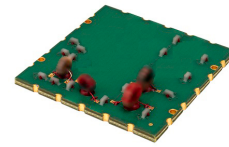


Surface Mount

# Diplexer

## DPLX-4254A0+

75Ω DC to 1000 MHz  
(DC-42, 54-1000 MHz)



CASE STYLE: NU1620

### The Big Deal

- Low insertion loss, 0.9dB typ.
- High rejection, 50dB typ.
- 75Ω Impedance
- Used in DOCSIS 3.0 standard

### Product Overview

DPLX-4254A0+ has lowpass port at DC-42 MHz and highpass port at 54-1000 MHz. Good return loss combined with high out of channel rejection makes it a ideal component in cable TV and multiband radio systems.

### Key Features

Feature	Advantages
Low passband insertion loss	Passband insertion loss 0.9dB ensures low signal loss through both the channels.
Good Stopband rejection	Co-channel rejection of 50dB ensures unwanted spurious are eliminated.
Good return loss at DC-42 and 54-1000 MHz	This makes signal transmission with very less reflection and well-matched with the adjacent component used in the system.

#### Notes

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# Surface Mount Diplexer

## DPLX-4254A0+

75Ω DC to 1000 MHz (DC-42, 54-1000 MHz)

### Maximum Ratings

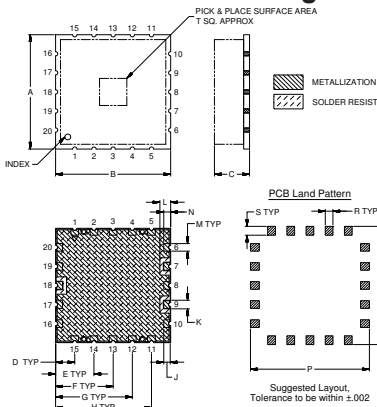
Operating Temperature	-40° to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	30dBm Max.

Permanent damage may occur if any of these limits are exceeded. These ratings are not intended for continuous normal operation

### Pin Connections

HIGH PASS PORT	7
LOW PASS PORT	9
COMMON PORT	18
GROUND	1-6,8,10-17,19,20

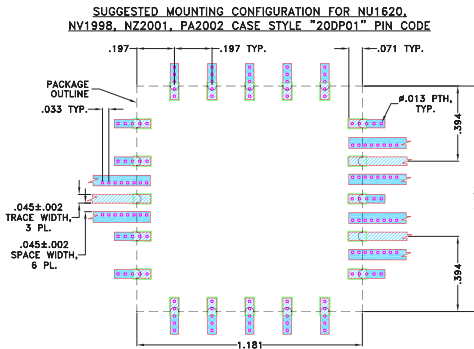
### Outline Drawing



### Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H	J	K	
-	-	Max	Min	.197	.394	.591	.787	.984	.066	.089
1.181	1.181	.280	.205	5.00	10.00	15.00	20.00	25.00	1.68	2.26
30.00	30.00	7.11	5.21							
L	M	N	P	Q	R	S	T			Wt.
-	-	.071	1.221	1.221	.079	.091	.280			grams
2.82	2.01	1.80	31.01	31.01	2.01	2.31	7.11			3.6

### Demo Board MCL P/N: TB-786+ Suggested PCB Layout (PL-435)



- TRACE WIDTH IS SHOWN FOR OAK-602 WITH DIELECTRIC THICKNESS .031"±.002". COPPER: 1/2 OZ. EACH SIDE FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
  - BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
- DENOTES COPPER LAND PATTERN FREE OF SOLDERMASK

### Features

- Low insertion loss
- 75Ω Impedance
- Good return loss
- High rejection

### Applications

- Cable TV systems (DOCSIS 3.0 standard)
- Multiband radio systems



CASE STYLE: NU1620

**+RoHS Compliant**

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

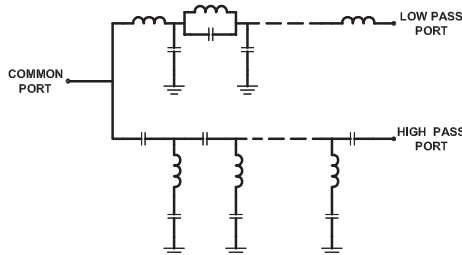
### Electrical Specifications at 25°C

Parameter	Port	Frequency (MHz)	Min.	Typ.	Max.	Unit	
Pass Band	Insertion Loss	Low Pass	DC-42	-	0.9	1.3	dB
		High Pass	54-1000	-	0.9	1.3	
	Return Loss	Low Pass	DC-42	17	20	-	dB
		High Pass	54-1000	15	18	-	
Common		DC-42	17	20	-		
Stop Band Isolation	Low Pass	54-1000	42	50	-	dB	
	High Pass	DC-42	42	50	-		

