

# Multilayer Organic (MLO™)



## 0603 WLAN/BT Diplexer



### MLO™ TECHNOLOGY

The 0603 diplexer is a best in class low profile multilayer organic passive device that is based on AVX's patented multilayer organic high density interconnect technology. The MLO™ diplexer uses high dielectric constant and low loss materials to realize high Q passive printed elements such as inductors, and capacitors in a multilayer stack up. The MLO™ diplexers can support multiple wireless standards such as WCDMA, CDMA, WLAN, GSM, and BT. These diplexers are less than 0.5mm in height and are ideally suited for band switching for dual band systems. All diplexers are expansion matched to printed circuit boards thereby resulting in improved reliability vs. ceramic and Si components.

### APPLICATIONS

Multiband applications including WiFi, WiMax, GPS, and cellular bands

### LAND GRID ARRAY ADVANTAGES

- Inherent Low Profile
- Excellent Solderability
- Low Parasitics
- High Heat Dissipation

### HOW TO ORDER

| DP   | 03   | A      | 2450            | T                            | TR                       |
|------|------|--------|-----------------|------------------------------|--------------------------|
| Type | Size | Design | Frequency (MHz) | Finish<br>7 = Au<br>T = NiSn | Packaging<br>Tape & Reel |

### QUALITY INSPECTION

Finished parts are 100% tested for electrical parameters and visual characteristics.

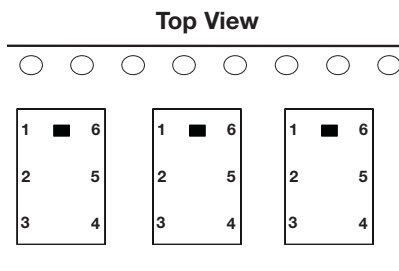
### OPERATING TEMPERATURE

-40°C to +85°C

### TERMINATION

Finishes available in Ni Au, Ni Sn and OSP coatings which are compatible with automatic soldering technologies which include reflow, wave soldering, vapor phase and manual.

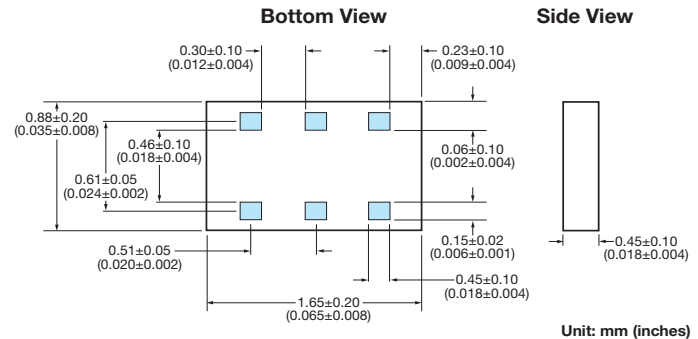
### ORIENTATION IN TAPE



### POWER CAPACITY

4.5W Maximum

### COMPONENT DIMENSIONS AND FUNCTIONS



| Terminal No. | Terminal Name       |
|--------------|---------------------|
| 1            | High Frequency Port |
| 2            | GND                 |
| 3            | Low Frequency Port  |
| 4            | GND                 |
| 5            | Common              |
| 6            | GND                 |

PART NUMBER: DP03A2450TTR

### Electrical Characteristics @ 25°C

| No. | Parameter      | Freq. (MHz) | Port     | Specification | Typ. value | Unit |
|-----|----------------|-------------|----------|---------------|------------|------|
| 1   | Insertion Loss | 2400-2496   | Low      | 0.40 max      | 0.35       | dB   |
| 2   |                | 4900-5950   | High     | 0.85 max      | 0.80       | dB   |
| 3   | Attenuation    | 500-2700    | High     | 25 min        | 30         | dB   |
| 4   |                | 10300-11900 | High     | 8 min         | 10         | dB   |
| 6   | Attenuation    | 4800-4992   | Low      | 25 min        | 28         | dB   |
| 7   |                | 4900-5950   | Low      | 25 min        | 27         | dB   |
| 8   |                | 7200-7500   | Low      | 25 min        | 30         | dB   |
| 9   | Isolation      | 500-2700    | Low-High | 25 min        | 30         | dB   |
| 10  |                | 5150-5950   | Low-High | 22 min        | 25         | dB   |
| 11  | VSWR           | 2400-2500   | Ant      | 2.0 max       | 1.5        | -    |
| 12  | VSWR           | 4900-5950   | Ant      | 2.0 max       | 1.3        | -    |
| 13  | VSWR           | 2400-2500   | Low      | 2.0 max       | 1.5        | -    |
| 14  | VSWR           | 4900-5950   | High     | 2.0 max       | 1.3        | -    |

