

Ceramic

# Bandpass Filter

**BFHK-2582+**

50Ω 24.25 to 27.50 GHz

## The Big Deal

- 5G n258 bandpass filter
- Low Insertion Loss – Mid band 2.0dB typical
- Pick and place standard case style
- Small size 4.5mm x 3.2mm
- High quality distributed filter topology



CASE STYLE: NM1812C-2

## Product Overview

The BFHK-2582+ LTCC Bandpass Filter covers the 5G n258 band. This corresponds to a passband of 24.25 to 27.5 GHz, with as low as 2dB passband loss, and up to 58dB stopband rejection. This model handles up to 1W RF input power and provides a wide operating temperature range from -55 to +125°C. Utilizing a proprietary LTCC material system and a distributed filter topology, this filter is able to achieve repeatable performance on a lot to lot basis, up to mmWave frequencies.

## Key Features

Feature	Advantages
5G n258 band	Designed for 5G Telecommunications, n258 band, 24.25 - 27.50 GHz
Proprietary mmWave compatible LTCC material system	Low loss and repeatable performance on a lot to lot basis up to mmWave frequencies.
Cost effective	LTCC is scalable technology that is cost effective due to ease of production in high quantities.
Small size (4.5mm x 3.2mm)	Allows for high layout density of circuit boards, while minimizing effects of parasitics.



# Ceramic Bandpass Filter

50Ω 24.25 to 27.50 GHz

## Features

- Small size
- Temperature stable
- Hermetically sealed
- LTCC construction

## Applications

- 5G Telecommunications

# BFHK-2582+



Generic photo used for illustration purposes only

CASE STYLE: NM1812C-2

**+RoHS Compliant**

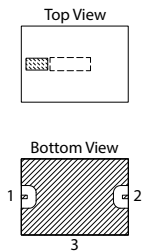
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications



## Maximum Ratings

Operating Temperature	-55°C to +125°C
Storage Temperature	-55°C to +125°C
RF Power Input	1W at 25°C

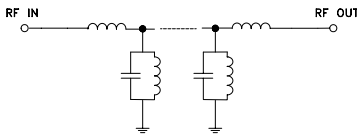
Permanent damage may occur if any of these limits are exceeded.



## Pad Connections

Input	1
Output	2
Ground	3

## Functional Schematic



## Electrical Specifications<sup>1</sup> at 25°C

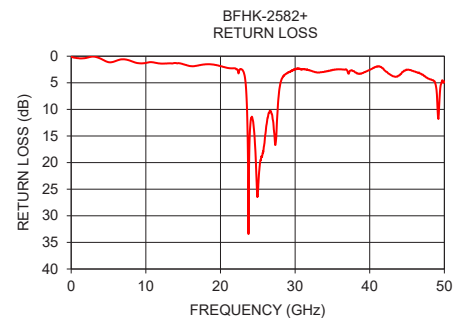
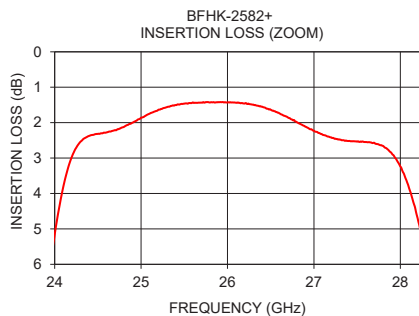
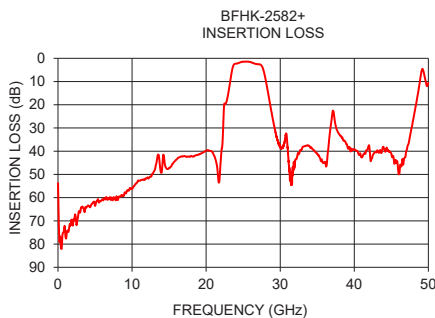
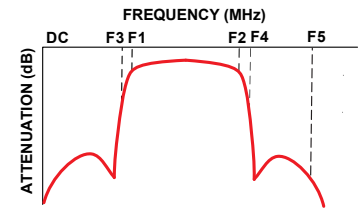
Parameter	F#	Frequency (GHz)	Min.	Typ.	Max.	Unit	
Center Frequency	—			25.8		MHz	
Pass Band	Insertion Loss	F1-F2	24.25 - 24.56	—	4	—	
			24.56 - 26.45	—	2	4.5	dB
			26.45 - 27.5	—	4	—	
	Return Loss	F1-F2	24.25 - 27.5	—	10	—	dB
Stop Band, Lower	Insertion Loss	DC - 9	45	58	—	—	
			9 - 21	34	40	—	dB
			21 - 21.7	—	40	—	
Stop Band, Upper	Insertion Loss	F4-F5	29.43 - 33	—	30	—	
			33 - 35.4	21	30	—	dB
			35.4 - 46	—	25	—	

