Surface Mount

Bandpass Filter

BPF-BC300A+

50Ω 260 to 340 MHz

Generic photo used for illustration purposes only

CASE STYLE: TS2825

The Big Deal

- Broader bandwidth
- High Rejection
- Miniature shielded package

Product Overview

BPF-BC300A+ is a 50Ω bandpass filter in a shielded package fabricated using SMT technology. This bandpass filter covers from 260 to 340 MHz. This filter build with high Q capacitors and wire welded inductors for high reliability. This filter offers sharp rejection and low insertion loss for use in Test and measurement system applications.

Key Features

Feature	Advantages
Low insertion loss	Can be used in Transmitters/Receivers application
Good rejection	This enables the filter attenuate spurious signals and reject harmonics for broad frequency band
Shielded package	The small surface mount package enables the BPF-BC300A+ to used in compact design

Surface Mount

Bandpass Filter

BPF-BC300A+

50Ω 260 to 340 MHz

Generic photo used for illustration purposes only

CASE STYLE: TS2825

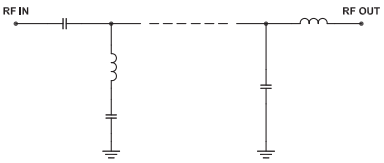
Features

- Broader bandwidth
- High rejection
- Miniature shielded package

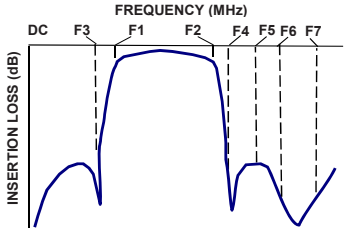
Applications

- Test and measurement
- Harmonic rejection
- Transmitters / Receivers

Functional Schematic



Typical Frequency Response



+RoHS Compliant

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

Electrical Specifications at 25°C

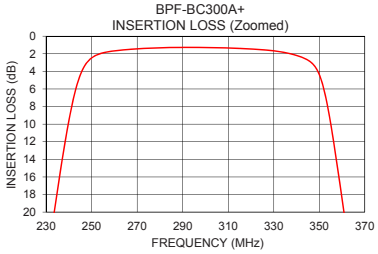
Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Center Frequency	—	—	—	300	—	MHz
	Insertion Loss	F1-F2	260 - 340	—	2.5	3.0	dB
	VSWR	F1-F2	260 - 340	—	1.4	1.57	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC - 220	40	—	—	dB
	VSWR	DC-F3	DC - 220	—	20	—	:1
Stop Band, Upper	Insertion Loss	F4-F5	380 - 1000	40	44	—	dB
		F5-F6	1000 - 3000	30	35	—	dB
		F6-F7	3000 - 4000	20	25	—	dB
	VSWR	F4-F7	380 - 4000	—	20	—	:1

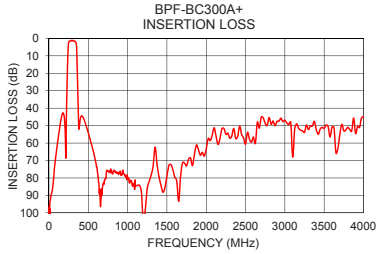
Maximum Ratings	
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	0.5 W

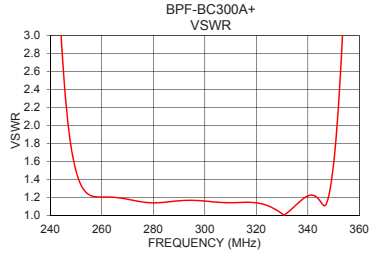
Permanent damage may occur if any of these limits are exceeded.

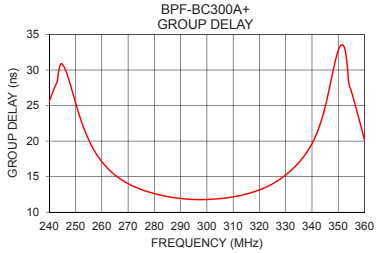
Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (nsec)
1	107.46	289.32	260	17.09
100	62.79	266.52	265	15.22
150	47.29	107.98	270	14.01
220	49.91	25.51	275	13.18
228	30.48	18.99	280	12.60
233	20.98	14.22	285	12.19
240	9.59	6.26	290	11.92
246	3.81	2.28	295	11.78
260	1.67	1.20	300	11.78
300	1.29	1.16	305	11.91
340	2.19	1.22	310	12.16
348	3.41	1.20	315	12.55
355	9.93	3.99	318	12.87
361	20.30	8.10	320	13.14
366	29.48	10.41	322	13.43
380	51.78	13.32	325	13.98
500	54.18	35.87	328	14.68
1000	79.91	49.75	330	15.24
3000	46.87	28.86	335	16.98
4000	45.03	49.27	340	19.63









