Surface Mount

Bandpass Filter

BPF-BC300+

50Ω 290 to 310 MHz

Generic photo used for illustration purposes only

CASE STYLE: TS2825

The Big Deal

- Narrow bandwidth
- High Rejection
- Miniature shielded package

Product Overview

BPF-BC300+ is a 50Ω bandpass filter in a shielded package fabricated using SMT technology. This bandpass filter covers from 290 to 310 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-BC300+ to used in compact design

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50Ω 290 to 310 MHz

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CASE STYLE: TS2825

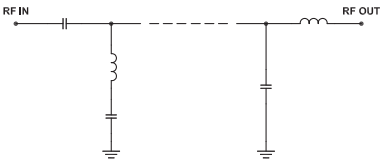
Features

- Narrow bandwidth
- High rejection
- Miniature shielded package

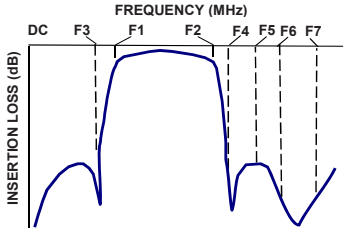
Applications

- 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

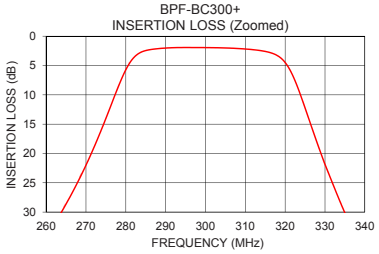
Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Center Frequency	—	—	—	300	—	MHz
	Insertion Loss	F1-F2	290 - 310	—	2.2	3.0	dB
	VSWR	F1-F2	290 - 310	—	1.4	1.57	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC - 240	40	50	—	dB
	VSWR	DC-F3	DC - 240	—	20	—	:1
Stop Band, Upper	Insertion Loss	F4-F5	350 - 1000	40	45	—	dB
		F5-F6	1000 - 3000	30	40	—	dB
		F6-F7	3000 - 4000	20	25	—	dB
	VSWR	F4-F7	350 - 4000	—	20	—	:1

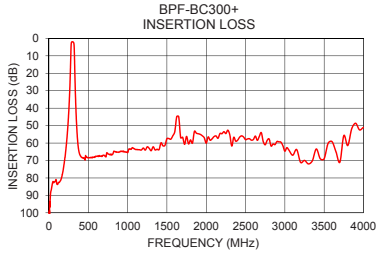
Maximum Ratings	
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	0.5 W

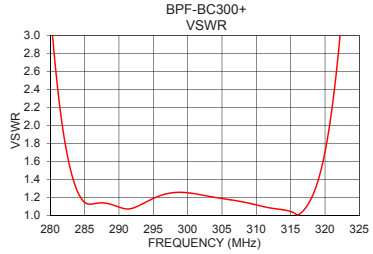
Permanent damage may occur if any of these limits are exceeded.

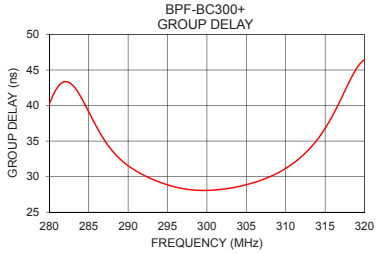
Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (nsec)
1	106.97	353.00	290	31.52
10	96.68	347.32	291	30.80
100	83.47	183.51	292	30.19
240	50.46	68.80	293	29.67
264	29.82	35.32	294	29.22
270	22.00	23.10	295	28.85
282	3.65	1.88	296	28.53
290	2.02	1.09	297	28.30
300	1.95	1.25	298	28.14
310	2.18	1.12	299	28.07
318	3.29	1.19	300	28.06
325	12.24	6.08	301	28.11
335	30.14	21.35	302	28.23
350	48.25	41.49	303	28.39
500	68.44	98.08	304	28.60
1000	65.53	154.18	305	28.86
1650	44.89	118.38	306	29.17
1700	56.67	275.53	307	29.54
3000	64.64	149.24	308	29.99
4000	51.06	73.35	310	31.16









