(SIW) SURFACE MOUNT

Bandpass Filter

WSBP-26G+

50Ω 25 to 27 GHz

KEY FEATURES

- Low Midband Insertion loss 1.7dB typ.
- High Rejection 56 dB typ.
- Shielded Construction.

APPLICATIONS

- n258
- 5G Telecommuniccation.

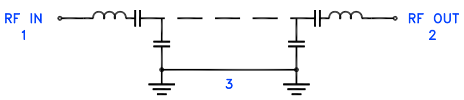


Generic photo used for illustration purposes only

PRODUCT OVERVIEW

Mini-Circuits' Model-WSBP-26G+ is a SIW (Substrate Integrated Waveguide) filter that offer a good insertion loss and high rejection, realized in a soft substrate using tight tolerance that can guarantee a enhanced Q and repeatable performance. Band pass surface mount SIW design can be realized with this technology. Using SIW, we can guarantee repeatability on large batches of filters.

FUNCTIONAL DIAGRAM



ELECTRICAL SPECIFICATIONS[1,2,3] AT +25°C

Parameter		F#	Frequency (GHz)	Min.	Typ.	Max.	Units
Passband	Center Frequency[4]	Fc	26	—	1.7	2.2	GHz
	Insertion Loss	F1-F2	25 - 27	—	2.3	3	dB
	Return Loss	F1-F2	25 - 27	—	12	—	dB
Stop Band, Lower	Rejection	DC-F3	DC - 9	45	56	—	dB
		F3-F4	9 - 21	30	41	—	
		F4-F5	21 - 23	20	42	—	
Stop Band, Upper	Rejection	F6-F7	31 - 32	25	35	—	dB

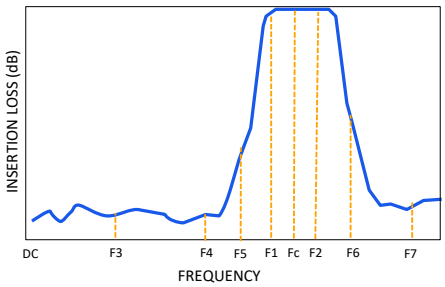
1. Tested in Evaluation Board P/N TB-WSBP-26G+.
2. This filter is bi-directional RF1 and RF2 ports may be interchanged, see S-Parameters for actual performance.
3. This component should not be used as a DC-block. In applications where DC voltage and/or current is present at either the input or output ports, external DC blocking capacitors are required.
4. Typical variation ± 2%

ABSOLUTE MAXIMUM RATINGS[5]

Parameter	Ratings
Operating Temperature	-40 °C to +85 °C
Storage Temperature	-55 °C to +100 °C
Input Power	1W Max. @25 °C