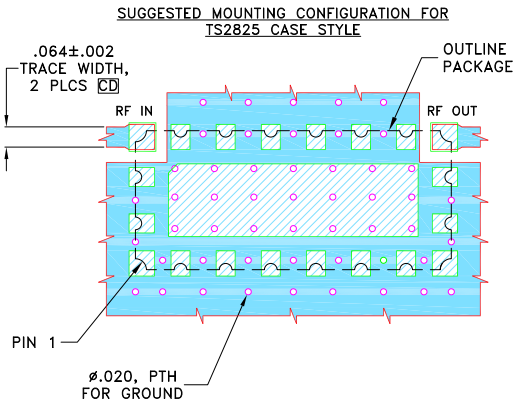
Notes

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

Pad Connections

INPUT	18
OUTPUT	11
GROUND	1-10, 12-17,19,20

Demo Board MCL P/N: TB-1097+
Suggested PCB Layout (PL-639)



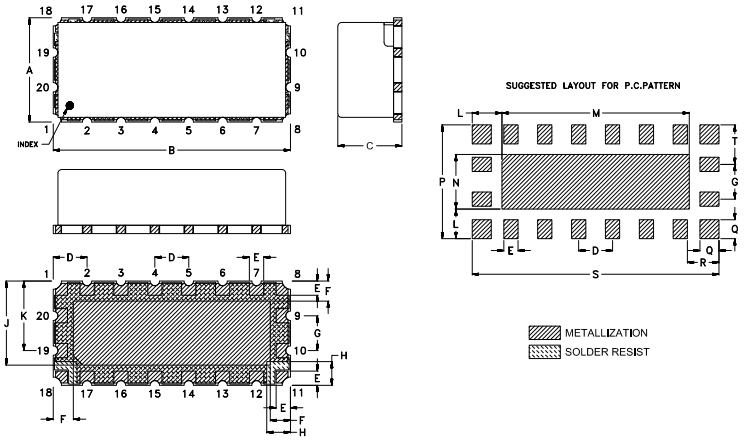
NOTES:

1. TRACE WIDTH IS SHOWN FOR ROGERS (RO4350B) WITH DIELECTRIC THICKNESS .030"±.002". 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

Outline Drawing



Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H	J	K
.440	**1.000**	**.270**	**.143**	**.060**	**.085**	**.147**	**.100**	**.355**	**.293**
11.18	25.40	6.86	3.63	1.52	2.16	3.73	2.54	9.02	7.45

L	M	N	P	Q	R	S	T	Wt.
.125	**.790**	**.230**	**.480**	**.080**	**0.133**	**1.040**	**.167**	grams
3.18	20.07	5.84	12.19	2.03	3.37	26.42	4.23	2