1. Measured on Mini-Circuits Characterization Test Board TB-BFHK-2582C+ with feedline losses removed by normalization of S12 and S21 traces to measurement of TB thru-line.

## Typical Performance Data at 25°C

Frequency (GHz)	Insertion Loss (dB)	Return Loss (dB)
1	76.49	0.38
5	63.57	1.12
10	56.27	1.26
15	47.15	1.51
20	39.84	1.86
23	14.86	2.70
24	2.32	12.94
25	1.46	26.07
26	1.64	14.78
27	2.54	11.86
28	8.70	5.33
30	38.18	2.42
35	40.95	2.58
40	39.07	2.56
45	41.01	2.57
50	10.66	4.74

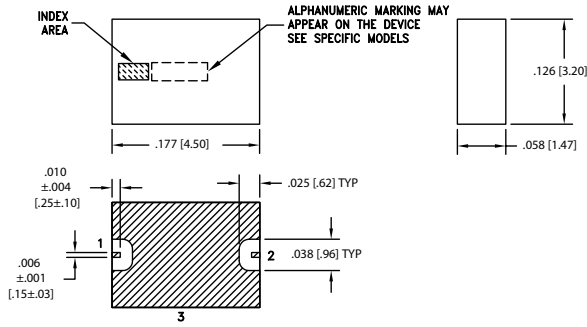
## Specification Definition



# Bandpass Filter

# BFHK-2582+

## Outline Drawing



METALLIZATION

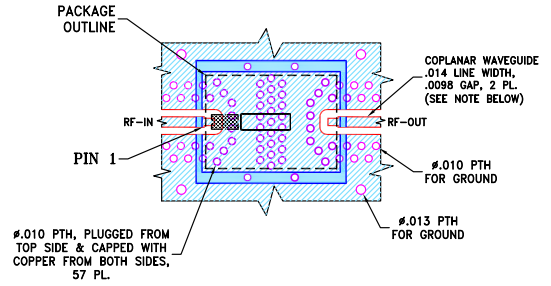
Weight: .064 grams.  
Dimensions are in inches [mm]

## Product Marking: F415

### Pad Connections

Input	1
Output	2
Ground	3

## Demo Board MCL P/N: TB-BFHK-2582C+ Suggested PCB Layout (PL-677)



### NOTES:

- TRACE WIDTH AND GAP ARE SHOWN FOR MEGTRON7 WITH DIELECTRIC THICKNESS: .0079±.001"; COPPER: HVLP/HVLP. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.
- 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 SOLDER MASK.

