

Engineering Development Model

Frequency Synthesizer

RSN-EDR10612

Important Note

This model has been designed, built and tested in our engineering department. Performance data represents model capability. At present it is a non-catalog model. On request, we can supply a final specification sheet, part number and price/delivery information.



Please click "Back", and then click "Contact Us" for Applications support.

CASE STYLE : JG1228

ELECTRICAL SPECIFICATIONS 50Ω, over -40°C to +85°C				
Parameter	Min.	Typ.	Max.	Units
Frequency	1380		1380	MHz
Step size		20000		kHz
Settling Time Within ±1kHz		1.5		msec
Output Power	+4	+7	+11	dBm
Phase Noise				
at 100 Hz offset		-96		dBc/Hz
at 1 kHz offset		-104		dBc/Hz
at 10 KHz offset		-105	-99	dBc/Hz
at 100 KHz offset		-132	-126	dBc/Hz
at 1000 kHz offset		-153	-147	dBc/Hz
Integrated SSB Phase Noise		-61		dBc
Reference Spurious Suppression		-92		dBc
Comparison Spurious Suppression		-38		dBc
Non-Harm. Spurious Suppression		-90		dBc
Harmonic Suppression		-34	-28	dBc
Supply voltage VCO		5		V
Supply voltage PLL		3.3		V
Supply current VCO		47	55	V
Supply current PLL		21	29	V
Reference In Frequency		960		MHz
Reference In Amplitude		1		Vp-p
Reference In Impedance		100		kΩ
Reference In Ph. N @ 1kHz		-145		dBc/Hz
Digital Lock Detect Locked	2.9		3.3	V
Digital Lock Detect Unlocked			0.4	V
Frequency Synthesizer PLL	Self-programmed (internal microcontroller)			

ABSOLUTE MAXIMUM RATINGS	
Operating Temperature	-45°C to 85°C
Storage Temperature	-55°C to 100°C
VCO Supply Voltage	6V
PLL Supply Voltage	4.3V
Reference Frequency voltage	3.6Vp-p

Power On sequence: Vcc VCO followed by Vcc PLL

Power Off sequence: Vcc PLL followed by Vcc VCO

PIN CONNECTIONS			
RF OUT	4	N.C	8,9,10,16,18
VCC VCO	19	GROUND	1,2,3,5,6,11,
VCC PLL	17		13,14,15,20
REF IN	12		
LOCK DETECT	7		

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.
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Typical Performance Data

FREQ. (MHz)	POWER OUTPUT (dBm)			HARMONICS (dBc)						VCO CURRENT (mA)			PLL CURRENT (mA)		
				F2			F3								
	-40°C	+25°C	+85°C	-40°C	+25°C	+85°C	-40°C	+25°C	+85°C	-40°C	+25°C	+85°C	-40°C	+25°C	+85°C
1380	6.52	7.09	7.03	-36.24	-33.34	-32.77	-55.63	-58.74	-61.87	46.10	47.02	47.56	18.97	20.93	22.75

FREQ. (MHz)	PHASE NOISE (dBc/Hz)													
	@ OFFSETS													
	-40°C					+25°C					+85°C			
	100Hz	1kHz	10kHz	100kHz	1MHz	100Hz	1kHz	10kHz	100kHz	1MHz	100Hz	1kHz	10kHz	1MHz
1380	-93.39	-99.79	-103.14	-131.79	-153.40	-97.90	-104.54	-104.99	-131.97	-153.36	-97.60	-106.93	-105.98	-131.35

REFERENCE & COMPARISON SPURIOUS ORDER	REFERENCE & COMPARISON SPURIOUS @Fcarrier 1380 MHz± (n*Fcomparison) (dBc) NOTE 1			COMPARISON SPURIOUS @Fcarrier 1380 MHz± (n*Fcomparison) (dBc) NOTE 2		
	-40°C	+25°C	+85°C	-40°C	+25°C	+85°C
n						
-5	-	-	-	-89.22	-101.01	-96.68
-4	-	-	-	-89.57	-103.55	-94.97
-3	-	-	-	-84.74	-85.56	-82.29
-2	-	-	-	-92.64	-93.39	-89.28
-1	-84.66	-76.15	-77.03	-92.94	-97.01	-91.99
0 note 3	-	-	-	-	-	-
+1	-84.23	-91.79	-93.03	-96.83	-93.95	-93.7
+2	-104.89	-110.3	-116.48	-98.09	-94.05	-94.51
+3	-94.36	-96.93	-96.77	-86.57	-87.73	-83.66
+4	-112.12	-104.59	-112.14	-98.80	-95.48	-90.38
+5	-120.14	-116.4	-119.29	-96.58	-93.24	-91.06

Note 1: Reference frequency 960 MHz.