Note: Please refer to case style drawing for details

Band Pass Filter BPF-BC300A+

Typical Performance Data

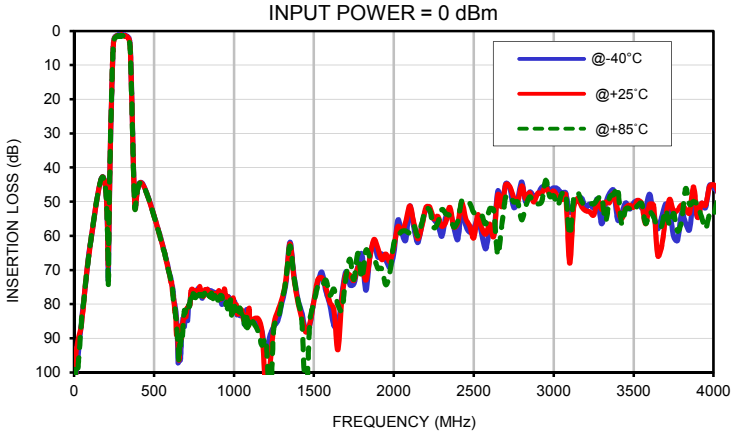
FREQ.	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
(MHz)	(dB)			(dB)			(dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
1	99.50	107.46	100.73	0.07	0.06	0.06	0.01	0.01	0.01
10	100.70	95.19	102.86	0.05	0.05	0.05	0.21	0.21	0.21
100	62.81	62.79	62.85	0.04	0.07	0.07	0.52	0.57	0.60
120	56.29	56.22	56.16	0.06	0.09	0.09	0.46	0.51	0.54
140	50.11	50.04	50.01	0.09	0.14	0.14	0.48	0.55	0.59
150	47.35	47.29	47.23	0.11	0.16	0.17	0.56	0.65	0.70
180	42.67	42.72	42.80	0.21	0.27	0.29	1.08	1.23	1.31
200	47.79	47.83	48.23	0.34	0.41	0.43	1.11	1.24	1.33
220	51.26	49.91	49.99	0.59	0.68	0.72	1.10	1.26	1.37
228	31.01	30.48	30.26	0.80	0.92	0.98	1.36	1.58	1.73
229	28.98	28.49	28.26	0.84	0.96	1.03	1.42	1.65	1.81
230	27.01	26.55	26.32	0.88	1.01	1.08	1.49	1.73	1.89
233	21.37	20.98	20.77	1.07	1.22	1.32	1.78	2.06	2.27
235	17.80	17.47	17.28	1.27	1.45	1.56	2.08	2.41	2.65
240	9.74	9.59	9.51	2.47	2.80	3.02	3.71	4.24	4.62
245	4.31	4.41	4.48	6.35	6.91	7.28	8.28	9.05	9.58
246	3.68	3.81	3.90	7.59	8.18	8.56	9.66	10.46	10.99
247	3.18	3.34	3.44	8.95	9.57	9.96	11.16	11.96	12.47
250	2.27	2.46	2.59	13.44	14.09	14.45	15.80	16.49	16.85
255	1.71	1.89	2.02	19.42	19.75	19.79	20.77	20.96	20.94
260	1.49	1.67	1.78	20.67	20.75	20.56	21.01	21.02	20.92
275	1.21	1.37	1.46	22.35	23.05	23.37	20.82	21.37	21.57
300	1.13	1.29	1.38	22.52	22.71	23.05	23.78	24.28	24.90
325	1.35	1.54	1.67	26.61	26.45	26.17	30.80	30.26	30.14
340	1.92	2.19	2.37	20.15	20.25	20.51	18.98	18.74	18.70
350	3.77	4.36	4.82	13.89	13.06	12.50	11.65	10.83	10.23
355	9.01	9.93	10.61	4.41	4.45	4.47	3.75	3.71	3.67
360	17.56	18.49	19.19	2.15	2.33	2.44	1.71	1.82	1.89
361	19.38	20.30	21.00	1.97	2.16	2.26	1.55	1.67	1.73
365	26.73	27.63	28.32	1.55	1.73	1.84	1.16	1.28	1.35
366	28.59	29.48	30.16	1.49	1.67	1.77	1.10	1.22	1.29
367	30.45	31.34	32.03	1.44	1.62	1.72	1.05	1.16	1.23
370	36.08	36.96	37.67	1.33	1.50	1.59	0.93	1.04	1.11
380	51.36	51.78	52.08	1.15	1.31	1.39	0.70	0.81	0.86
400	45.79	45.80	45.82	1.00	1.14	1.21	0.50	0.59	0.63
420	44.36	44.45	44.51	0.84	0.97	1.04	0.39	0.47	0.51
450	46.85	47.01	47.04	0.59	0.71	0.77	0.28	0.36	0.39
500	53.98	54.18	54.19	0.38	0.48	0.53	0.18	0.26	0.28
600	71.53	72.14	71.92	0.38	0.48	0.52	0.07	0.15	0.17
800	78.23	77.00	77.16	0.42	0.53	0.58	0.03	0.06	0.09
1000	79.16	79.91	81.00	0.23	0.35	0.39	0.05	0.04	0.07
1200	94.32	105.16	90.31	0.12	0.25	0.30	0.05	0.05	0.09
1400	78.46	79.42	78.85	0.11	0.23	0.28	0.06	0.05	0.08
1600	80.31	79.56	77.38	0.13	0.27	0.31	0.05	0.06	0.09
1800	65.37	68.51	72.48	0.17	0.32	0.34	0.04	0.07	0.11
2000	65.14	63.31	62.17	0.15	0.35	0.35	0.04	0.07	0.12
2200	52.45	51.73	52.14	0.19	0.44	0.41	0.06	0.07	0.11
2400	61.03	56.28	55.70	0.16	0.49	0.45	0.08	0.04	0.08
2600	58.09	56.55	52.03	0.18	0.55	0.47	0.11	0.04	0.07
2800	44.22	45.37	55.30	0.27	0.64	0.53	0.11	0.05	0.10
3000	45.93	46.87	48.30	0.27	0.60	0.57	0.13	0.02	0.08
3100	53.02	68.01	59.72	0.29	0.57	0.57	0.15	0.01	0.11
3200	51.62	52.65	50.94	0.27	0.54	0.55	0.18	0.02	0.06
3300	56.49	52.26	48.52	0.27	0.52	0.55	0.14	0.01	0.10
3400	55.30	52.31	46.07	0.28	0.49	0.53	0.03	0.22	0.27
3500	50.37	51.63	52.71	0.26	0.47	0.54	0.17	0.02	0.09
3600	47.83	50.73	53.20	0.23	0.49	0.48	0.11	0.09	0.22
3700	50.66	54.88	52.45	0.18	0.40	0.43	0.15	0.04	0.20
3800	53.38	50.98	55.83	0.13	0.34	0.39	0.03	0.13	0.19
4000	45.93	45.03	54.12	0.13	0.35	0.41	0.07	0.18	0.28