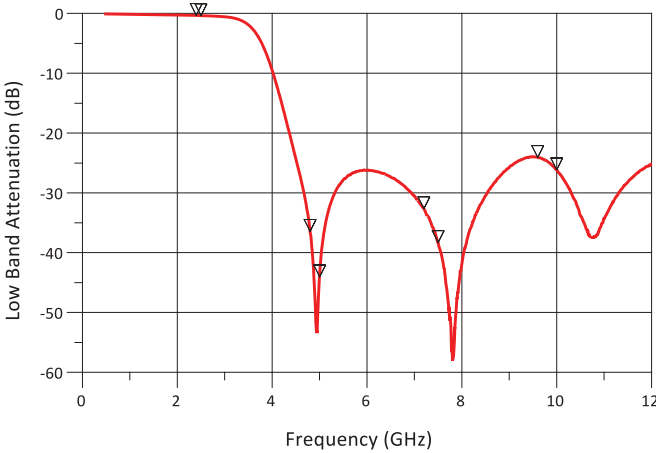
### Mechanical Characteristics @ 25°C

|                     |                             |
|---------------------|-----------------------------|
| Size [mm(inches)]   | 1.65 x 0.88 (0.065 x 0.035) |
| Height [mm(inches)] | 0.42 (0.017)                |
| Volume (mm^3)       | 0.77                        |



### S PARAMETER MEASUREMENTS

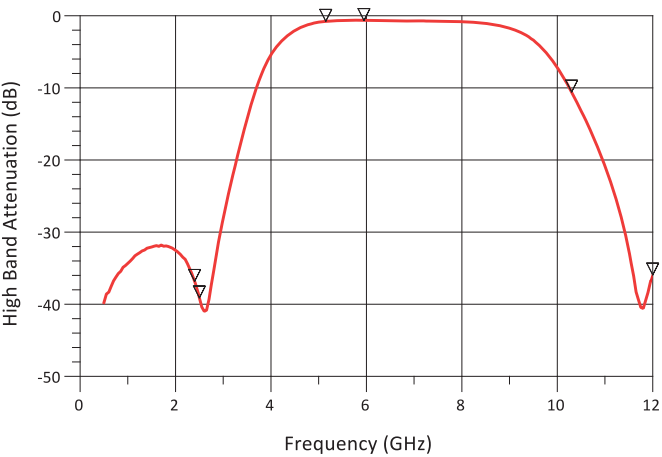
#### LOW BAND PORT ATTENUATION



#### Low Band Attenuation

| Frequency (GHz) | Attenuation (dB) |
|-----------------|------------------|
| 4.800           | 36.441           |
| 5.000           | 44.044           |
| 7.200           | 32.638           |
| 7.500           | 38.299           |
| 9.600           | 24.064           |
| 10.00           | 26.152           |

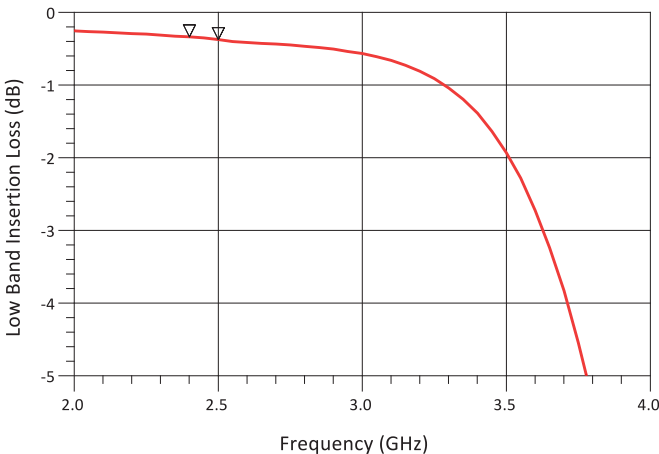
#### HIGH BAND ATTENUATION



#### High Band Attenuation

| Frequency (GHz) | Attenuation (dB) |
|-----------------|------------------|
| 2.400           | 36.829           |
| 2.500           | 39.116           |
| 10.30           | 10.573           |
| 12.00           | 35.929           |