### Typical Performance Data at 25°C

FREQUENCY (MHz)	INSERTION LOSS (dB)			RETURN LOSS (dB)	
	Low Pass Port	High Pass Port	Common Port	Low Pass Port	High Pass Port
1.0	0.11	66.00	40.84	40.73	0.03
10.0	0.17	48.33	27.21	27.74	0.04
40.0	0.71	55.34	32.36	28.45	0.66
42.0	0.89	52.30	24.17	23.65	0.84
44.0	1.20	31.59	18.66	18.36	1.13
44.5	1.32	28.10	17.71	17.19	1.24
45.5	1.65	22.14	16.57	15.29	1.58
46.0	1.88	19.55	16.59	14.77	1.84
47.0	2.73	13.74	19.26	14.73	2.92
47.5	3.84	9.65	20.97	11.94	4.26
48.5	10.12	3.56	15.44	4.15	10.59
49.5	18.77	1.93	15.65	2.01	15.94
50.0	22.37	1.61	16.76	1.62	17.58
51.0	28.65	1.23	19.49	1.21	20.75
51.5	31.69	1.11	20.92	1.09	22.36
52.0	34.83	1.02	22.25	1.00	23.86
54.0	49.71	0.78	25.89	0.76	27.51
300.0	62.29	0.21	24.46	0.06	24.38
500.0	57.29	0.31	17.98	0.05	18.52
700.0	54.00	0.42	15.61	0.11	16.16
950.0	57.81	0.51	15.56	0.33	16.10
1000.0	50.92	0.53	15.76	0.31	16.37

### Functional Schematic



### Notes

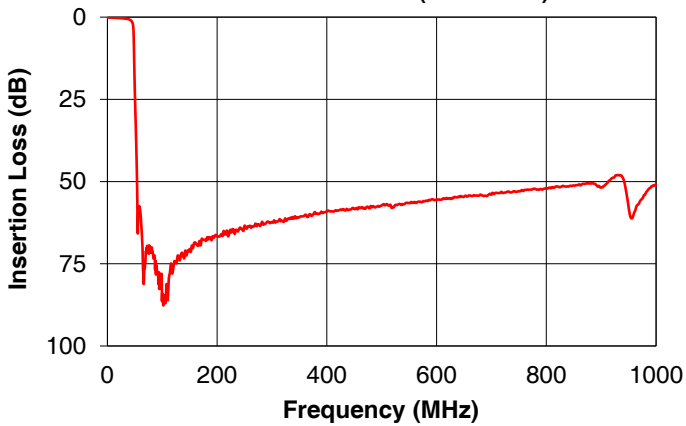
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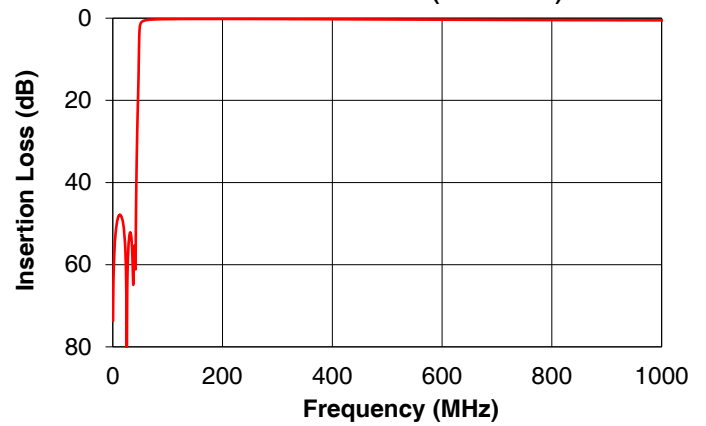
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REV. OR  
M159015  
EDU1480\_2  
DPLX-4254A0+  
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Page 2 of 3

