

Multilayer Organic (MLO)



0805 CDMA Diplexer



MLO TECHNOLOGY

The 0805 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, and GSM and are less than 0.6mm in thickness. These components are ideally suited for band switching for dual band systems. All diplexers are expansion matched to FR4 thereby resulting in improved reliability over standard Si and ceramic devices.

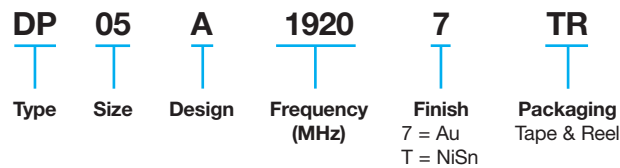
APPLICATIONS

Multiband applications including WCDMA, WLAN, WiMax, GPS, and cellular bands

LAND GRID ARRAY ADVANTAGES

- Low Insertion Loss
- Excellent Solderability
- Low Parasitics
- Low Profile

HOW TO ORDER



QUALITY INSPECTION

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

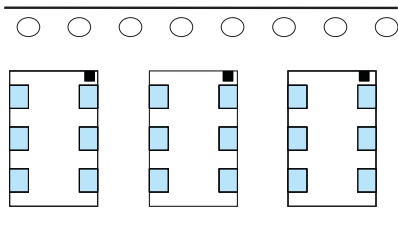
OPERATING TEMPERATURE

-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.

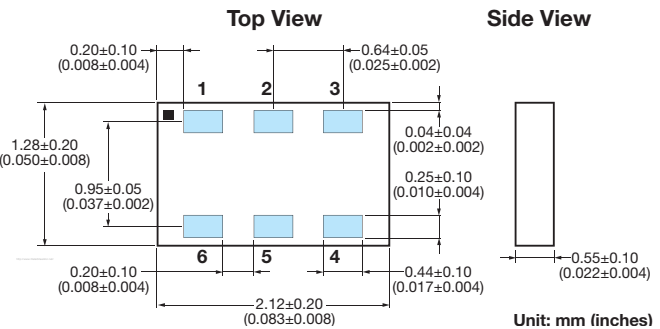
ORIENTATION IN TAPE



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

0805 CDMA DIPLEXER SPECIFICATIONS

PART NUMBER: DP05A19207TR

Specification @ 25°C	AVX -MLO mm (inches)
Size	2.12 x 1.28 (0.083 x 0.050)
Height	0.55 (0.021)
Volume (mm ³)	1.5
Frequency Range (F1) (MHz)	859±35
Frequency Range (F2) (MHz)	1920±70
Insertion Loss (F1, at Fc) (dB)	-0.4
Insertion Loss (F2, at Fc) (dB)	-0.6
Attenuation (F1) at (F2) (dB)	-23
Attenuation (F2) at (F1) (dB)	-23
VSWR (Input @ F1)	1.4
VSWR (Input @ F2)	1.3
VSWR (Lowband @ F1)	1.4
VSWR (Highband @ F2)	1.4