Note 2: Comparison frequency 20 MHz.

Note 3: All spurs are referenced to carrier signal (n=0).

Notes

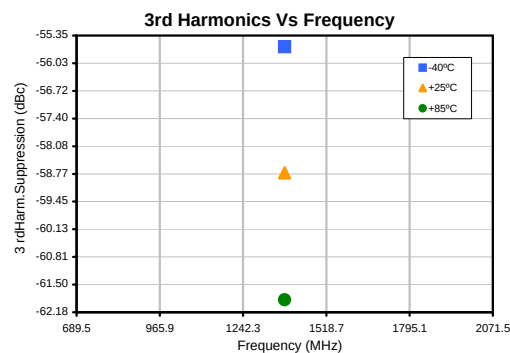
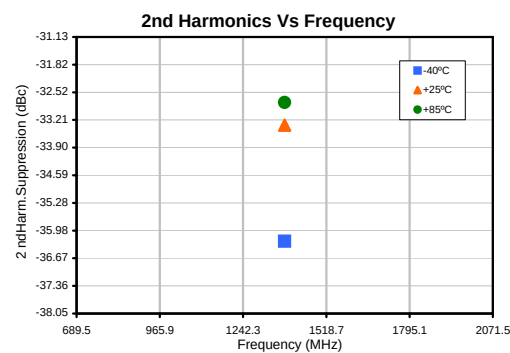
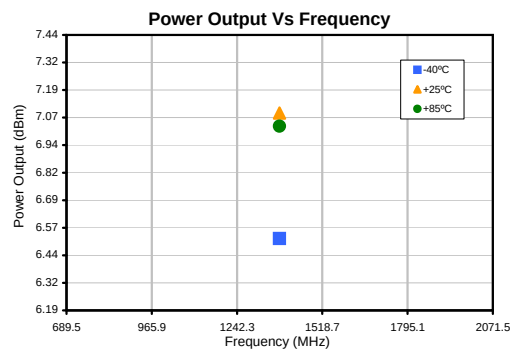
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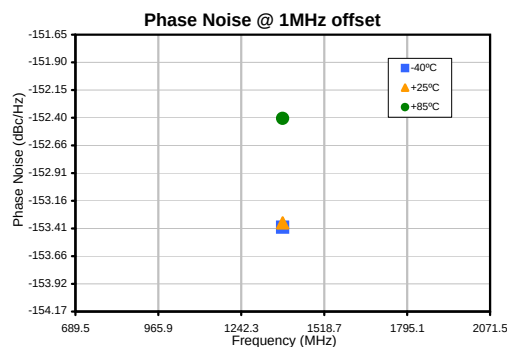
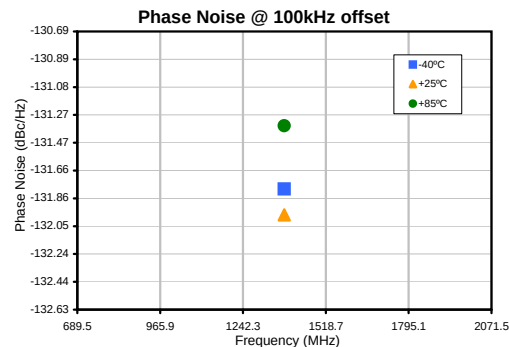
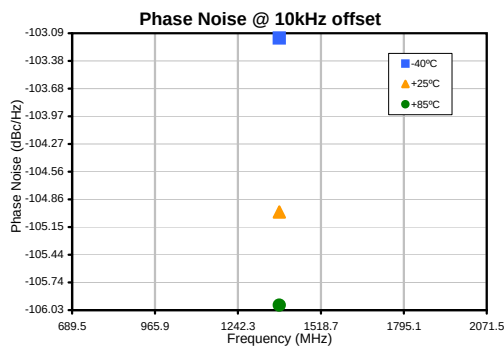
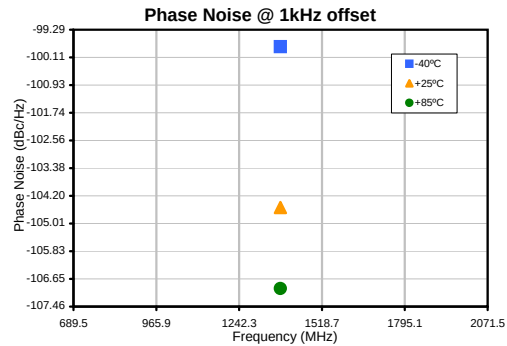
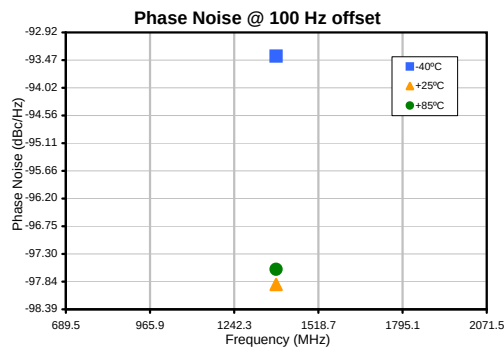
Typical Performance Data



