



### THE BIG DEAL

- Very Wideband, 5 to 1220 MHz
- Maximum DC Current Handling Capability of 200 mA
- Excellent Insertion Loss, 0.2 dB Typical
- Good Return Loss, 25 dB Typ.
- Low Parasitic Capacitance, 0.1 pF Typ.
- Effective Parallel Resistance, Rch 800Ω Typ.
- SMT Package
- Aqueous Washable
- Protected by US Patent, 6,133,525



Generic photo used for illustration purposes only

CASE STYLE: CD637

### +RoHS Compliant

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

### APPLICATIONS

- Biasing Amplifiers
- Biasing of Laser Diodes
- Biasing of Active Antennas

### PRODUCT OVERVIEW

Mini-Circuits' ADCH-1220+ RF Choke achieves a very wide bandwidth from 5 up to 1220 MHz. The choke is wound with AWG32 wire, making the maximum continuous current 200 mA DC. Excellent Insertion Loss, good VSWR (1.1:1 typ.), flatness and rugged construction make these models ideal solutions for rf-choke applications across a very wide frequency range. These units support a broad range of system and test applications.

### KEY FEATURES

Features	Advantages
Extremely Wideband, 5 to 1220 MHz	Ideal for an exceptionally wide variety of lab and system applications.
Excellent Insertion Loss, 0.2 dB Typ. Across Entire Range	Provides excellent signal transmission from input to output with consistent performance across its entire frequency range.
Good Return Loss, 25 dB Typ.	Efficient power utilization with minimal signal power reflected back to source.
200 mA DC Continuous	Ideal for DC injection applications requiring high current levels.
Rugged Construction	Withstands harsh environmental conditions for high reliability and long life of use.

REV. B  
ECO-027902  
ADCH-1220+  
MCL NY  
251208



VERY HIGH DC CURRENT

# RF Choke

## ADCH-1220+

Mini-Circuits

50Ω 5 to 1220 MHz

### ELECTRICAL SPECIFICATIONS AT +25°C

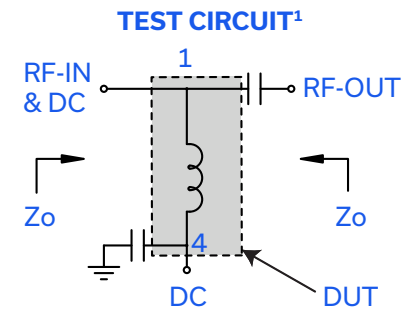
Parameter	Condition	Min.	Typ.	Max.	Unit
Frequency Range		5		1220	MHz
Insertion Loss	5-10 MHz		0.3	0.8	dB
	10-1220 MHz		0.2	0.5	
VSWR <sup>1</sup>	5-10 MHz		1.64		:1
	10-1220 MHz		1.1	1.29	
DC Current				200	mA
Inductance	@ 0 mA		3.4		μH

1. Tested with circuit shown below,  $Z_o = 50\Omega$ .

### ABSOLUTE MAXIMUM RATINGS

Operating Temperature	-40°C to +85°C
Storage Temperature	-55°C to +100°C
DC Current	300 mA

Permanent damage may occur if any of these limits are exceeded.





