

AMDIP Series – 1608(0603)- RoHS Compliance

MULTILAYER CERAMIC DIPLEXER

Halogens Free Product

2.4 / 5.0 GHz ISM Band RF Application

Automotive Qualified to AEC-Q200 Preliminary

P/N: AMDIP1606L96A8Q1C

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

Approval sheet

FEATURES

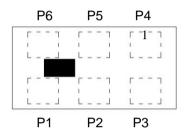
- 1. Miniature footprint: 1.6 X 0.8 X 0.6 mm³
- 2. Low Insertion Loss
- 3. High Attenuation on harmonic suppressed
- 4. LTCC process

APPLICATIONS

- 1. ISM 2.4 / 5.0 GHz band RF Application
- 2. Wi-Fi 802.11a/b/g/n Application
- 3. Automobile grade 2 & AEC-Q200 compliant

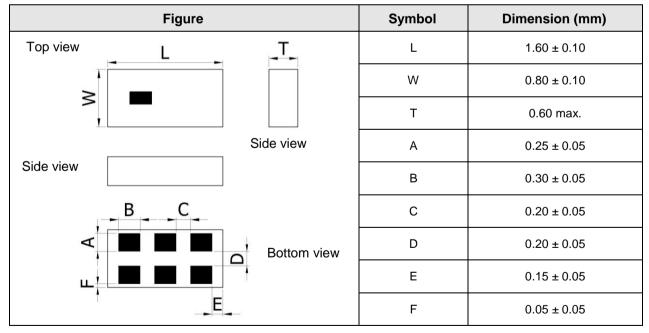
CONSTRUCTION

Top View



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

DIMENSIONS

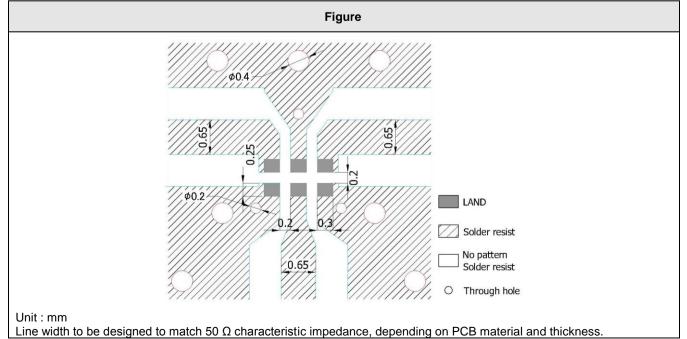




ELECTRICAL CHARACTERISTICS

Frequency range 2400-2500 MHz 4900-5100 MHz 5150-5950 MHz Insertion loss 0.7 dB max. (0.55 typ.) at 25 °C 0.9 dB max. at -40 -+105 °C 1.3 dB max. (10 dB typ.) at 25 °C 1.2 dB max. (0.8 dB typ.) at 25 °C 1.2 dB max. at -40 -+105 °C 1.0 dB max. (0.8 dB typ.) at 25 °C 1.2 dB max. at -40 -+105 °C Attenuation 50 dB min. (54 dB typ.) @ 4800-5000 MHz 15 dB min. (25 dB typ.) @ 1200-7500 MHz 40 dB min. (45 dB typ.) @ 1300-11700 MHz 25 dB min. (30 dB typ.) @ 1300-11700 MHz Return loss 10 dB min. (45 dB typ.) @ 4200-500 MHz 40 dB min. (45 dB typ.) @ 4800-5000 MHz 10 dB min. Impedance 10 dB min. (45 dB typ.) @ 4800-500 MHz 50 G 10 dB min. Impedance 50 Q LEVEL 1 (Refer to : IPC/JEDEC J-STD-020) Operation Temperature Range: -40 - +105 °C Storage Condition (Component) LEVEL 1 (Refer to : IPC/JEDEC J-STD-020) Operation Temperature Range: -40 - +105 °C Storage Temperature Range: -40 - +105 °C Storage Condition before Soldering (Included packaging marerial) Storage Temperature Range: -40 - +105 °C Storage Temperature Range: -5 - +40 °C Humidity: 30 to 70% relative humidity Immetion Loss (B) Upget Storage Condition before Soldering (Included packaging marerial) Storage Condition Loss (B) Immetion Loss (B) Upget Storage C	Frequency range 2400-2500 MHz 4900-5100 MHz 5150-5950 MHz Insertion loss 0.7 dB max. (0.55 typ.) at 25 °C 1.3 dB max. (1-0 + 105 °C 1.2 dB max. (0.8 dB typ.) at 25 °C Attenuation 50 dB min. (54 dB typ.) 25 °C 1.5 dB min. (45 dB typ.) 2400-2500 MHz Attenuation © 4800-5000 MHz 40 dB min. (45 dB typ.) 0 dB min. (45 dB typ.) 2400-2500 MHz Return loss 10 dB min. (26 dB typ.) © 400 dB min. (26 dB typ.) © 10300-11700 MHz Isolation 40 dB min. (46 dB typ.) © 400-2500 MHz 15 dB min. (20 dB typ.) © 10300-11700 MHz Isolation 40 dB min. (46 dB typ.) © 10300-11700 MHz 15 dB min. (48 dB typ.) © 10300-11700 MHz Isolation 40 dB min. (46 dB typ.) © 3000 MHz 15 dB min. (48 dB typ.) © 2000-6000 MHz Impedance 50 Ω Moisture sensitivity levels LEVEL 1 (Refer to : IPC/JEDEC J-STD-020) Operation Edvers Soldering (Included packaging marerial) Storage Temperature Range: +5 ~ + 105 °C Storage Temperature Range: +5 ~ + 40 °C Humidity: 30 to 70% relative humidity TYPICAL ELECTRICAL PERFORMANCE	AMDIP1606L96A8Q1C Specification						
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Humidity: 30 to 70% relative humidity TYPICAL ELECTRICAL PERFORMANCE	Humidity: 30 to 70% relative humidity	Storage Condition before Sc	oldering (Included packaging mareria	al)				
Humidity: 30 to 70% relative humidity TYPICAL ELECTRICAL PERFORMANCE	Humidity: 30 to 70% relative humidity	Storage Temperature Rang	ae: +5 ~ +40 ℃					
TYPICAL ELECTRICAL PERFORMANCE	TYPICAL ELECTRICAL PERFORMANCE		-					
0 -10 -20 -20 -20 -20 -20 -20 -20 -20 -20 -2	(g) -20 -10 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0							
freq, GHz								