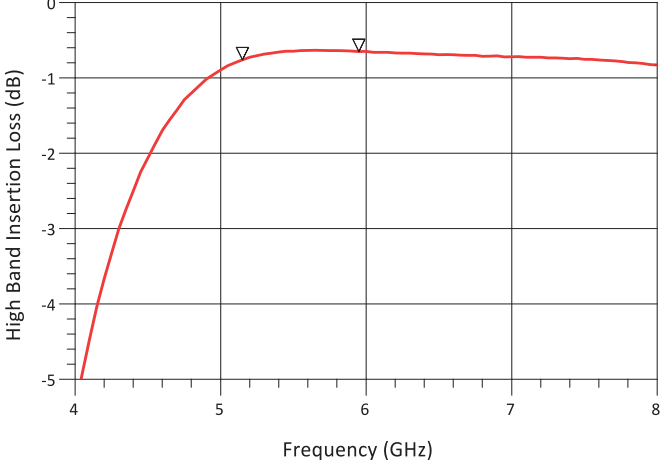
#### LOW BAND INSERTION LOSS



#### Low Band Insertion Loss

| Frequency (GHz) | Insertion Loss (dB) |
|-----------------|---------------------|
| 2.400           | 0.338               |
| 2.500           | 0.374               |

#### HIGH BAND INSERTION LOSS

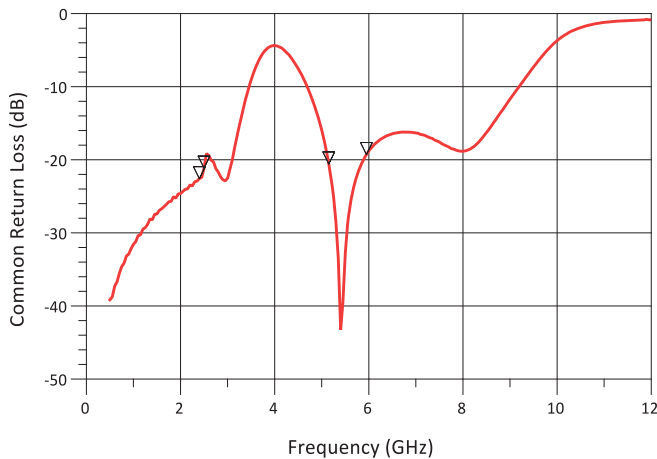


#### High Band Insertion Loss

| Frequency (GHz) | Insertion Loss (dB) |
|-----------------|---------------------|
| 5.150           | 0.760               |
| 5.950           | 0.651               |

### S PARAMETER MEASUREMENTS

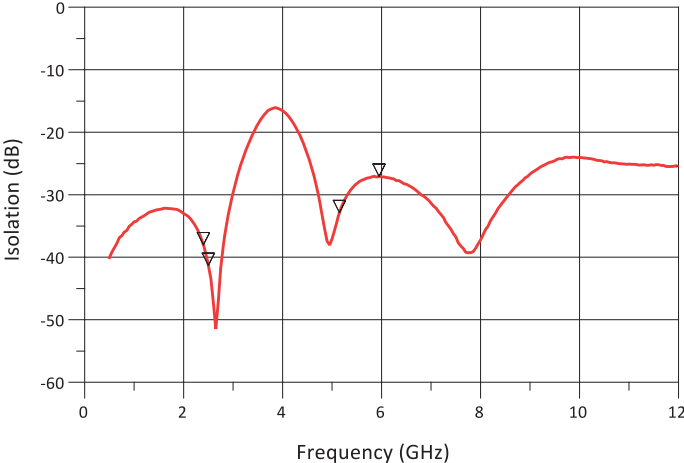
#### COMMON PORT RETURN LOSS



Common Return Loss

| Frequency (GHz) | Return Loss (dB) | VSWR  |
|-----------------|------------------|-------|
| 2.400           | 22.592           | 1.160 |
| 2.500           | 21.127           | 1.193 |
| 5.150           | 20.578           | 1.206 |
| 5.950           | 19.279           | 1.244 |

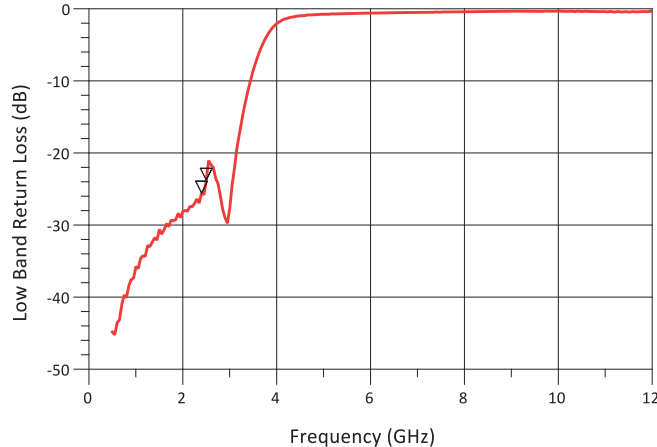
#### ISOLATION



Isolation

| Frequency (GHz) | Attenuation (dB) |
|-----------------|------------------|
| 2.400           | 38.031           |
| 2.500           | 41.305           |
| 5.150           | 32.861           |
| 5.950           | 27.052           |