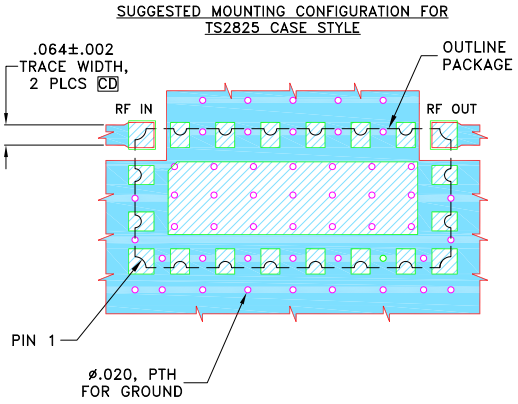
Notes

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)



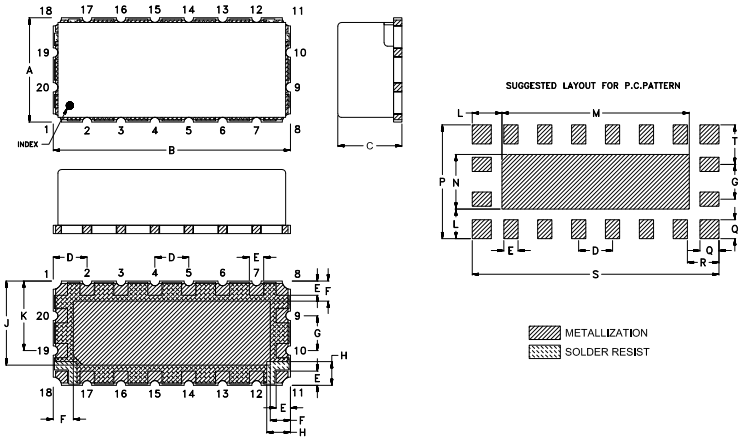
NOTES:

