

Plug-in

# Diplexer

## DPLC-8510A0+

75Ω DC to 1220 MHz  
(DC-85, 102-1220 MHz)



Generic photo used for illustration purposes only  
CASE STYLE: QB2223

### The Big Deal

- Plug-in design
- Field replaceable
- Low insertion loss
- Excellent return loss, 24 dB typ.
- Low group delay variation in passband
- Mirrored version available for ease of routing
- DOCSIS 3.1 standard

### Product Overview

DPLC-8510A0+ is a high performance field replaceable plug-in diplexer with the lowpass port at DC-85 MHz and highpass port at 102-1220 MHz. Excellent return loss combined with high out of channel rejection makes it a ideal part in cable TV and multiband radio systems

### Key Features

Feature	Advantages
Low passband insertion loss	Ensures low signal loss through both the channels.
Excellent Stopband rejection	Co-channel rejection of 50dB typical ensures unwanted spurious are eliminated.
Excellent return loss at DC-85 and 102-1220 MHz	This makes signal transmission with very less reflection and well-matched with the adjacent component used in the system.

#### Notes

- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.  
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.  
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75Ω DC to 1220 MHz (DC-85, 102-1220 MHz)

## Maximum Ratings

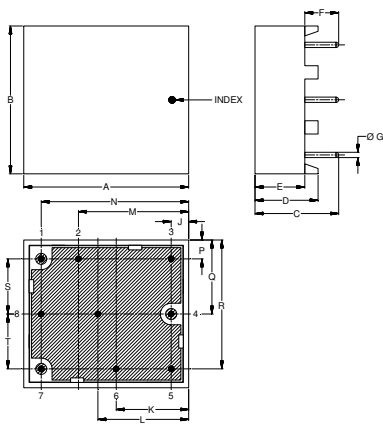
Operating Temperature	-40° to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	30dBm Max.

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	1
COMMON PORT	4
GROUND	2,3,5,6,8,9

## Outline Drawing



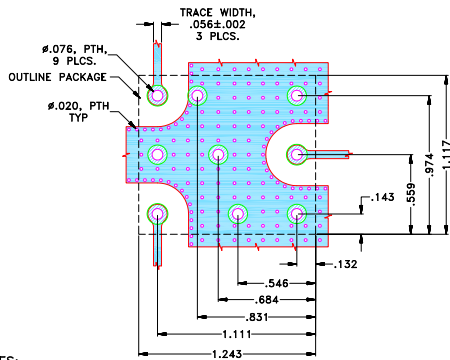
## Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H	J	K
1.243	1.117	.630	.475	.375	.255	.040	--	.132	.546
31.56	28.36	16.00	12.07	9.53	6.48	1.02	--	3.35	13.87
L	M	N	P	Q	R	S	T	Wt.	
.684	.831	1.111	.143	.559	.974	.417	.415	grams	7
17.37	21.10	28.22	3.63	14.21	24.74	10.58	10.53		

Note: Please refer to case style drawing for details

## Demo Board MCL P/N: TB-897+ Suggested PCB Layout (PL-485)

### SUGGESTED MOUNTING CONFIGURATION FOR QC2228 CASE STYLE



#### NOTES:

- TRACE WIDTH IS SHOWN FOR IT180, WITH DIELECTRIC THICKNESS .059"±.005", 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

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## Features

- Low insertion loss
- 75Ω Impedance
- Excellent return loss 24 dB typ.
- Low group delay variation
- High rejection