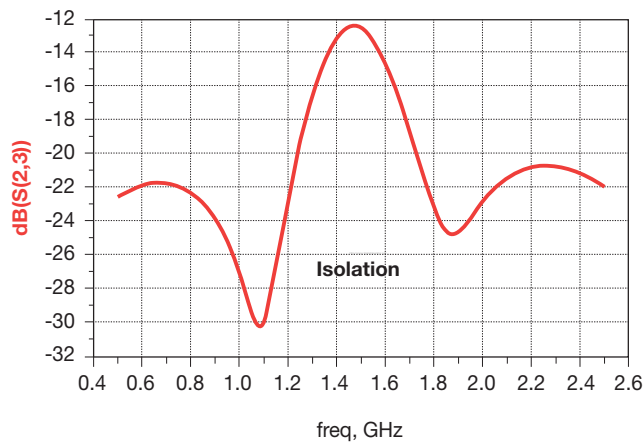
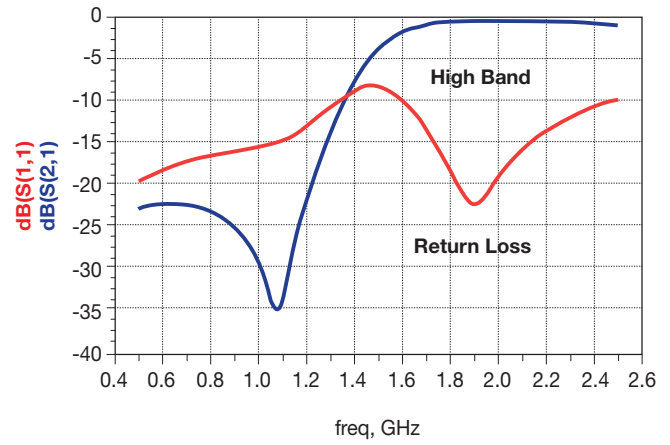
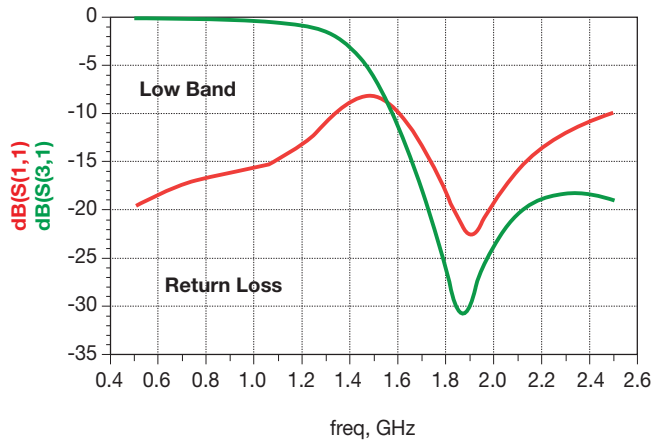


Multilayer Organic (MLO)



0805 CDMA Diplexer

S PARAMETER MEASUREMENTS



Note: Measurements were taken using an Anritsu 4 port VNA; Diplexer was mounted on a custom evaluation board. To reduce systematic errors from the VNA, the coaxial measurement cables, and evaluation board, a Short-Open-Load-Thru (SOLT) calibration was performed, using a custom fabricated calibration substrate. This is the most common coaxial calibration methods.



AUTOMATED SMT ASSEMBLY

The following section describes the guidelines for automated SMT assembly of OPC 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 OPC 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 OPC 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 OPC 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.

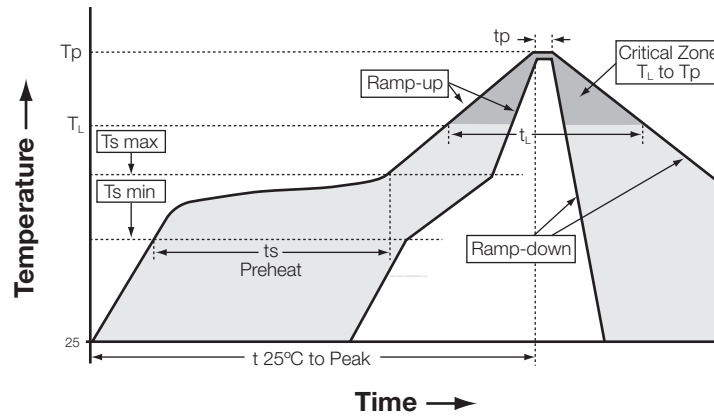


Figure A. Typical Lead Free Profile and Parameters

Profile Parameter	Pb free, Convection, IR/Convection
Ramp-up rate (T _s max to T _p)	3°C/second max.
Preheat temperature (T _s min to T _s max)	150°C to 200°C
Preheat time (t _s)	60 – 180 seconds
Time above T _L , 217°C (t _L)	60 – 120 seconds
Peak temperature (T _p)	260°C
Time within 5°C of peak temperature (t _p)	10 – 20 seconds
Ramp-down rate	4°C/second max.
Time 25°C to peak temperature	6 minutes max.

Multilayer Organic (MLO)



0805 WCDMA Diplexer



MLO TECHNOLOGY

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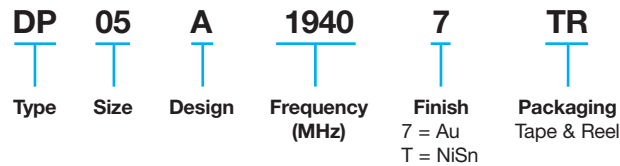
APPLICATIONS

Multiband applications including WCDMA, WLAN, WiMax, GPS, and cellular bands

LAND GRID ARRAY ADVANTAGES

- Low Insertion Loss
- Excellent Solderability
- Low Parasitics
- Low Profile

HOW TO ORDER



QUALITY INSPECTION

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

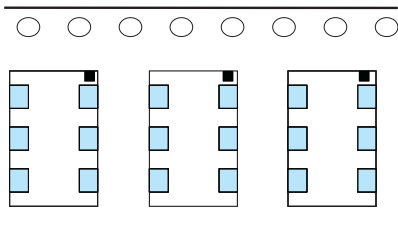
OPERATING TEMPERATURE

-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.