LAND PATTERN



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RELIABILITY TEST

(R.S.H)folMIL-STD-202 method 21027Solderability J-STD-002* (Ur co soTemperature cycling JESD22 method JA-10410Humidity MIL-STD-202 method 10310High Temperature Exposure10	In-mounted chips completely immersed or 10 ± 1 second in a SAC solder bath at $70^{\circ}C\pm5^{\circ}C$ Condition A In-mounted chips 4hrs / $155^{\circ}C^*$ dry then ompletely immersed for 5 ± 0.5 sec in older bath at $235\pm5^{\circ}C$. Condition B In-mounted chips steam 8 hrs then ompletely immersed for 10 ± 1 sec. in older bath at $260+0/-5^{\circ}C$.	No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within -55 ~ 125°C. Loss of metallization on the edges of each electrode shall not exceed 25 All terminations shall exhibit a continuous solder coating free from defects from a minimum of 95% of the critical surface area of any individual termination.
J-STD-002 Ur co so * (Ur co so Temperature cycling JESD22 method JA-104 Humidity MIL-STD-202 method 103 High Temperature Exposure	In-mounted chips 4hrs / $155^{\circ}C^*$ dry then ompletely immersed for 5 ± 0.5 sec in older bath at $235\pm5^{\circ}C$. Condition B In-mounted chips steam 8 hrs then ompletely immersed for 10 ± 1 sec. in	solder coating free from defects from a minimum of 95% of the critical
JESD22 method JA-10430Humidity MIL-STD-202 method 10310High Temperature Exposure10		
MIL-STD-202 method 103 High Temperature Exposure 10	000 cycles, -55° $\mathbb C$ ~ +125° $\mathbb C$, dwell time 0min	No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within -55 ~ 125°C.
	000+48/-0 hours; 85°C, 85% RH	No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within -55 ~ 125°C.
	000+48/-0 hours; without load in a emperature chamber controlled 125±3°C	No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within -55 ~ 125°C.
	/2 Sine Pulse / 100g Peak / Velocity 2.3ft/sec	No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within -55 ~ 125°C.
AEC-Q200-005 ep	F component mounted on a 90mm glass poxy resin PCB(FR4), bending once mm for 60sec	No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within -55 ~ 125°C.
AEC-Q200-006 Te	Pressurizing force: 1.8Kg, Test time: 60±1sec. Only 0402 for 1.0kg/60sec. GA terminal series for 0.5kg/60sec.	No remarkable damage or removal of the terminations
	est 5g's for 20min., 12 cycles each of 3 rientations	No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within -55 ~ 125°C.
ESD Te AEC-Q200-002	est contact 1.0KV (0.5KV for 1005 only)	No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under

SOLDERING CONDITION

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

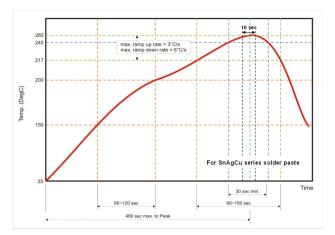


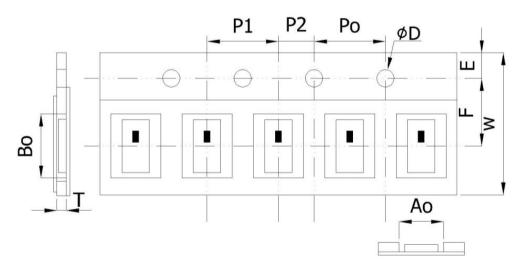
Fig 2. Infrared soldering profile

ORDERING CODE

AM	DIP	1606	L	96A8Q1C
Walsin	Product Code	Dimension code	Application	Specification
Automotive	DIP:	Per 2 digits of Length, Thickness	L: 2.4GHz/5Ghz	Design Code
device	Diplexer	e.g. : 1606 =		
		Length 1.6mm,		
		Thickness 0.6mm		

Minimum Ordering Quantity: 4000 pcs per reel.

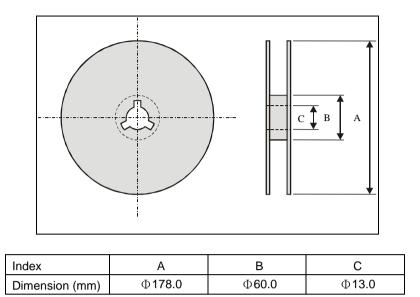
PACKAGING



Paper Tape specifications (unit :mm)

Index	Ao	Во	ΦD	Т	W
Dimension (mm)	$\textbf{0.975} \pm \textbf{0.10}$	$\textbf{1.76} \pm \textbf{0.10}$	1.55 ± 0.05	$\textbf{0.75} \pm \textbf{0.10}$	8.00 ± 0.10
Index	E	F	Po	P1	P2
Dimension (mm)	1.75 ± 0.10	$\textbf{3.50} \pm \textbf{0.05}$	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05

Reel dimensions



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.
- (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.