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-BC300+

Typical Performance Data

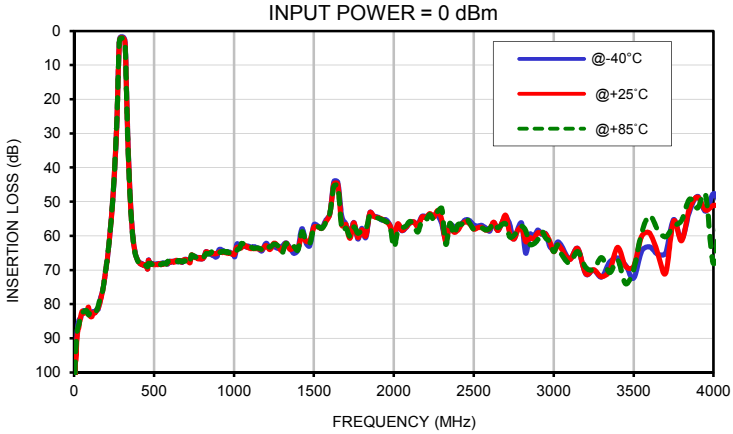
FREQ.	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
(MHz)	(dB)			(dB)			(dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
1	98.75	106.97	108.94	0.05	0.05	0.05	0.05	0.05	0.05
10	94.74	96.68	93.51	0.05	0.05	0.05	0.05	0.05	0.05
50	82.77	82.09	82.57	0.03	0.06	0.05	0.04	0.06	0.05
100	82.31	83.47	82.51	0.05	0.09	0.07	0.06	0.10	0.08
110	82.64	83.72	81.77	0.06	0.11	0.09	0.07	0.11	0.10
120	82.20	82.60	82.04	0.07	0.12	0.10	0.08	0.12	0.11
130	82.56	82.59	82.32	0.08	0.13	0.11	0.08	0.13	0.12
140	81.62	81.95	81.95	0.08	0.13	0.12	0.09	0.14	0.13
150	81.56	81.21	80.65	0.09	0.14	0.12	0.10	0.14	0.14
160	79.52	79.87	78.88	0.10	0.15	0.13	0.10	0.15	0.14
170	77.55	77.94	78.23	0.10	0.15	0.13	0.11	0.16	0.15
180	75.67	75.65	75.57	0.11	0.16	0.14	0.12	0.17	0.16
190	72.59	72.59	72.79	0.12	0.17	0.15	0.13	0.17	0.17
200	69.52	69.32	69.44	0.13	0.18	0.16	0.13	0.18	0.17
220	61.44	61.47	61.37	0.16	0.20	0.19	0.16	0.20	0.20
240	50.51	50.46	50.36	0.20	0.25	0.24	0.21	0.26	0.26
250	43.39	43.27	43.11	0.25	0.30	0.30	0.26	0.32	0.33
260	34.40	34.22	34.01	0.34	0.41	0.42	0.37	0.44	0.46
264	30.03	29.82	29.58	0.42	0.49	0.51	0.46	0.54	0.57
270	22.28	22.00	21.70	0.64	0.75	0.81	0.71	0.84	0.90
272	19.28	18.98	18.66	0.80	0.93	1.01	0.88	1.03	1.13
275	14.34	14.02	13.68	1.25	1.47	1.62	1.38	1.62	1.79
280	5.83	5.73	5.57	4.66	5.39	6.03	4.96	5.76	6.47
282	3.56	3.65	3.66	9.14	10.30	11.35	9.69	11.00	12.23
286	2.06	2.30	2.44	25.09	24.59	24.00	27.97	26.93	25.76
290	1.79	2.02	2.15	26.20	27.18	27.80	27.40	28.99	29.68
295	1.69	1.93	2.07	22.30	21.33	20.69	23.35	22.43	21.83
300	1.71	1.95	2.08	19.14	19.04	18.96	20.72	20.96	21.09
305	1.76	2.01	2.15	21.26	21.35	21.51	23.36	23.86	24.13
310	1.91	2.18	2.35	24.64	25.25	26.01	21.98	22.23	22.34
315	2.25	2.60	2.82	31.07	33.74	37.72	22.50	22.27	22.23
320	3.85	4.49	4.99	12.37	11.66	10.97	10.27	9.61	8.99
325	11.32	12.24	12.95	2.78	2.88	2.87	2.33	2.38	2.37
328	17.29	18.13	18.77	1.52	1.66	1.69	1.27	1.38	1.41
330	21.07	21.85	22.44	1.14	1.28	1.31	0.97	1.08	1.11
335	29.48	30.14	30.63	0.69	0.81	0.83	0.61	0.71	0.73
340	36.58	37.14	37.56	0.50	0.61	0.61	0.45	0.54	0.55
350	47.70	48.25	48.47	0.33	0.42	0.41	0.31	0.38	0.38
400	67.36	67.38	67.51	0.17	0.23	0.22	0.15	0.21	0.21
450	68.79	68.81	68.70	0.13	0.19	0.19	0.12	0.18	0.18
500	68.24	68.44	68.23	0.12	0.18	0.18	0.11	0.17	0.17
600	67.42	67.69	67.75	0.09	0.16	0.17	0.08	0.16	0.15
800	66.62	66.76	66.37	0.04	0.14	0.13	0.05	0.13	0.12
1000	65.73	65.53	65.06	0.00	0.11	0.10	0.00	0.10	0.11
1200	62.21	62.86	62.75	0.05	0.07	0.07	0.03	0.07	0.08
1400	64.05	63.76	64.13	0.09	0.04	0.05	0.06	0.06	0.06
1600	53.57	53.52	53.30	0.09	0.05	0.07	0.05	0.09	0.11
1650	44.42	44.89	45.38	0.02	0.15	0.18	0.16	0.34	0.39
1700	56.50	56.67	57.72	0.08	0.06	0.07	0.05	0.09	0.10
2000	60.60	60.04	63.40	0.10	0.06	0.07	0.09	0.06	0.09
2400	57.54	58.33	56.75	0.08	0.09	0.11	0.07	0.10	0.12
2600	58.60	57.95	57.80	0.06	0.12	0.13	0.02	0.14	0.16
2800	56.41	57.69	57.20	0.06	0.12	0.12	0.02	0.15	0.16
3000	64.00	64.64	64.60	0.06	0.12	0.13	0.02	0.19	0.20
3200	71.16	71.06	69.23	0.07	0.11	0.11	0.04	0.23	0.25
3400	66.46	63.40	67.12	0.07	0.12	0.12	0.17	0.39	0.43
3500	72.43	68.97	69.87	0.05	0.15	0.15	0.29	0.56	0.63
3600	63.23	59.18	54.06	0.01	0.20	0.22	0.75	1.14	1.34
3800	61.05	61.43	55.50	0.65	0.83	0.83	3.98	4.48	4.78
4000	47.62	51.06	68.17	0.02	0.24	0.27	0.93	1.12	1.17