## Additional Notes

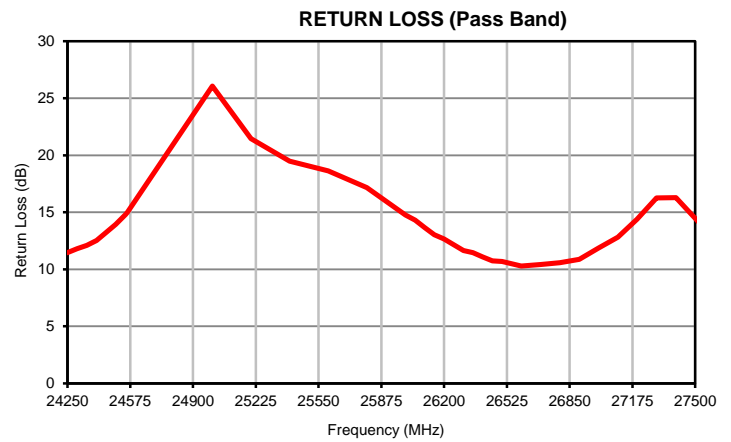
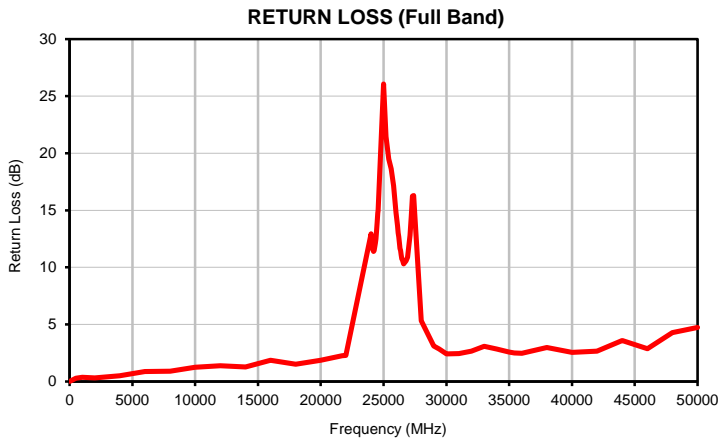
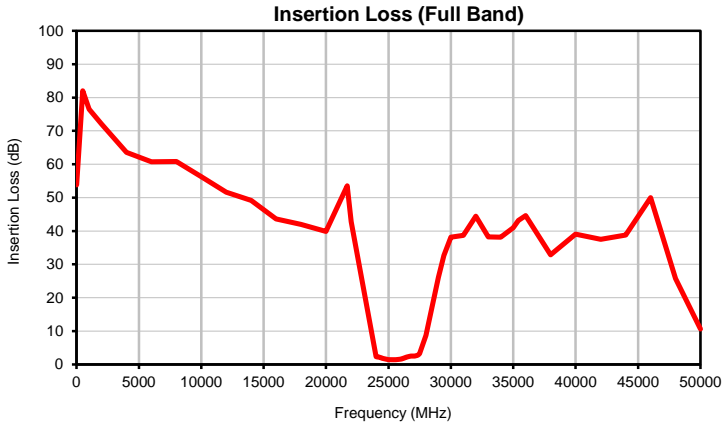
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Typical Performance Data