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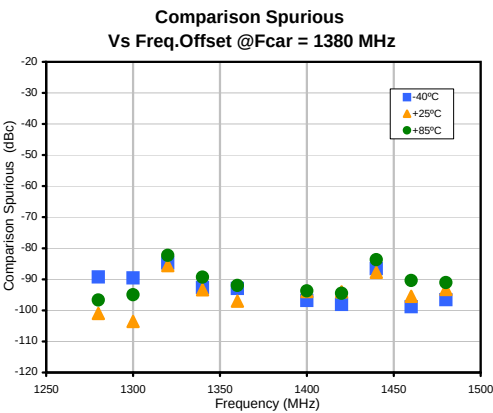
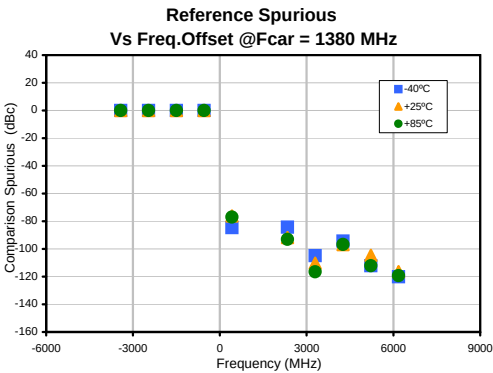


