Plug-in

Diplexer

DPLC-8510A01+

75Ω 5 to 1225 MHz
(5-85, 102-1225 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.
- High cross over isolation
- Low group delay variation in passband
- Mirrored version available for ease of routing
- DOCSIS 3.1 standard

Product Overview

DPLC-8510A01+ is a high performance field replaceable plug-in diplexer with the lowpass port at 5-85 MHz and highpass port at 102-1225 MHz. Excellent return loss combined with high out of channel rejection makes it an 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 5-85 and 102-1225 MHz	This makes signal transmission with very less reflection and well-matched with the adjacent component used in the system.

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Maximum Ratings

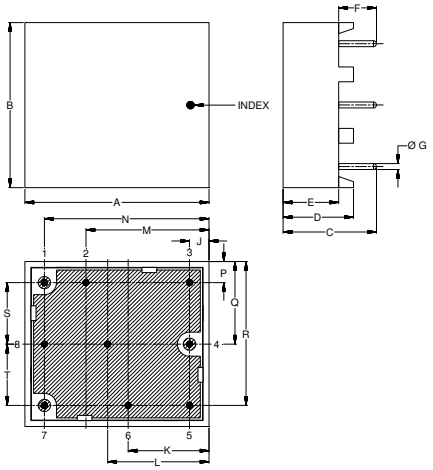
Operating Temperature	-40° to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	30dBm Max.

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



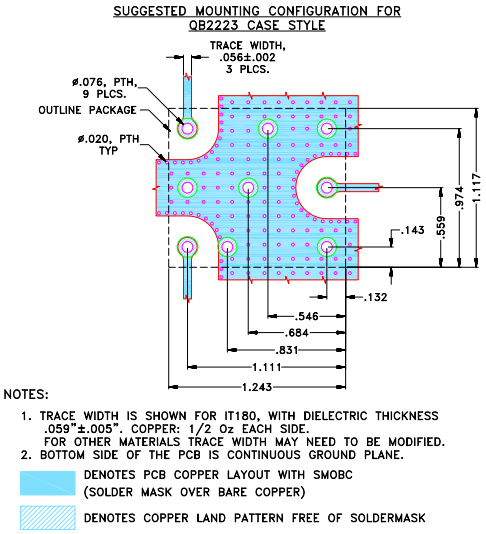
Outline Dimensions (inch / mm)

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
17.37	21.10	28.22	3.63	14.21	24.74	10.58	10.53	7

Note: Please refer to case style drawing for details

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



NOTES:
1. 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.
2. 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
- Excellent return loss 24 dB typ.
- Low group delay variation
- High cross isolation
- High rejection

Applications

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

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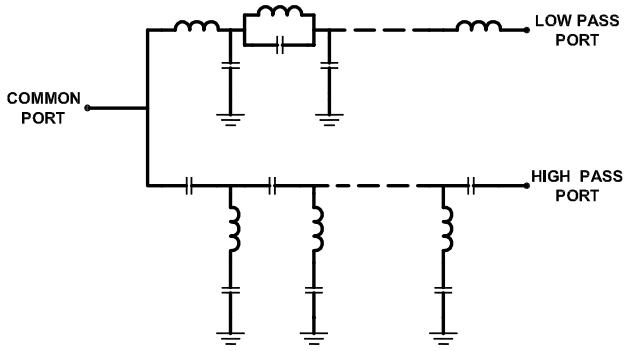
+RoHS Compliant
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

CAUTION NOTE: *Not designed for reflow process.*

Electrical Specifications at 25°C

Parameter		Port	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Insertion Loss	Low Pass	5	-	-	0.20	dB
			85	-	-	1.30	dB
		High Pass	102	-	-	1.75	dB
			105	-	-	1.30	dB
			130	-	-	0.60	dB
			870	-	-	0.50	dB
			1000	-	-	0.55	dB
			1218	-	-	0.60	dB
			1225	-	-	0.65	dB
	Return Loss	Low Pass	5-85	22	24	-	dB
		High Pass	102-104.9	20	24	-	dB
			105-1225	20	24	-	dB
		Common	5-85	22	24	-	dB
			102-104.9	20	24	-	dB
			105-1225	20	24	-	dB
Stop Band Isolation		High Pass	5-84.9	48	50	-	dB
		Cross over	85-104.9	38	40	-	dB
		Low Pass	105-1225	45	50	-	dB
Group Delay Variation		High Pass	109.275-112.855	-	6	8	ns
			115.275-118.855	-	3	6	ns
			121.2625-124.843	-	2	5	ns
		Low Pass	82-83.5	-	-	6	ns
			83.5-85	-	-	8	ns