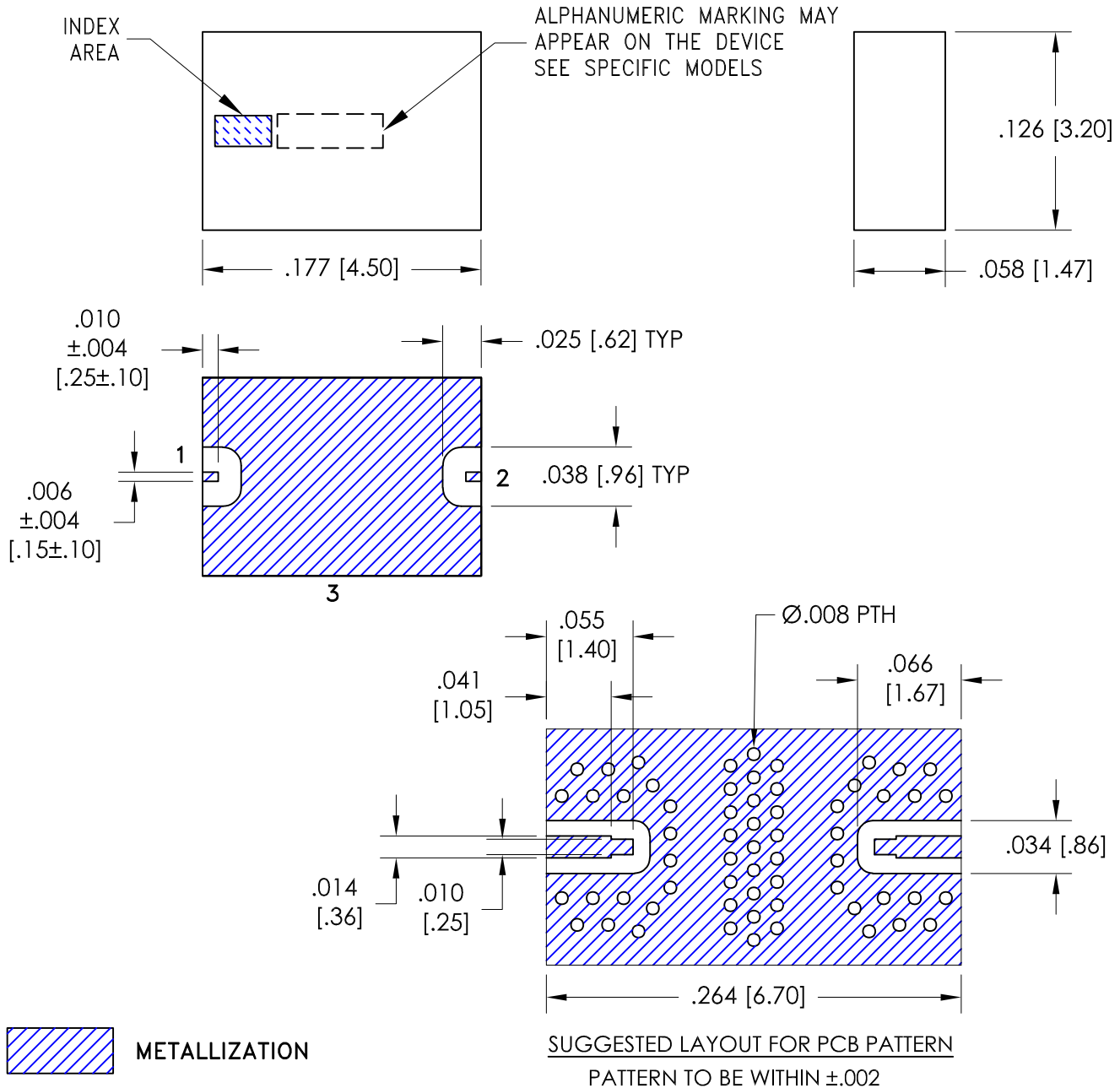
FREQUENCY (MHz)	INSERTION LOSS (dB)	RETURN LOSS (dB)
10	53.79	0.01
500	82.01	0.29
1000	76.49	0.38
2000	72.06	0.33
4000	63.57	0.50
6000	60.71	0.88
8000	60.85	0.90
10000	56.27	1.26
12000	51.65	1.39
14000	49.14	1.29
16000	43.63	1.87
18000	41.98	1.52
20000	39.84	1.86
21700	53.55	2.26
22000	42.83	2.30
24000	2.32	12.94
24100	2.28	11.68
24200	2.21	11.39
24250	2.17	11.47
24300	2.12	11.80
24350	2.06	12.10
24400	2.00	12.53
24450	1.94	13.23
24500	1.86	13.94
24550	1.81	14.78
24560	1.79	14.97
25000	1.46	26.07
25200	1.43	21.47
25400	1.42	19.49
25600	1.44	18.64
25800	1.49	17.15
26000	1.64	14.78
26050	1.68	14.32
26100	1.74	13.64
26150	1.80	13.02
26200	1.85	12.67
26250	1.92	12.16
26300	1.98	11.66
26350	2.05	11.47
26400	2.11	11.08
26450	2.18	10.73
26500	2.23	10.68
26600	2.34	10.30
26700	2.42	10.43
26800	2.48	10.58
26900	2.52	10.88
27000	2.54	11.86
27100	2.55	12.82
27200	2.57	14.40
27300	2.66	16.25
27400	2.87	16.29
27500	3.24	14.47
28000	8.70	5.33
29000	26.16	3.12
29430	32.68	2.86
30000	38.18	2.42
31000	38.68	2.46
32000	44.43	2.67
33000	38.27	3.08
34000	38.11	2.86
35000	40.95	2.58
35400	43.16	2.51
36000	44.59	2.49
38000	32.82	2.99
40000	39.07	2.56
42000	37.50	2.67
44000	38.74	3.60
46000	49.95	2.87
48000	25.72	4.29
50000	10.66	4.74