VERY HIGH DC CURRENT

# RF Choke

## ADCH-1220+

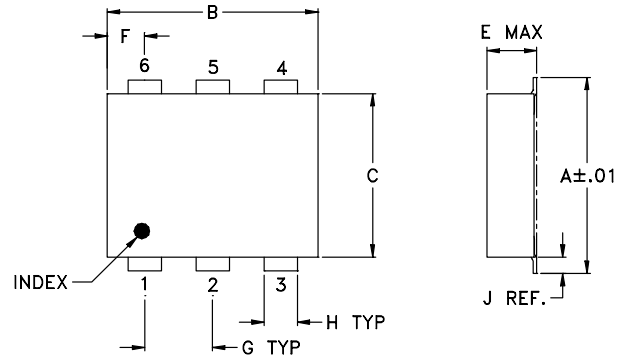
Mini-Circuits

50Ω 5 to 1220 MHz

### PIN CONNECTIONS

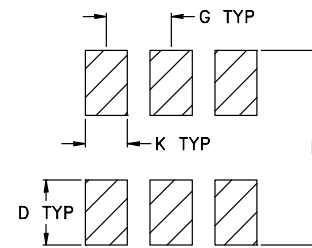
RF-IN & DC	1
RF GROUND	4
NOT USED	2,3,5,6

### OUTLINE DRAWING



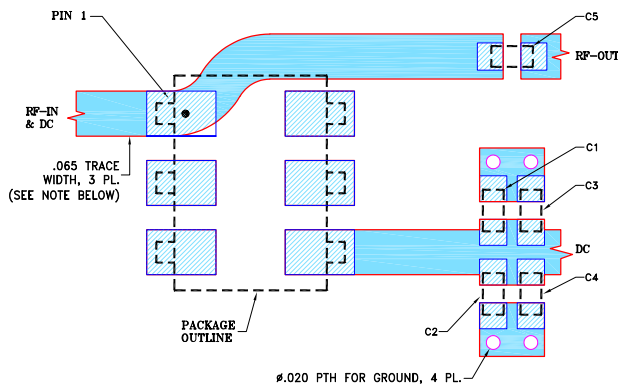
PRODUCT MARKING: N/A

### PCB Land Pattern



Suggested Layout,  
Tolerance to be within  $\pm .002$  in

### DEMO BOARD MCL P/N: TB-ADCH-1220+ SUGGESTED PCB LAYOUT (PL-699)



COMPONENT	SIZE
C1...C5	0603

#### NOTES:

- TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS  $.030 \pm .0015$ ”; COPPER: 1/2 OZ. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
- CHIP COMPONENT FOOT PRINTS SHOWN FOR REFERENCE. FOR COMPONENT VALUES REFER TO TB-ADCH-1220+.
- UNIT LAND PATTERN WAS OPTIMIZED FOR BETTER PERFORMANCE.
- BOTTOM COPPER OF THE PCB IS CONTINUOUS GROUND PLANE.

- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

### OUTLINE DIMENSIONS (Inches/mm)

A	B	C	D	E	F	G
.272	.310	.220	.100	.206	.055	.100
6.91	7.87	5.59	2.54	5.23	1.40	2.54
H	J	K	L	wt		
.030	.026	.065	.300	grams		
0.76	0.66	1.65	7.62	0.40		

### TAPE & REEL INFORMATION: F46



VERY HIGH DC CURRENT

# RF Choke

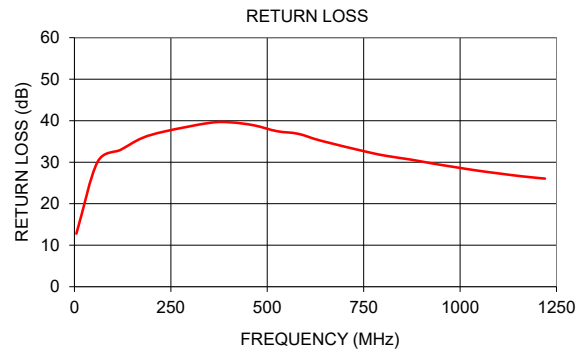
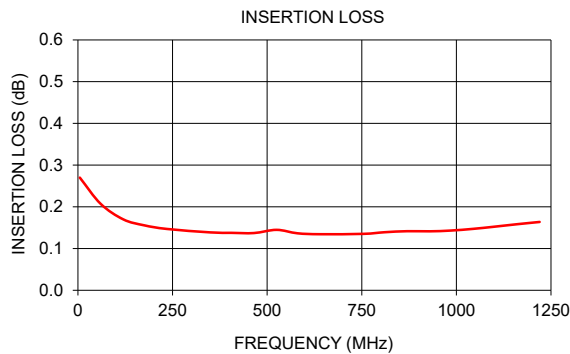
## ADCH-1220+