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

TYPICAL FREQUENCY RESPONSE AT +25°C



REV. OR
ECO-020324
WSBP-26G+
EDU4190
URJ
231219

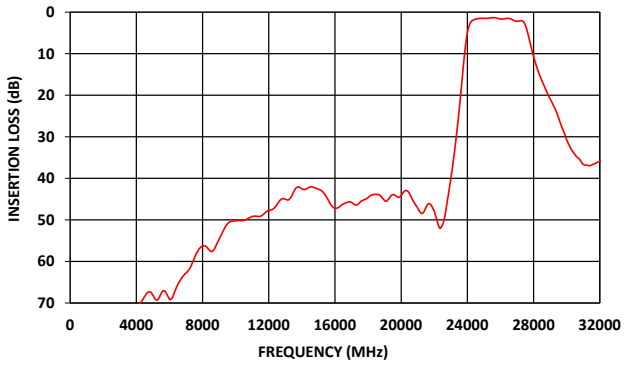
Bandpass Filter

WSBP-26G+

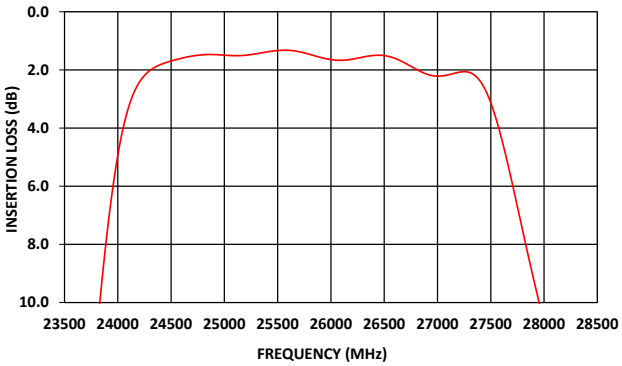
50Ω 25 to 27 GHz

TYPICAL PERFORMANCE GRAPHS AT +25°C

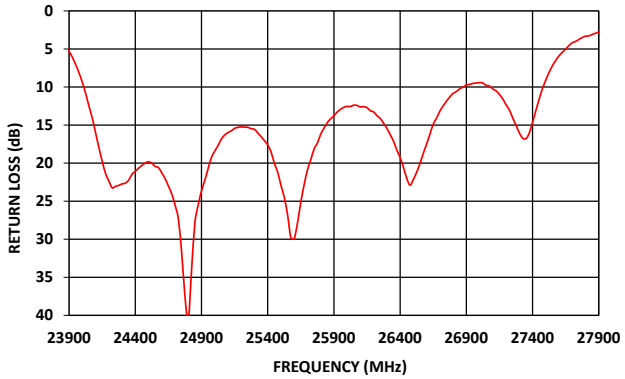
WSBP-26G+
INSERTION LOSS



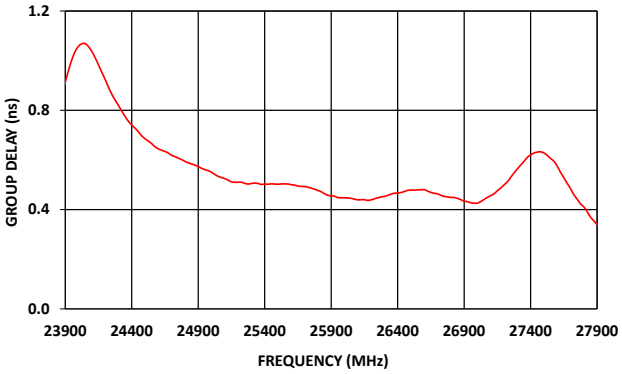
WSBP-26G
INSERTION LOSS (Zoomed)



WSBP-26G+
RETURN LOSS



WSBP-26G+
GROUP DELAY

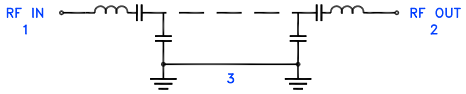


Bandpass Filter

WSBP-26G+

50Ω 25 to 27 GHz

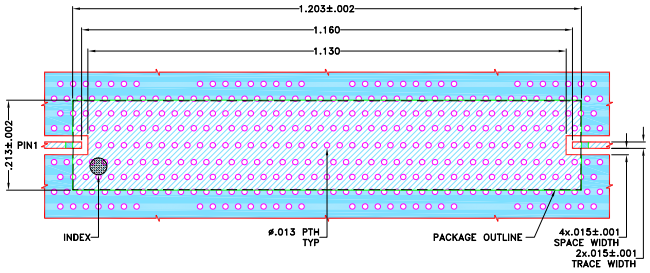
FUNCTIONAL DIAGRAM



PAD DESCRIPTION

Function	Pad Number	Description
RF1[2]	1	Connects to RF Input Port
RF2[2]	2	Connects to RF Output Port
GROUND	3	Connects to Ground on PCB, (See drawing PL-693)

SUGGESTED PCB LAYOUT (PL-693)



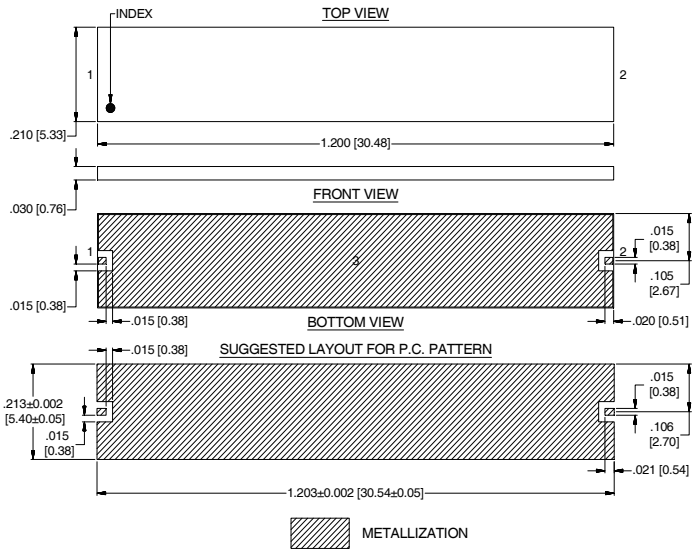
NOTES:

1. COPLANAR WAVEGUIDE PARAMETERS ARE SHOWN FOR ROGERS (RO4350B) WITH DIELECTRIC THICKNESS .0066±.0007; COPPER: 1/2 Oz. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

DENOTES PCB COPPER PATTERN WITH SMOBC (SOLDER MASK OVER BARE COPPER)
DENOTES PCB COPPER PATTERN FREE OF SOLDERMASK

Figure 2. Suggested PCB Layout PL-693

CASE STYLE DRAWING



Weight: 0.35 grams.
Dimensions are in inches (mm). Tolerances: 2Pl. ± .01; 3Pl. ± .005

Bandpass Filter

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50Ω 25 to 27 GHz

ADDITIONAL DETAILED INFORMATION IS AVAILABLE ON OUR DASH BOARD. CLICK HERE

Performance Data and Graphs	Data Graphs S-Parameter (S2P Files) Data Set (.zip file) De-embedded to device pads
Case Style	YR3342 Lead Finish: Gold over Nickel Plate
RoHs Status	Compliant
Tape and Reel	TR-F007
Suggested Layout for PCB Design	PL-693
Evaluation Board	TB-WSBP-26G+
	Gerber File
Environmental Rating	ENV54

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-Circuits' 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/terms/viewterm.html

SIW Bandpass Filter WSBP-26G+

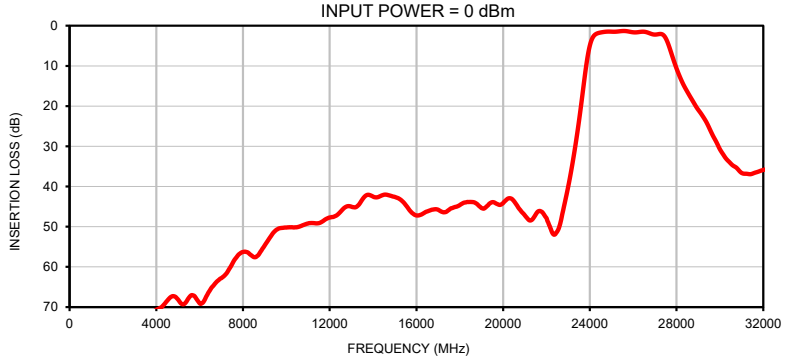
Typical Performance Data

FREQ. (MHz)	Insertion Loss (dB)	Input Return Loss (dB)	Output Return Loss (dB)
10	105.24	0.08	0.11
20	105.34	0.08	0.11
40	105.65	0.09	0.13
100	106.12	0.11	0.15
150	106.51	0.13	0.16
200	106.85	0.15	0.18
300	107.32	0.18	0.21
400	107.15	0.22	0.25
500	105.90	0.26	0.28
600	103.73	0.29	0.31
700	100.84	0.31	0.33
800	98.15	0.33	0.35
900	95.90	0.35	0.37
1000	94.33	0.36	0.39
1500	88.28	0.39	0.42
2000	84.34	0.39	0.42
2500	80.52	0.37	0.40
3000	78.38	0.33	0.36
3500	74.86	0.32	0.35
4000	70.67	0.33	0.36
5000	68.10	0.41	0.46
6000	69.07	0.52	0.57
6500	65.59	0.57	0.62
7400	60.22	0.58	0.66
7500	59.28	0.58	0.67
8000	56.29	0.63	0.73
8500	57.56	0.68	0.79
9000	54.67	0.73	0.84
10000	50.22	0.83	0.93
11000	49.21	0.91	1.02
12000	47.72	1.02	1.13
13000	45.02	1.14	1.24
14000	42.52	1.20	1.32
15000	42.59	1.25	1.39
16000	47.20	1.26	1.36
17000	45.78	1.34	1.43
18000	44.63	1.41	1.54
19000	45.35	1.49	1.71
20000	44.12	1.60	1.83
20500	43.65	1.72	1.93
21000	47.18	1.88	2.12
21500	46.99	2.09	2.28
22000	47.87	2.18	2.32
22500	51.14	2.12	2.17
23000	40.07	1.77	1.97
23500	23.66	1.91	2.09
24000	4.94	9.39	8.90
24500	1.69	19.82	20.92
25000	1.49	18.43	17.42
25500	1.33	22.92	25.88
26000	1.65	12.54	13.94
26500	1.51	22.14	27.07
27000	2.21	9.42	11.32
27500	3.13	9.09	10.26
28000	10.67	2.63	3.88
28500	16.48	2.73	3.89
29000	20.93	3.08	3.55
30000	30.75	2.35	2.43
31000	36.63	1.72	2.25
32000	35.88	1.61	2.48