Functional Schematic

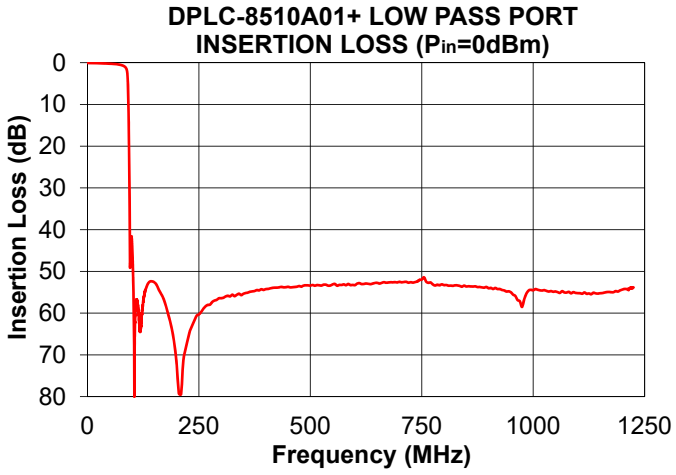


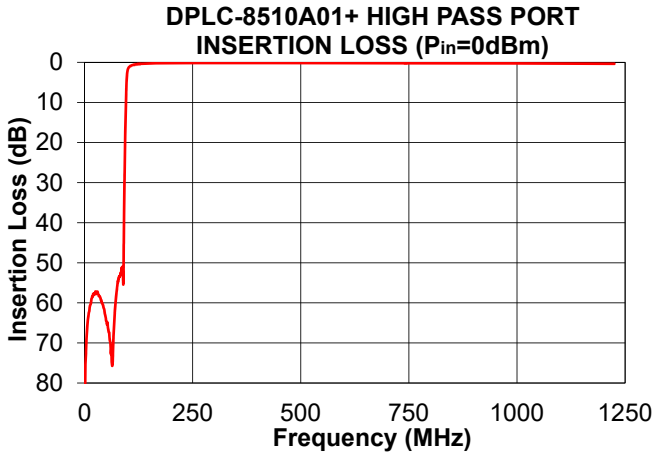
Notes
A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp

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
1.000	0.05	85.10	52.32	52.63	0.04
5.000	0.08	68.49	44.84	47.51	0.04
82.000	0.83	53.20	32.54	31.83	0.28
83.500	0.93	52.84	34.89	35.57	0.31
84.900	1.07	52.28	38.71	34.59	0.35
85.000	1.08	52.11	39.29	34.29	0.35
90.000	3.36	52.98	11.22	10.83	0.54
92.400	13.59	29.55	4.01	2.68	0.76
93.300	20.63	23.33	3.48	1.90	0.91
94.000	27.55	19.01	3.41	1.58	1.11
94.300	31.11	17.27	3.46	1.47	1.22
98.000	42.28	3.39	11.63	0.88	8.46
99.000	41.72	2.34	17.66	0.81	12.94
102.000	49.49	1.33	32.26	0.66	28.73
104.900	72.10	1.00	29.52	0.59	29.84
105.000	75.57	0.99	29.50	0.59	29.64
109.275	56.94	0.76	27.42	0.53	25.98
112.855	58.02	0.63	26.13	0.50	26.01
115.275	61.06	0.57	26.04	0.49	26.82
118.855	64.39	0.50	26.76	0.47	28.52
120.000	62.96	0.48	27.14	0.47	29.21
121.263	60.91	0.46	27.62	0.47	30.02
124.843	57.39	0.42	29.19	0.46	32.63
130.000	54.48	0.37	31.58	0.45	36.40
500.000	53.40	0.19	26.80	0.32	26.15
870.000	53.58	0.25	32.56	0.40	31.23
1000.000	54.53	0.28	42.10	0.46	29.23
1218.000	53.86	0.36	34.38	0.58	33.97
1225.000	53.85	0.37	33.95	0.59	34.37