Mini-Circuits

50Ω 5 to 1220 MHz

### TYPICAL PERFORMANCE DATA

Frequency (MHz)	Insertion Loss (dB)	Return Loss (dB)
5	0.27	12.78
60	0.21	30.08
120	0.17	32.99
175	0.16	35.80
235	0.15	37.43
350	0.14	39.47
405	0.14	39.60
465	0.14	38.89
525	0.14	37.48
580	0.14	36.84
640	0.13	35.16
755	0.14	32.56
810	0.14	31.50
870	0.14	30.66
930	0.14	29.67
985	0.14	28.84
1045	0.15	27.97
1100	0.15	27.30
1160	0.16	26.60
1220	0.16	26.05



#### NOTES

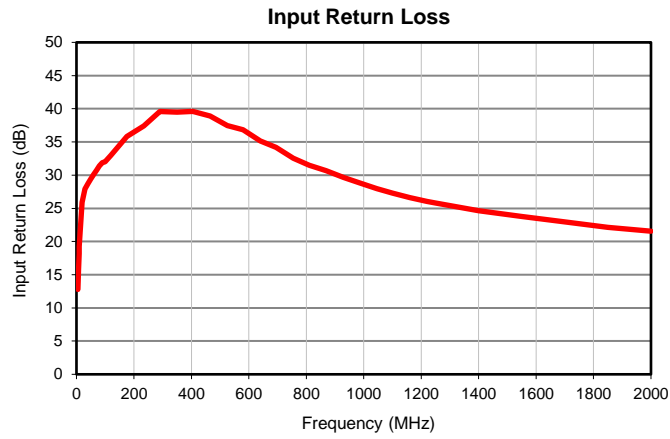
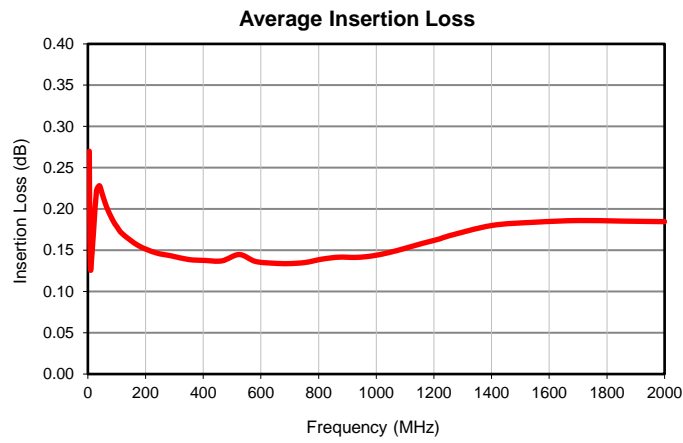
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- B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
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## Typical Performance Data

FREQUENCY (MHz)	AVERAGE INSERTION LOSS (dB)	INPUT RETURN LOSS (dB)
5	0.27	12.78
7	0.16	15.82
9	0.13	18.18
10	0.13	19.23
20	0.17	25.91
30	0.22	27.93
40	0.23	28.68
50	0.22	29.39
60	0.21	30.08
70	0.20	30.71
80	0.19	31.39
90	0.18	31.86
100	0.18	32.03
120	0.17	32.99
175	0.16	35.80
235	0.15	37.43
290	0.14	39.59
350	0.14	39.47
405	0.14	39.60
465	0.14	38.89
525	0.14	37.48
580	0.14	36.84
640	0.13	35.16
695	0.13	34.20
755	0.14	32.56
810	0.14	31.50
870	0.14	30.66
930	0.14	29.67
985	0.14	28.84
1045	0.15	27.97
1100	0.15	27.30
1160	0.16	26.60
1220	0.16	26.05
1250	0.17	25.82
1400	0.18	24.64
1550	0.18	23.77
1700	0.19	22.97
1850	0.19	22.12
2000	0.18	21.56