Typical Performance Data

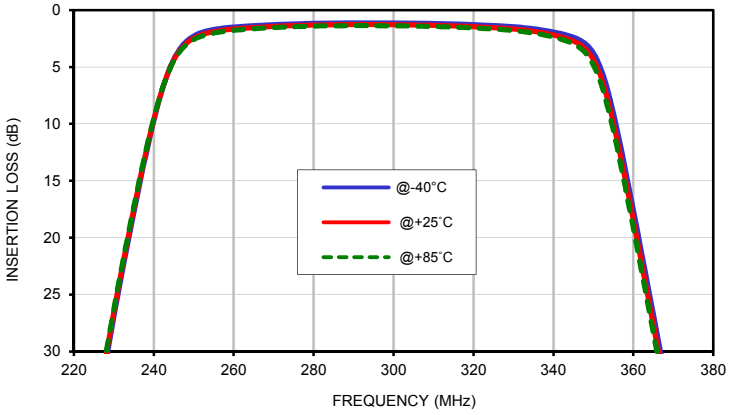
FREQ. (MHz)	GROUP DELAY (nsec)		
	@-40°C	@+25°C	@+85°C
260	17.24	17.09	16.99
262	16.36	16.23	16.15
264	15.62	15.53	15.45
266	15.02	14.94	14.88
268	14.49	14.44	14.38
270	14.06	14.01	13.97
272	13.67	13.64	13.60
274	13.35	13.31	13.29
276	13.07	13.05	13.02
278	12.84	12.82	12.80
280	12.62	12.60	12.59
282	12.44	12.43	12.41
284	12.28	12.26	12.24
286	12.14	12.13	12.12
288	12.02	12.01	12.01
290	11.92	11.92	11.92
292	11.85	11.85	11.85
294	11.79	11.79	11.80
296	11.77	11.77	11.77
298	11.76	11.76	11.77
300	11.77	11.78	11.80
302	11.80	11.81	11.82
304	11.86	11.88	11.89
306	11.93	11.95	11.96
308	12.02	12.04	12.06
310	12.13	12.16	12.18
311	12.18	12.21	12.24
312	12.26	12.30	12.32
313	12.33	12.37	12.39
314	12.42	12.46	12.48
315	12.52	12.55	12.58
316	12.62	12.65	12.69
317	12.71	12.75	12.78
318	12.82	12.87	12.90
319	12.96	13.00	13.04
320	13.08	13.14	13.18
321	13.21	13.27	13.32
322	13.37	13.43	13.49
323	13.53	13.61	13.65
324	13.72	13.79	13.85
325	13.90	13.98	14.04
326	14.13	14.22	14.28
327	14.34	14.42	14.49
328	14.59	14.68	14.75
329	14.85	14.95	15.03
330	15.12	15.24	15.33
334	16.44	16.59	16.70
336	17.24	17.41	17.55
338	18.21	18.41	18.56
339	18.75	18.98	19.16
340	19.39	19.63	19.83

Typical Performance Curves

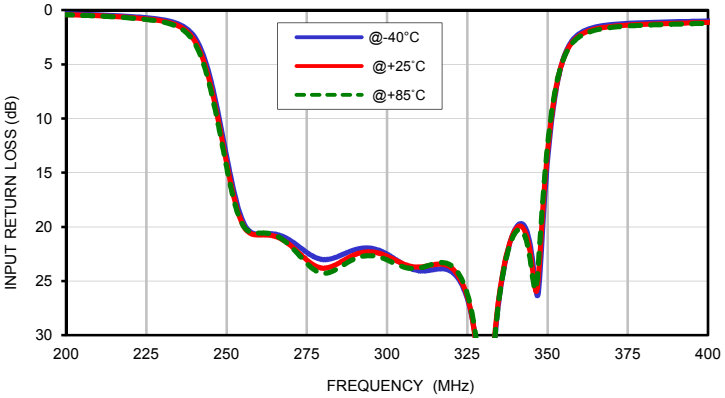
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