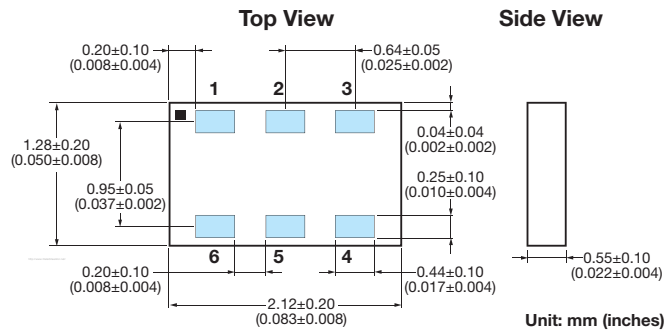
ORIENTATION IN TAPE



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

0805 WCDMA DIPLEXER SPECIFICATIONS

PART NUMBER: DP05A19407TR

Specification @ 25°C	AVX -MLO mm (inches)
Size	2.12 x 1.28 (0.083 x 0.050)
Height	0.55 (0.021)
Volume (mm ³)	1.5
Frequency Range (F1) (MHz)	892±68
Frequency Range (F2) (MHz)	1940±230
Insertion Loss (F1, at Fc) (dB)	-0.4
Insertion Loss (F2, at Fc) (dB)	-0.65
Attenuation (F1) at (F2) (dB)	-23
Attenuation (F2) at (F1) (dB)	-20
VSWR (Input @ F1)	1.3
VSWR (Input @ F2)	1.4
VSWR (Lowband @ F1)	1.4
VSWR (Highband @ F2)	1.2

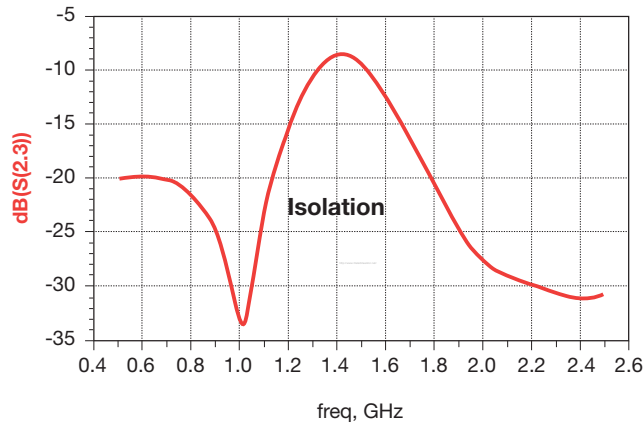
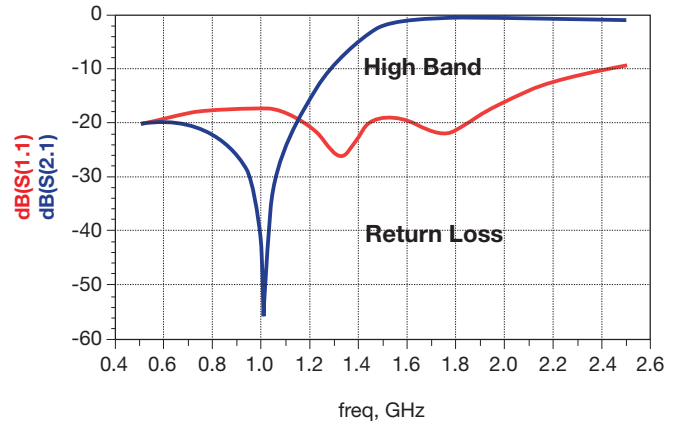
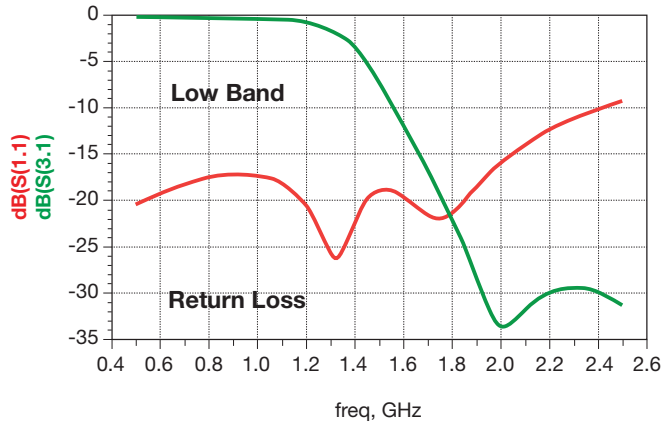