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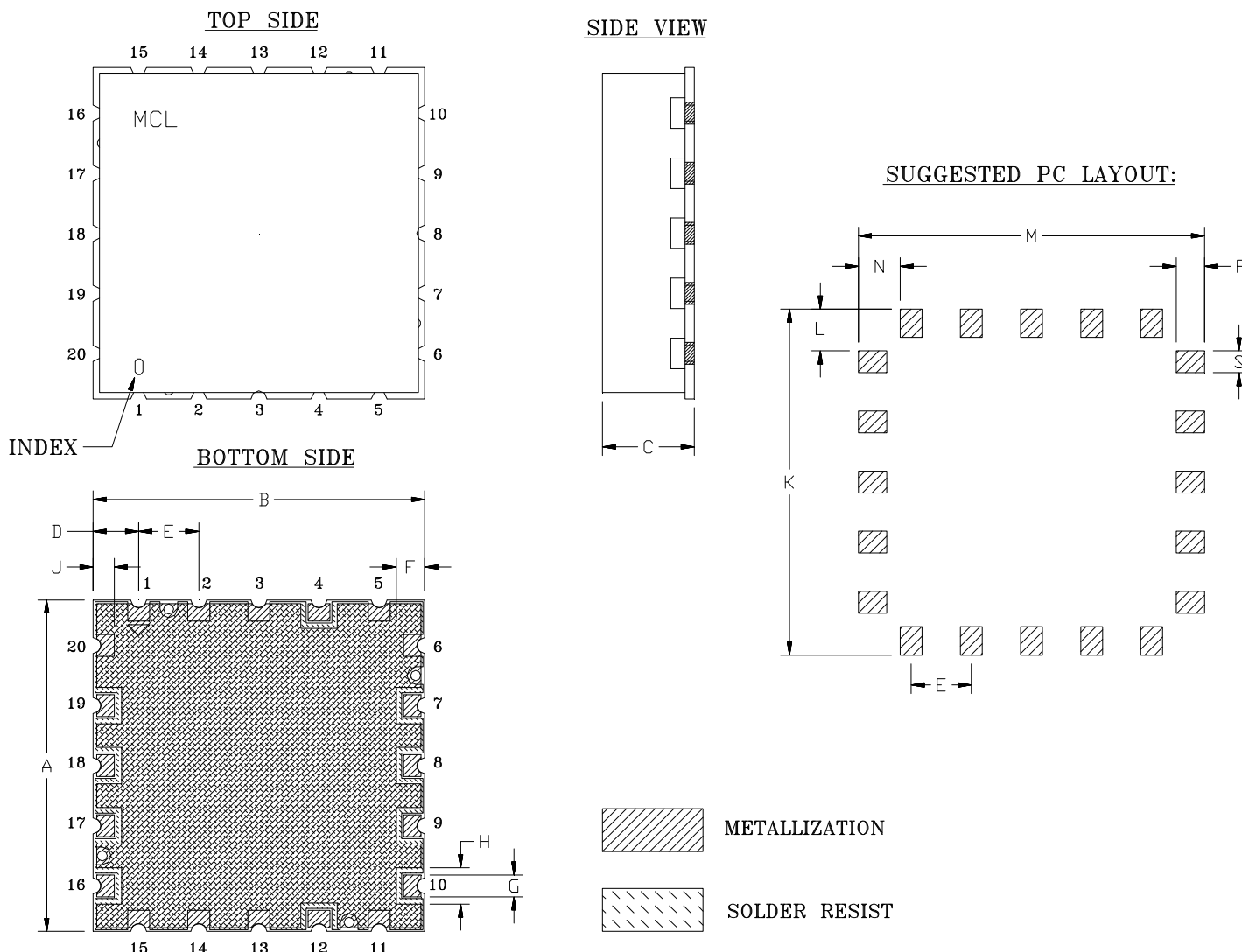
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Outline Dimensions

JG1228



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N	P	S	WT, GRAM
JG1228	.910" (23.11)	.910" (23.11)	.252" (6.40)	.125" (3.18)	.165" (4.19)	.078" (1.98)	.060" (1.52)	.100" (2.54)	.058" (1.47)	.950" (24.13)	.115" (2.92)	.950" (24.13)	.115" (2.92)	.078" (1.98)	.060" (1.52)	8.5

Dimensions are in inches (mm). Tolerances: 2PL. +/- .03; 3PL. +/- .015

Notes:

1. Case material: Nickel-Silver alloy.
2. Base: Printed wiring laminate.
3. Termination finish:

For RoHS Case Styles: 2-5 μ inch (.05-.13 microns) Gold over 120-240 μ inch (3.05-6.10 microns) Nickel plate.
For RoHS-5 Case Styles: Tin-Lead plate.



