

Engineering Development Model

Frequency Synthesizer

SSN-EDR11130SA

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 : KJ1367

ELECTRICAL SPECIFICATIONS 50Ω, over -10°C to +75°C				
Parameter	Min.	Typ.	Max.	Units
Frequency	1200		1400	MHz
Step size		500		kHz
Settling Time Within ±1kHz		0.9		msec
Output Power	+1	+5	+10	dBm
Phase Noise				
at 100 Hz offset		-90		dBc/Hz
at 1 kHz offset		-93		dBc/Hz
at 10 KHz offset		-92	-87	dBc/Hz
at 100 KHz offset		-92		dBc/Hz
at 1000 kHz offset		-133	-127	dBc/Hz
Integrated SSB Phase Noise		39		dBc
Reference Spurious Suppression		-81		dBc
Comparison Spurious Suppression		-109		dBc
Non-Harm. Spurious Suppression		-90		dBc
Harmonic Suppression		-37	-28	dBc
Supply voltage VCO		5		V
Supply voltage PLL		3.3		V
Supply current VCO		45	53	mA
Supply current PLL		10	18	mA
Reference In (External)				
Frequency		10		MHz
Amplitude		1		Vp-p
Impedance		100		kΩ
Ph. N @ 1kHz		-145		dBc/Hz
Input Logic Levels	Logic high	2.64	3.3	V
	Logic Low		0.66	
Digital Lock Detect	Locked	2.9	3.3	V
	Unlocked		0.4	
Frequency Synthesizer PLL	ADF4113			

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	5.8Vp-p
Data, Clock & LE levels	3.6V

Power On sequence: Vcc VCO followed by Vcc PLL

Power Off sequence: Vcc PLL followed by Vcc VCO

PIN CONNECTIONS			
RF OUT	9	CLOCK	1
VCC VCO	7	DATA	2
VCC PLL	12	LATCH ENABLE	3
REF IN	4	GROUND	5,6,8,10
LOCK DETECT	11		

Notes

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REV. OR
 SSN-EDR11130SA
 150219

Frequency Synthesizer

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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
1180.0	4.26	4.48	4.96	-38.39	-40.12	-42.19	-50.89	-51.44	-51.89	43.59	44.25	45.15	9.03	9.72	10.90
1200.0	4.51	4.68	4.97	-38.06	-39.78	-41.52	-52.49	-52.42	-52.20	43.61	44.29	45.22	9.02	9.74	10.92
1220.0	4.47	4.59	4.95	-35.94	-37.12	-39.08	-50.17	-48.91	-51.19	43.64	44.34	45.27	9.04	9.76	10.96
1240.0	4.62	4.68	4.92	-37.06	-37.72	-39.41	-63.24	-68.40	-63.62	43.68	44.39	45.35	9.04	9.75	10.96
1260.0	5.04	5.10	5.20	-35.20	-36.17	-37.87	-54.62	-54.54	-53.37	43.71	44.53	45.38	9.07	9.78	11.00
1280.0	5.37	5.40	5.46	-36.62	-37.46	-39.00	-52.15	-53.00	-51.82	43.74	44.57	45.43	9.05	9.78	11.00
1300.0	5.45	5.47	5.42	-35.12	-35.88	-37.32	-49.38	-49.83	-48.53	43.78	44.61	45.49	9.08	9.80	11.03
1320.0	5.44	5.41	5.43	-35.94	-36.52	-38.08	-49.19	-48.48	-48.30	43.82	44.52	45.49	9.07	9.79	11.02
1340.0	5.66	5.60	5.53	-36.62	-37.06	-38.47	-56.38	-54.01	-52.37	43.84	44.58	45.48	9.09	9.82	11.05
1360.0	6.08	5.98	5.88	-35.72	-36.23	-37.84	-47.15	-47.76	-46.02	43.82	44.44	45.40	9.08	9.81	11.05
1380.0	6.29	6.20	6.09	-39.69	-39.85	-40.90	-45.88	-46.64	-45.08	43.80	44.40	45.36	9.11	9.84	11.08
1400.0	6.16	6.09	5.92	-36.34	-36.83	-38.38	-41.99	-43.30	-41.75	43.64	44.39	45.24	9.10	9.83	11.08
1420.0	6.14	6.09	5.99	-40.26	-40.32	-42.08	-38.66	-40.58	-40.95	43.44	44.19	45.03	9.13	9.85	11.11