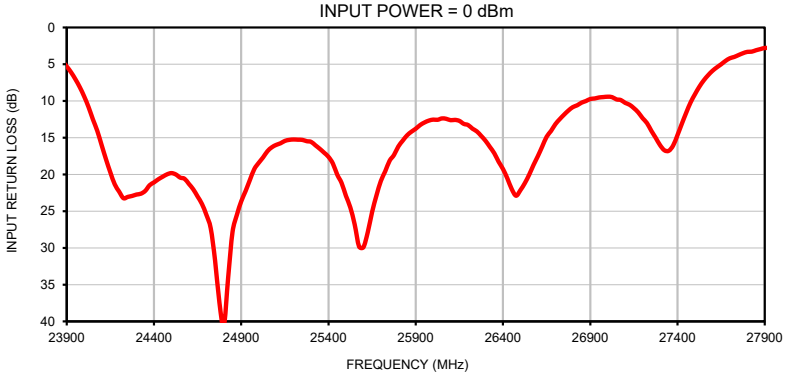
FREQ. (MHz)	Group Delay (ns)
25000	0.55
25050	0.53
25100	0.52
25150	0.51
25200	0.51
25250	0.51
25300	0.51
25350	0.51
25400	0.50
25450	0.50
25500	0.50
25550	0.50
25600	0.50
25650	0.49
25700	0.49
25750	0.49
25750	0.49
25800	0.48
25850	0.46
25900	0.46
25950	0.45
26000	0.45
26050	0.45
26100	0.44
26150	0.44
26200	0.44
26250	0.45
26300	0.45
26350	0.46
26400	0.47
26450	0.47
26500	0.48
26550	0.48
26600	0.48
26650	0.47
26700	0.46
26750	0.45
26800	0.45
26850	0.45
26900	0.43
26950	0.43
27000	0.43

Typical Performance Curves

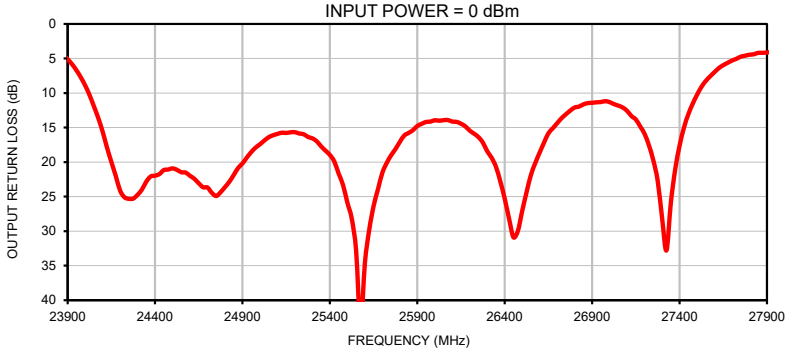
INSERTION LOSS
INPUT POWER = 0 dBm



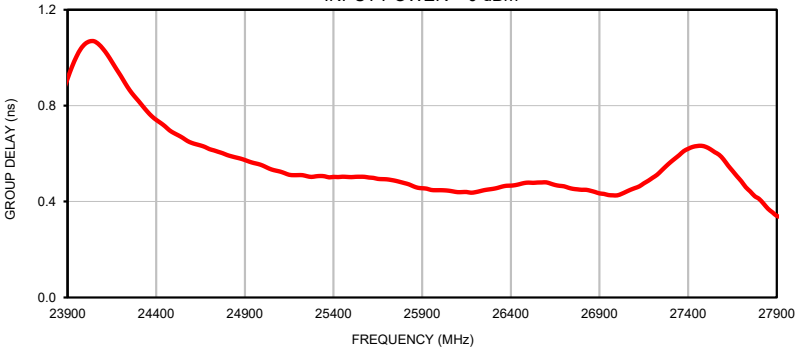
INPUT RETURN LOSS
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS
INPUT POWER = 0 dBm