## Typical Performance Data

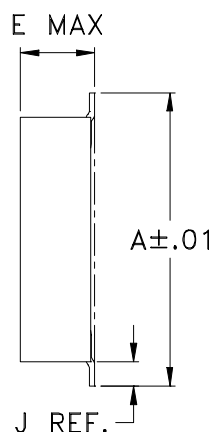
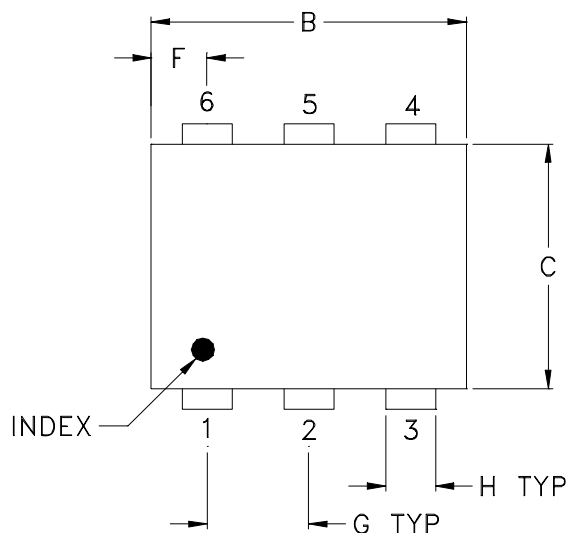


# Case Style

# CD

CD541  
CD542  
CD636  
CD637

## Outline Dimensions



## PCB Land Pattern



Suggested Layout,  
Tolerance to be within  $\pm .002$

CASE#	A	B	C	D	E	F	G	H	J	K	L	WT, GRAM
CD541					.082 (2.08)							.15
CD542	.272 (6.91)	.310 (7.87)	.220 (5.58)	.100 (2.54)	.112 (2.84)	.055 (1.40)	.100 (2.54)	.030 (0.76)	.026 (0.66)	.065 (1.65)	.300 (7.62)	.20
CD636					.162 (4.11)							.25
CD637					.206 (5.23)							.40

Dimensions are in inches (mm). Tolerances: 2 Pl.  $\pm .01$ ; 3 Pl.  $\pm .005$

### Notes:

- Case material: Plastic.
- Termination finish:
  - For RoHS Case Styles: Tin plate over Nickel plate. All models, (+) suffix.
  - For RoHS-5 Case Styles: Tin-Lead plate. All models, no (+) suffix.

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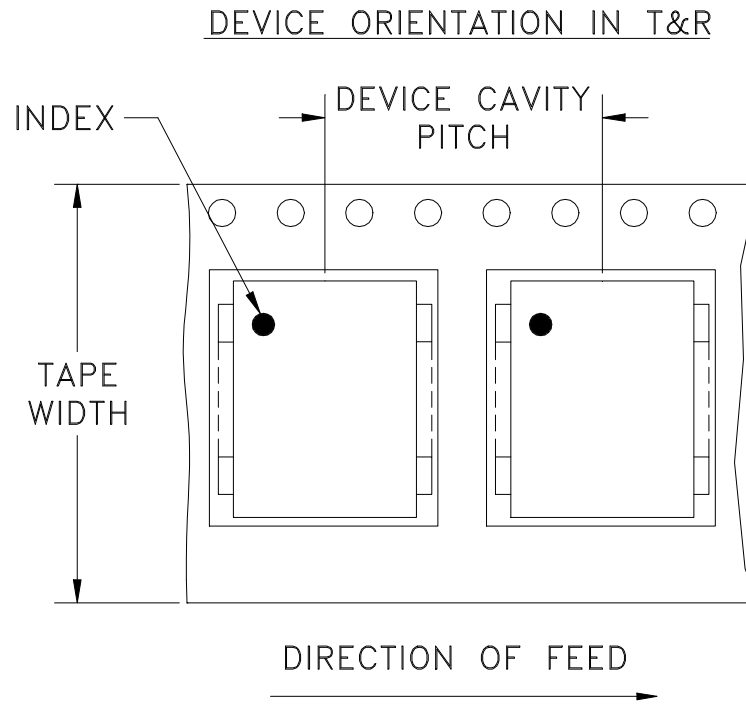
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# Tape & Reel Packaging TR-F46