Typical Performance Data

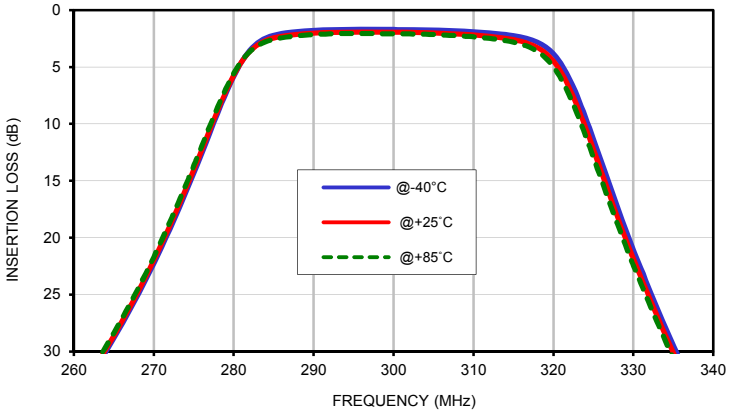
FREQ.	GROUP DELAY		
	(nsec)		
(MHz)	@-40°C	@+25°C	@+85°C
280	39.62	40.20	40.69
281	42.39	42.49	42.57
282	43.74	43.36	43.04
283	43.55	42.80	42.21
284	42.14	41.22	40.49
285	40.01	39.12	38.41
286	37.74	36.99	36.38
287	35.71	35.13	34.65
288	34.05	33.62	33.26
289	32.76	32.45	32.18
290	31.77	31.52	31.33
291	30.99	30.80	30.63
292	30.35	30.19	30.05
293	29.81	29.67	29.55
294	29.35	29.22	29.12
295	28.95	28.85	28.76
296	28.61	28.53	28.47
297	28.35	28.30	28.25
298	28.17	28.14	28.12
299	28.07	28.07	28.06
300	28.03	28.06	28.08
301	28.07	28.11	28.15
302	28.17	28.23	28.28
303	28.31	28.39	28.46
304	28.51	28.60	28.68
305	28.76	28.86	28.96
306	29.05	29.17	29.28
307	29.40	29.54	29.67
308	29.82	29.99	30.14
309	30.33	30.51	30.69
310	30.94	31.16	31.37
311	31.65	31.91	32.15
312	32.50	32.81	33.09
313	33.53	33.89	34.22
314	34.77	35.19	35.58
315	36.29	36.78	37.22
316	38.15	38.69	39.16
317	40.35	40.88	41.32
318	42.75	43.19	43.49
319	45.06	45.22	45.25
320	46.71	46.45	46.08

Typical Performance Curves

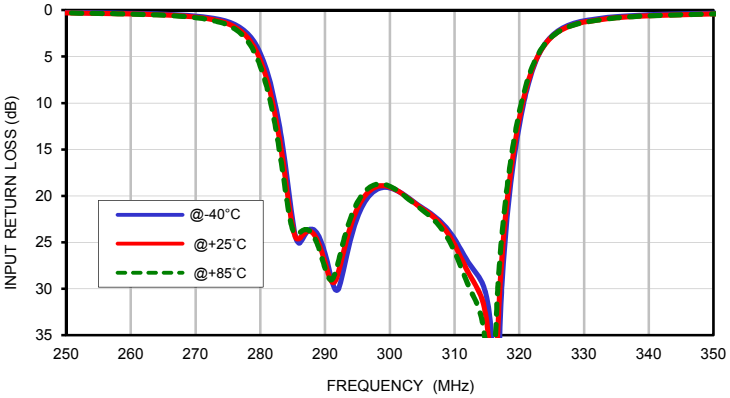
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



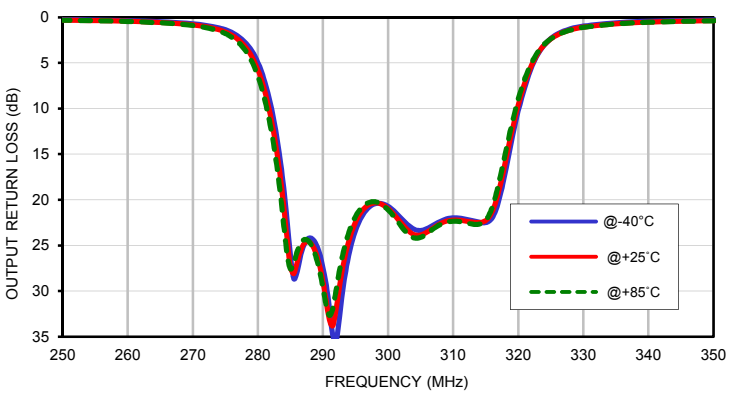
INSERTION LOSS vs. TEMPERATURE (Zoomed)
INPUT POWER = 0 dBm