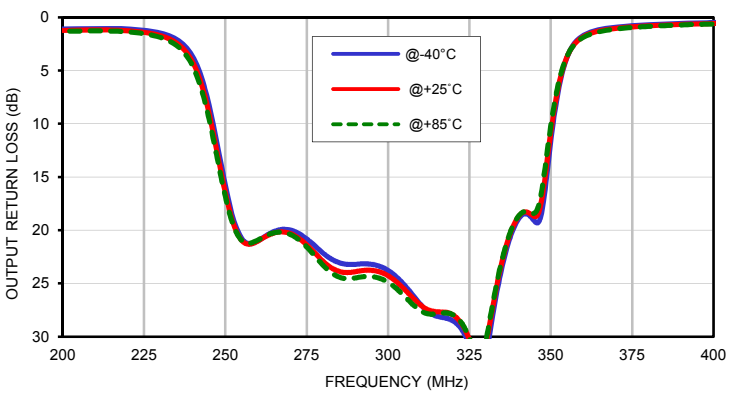
INSERTION LOSS vs. TEMPERATURE (Zoomed)
INPUT POWER = 0 dBm



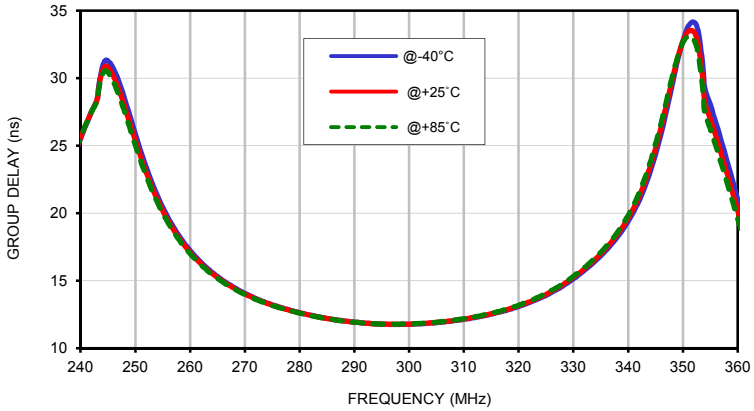
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



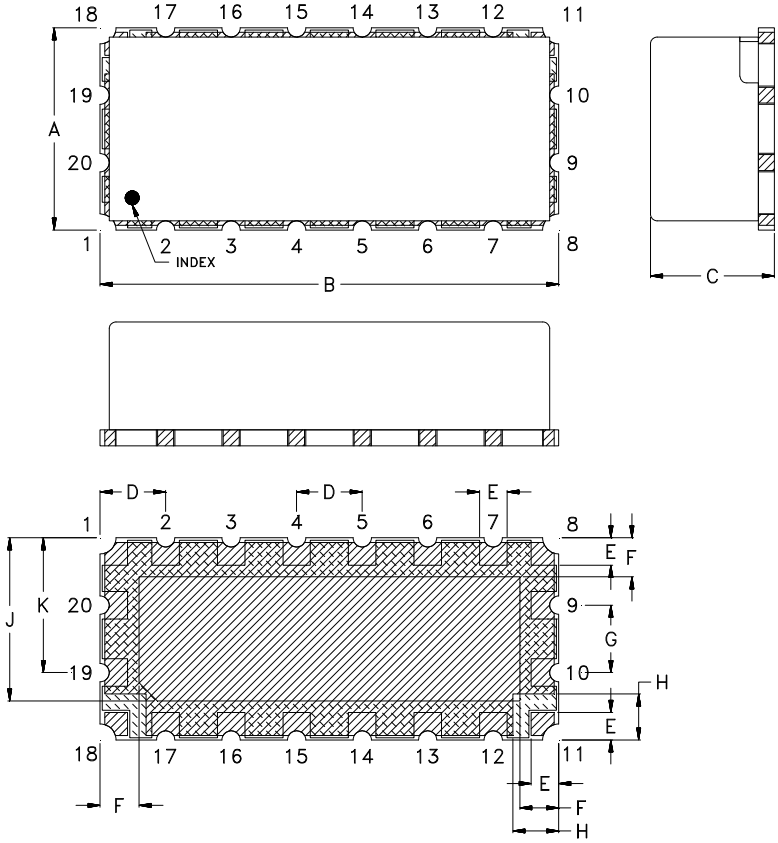
GROUP DELAY vs. TEMPERATURE
INPUT POWER = 0 dBm