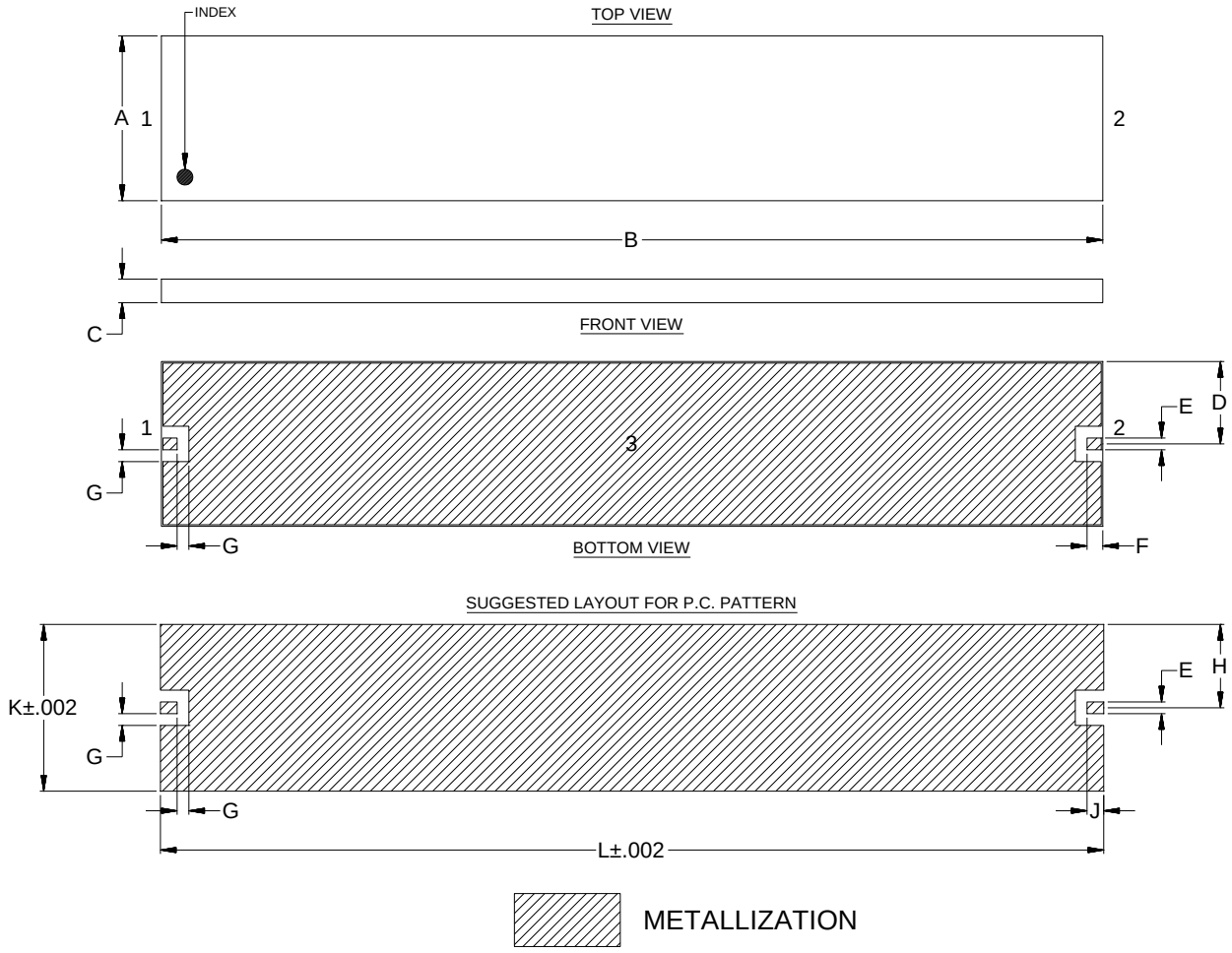


GROUP DELAY
INPUT POWER = 0 dBm



Case Style YR

Outline Dimensions YR3342



CASE#	A	B	C	D	E	F	G	H	J	K	L	WT.GRAM
YR3342	.210 (5.33)	1.200 (30.48)	.030 (0.76)	.105 (2.67)	.015 (0.38)	.020 (0.51)	.015 (0.38)	.106 (2.70)	.021 (0.54)	.213 (5.40)	1.203 (30.54)	0.35