Multilayer Organic (MLO)



0805 WCDMA Diplexer

S PARAMETER MEASUREMENTS



Note: Measurements were taken using an Anritsu 4 port VNA; Diplexer was mounted on a custom evaluation board. To reduce systematic errors from the VNA, the coaxial measurement cables, and evaluation board, a Short-Open-Load-Thru (SOLT) calibration was performed, using a custom fabricated calibration substrate. This is the most common coaxial calibration methods.

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

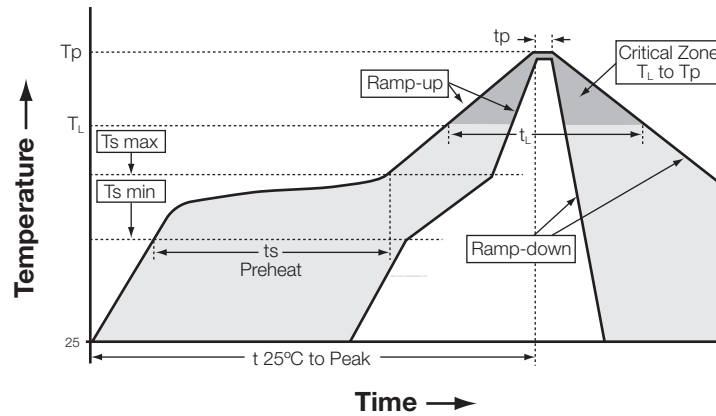


Figure A. Typical Lead Free Profile and Parameters

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 T _L , 217°C (t _L)	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.

Multilayer Organic (MLO)



0805 WLAN Diplexer



MLO TECHNOLOGY

The 0805 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 and GSM. These components which are less than 0.6mm in thickness are ideally suited for band switching for dual band systems. All diplexers are expansion matched to FR4 thereby resulting in improved reliability over standard Si and ceramic devices.

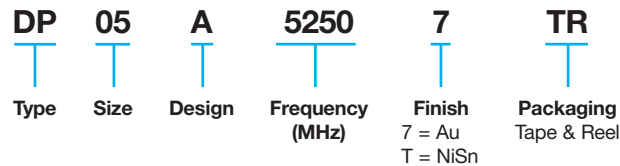
APPLICATIONS

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

LAND GRID ARRAY ADVANTAGES

- Low Insertion Loss
- Excellent Solderability
- Low Parasitics
- Low Profile

HOW TO ORDER



QUALITY INSPECTION

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

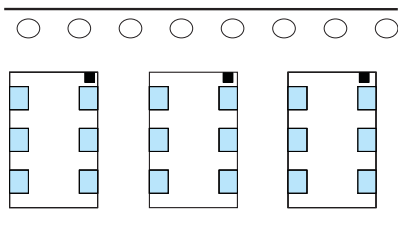
OPERATING TEMPERATURE

-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.