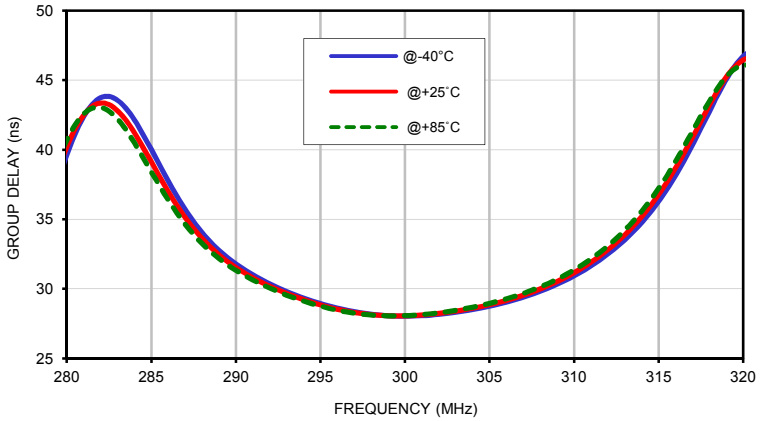
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



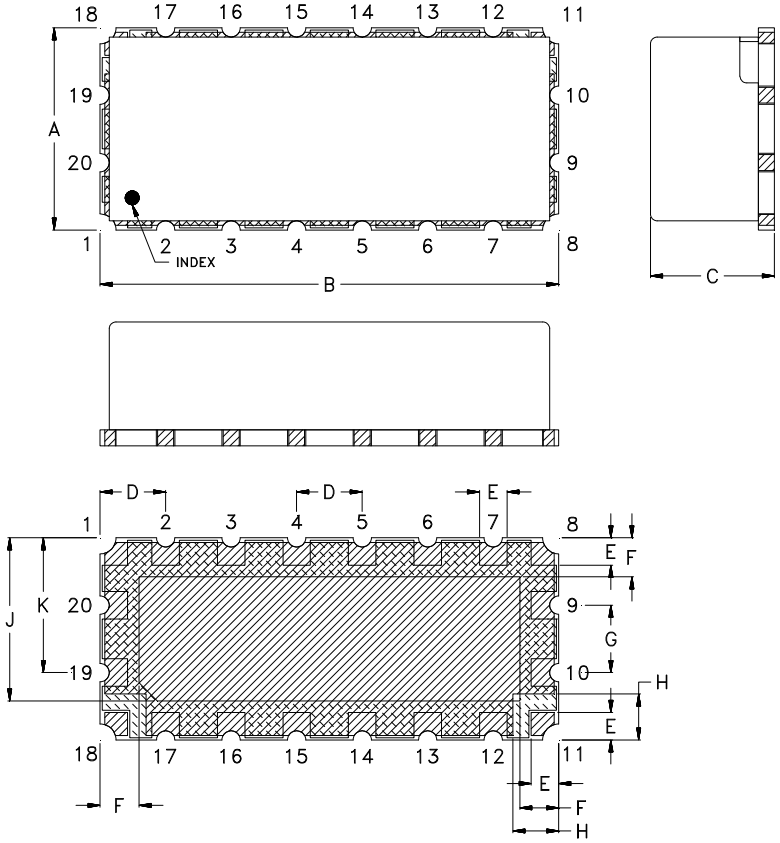
GROUP DELAY vs. TEMPERATURE
INPUT POWER = 0 dBm