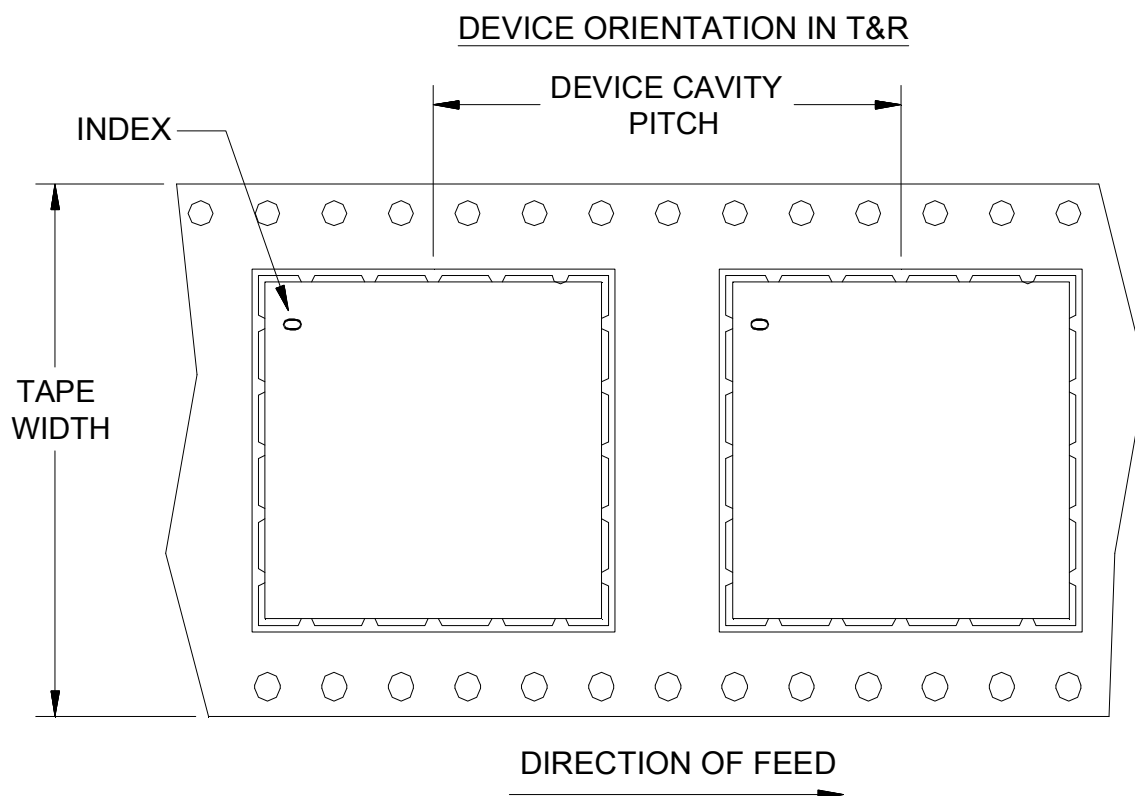
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Tape & Reel Packaging TR-F99