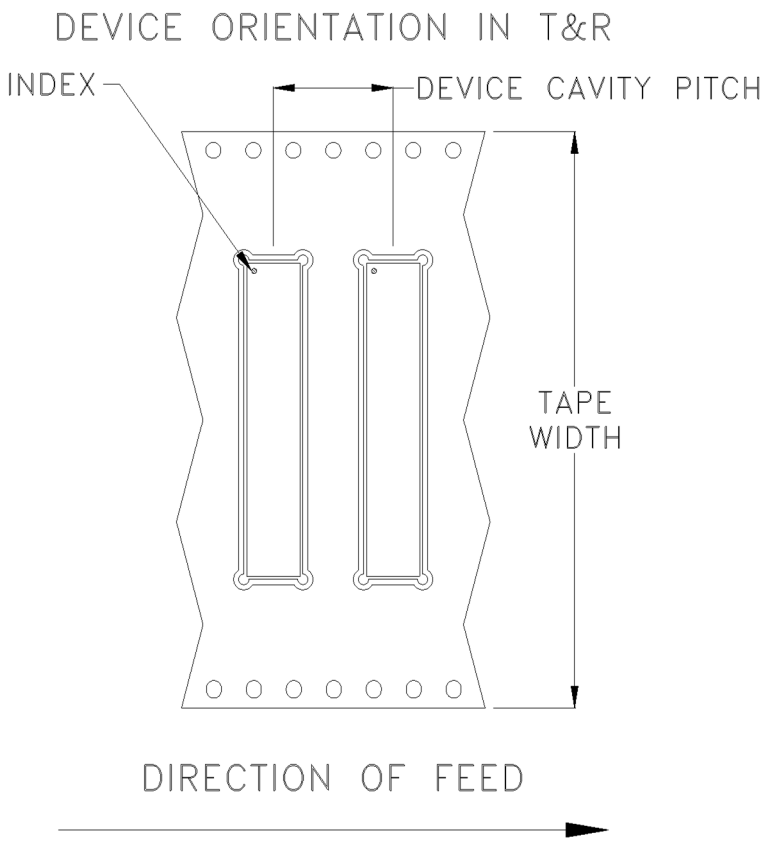
Dimensions are in inches (mm). Tolerances: 2Pl. ± .01; 3Pl. ± .005

Notes:

1. Base: Printed wiring laminate.
2. Termination finish:
   For RoHS Case Styles: 3-5µ inch gold over 120-240µ inch nickel plate.

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Tape & Reel Packaging TR-F007



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel See note	
56	12	13	Small quantity standards	10
				20
				50
			Standard	100

Note: Please consult individual model data sheet/dashboard to determine device per reel availability.

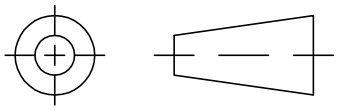
Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

Go to: www.minicircuits.com/pages/pdfs/tape.pdf

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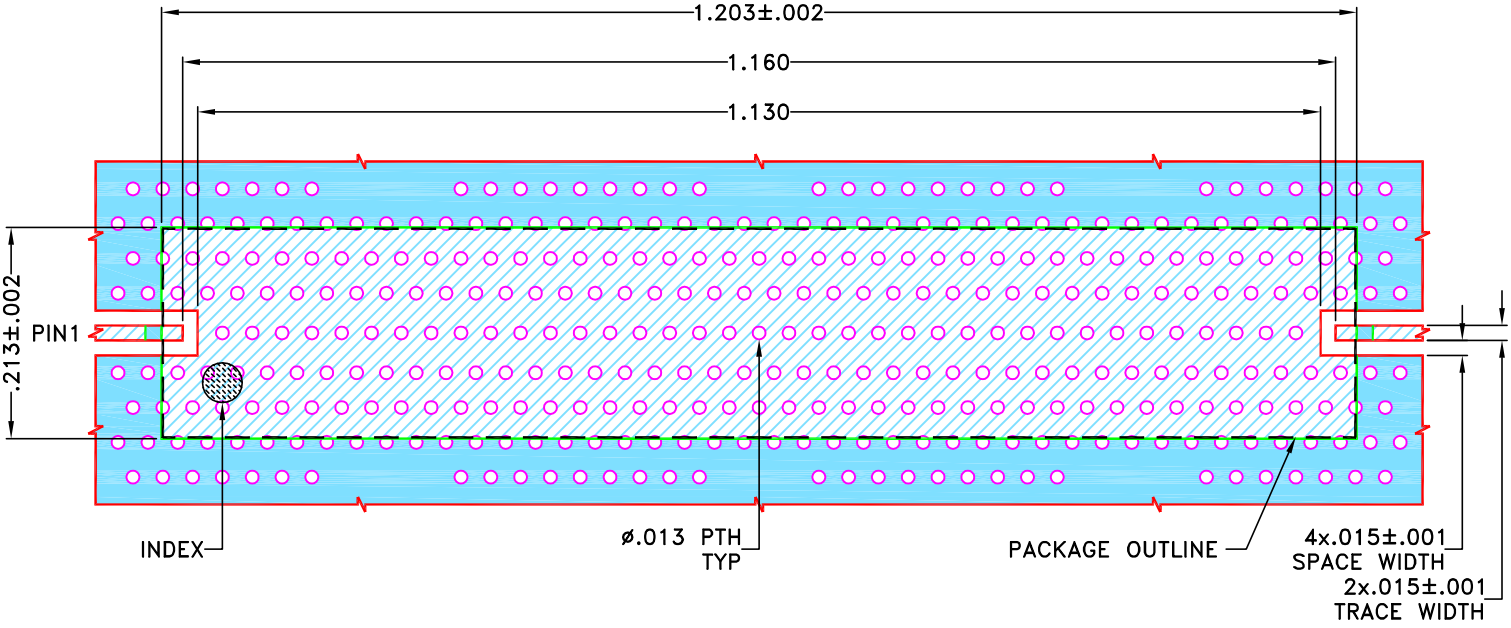
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THIRD ANGLE PROJECTION



REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	NPO-003185	NEW RELEASE	FEB 23	DDR	VC

SUGGESTED MOUNTING CONFIGURATION FOR YR3342 CASE STYLE



NOTES:

1. COPLANAR WAVEGUIDE PARAMETERS ARE SHOWN FOR ROGERS (RO4350B) WITH DIELECTRIC THICKNESS .0066±.0007; COPPER: 1/2 Oz. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

DENOTES PCB COPPER PATTERN WITH SMOBC (SOLDER MASK OVER BARE COPPER)
DENOTES PCB COPPER PATTERN FREE OF SOLDERMASK

UNLESS OTHERWISE SPECIFIED		INITIALS	DATE
DIMENSIONS ARE IN INCHES	DRAWN	DDR	15 FEB 23
TOLERANCES ON:	CHECKED	MD	15 FEB 23
2 PL DECIMALS ±	APPROVED	PTB	15 FEB 23
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

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

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Brooklyn NY 11235

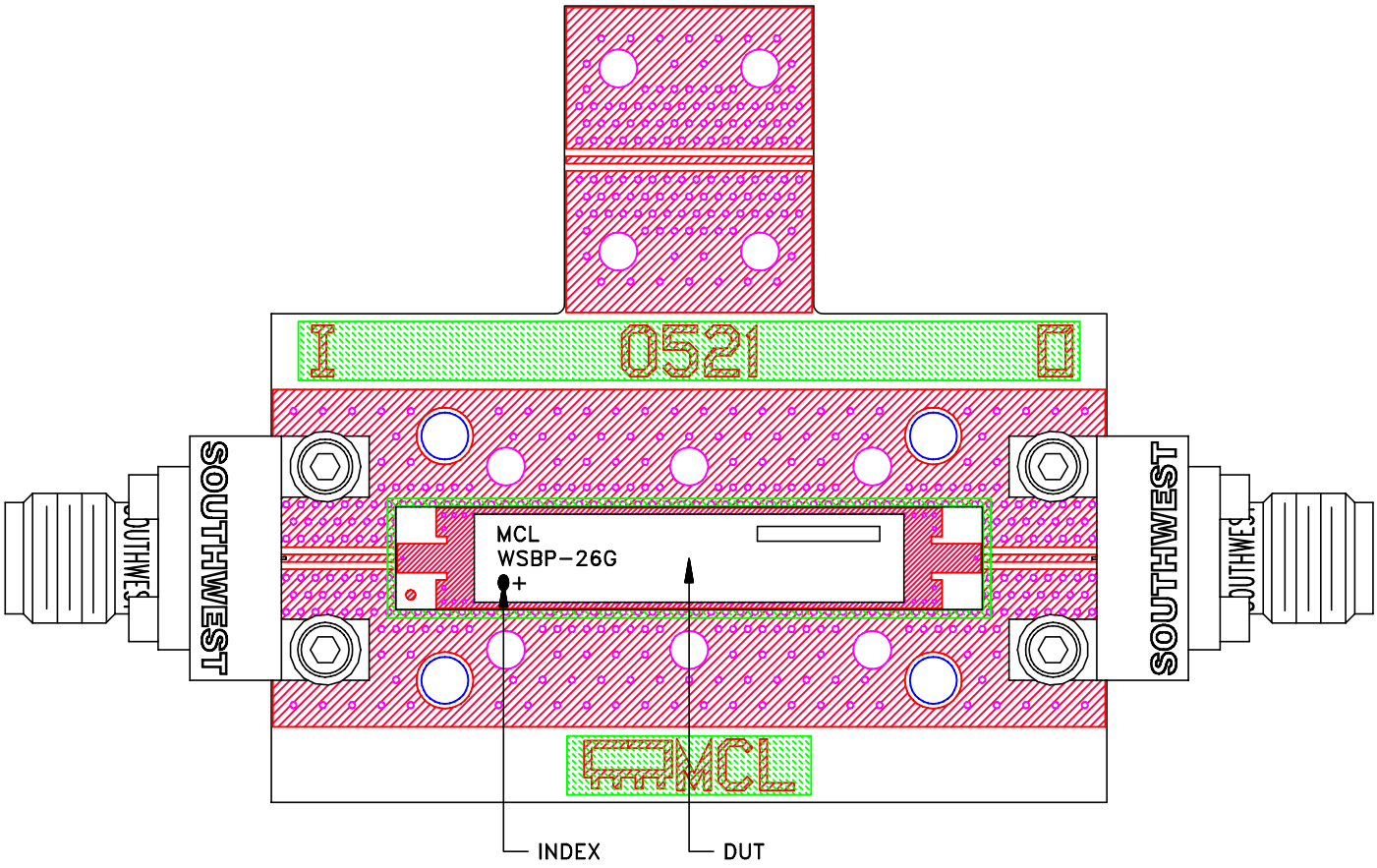
PL DWG YR3342 C.S 50 OHM WSBP

SIZE	CODE IDENT	DRAWING NO:	REV:
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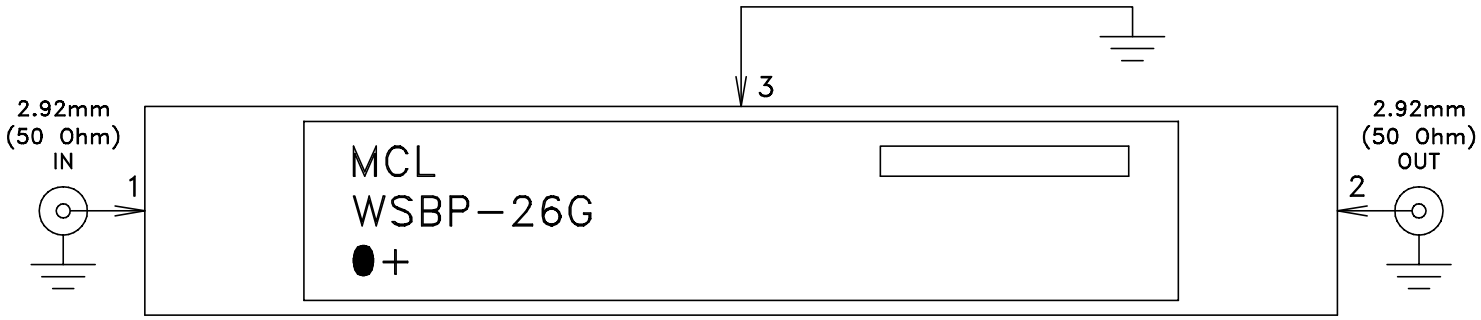
FILE:	SCALE:	SHEET:
98-PL-693	5:1	1 OF 1

Evaluation Board and Circuit

TB-WSBP-26G+



Schematic diagram



Notes:

1. PCB Material: ROGERS (RO4350B) OR Equivalent, Dielectric Constant=3.48±.05
Dielectric Thickness: .0066±.0007
2. 50 Ohm 2.92mm Female Connectors.

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Environmental Specifications ENV54

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, 96 hours, 40°C	MIL-STD-202, Method 103B, Condition B, Except 50°C
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
Solder Reflow Heat	Sn-Pb Eutectic Process: 225°C peak Pb-Free Process, 245°C peak	J-STD-020, Table 4-1, 4-2 and 5-2, Figure 5-1
Solderability	10X Magnification	J-STD-002, Para 4.2.5, Test S, 95% Coverage
Vibration (High Frequency)	20g peak, 10-2000 Hz, 4 times in each of three axes (total 12)	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

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