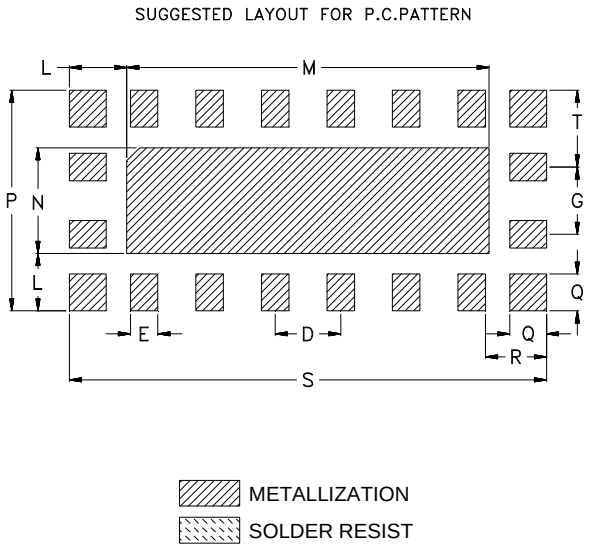


Case Style TS

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

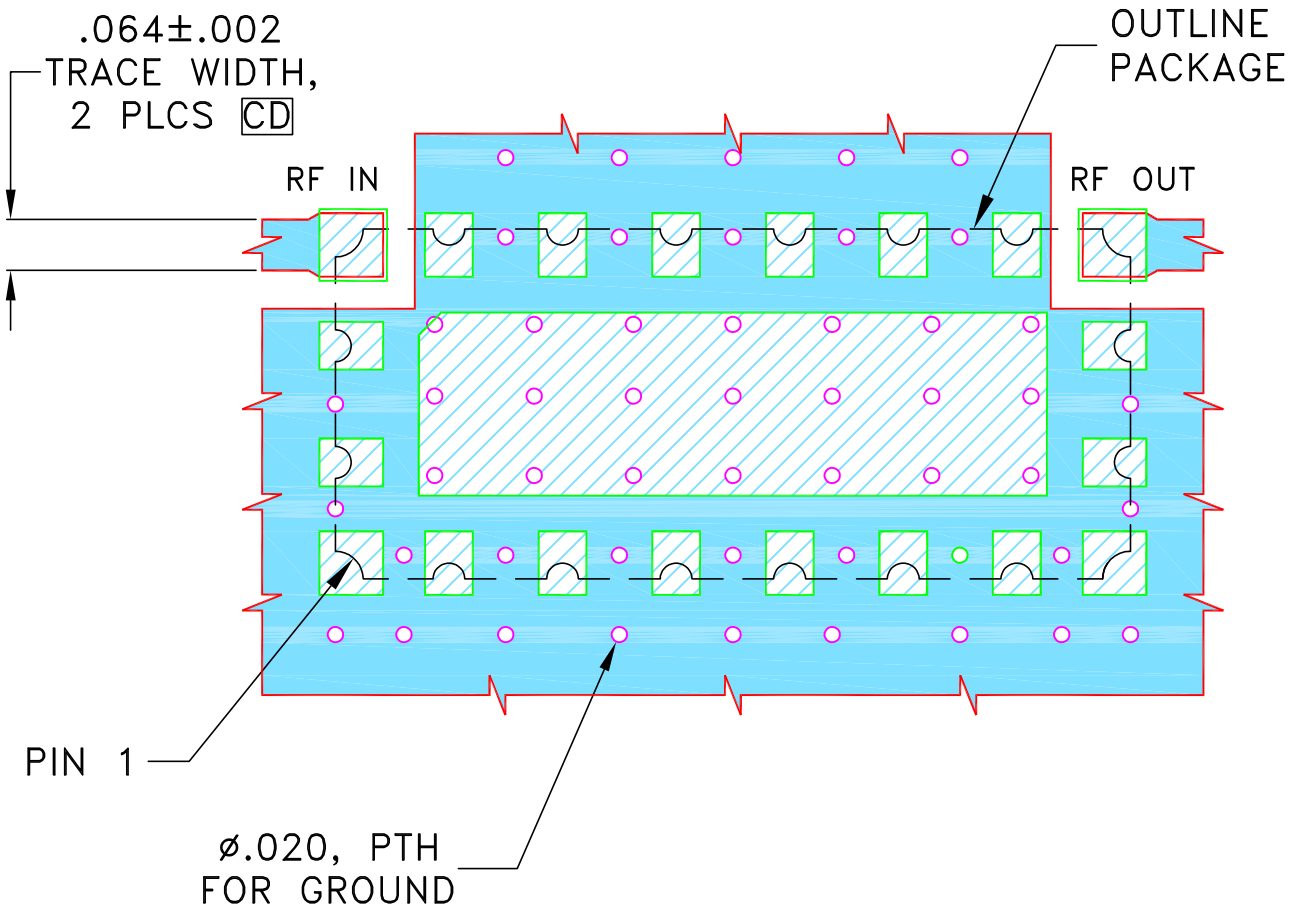
Dimensions are in inches (mm). Tolerances: 2 Pl. ± .03; 3 Pl. ± .015

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	

Mini-Circuits

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