<b>Tape Width, mm</b>	<b>Device Cavity Pitch, mm</b>	<b>Reel Size, inches</b>	<b>Devices per Reel</b>
16	12	13	900

Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

Go to: [www.minicircuits.com/pages/pdfs/tape.pdf](http://www.minicircuits.com/pages/pdfs/tape.pdf)



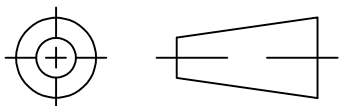
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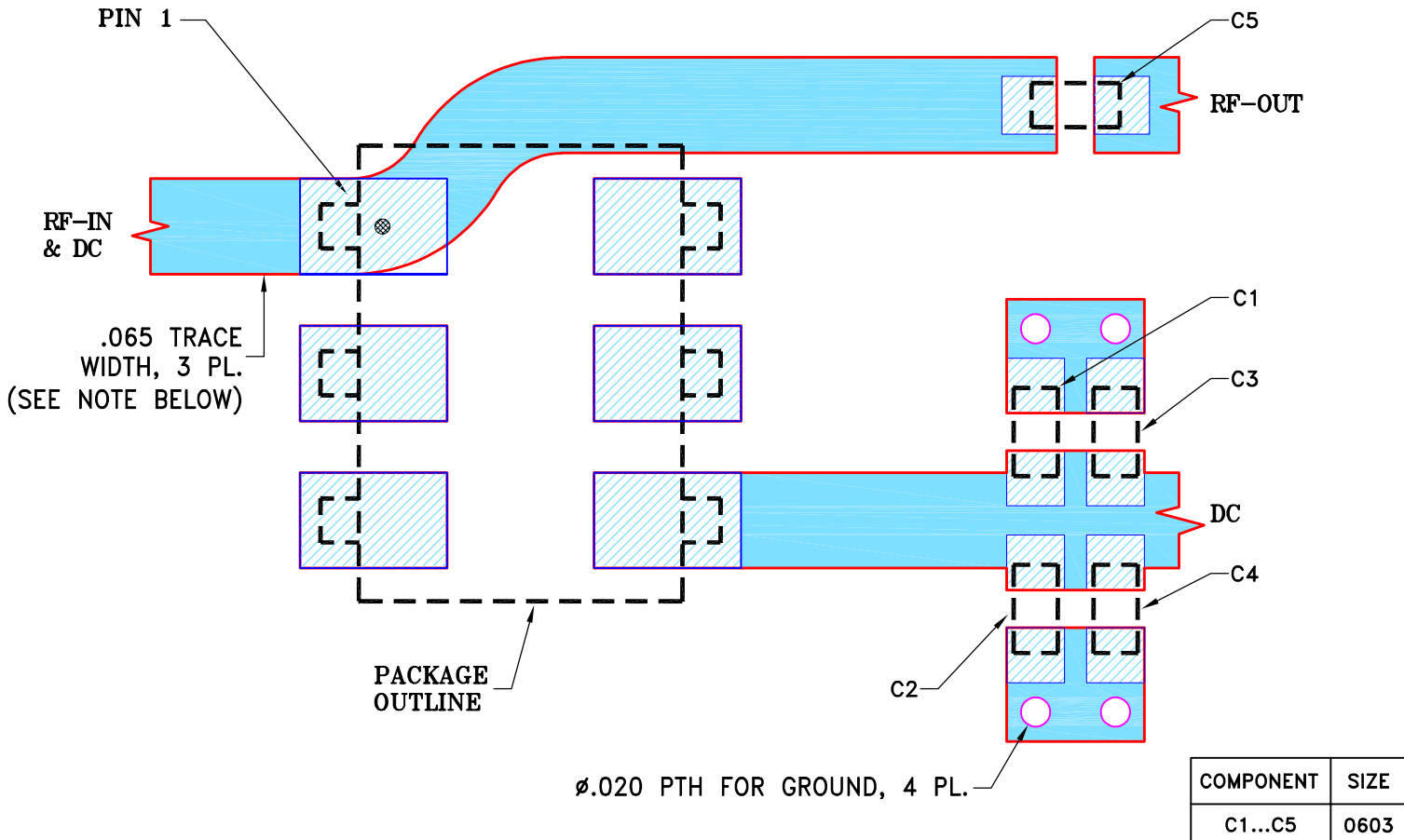
THIRD ANGLE PROJECTION