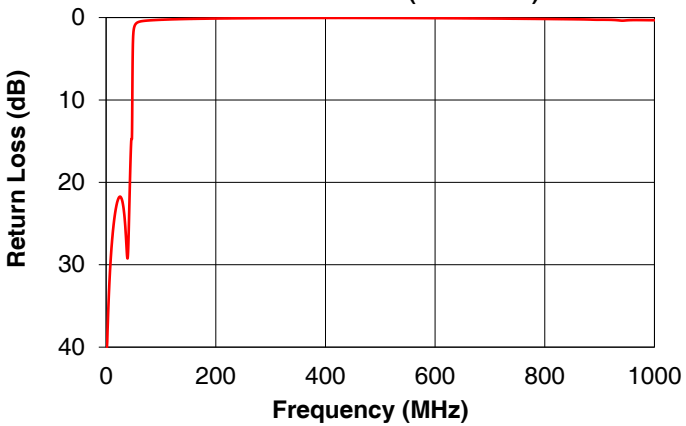
DPLX-4254A0+ LOW PASS PORT  
INSERTION LOSS (P<sub>in</sub>=0dBm)



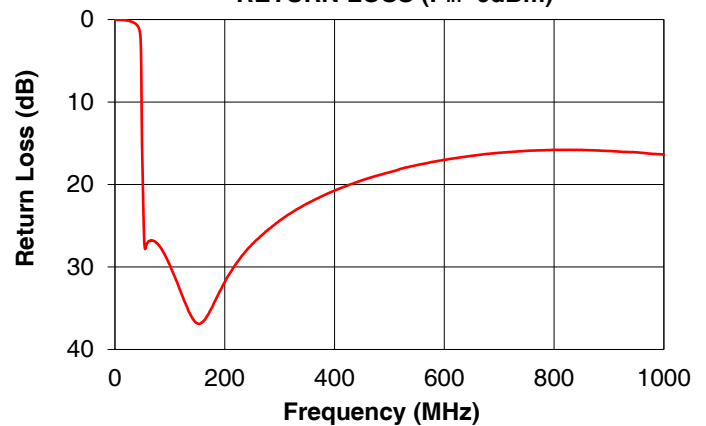
DPLX-4254A0+ HIGH PASS PORT  
INSERTION LOSS (P<sub>in</sub>=0dBm)



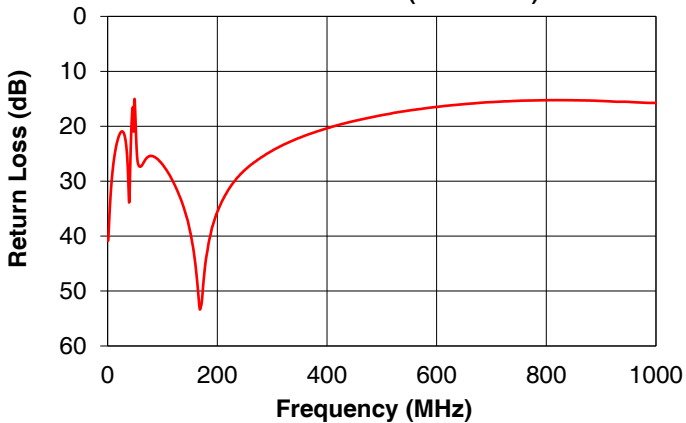
DPLX-4254A0+ LOW PASS PORT  
RETURN LOSS (P<sub>in</sub>=0dBm)



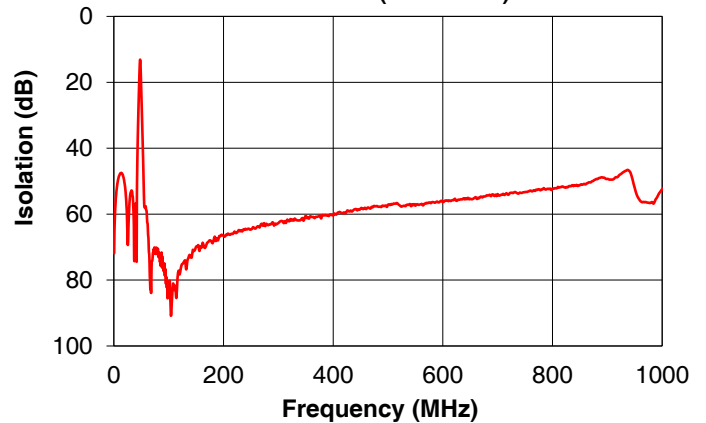
DPLX-4254A0+ HIGH PASS PORT  
RETURN LOSS (P<sub>in</sub>=0dBm)



DPLX-4254A0+ COMMON PORT  
RETURN LOSS (P<sub>in</sub>=0dBm)



DPLX-4254A0+ CROSS OVER  
ISOLATION (P<sub>in</sub>=0dBm)



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