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel
44	32	13	125

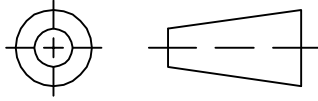
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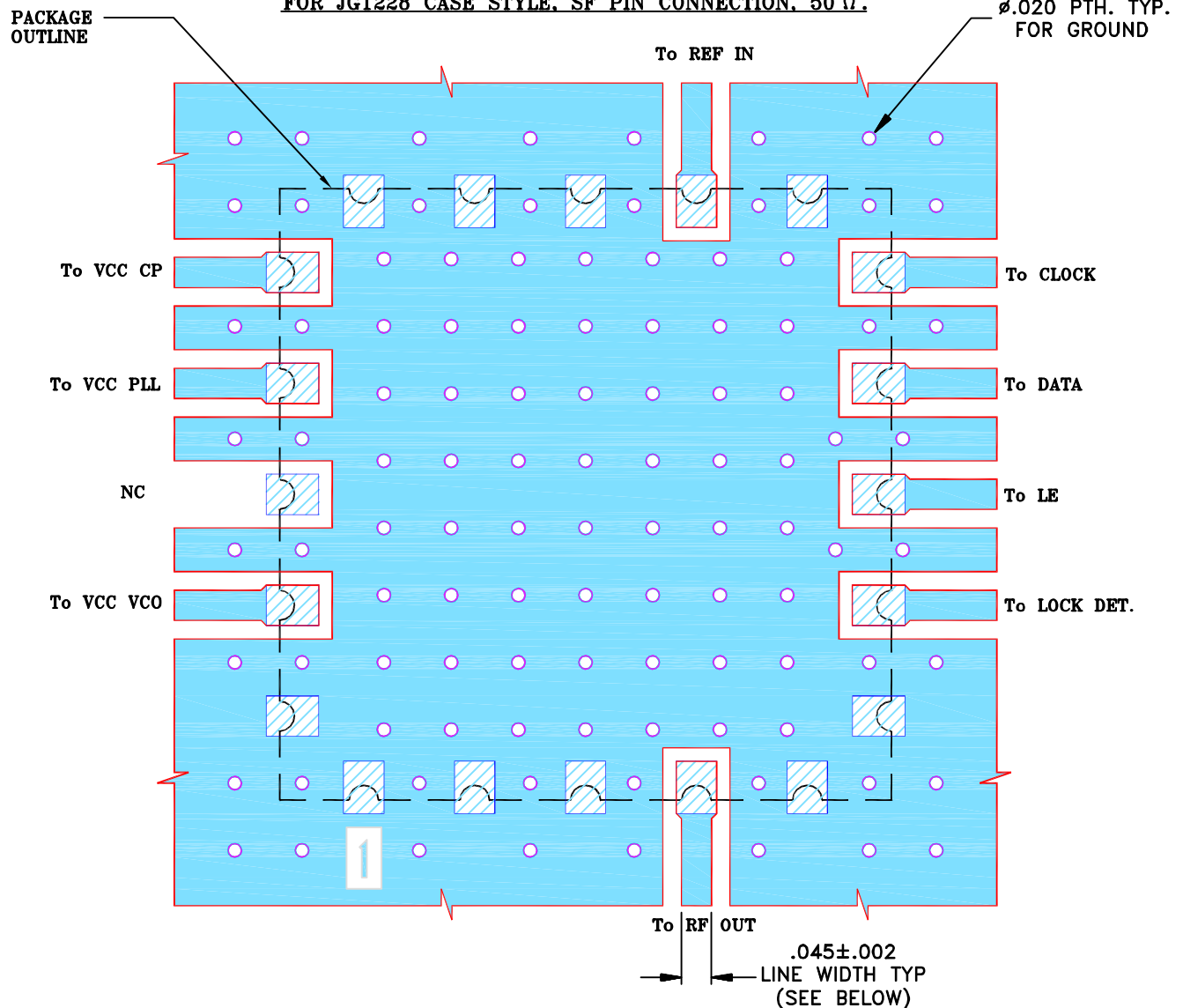
THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M124738	NEW RELEASE	04/10	DK	HH
OR	R77823	NEW RELEASE	04/10	DK	HH

SUGGESTED MOUNTING CONFIGURATION
FOR JG1228 CASE STYLE, SF PIN CONNECTION, 50 Ω .

**NOTES:**

- TRACE WIDTH IS SHOWN FOR R04350B WITH DIELECTRIC THICKNESS. $.020 \pm .0015$ ". COPPER: 1/2 OZ. EACH SIDE.
FOR OTHER MATERIALS TRACE WIDTH 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 SOLDERMASK

UNLESS OTHERWISE SPECIFIED	INITIALS	DATE
DIMENSIONS ARE IN INCHES	DRAWN DK (RAVON)	06 APR 10
TOLERANCES ON:	CHECKED DH (RAVON)	07 APR 10
2 PL DECIMALS $\pm$	APPROVED HH (RAVON)	07 APR 10
3 PL DECIMALS $\pm$.005		
ANGLES $\pm$		
FRACTIONS $\pm$		