REVISIONS

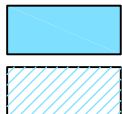
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	ECO-006963	NEW RELEASE	03/19/21	ITG	IL

SUGGESTED MOUNTING CONFIGURATION FOR CD637 CASE STYLE



NOTES:

1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS  $.030 \pm .0015$ "; COPPER: 1/2 OZ. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. CHIP COMPONENT FOOT PRINTS SHOWN FOR REFERENCE. FOR COMPONENT VALUES REFER TO TB-ADCH-1220+.
3. UNIT LAND PATTERN WAS OPTIMIZED FOR BETTER PERFORMANCE.
4. BOTTOM COPPER OF THE PCB IS CONTINUOUS GROUND PLANE.



DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

UNLESS OTHERWISE SPECIFIED	INITIALS		DATE
	DRAWN	ITG	03/18/21
DIMENSIONS ARE IN INCHES	CHECKED	GF	03/18/21
	APPROVED	IL	03/19/21

TOLERANCES ON:  
 2 PL DECIMALS ±  
 3 PL DECIMALS ± .005  
 ANGLES ±  
 FRACTIONS ±

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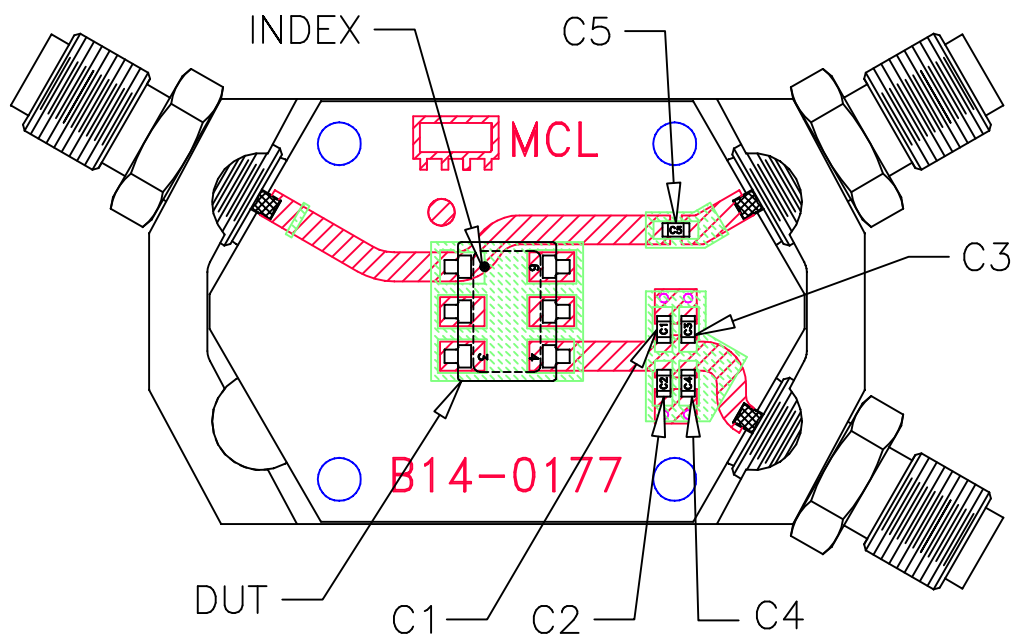
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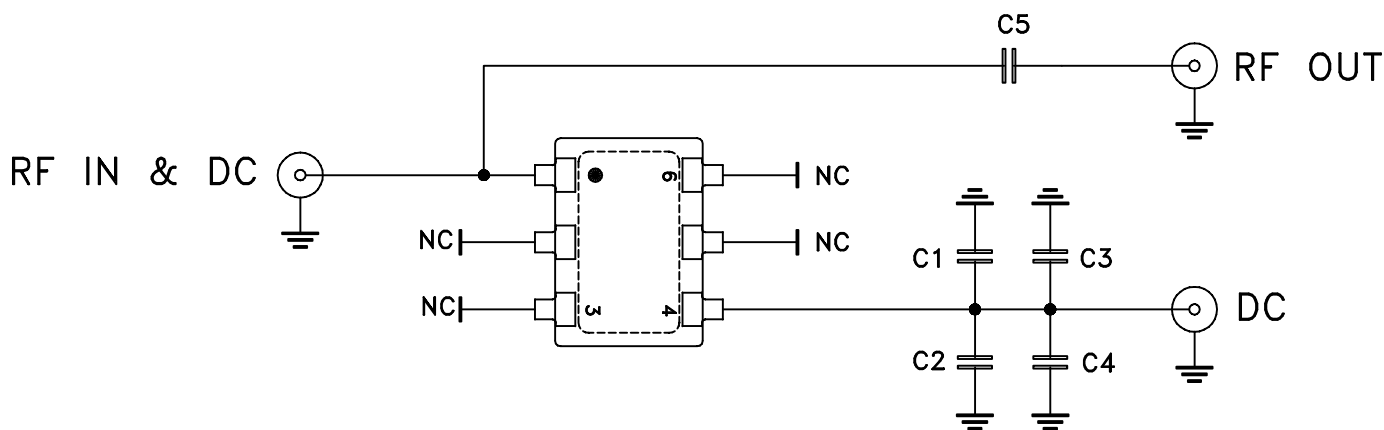
PL, CD637, TB-ADCH-1220+

SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-699	OR
FILE:	98PL699	SCALE:	SHEET:
		8:1	1 OF 1

# Evaluation Board and Circuit



TB-1167+



COMPONENT	VALUE	SIZE
DUT	MCL ADCH-1220+	7.87X6.91 mm
C1,C2	Capacitor 82 pF	0603
C3,C4,C5	Capacitor .1uF	

## SCHEMATIC DIAGRAM

### Notes:

1. SMA Female connectors.
2. PCB Material: Rogers R04350 or equivalent, Dielectric Constant=3.5, Thickness=.030 inch.

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All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-40° to 85°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Humidity	90 to 95% RH, 240 hours, 50°C	MIL-STD-202, Method 103, Condition A, Except 50°C and end-point electrical test done within 12 hours
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
Solder Reflow Heat	Sn-Pb Eutetic Process: 225°C peak Pb-Free Process 245° - 250°C peak	J-STD-020, Table 4-1, 4-2 and 5-2, Figure 5-1
Solderability	10X Magnification	J-STD-002, 95% Coverage
Vibration (High Frequency)	20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36)	MIL-STD-202, Method 204, Condition D
Mechanical Shock	50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, Condition A
Marking Resistance to Solvents	Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C	MIL-STD-202, Method 215