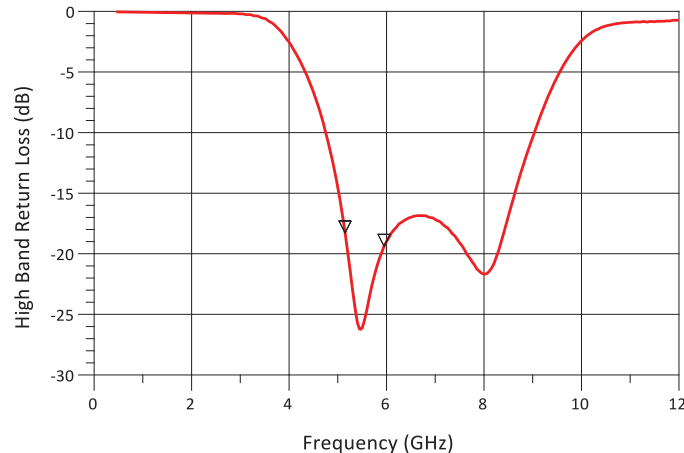
#### LOW BAND RETURN LOSS



Low Band Return Loss

| Frequency (GHz) | Return Loss (dB) | VSWR  |
|-----------------|------------------|-------|
| 2.400           | 25.568           | 1.111 |
| 2.500           | 23.775           | 1.138 |

#### HIGH BAND RETURN LOSS



High Band Return Loss

| Frequency (GHz) | Return Loss (dB) | VSWR  |
|-----------------|------------------|-------|
| 5.150           | 18.278           | 1.278 |
| 5.950           | 19.376           | 1.241 |

## 0805 WLAN/BT Diplexer

### AUTOMATED SMT ASSEMBLY

The following section describes the guidelines for automated SMT assembly of MLO™ RF devices which are typically Land Grid Array (LGA) packages or side termination SMT packages. Control of solder and solder paste volume is critical for surface mount assembly of MLO™ RF devices onto the PCB.

Stencil thickness and aperture openings should be adjusted according to the optimal solder volume. The following are general recommendations for SMT mounting of MLO™ devices onto the PCB.

### SMT REFLOW PROFILE

Common IR or convection reflow SMT processes shall be used for the assembly. Standard SMT reflow profiles, for eutectic and Pb free solders, can be used to surface mount the MLO™ devices onto the PCB. In all cases, a temperature gradient of 3°C/sec, or less, should be maintained to prevent warpage of the package and to ensure that all joints reflow properly. Additional soak time and slower preheating time

may be required to improve the out-gassing of solder paste. In addition, the reflow profile depends on the PCB density and the type of solder paste used. Standard no-clean solder paste is generally recommended. If another type of flux is used, complete removal of flux residual may be necessary. Example of a typical lead free reflow profile is shown below.

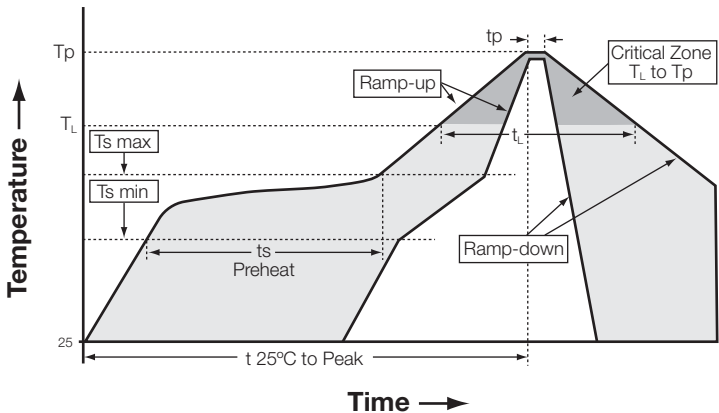


Figure A. Typical Lead Free Profile and Parameters

| Profile Parameter                        | Pb free, Convection, IR/Convection |
|------------------------------------------|------------------------------------|
| Ramp-up rate (Tsmax to Tp)               | 3°C/second max.                    |
| Preheat temperature (Ts min to Ts max)   | 150°C to 200°C                     |
| Preheat time (ts)                        | 60 – 180 seconds                   |
| Time above TL, 217°C (tL)                | 60 – 120 seconds                   |
| Peak temperature (Tp)                    | 260°C                              |
| Time within 5°C of peak temperature (tp) | 10 – 20 seconds                    |
| Ramp-down rate                           | 4°C/second max.                    |
| Time 25°C to peak temperature            | 6 minutes max.                     |

## Данный компонент на территории Российской Федерации

**Вы можете приобрести в компании MosChip.**

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

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