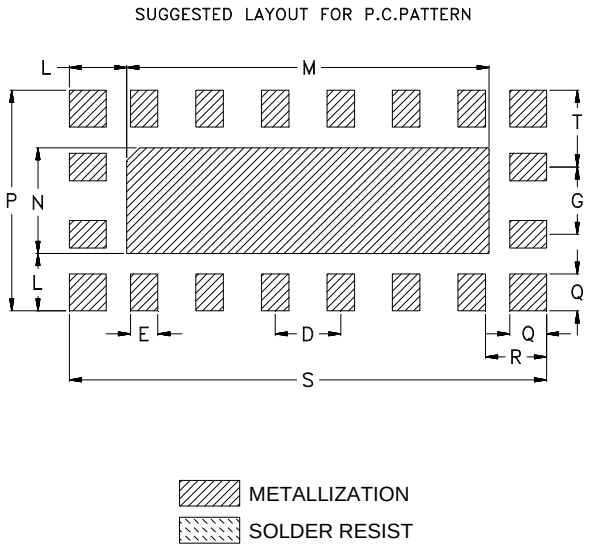


Case Style TS

TS2825

Outline Dimensions





CASE#	A	B	C	D	E	F	G	H	J	K	L	M
TS2825	.440 (11.18)	1.000 (25.40)	.270 (6.86)	.143 (3.63)	.060 (1.52)	.085 (2.16)	.147 (3.73)	.100 (2.54)	.355 (9.02)	.293 (7.45)	.125 (3.18)	.790 (20.07)

CASE#	N	P	Q	R	S	T	WT. GRAMS
TS2825	.230 (5.84)	.480 (12.19)	.080 (2.03)	.133 (3.37)	1.040 (26.42)	.167 (4.23)	2

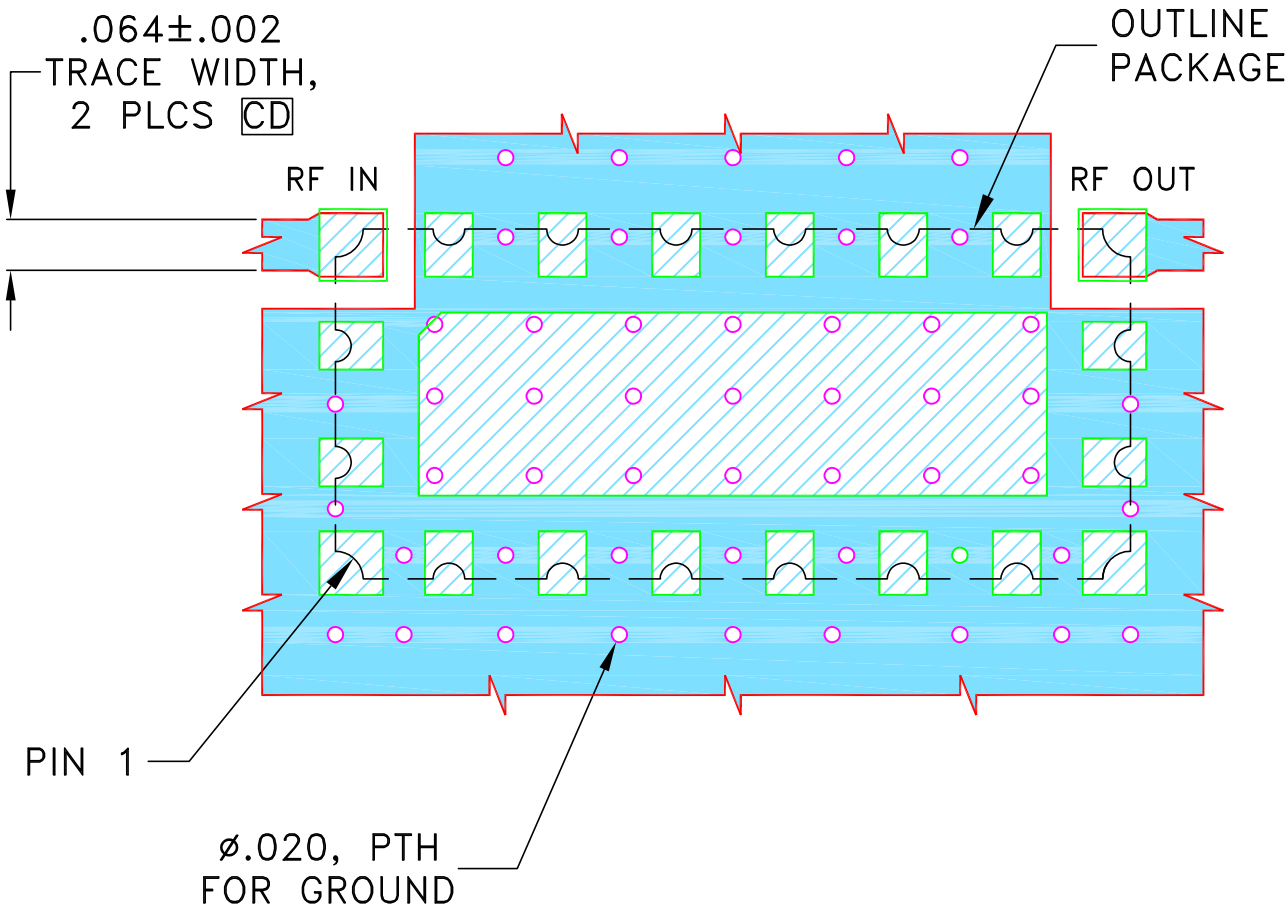
Dimensions are in inches (mm). Tolerances: 2 Pl. ± .03; 3 Pl. ± .015