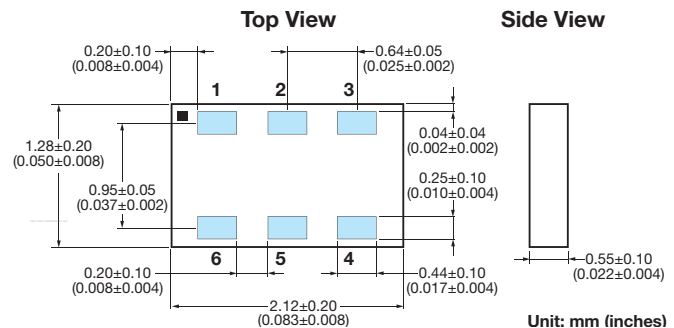
ORIENTATION IN TAPE



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

0805 WLAN DIPLEXER SPECIFICATIONS

PART NUMBER: DP05A52507TR

AVX – MLO Diplexer 2.45GHz / 5.425GHz	
Specification @ 25°C	AVX – MLO mm (inches)
Size	2.12 x 1.28 (0.083 x 0.050)
Height	0.55 (0.021)
Volume (mm ³)	1.5
Frequency Range (F1) (MHz)	2450±50
Frequency Range (F2) (MHz)	5250±100
Insertion Loss (F1) (dB)	-0.5
Insertion Loss (F2) (dB)	-0.5
Attenuation (F1) at (F2) (dB)	-20
Attenuation (F2) at (F1) (dB)	-20
Return Loss (Lowband @ F1) (dB)	-12
Return Loss (Highband @ F2) (dB)	-12
Isolation (Lowband @ F1) (dB)	-25
Isolation (Highband @ F2) (dB)	-21

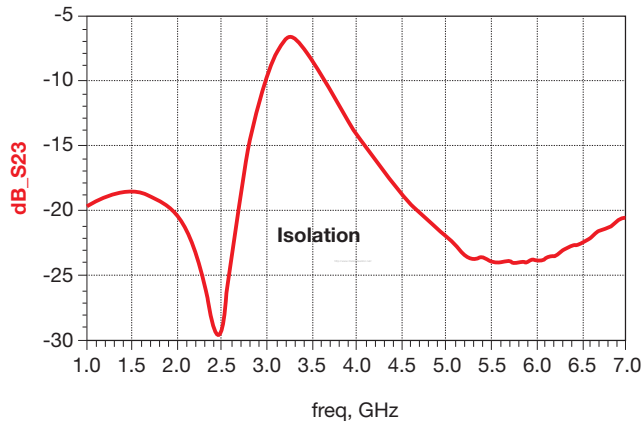
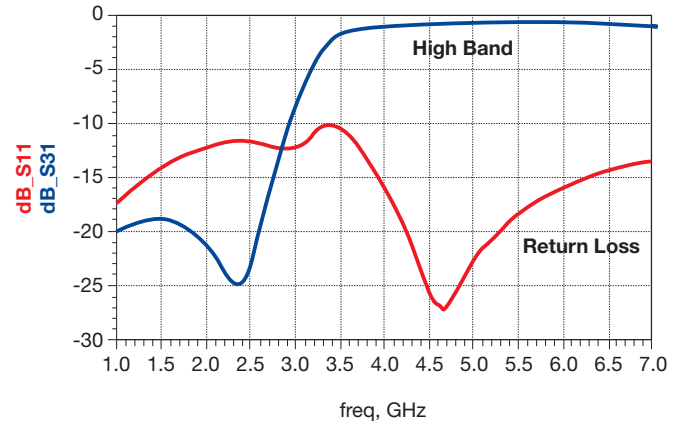
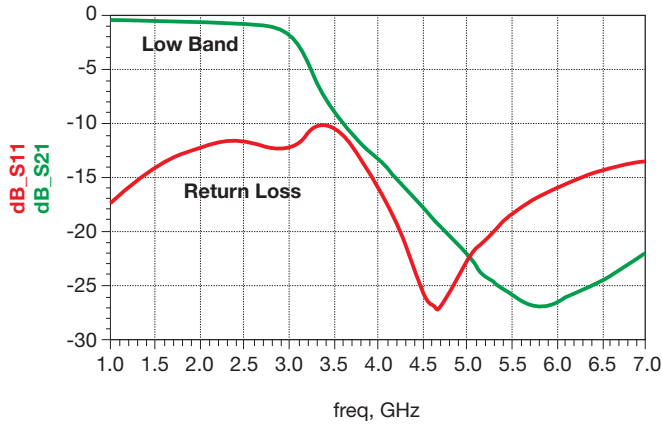


Multilayer Organic (MLO)



0805 WLAN Diplexer

S PARAMETER PLOTS



AUTOMATED SMT ASSEMBLY

The following section describes the guidelines for automated SMT assembly of OPC 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 OPC 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 OPC 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 OPC 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.