## Applications

- Cable TV systems (DOCSIS 3.1 standard)
- Multiband radio systems



**CAUTION NOTE:** Not designed for reflow process.



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CASE STYLE: QC2223

## +RoHS Compliant

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

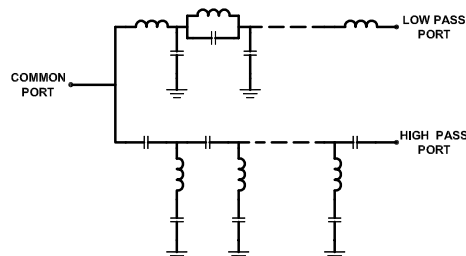
## Electrical Specifications at 25°C

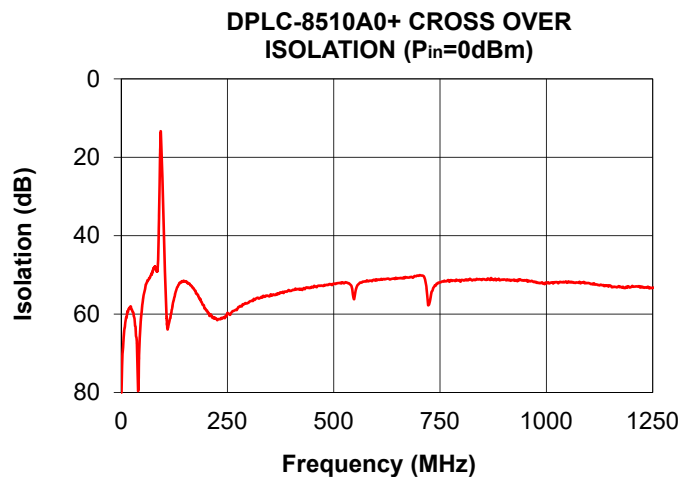
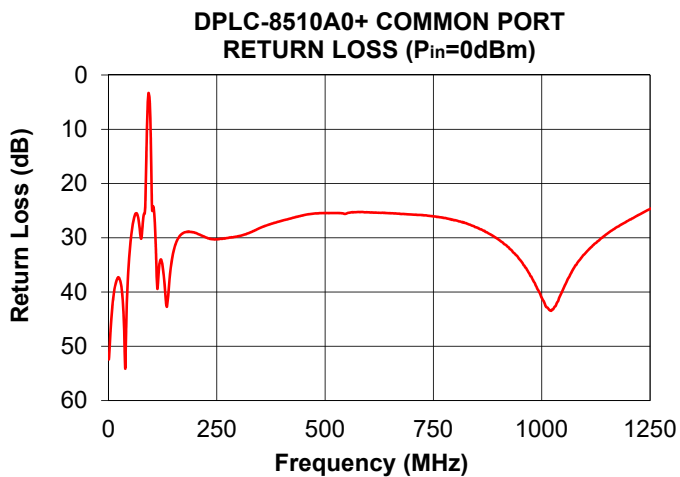
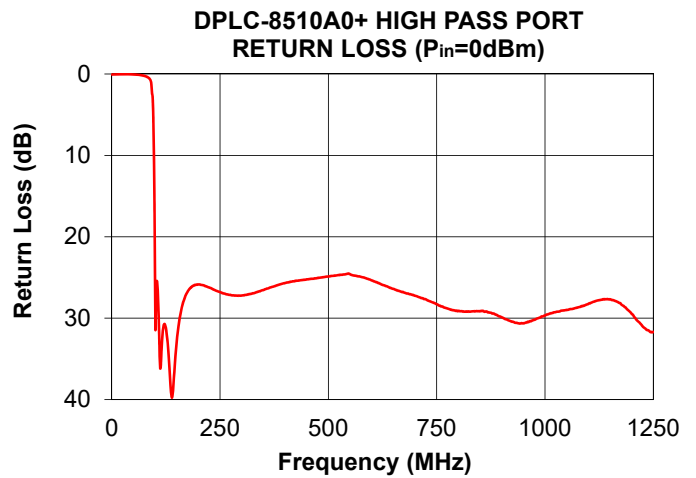
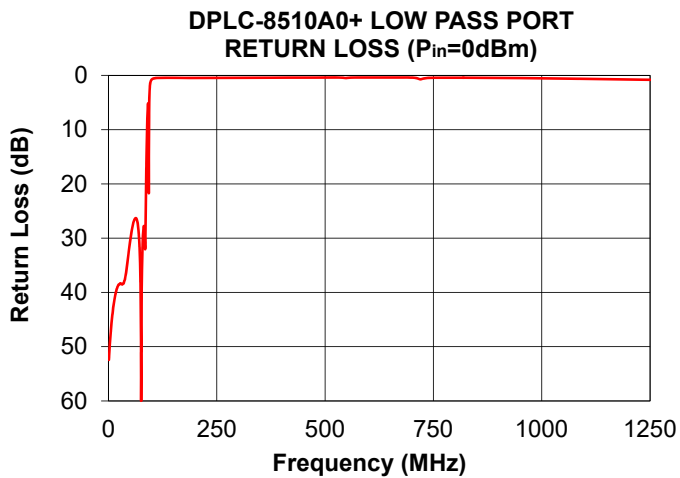
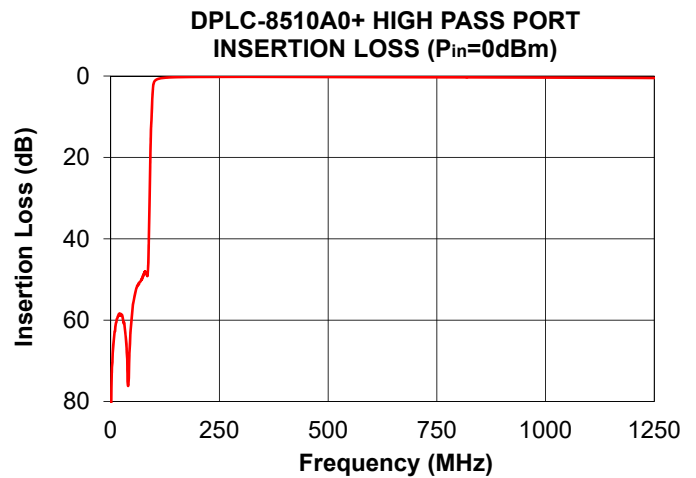
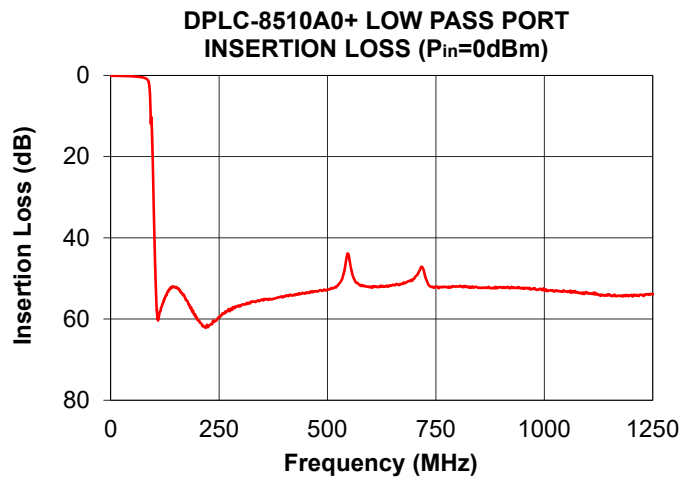
Parameter	Port	Frequency (MHz)	Min.	Typ.	Max.	Unit	
Pass Band	Insertion Loss	Low Pass	DC-85	-	1.1	1.4	dB
		High Pass	102-1220	-	1.4	1.7	
	Return Loss	Low Pass	DC-85	20	24	-	dB
		High Pass	102-1220	20	24	-	
Common		DC-85	20	24	-		
Stop Band Isolation	Low Pass	102-1220	42	50	-	dB	
	High Pass	DC-85	45	50	-		
	Cross over	85-102	-	15	-		