## Typical Performance Curves



## Outline Dimensions

NM1812C-2



Weight: .064 grams.

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

### Notes:

1. Case material: Ceramic.
2. Termination Finish: **as shown below or indicated on Data Sheet.**  
For RoHS Case Styles: Tin Plate over Nickel plate. All models, (+) suffix.

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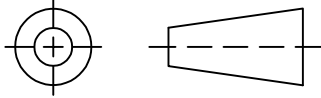
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RF/IF MICROWAVE COMPONENTS

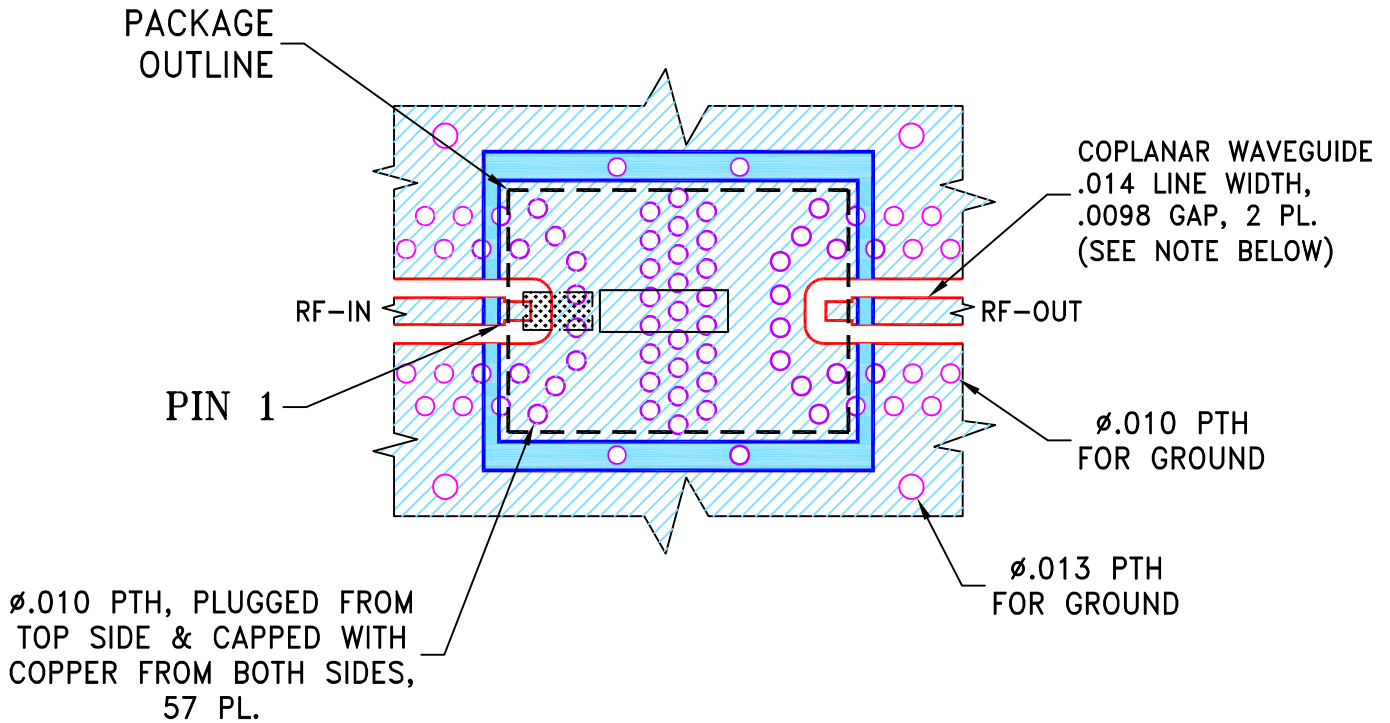
THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	ECO-003081	NEW RELEASE	06/24/20	ITG	WY
A	ECO-003526	UPDATED PATTERN	08/03/20	GF	WY