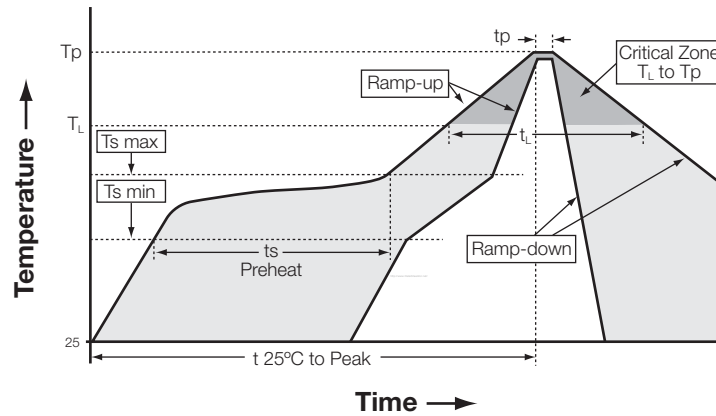


Figure A. Typical Lead Free Profile and Parameters

Profile Parameter	Pb free, Convection, IR/Convection
Ramp-up rate (T _s max to T _p)	3°C/second max.
Preheat temperature (T _s min to T _s max)	150°C to 200°C
Preheat time (t _s)	60 – 180 seconds
Time above T _L , 217°C (t _L)	60 – 120 seconds
Peak temperature (T _p)	260°C
Time within 5°C of peak temperature (t _p)	10 – 20 seconds
Ramp-down rate	4°C/second max.
Time 25°C to peak temperature	6 minutes max.

Multilayer Organic (MLO)



0805 WLAN/BT Diplexer



MLO TECHNOLOGY

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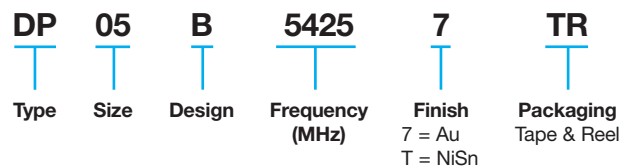
APPLICATIONS

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



QUALITY INSPECTION

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

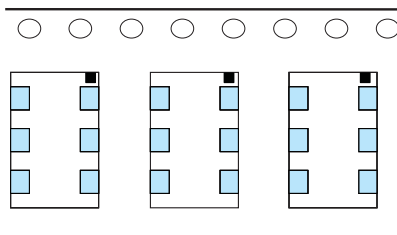
OPERATING TEMPERATURE

-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.

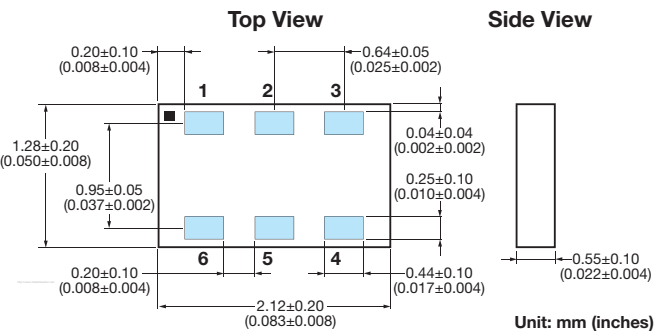
ORIENTATION IN TAPE



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

0805 DIPLEXER WLAN/BT

PART NUMBER: DP05B54257TR

Specification @ 25°C	AVX -MLO mm (inches)
Size	2.12 x 1.28 (0.083 x 0.050)
Height	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) 4800MHz - 6000MHz (dB)	-36
Attenuation 3 x (F1) (dB)	-31
Attenuation (F2) 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

