

# Multilayer Organic (MLO™)



## 0805 WLAN/BT Diplexer



### MLO™ TECHNOLOGY

The 0805 MLO™ diplexer is 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 and GSM. These components which are less than 0.5mm in thickness are ideally suited for band switching for dual band systems. All MLO™ diplexers are expansion matched to FR4 thereby resulting in improved reliability over standard Si and ceramic devices.

### APPLICATIONS

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

### LAND GRID ARRAY ADVANTAGES

- Low Insertion Loss
- Excellent Solderability
- Low Parasitics
- Matched CTE to PCB

### HOW TO ORDER

|           |           |          |                 |                    |                                                |
|-----------|-----------|----------|-----------------|--------------------|------------------------------------------------|
| <b>DP</b> | <b>05</b> | <b>A</b> | <b>5425</b>     | <b>7</b>           | <b>TR</b>                                      |
| Type      | Size      | Design   | Frequency (MHz) | Finish             | Packaging                                      |
|           |           |          |                 | 7 = Au<br>T = NiSn | Tape & Reel<br>TR = 3 Kpcs<br>TR/500 = 500 pcs |

### QUALITY INSPECTION

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

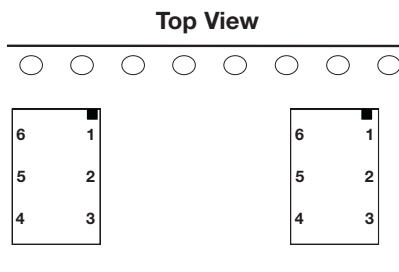
### OPERATING TEMPERATURE

-40°C to +85°C

### TERMINATION

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

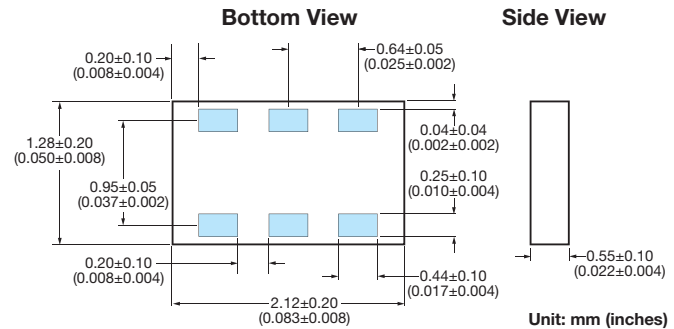
### ORIENTATION IN TAPE



### POWER CAPACITY

4.5W Maximum

### COMPONENT DIMENSIONS AND FUNCTIONS



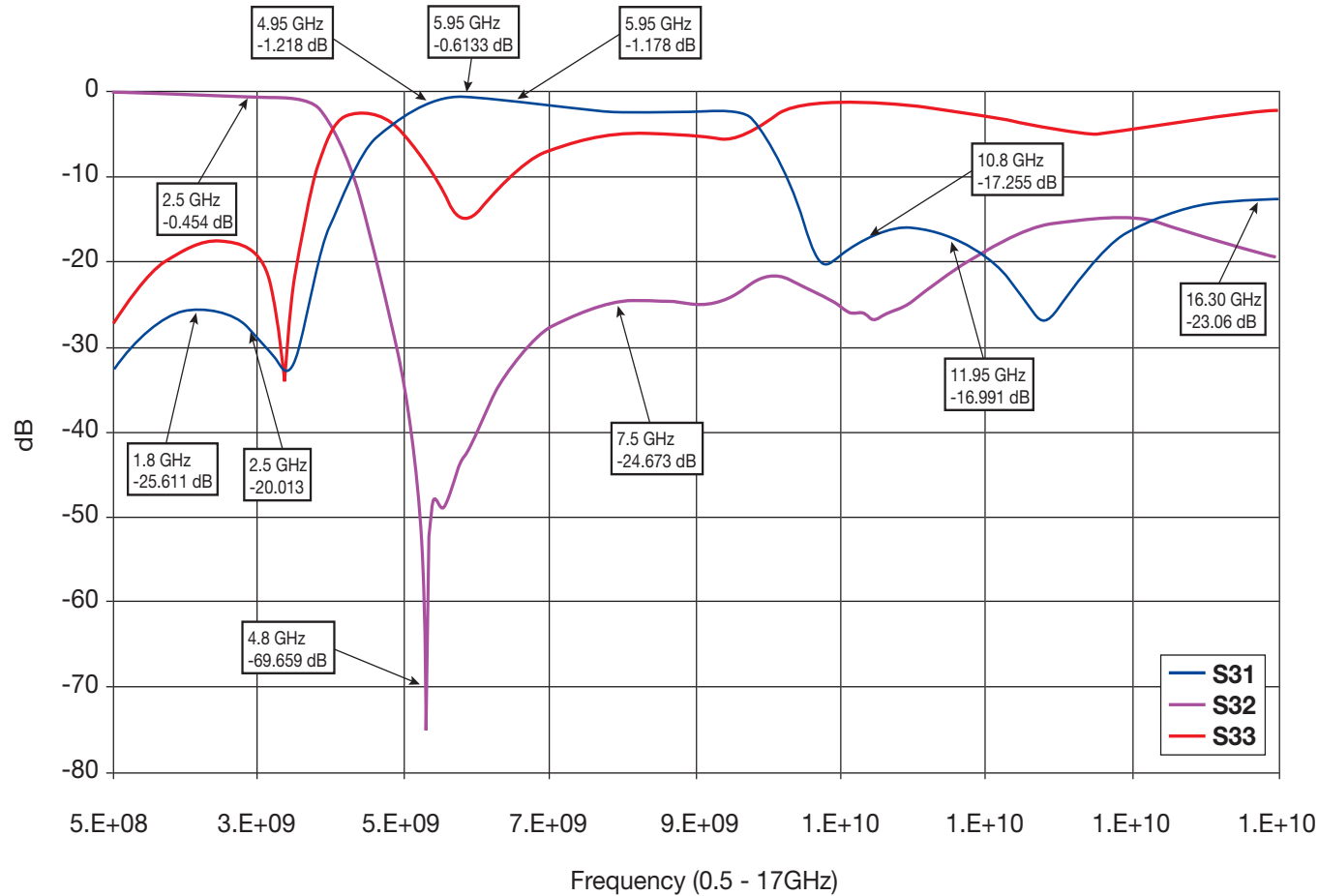
| Terminal No. | Terminal Name       |
|--------------|---------------------|
| 1            | High Frequency Port |
| 2            | GND                 |
| 3            | Low Frequency Port  |
| 4            | GND                 |