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

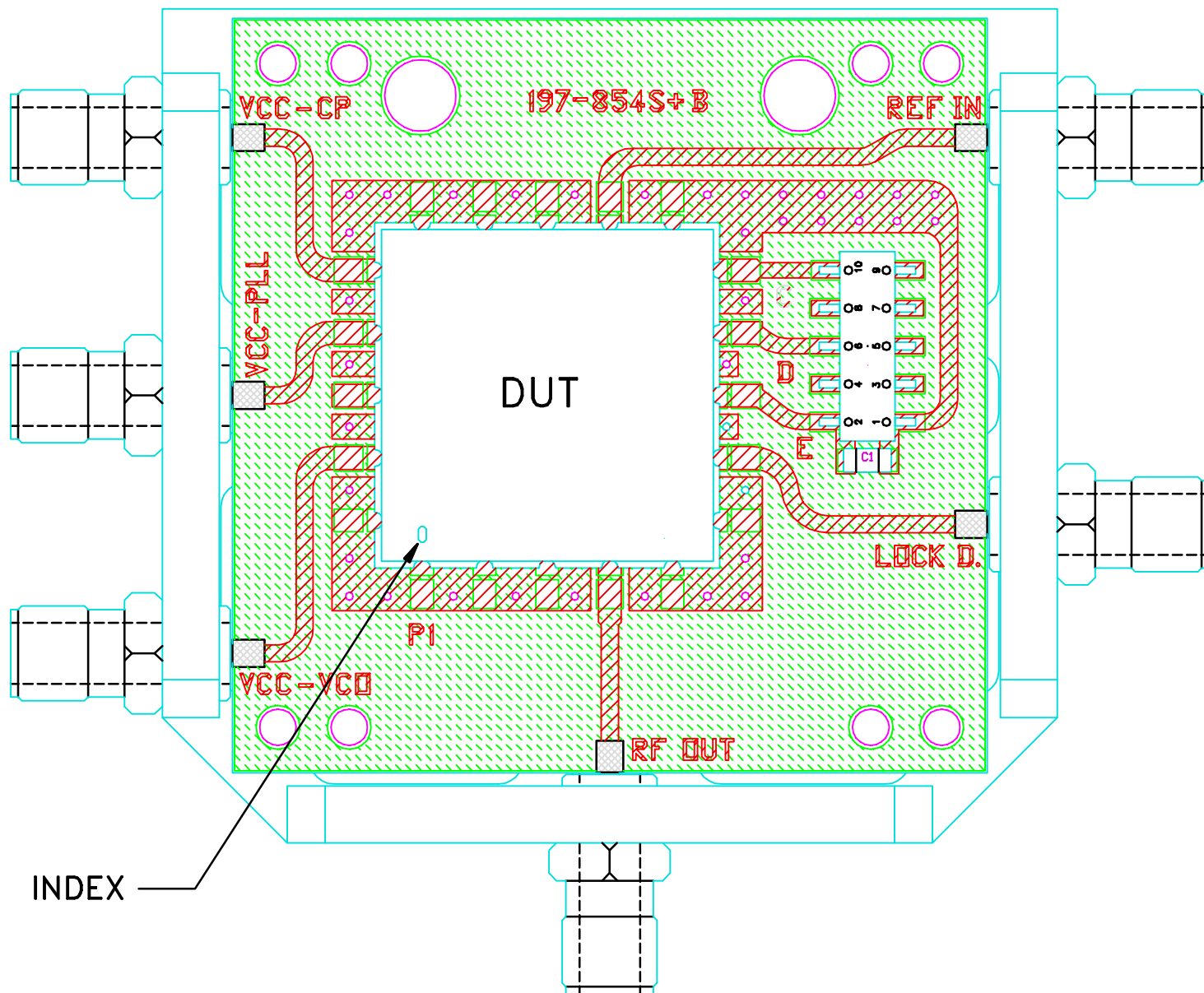


Mini-Circuits® 13 Neptune Avenue
Brooklyn NY 11235

PL, SF, JG1228, RSN
TB-554+ (50 Ω)

SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-319	OR
FILE:	98PL319	SCALE:	4:1
SHEET:	1	OF	1

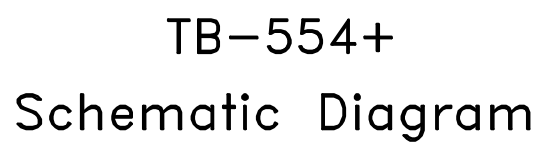
Evaluation Board and Circuit



TB-554+

NOTES:

1. SMA FEMALE CONNECTORS.
2. PCB MATERIAL: RO4350B OR EQUIVALENT, DIALECTRIC CONSTANT=3.5, DIALECTRIC THICKNESS=.020 INCH.





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 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, 20-2000 Hz, 4 times in each of three axes (total 12)	MIL-STD-883, Method 2007.3, Condition A
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