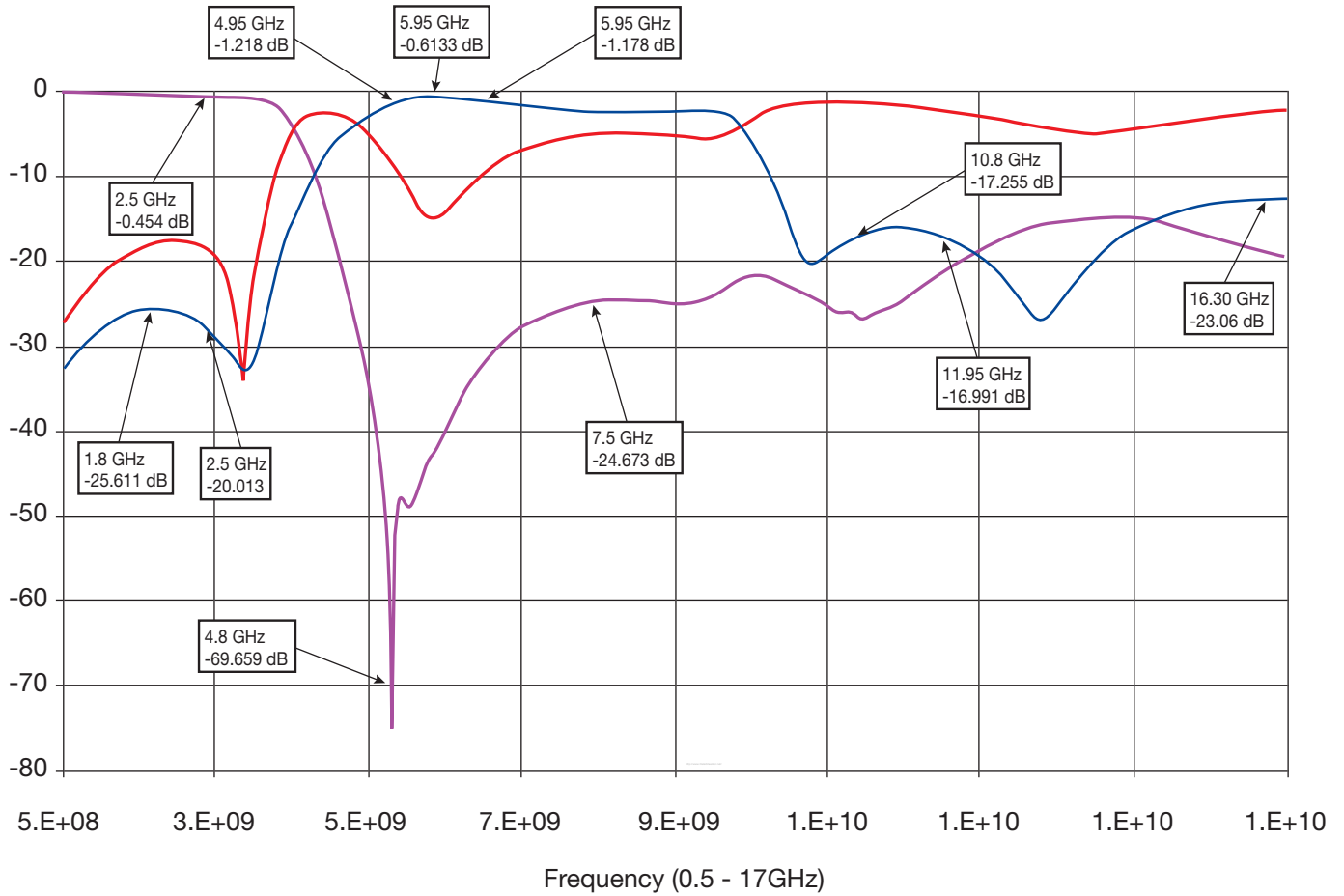


Multilayer Organic (MLO)



0805 WLAN/BT Diplexer

0805 DIPLEXER S PARAMETER SIMULATIONS



AUTOMATED SMT ASSEMBLY

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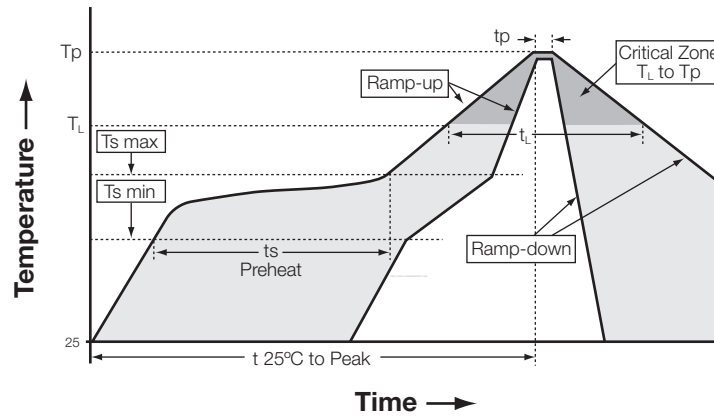


Figure A. Typical Lead Free Profile and Parameters

Profile Parameter	Pb free, Convection, IR/Convection
Ramp-up rate (T _{smax} to T _p)	3°C/second max.
Preheat temperature (T _{s min} to T _{s max})	150°C to 200°C
Preheat time (t _s)	60 – 180 seconds
Time above T _L , 217°C (t _L)	60 – 120 seconds
Peak temperature (T _p)	260°C
Time within 5°C of peak temperature (t _p)	10 – 20 seconds
Ramp-down rate	4°C/second max.
Time 25°C to peak temperature	6 minutes max.