1. Case material: Nickel-Silver alloy.
2. Base: Printed wiring laminate.
3. Termination finish:
   For RoHS Case Styles: 3-5 µ inch Gold over 120-240 µ inch Nickel plate.
   For RoHS-5 Case Styles: Tin-Lead plate.

THIRD ANGLE PROJECTION

REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M174597	NEW RELEASE	JUN 19	ES	VC

SUGGESTED MOUNTING CONFIGURATION FOR TS2825 CASE STYLE



NOTES:

1. TRACE WIDTH IS SHOWN FOR ROGERS (RO4350B) WITH DIELECTRIC THICKNESS .030"±.002". 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

UNLESS OTHERWISE SPECIFIED		INITIALS	DATE
DIMENSIONS ARE IN INCHES	DRAWN	ES	14 JUN 19
TOLERANCES ON:	CHECKED	TM	14 JUN 19
2 PL DECIMALS ±	APPROVED	KKK	14 JUN 19
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

ASHEETA1.DWG REV:A DATE:01/12/95

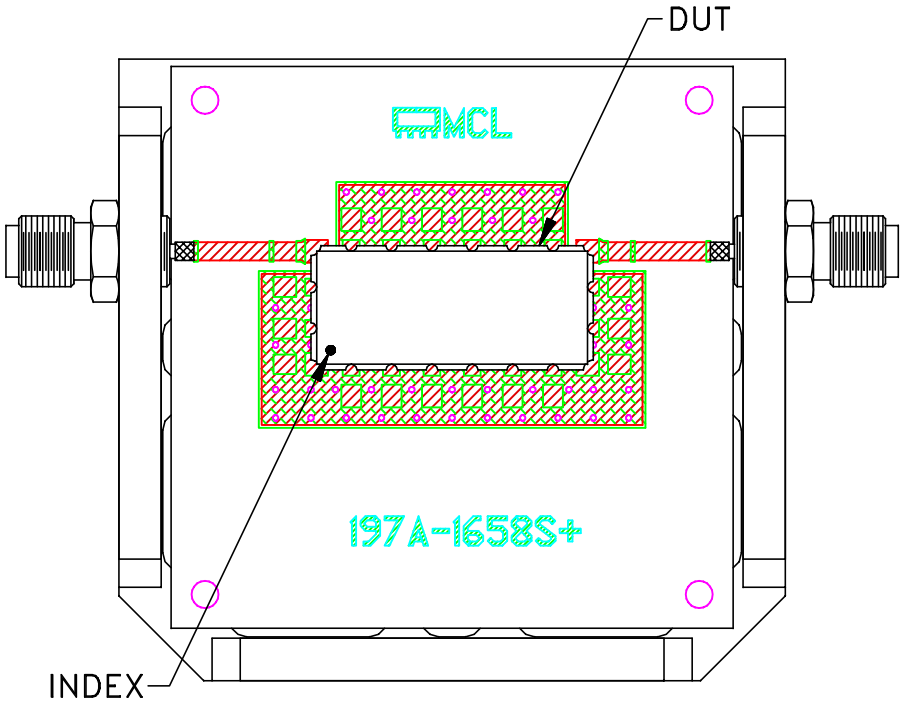
Mini-Circuits®
13 Neptune Avenue
Brooklyn NY 11235