Performance Charts





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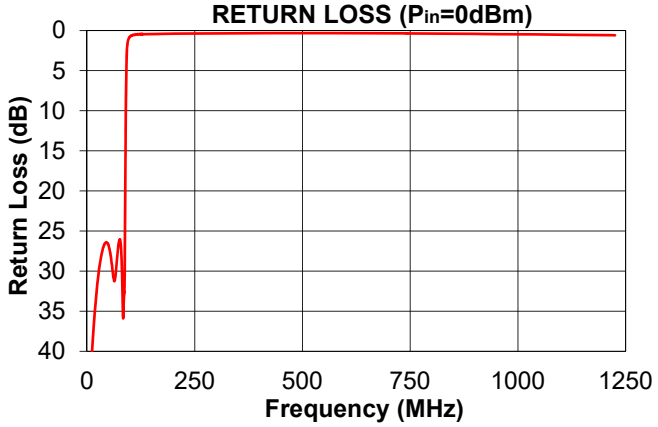
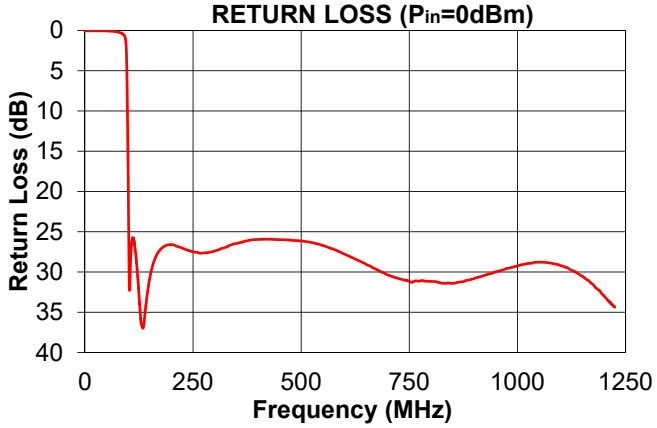
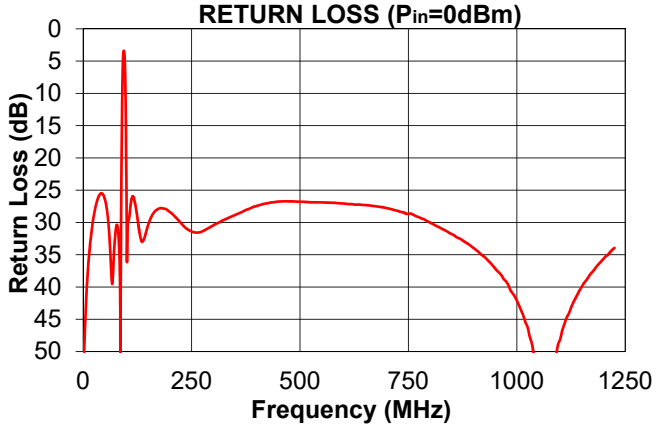
DPLC-8510A01+ LOW PASS PORT
RETURN LOSS (P_{in}=0dBm)



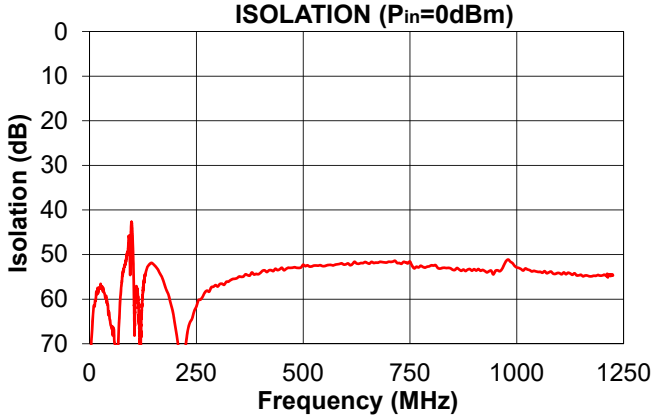
DPLC-8510A01+ HIGH PASS PORT
RETURN LOSS (P_{in}=0dBm)



DPLC-8510A01+ COMMON PORT
RETURN LOSS (P_{in}=0dBm)



DPLC-8510A01+ CROSS OVER
ISOLATION (P_{in}=0dBm)



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