SUGGESTED MOUNTING CONFIGURATION FOR  
NM1812C-2 CASE STYLE



NOTES:

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UNLESS OTHERWISE SPECIFIED	INITIALS	DATE
DIMENSIONS ARE IN INCHES	ITG	06/24/20
TOLERANCES ON:	GF	06/24/20
2 PL DECIMALS ±	WY	06/24/20
3 PL DECIMALS ± .005		
ANGLES ±		
FRACTIONS ±		



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Brooklyn NY 11235

PL, NM1812C-2, TB-1135+

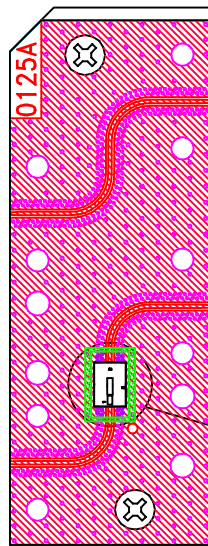
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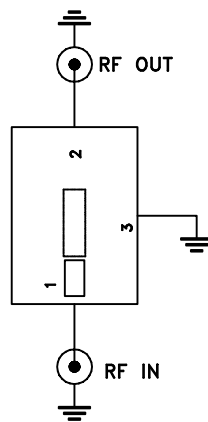
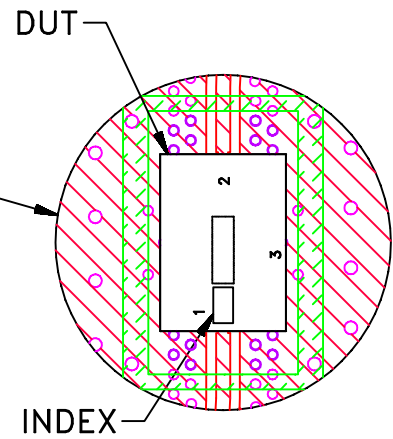
ASHEETA1.DWG REV:A DATE:01/12/95

SIZE A	CODE IDENT 15542	DRAWING NO: 98-PL-677	REV: A
FILE: 98PL677	SCALE: 10:1	SHEET: 1 OF 1	

# Evaluation Board and Circuit



TB-BFHK-2582+



Schematic Diagram

1. 50 Ohm 1.85 mm Female end launch connectors.
2. PCB Material: Megtron 7 R5785(N) or equivalent, Dielectric Constant=3.6 Thickness=.008 inch.

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## Environmental Specifications ENV06T8

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	-55° to 125° C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 125° C Ambient Environment	Individual Model Data Sheet
Thermal Cycling	-55 to 125°C, 100 cycles, Dwell Time 15 minutes.	MIL-STD-202, Method 107, Condition A-3
Mechanical Shock	50g, 11ms half-sine, 18 shocks applied each to 3 axes	MIL-STD-202 Method 213, Condition A
Vibration	10-2000Hz sine, 20g, 12 cycles applied each to 3 axes	MIL-STD-202, Method 204, Condition D
Constant Acceleration	30Kg, Y1 Direction	MIL-STD-883, Method 2001, Condition E
Humidity	85°C, 90-95% Relative Humidity, 250hours	
Solderability	10X / 30X Magnification	J-STD-002C Test S, J-STD-002C Test S1
High Temp Storage	125°C, 250 hours	