MHz / 1125~1675 MHz Working Frequency

# P/N: RFDIP2510G15AT

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

#### Approval sheet



### FEATURES

- 1. Miniature footprint: 2.5 X 2.0X 1.0 mm<sup>3</sup>
- 2. Low Insertion Loss
- 3. High Rejection Rate
- 4. LTCC process

#### APPLICATIONS

1. 5~1002 MHz / 1125~1675 MHz working frequency

### CONSTRUCTION

Top view



PIN	Connection	PIN	Connection
1	GND	5	Low Band Port
2	Common Port	6	GND
3	GND	7	High Band Port
4	GND	8	GND

#### DIMENSIONS

Figure		Symbol	Dimension (mm)
			$2.5 \pm 0.2$
Top view		W	$2.0 \pm 0.2$
		Т	1.0 max.
		A	0.50 ± 0.15
Side view		В	0.30 ± 0.15
	С	0.30 ± 0.15	
E	D	0.60± 0.15	
Bottom view		E	0.25 ± 0.15
		F	0.25 ± 0.15
		G	0.50 ± 0.15

#### **ELECTRICAL CHARACTERISTICS**

Frequency range Insertion Loss Attenuation VSWR Impedance Power capacity Moisture sensitivity levels perating & Storage Condition (Com Operation Temperature Range: -40 Storage Temperature Range: -40 ~	LEVEL 1 (Refer to : IF ponent) ~ +85 ℃ +85 ℃ (Included packaging material) +40 ℃	<i>N</i> max. PC/JEDEC J-STD-020)
Attenuation VSWR Impedance Power capacity Moisture sensitivity levels perating & Storage Condition (Com Operation Temperature Range: -40 Storage Temperature Range: -40 ~ corage Condition before Soldering ( Storage Temperature Range: +5 ~ + Humidity: 30 to 70% relative humidit T	3.9 dB max at -40~ +85°C 3.7 dB min. @ 1125~1675 MHz 1.6 max.(Common) 4.1 max.(Low-Band) 75 500 m\ LEVEL 1 (Refer to : IF ponent) ~ +85 °C +85 °C (Included packaging material) +40 °C ty	2.5 dB max at -40~ +85°C 2.0 dB min. @ 5~1002 MHz 1.7 max. (Common) 2.5 max. (High-Band) 3Ω <i>N</i> max. PC/JEDEC J-STD-020)
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Operation Temperature Range: -40 Storage Temperature Range: -40 ~ <b>corage Condition before Soldering (</b> Storage Temperature Range: +5 ~ + Humidity: 30 to 70% relative humidit	~ +85 °ີ +85 °ີ (Included packaging material) +40 °ີ ty	NCE
T	•	NCE
0		
	Insertion loss(LB Port           Insertion loss(LB Port)           Insertion loss(LB Port)           Return loss(LB Port)	t) Port)
AND PATTERN	Figure	
		LAND Solder resist No pattern Solder resist
Jnit : mm ine width to be designed to match 50	$\Omega$ characteristic impedance, depending of	O Through hole

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### Approval sheet

RELIABILITY TEST		
Test item	Test condition / Test method	Specification
Solderability	*Solder bath temperature : $235 \pm 5^{\circ}$ C	At least 95% of a surface of each terminal
JIS C 0050-4.6	*Immersion time $: 2 \pm 0.5$ sec	electrode must be covered by fresh solder.
JESD22-B102D	Solder:Sn3Ag0.5Cu for lead-free	
Resistance to soldering	*Preheating temperature : $120~150^{\circ}C$ ,	No mechanical damage.
heat JIS C 0050-5.4	1 minute.	Electrical specification shall satisfy the
	*Solder temperature : 270±5°C	descriptions in electrical characteristics under
	*Immersion time : 10±1 sec	the operational temperature range within -40
	Solder : Sn3Ag0.5Cu for lead-free	~ 85°C.
	Measurement to be made after keeping at	Loss of metallization on the edges of each
	room temperature for $24\pm 2$ hrs	electrode shall not exceed 25%.
Drop Test JIS C 0044	*Height:75 cm	No mechanical damage.
Customer's specification.	*Test Surface : Rigid surface of concrete or	Electrical specification shall satisfy the
customer's specification.	steel.	descriptions in electrical characteristics under
	*Times : 6 surfaces for each units ; 2 times	the operational temperature range within -40
	for each side.	~ 85°C.
Vibration	*Frequency : 10Hz~55Hz~10Hz(1min)	No mechanical damage.
JIS C 0040	*Total amplitude : 1.5mm	Electrical specification shall satisfy the
	*Test times : 6hrs.(Two hrs each in three	descriptions in electrical characteristics under
	mutually perpendicular directions)	the operational temperature range within -40
		~ 85°C.
Adhesive Strength	*Pressurizing force :	No remarkable damage or removal of the
of Termination	5N (LGA terminal series ) ; 5N( $\leq$ 0603);	termination.
JIS C 0051- 7.4.3	10N(>0603)	
	*Test time : 10±1 sec	
Bending test	The middle part of substrate shall be	No mechanical damage.
JIS C 0051- 7.4.1	pressurized by means of the pressurizing rod	Electrical specification shall satisfy the
	at a rate of about 1 mm/s per second until the	descriptions in electrical characteristics under
	deflection becomes 1mm/s and then pressure	the operational temperature range within -40
	shall be maintained for $5\pm1$ sec.	~ 85°C.
	Measurement to be made after keeping at	
	room temperature for 24±2 hours	

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### Approval sheet

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

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





#### ORDERING CODE

RF	DIP	2510	G	15A	Т
Walsin	Product Code	Dimension code	Application	Specification	Specification
RF device	DIP :Diplexer	Per 2 digits of Length, Width, Thickness : e.g. : 2510 = Length 2.5 mm Width 2.0 mm Thickness 1.0 mm	G: 5~1002MHz/ 1125~1675MHz	Design code	T:Reeled

Minimum Ordering Quantity: 2000 pcs per reel. PACKAGING



#### Plastic Tape specifications (unit :mm)

Index	Ao	Во	ΦD	Т	W
Dimension (mm)	$\textbf{2.27} \pm \textbf{0.10}$	$\textbf{2.74} \pm \textbf{0.10}$	$1.55\pm0.10$	$\textbf{1.18} \pm \textbf{0.10}$	$8.00\pm0.10$
Index	E	F	Po	P1	P2
Dimension (mm)	$1.75\pm0.10$	$3.50\pm0.05$	$4.00\pm010$	$4.00\pm0.10$	$2.00\pm0.05$

#### Reel dimensions



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.
- (2) Storage environment condition.
  - Products should be storage in the warehouse on the following conditions.
  - Temperature : +5 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.