| 5            | Common Port         |
| 6            | GND       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

PART NUMBER: DP05B54257TR

| Specification @ 25°C                       |                             |
|--------------------------------------------|-----------------------------|
| Size [mm(inches)]                          | 2.12 x 1.28 (0.083 x 0.050) |
| Height [mm(inches)]                        | 0.55 (0.021)                |
| Volume (mm^3)                              | 1.5                         |
| Pass Band Range (F1) (MHz)                 | 2450 +/-50MHz               |
| Pass Band Range (F2) (MHz)                 | 5425 +/-525MHz              |
| Insertion Loss (F1) (dB)                   | -0.5                        |
| Insertion Loss (F2) (dB)                   | -0.8                        |
| Attenuation (F1)<br>4800MHz - 6000MHz (dB) | -36                         |
| Attenuation 3 x (F1) (dB)                  | -31                         |
| Attenuation (F2)<br>1800MHz - 2500MHz (dB) | -26                         |
| Attenuation 2 x (F2) (dB)                  | -13                         |
| Attenuation 3 x (F2) (dB)                  | -15                         |
| VSWR (Input @ F1)                          | 1.2                         |
| VSWR (Input @ F2)                          | 1.7                         |
| VSWR (Lowband @ F1)                        | 1.2                         |
| VSWR (Highband @ F2)                       | 1.7                         |



### S PARAMETER MEASUREMENTS



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### 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.

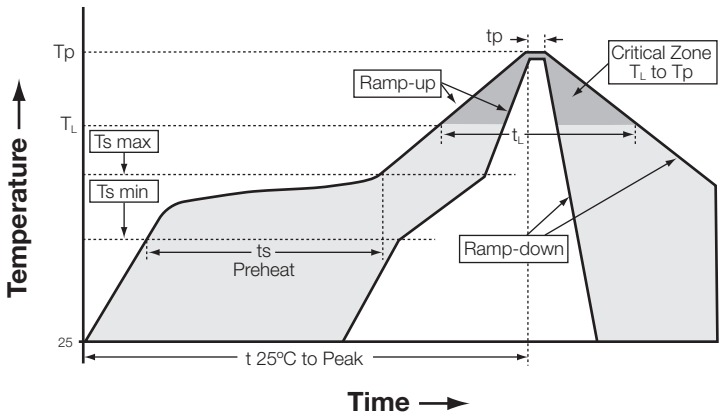


Figure A. Typical Lead Free Profile and Parameters

| 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.                     |

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