## 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	0.04	83.91	51.62	52.59	0.02
20.0	0.10	59.04	35.41	47.28	0.01
40.0	0.16	75.08	32.59	36.79	0.03
82.0	0.77	47.51	43.46	39.40	0.33
83.0	0.83	47.70	40.81	33.16	0.36
83.4	0.86	47.77	35.93	30.86	0.37
85.0	1.01	48.32	25.12	23.43	0.42
90.0	2.54	34.93	9.29	8.96	0.70
91.4	3.68	26.90	6.95	6.90	0.89
93.0	5.99	17.87	5.49	8.58	1.47
94.0	11.13	11.77	4.67	15.66	2.45
94.6	15.35	9.42	4.41	5.73	2.83
98.2	25.98	2.64	11.18	1.06	9.93
101.0	38.94	1.40	21.56	0.75	20.90
102.0	43.48	1.24	24.80	0.70	24.60
105.0	56.10	0.94	28.32	0.59	27.13
109.2	58.08	0.73	28.70	0.52	27.71
113.0	54.97	0.61	28.88	0.48	29.54
115.0	54.60	0.57	29.23	0.47	30.70
118.0	54.09	0.51	30.18	0.46	32.98
121.0	53.87	0.47	31.61	0.46	36.00
125.0	53.88	0.42	33.58	0.46	41.81
600.0	52.73	0.30	27.97	0.37	27.92
900.0	52.86	0.39	37.92	0.47	32.59
1002.0	52.02	0.43	43.85	0.52	30.22
1100.0	52.22	0.47	31.30	0.61	28.03
1200.0	51.79	0.51	27.12	0.69	28.12
1218.0	51.14	0.53	26.61	0.69	28.83
1220.0	50.97	0.53	26.54	0.70	28.80

## Functional Schematic





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