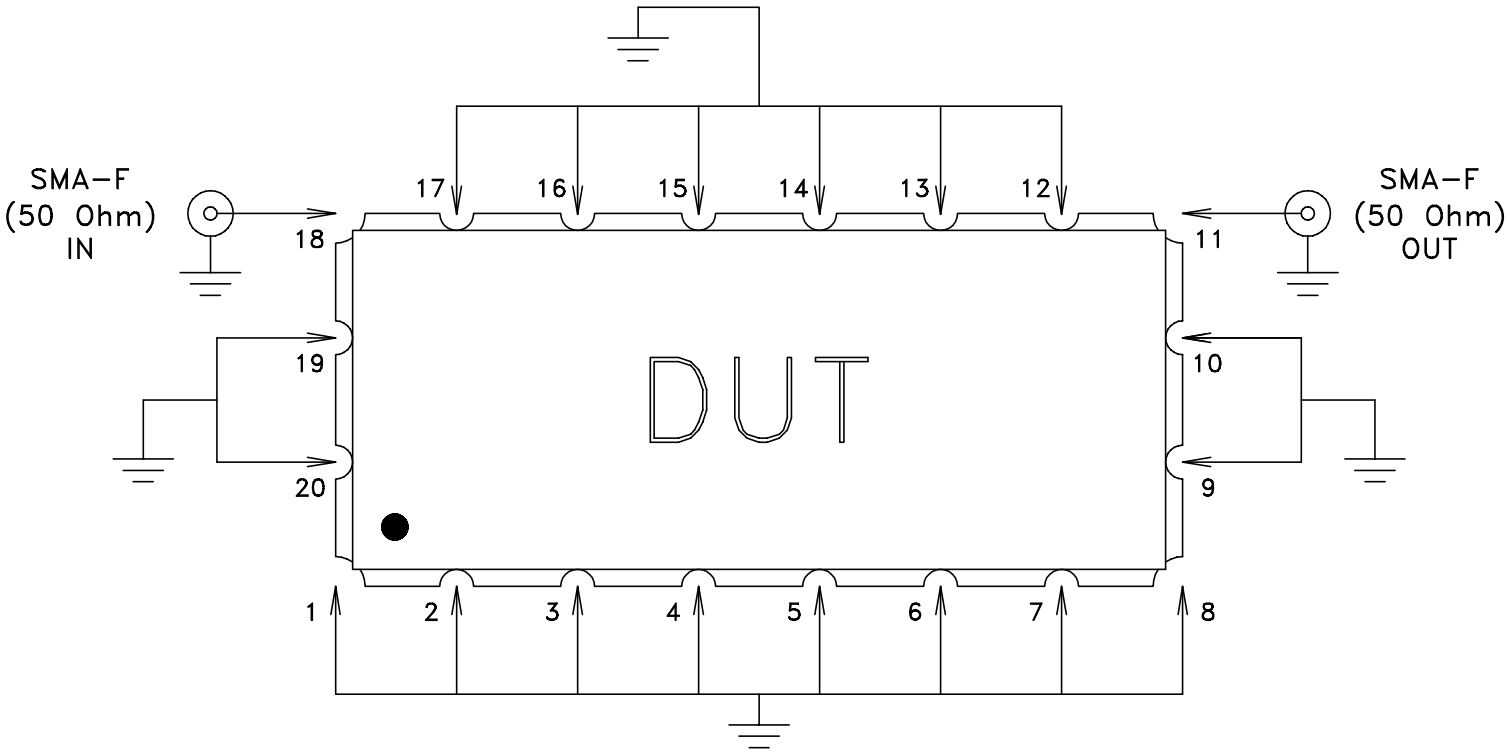
PL, TS2825, BPF, TB-1097+, 50 Ohm

SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-639	OR
FILE: 98PL639	SCALE: 3.5:1	SHEET: 1 OF 1	

Evaluation Board and Circuit

TB-1097+





Schematic Diagram

Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: Rogers (RO4350B) OR Equivalent
   Dielectric Constant=3.48±.05, Thickness=.030 inch.

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Environmental Specifications ENV12

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	-65° to 150° C Ambient Environment	Individual Model Data Sheet
Autoclave	15 psig, 100% RH, 121°C, 96 hours	JESD22-A102-C, Condition C
Temperature Cycling	-65° to 150°C, 100 cycles	JESD22-A104
Temperature Humidity	85°C/ 85% RH, 168 hours	JESD22-113
Solder Reflow Heat	Sn-Pb Eutetic Process: 240°C peak Pb-Free Process: 260°C peak	J-STD-020, Table 4-1, 4-2 and 5-2; Figure 5-1
Moisture Sensitivity: Level 1	Bake at 125°C for 24 hours Soak at 85°C/85% RH for 168 hours, Reflow 3 cycles at 240°C peak (Non-RoHS) or 260°C (RoHS)	J-STD-020
Solderability	10X magnification, 95% coverage	JESD22-B102, Method 1: Dip and Look Test
Mechanical Shock	50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, Condition A
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