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	100kHz	1MHz
1180.0	-89.96	-93.39	-92.46	-96.20	-135.90	-91.85	-94.34	-91.86	-99.84	-136.55	-88.94	-92.02	-92.27	-96.23	-135.23
1200.0	-91.20	-94.52	-92.10	-94.19	-135.40	-89.16	-92.78	-92.67	-94.87	-135.20	-91.96	-93.89	-93.16	-91.65	-133.93
1220.0	-88.51	-94.04	-92.60	-91.36	-134.02	-89.52	-94.61	-92.71	-92.13	-133.92	-90.47	-92.86	-93.25	-89.19	-131.33
1240.0	-89.92	-91.74	-92.49	-90.63	-133.68	-92.36	-92.95	-92.21	-91.90	-133.59	-89.77	-92.72	-92.73	-89.45	-131.61
1260.0	-91.56	-93.83	-92.39	-91.01	-132.94	-88.92	-95.23	-92.83	-92.22	-133.00	-89.62	-92.96	-92.86	-89.83	-131.59
1280.0	-89.41	-93.10	-92.39	-91.29	-133.06	-89.32	-93.13	-93.07	-92.72	-133.23	-90.72	-93.70	-92.28	-90.39	-131.74
1300.0	-88.78	-91.41	-92.10	-92.28	-133.67	-89.84	-92.12	-92.40	-93.27	-133.60	-89.23	-90.69	-92.14	-91.45	-133.09
1320.0	-86.19	-92.22	-92.04	-94.02	-134.05	-91.71	-92.61	-92.70	-93.53	-133.95	-88.78	-94.68	-92.23	-91.50	-132.94
1340.0	-90.40	-91.70	-92.10	-92.77	-133.81	-88.97	-91.70	-92.09	-93.71	-133.94	-91.60	-92.75	-92.06	-91.88	-132.78
1360.0	-89.23	-91.60	-92.24	-93.04	-133.52	-90.59	-92.15	-92.09	-93.60	-133.31	-89.80	-92.98	-92.21	-91.49	-131.35
1380.0	-89.49	-92.10	-92.09	-93.44	-133.41	-88.91	-93.04	-92.09	-93.95	-132.53	-90.97	-93.25	-92.36	-92.10	-130.02
1400.0	-89.19	-92.33	-92.14	-94.78	-133.63	-92.17	-91.91	-92.17	-95.68	-133.15	-87.84	-91.76	-92.33	-94.04	-130.97
1420.0	-88.19	-92.78	-91.53	-96.05	-132.62	-89.61	-92.77	-91.95	-97.71	-132.94	-87.86	-91.72	-91.85	-97.25	-130.83

Notes

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Typical Performance Data

COMPARISON SPURIOUS ORDER	COMPARISON SPURIOUS @Fcarrier 1200 MHz± (n*Fcomparison) (dBc) NOTE 1			COMPARISON SPURIOUS @Fcarrier 1300 MHz± (n*Fcomparison) (dBc) NOTE 1			COMPARISON SPURIOUS @Fcarrier 1400 MHz± (n*Fcomparison) (dBc) NOTE 1		
	-40 °C	+25°C	+85 °C	-40 °C	+25°C	+85 °C	-40 °C	+25°C	+85 °C
-5	-89.10	-89.29	-89.66	-92.61	-91.28	-86.40	-95.24	-86.09	-104.58
-4	-85.09	-85.19	-85.84	-90.47	-90.09	-83.65	-93.07	-83.81	-104.41
-3	-80.18	-80.51	-81.02	-86.05	-86.07	-80.05	-91.01	-81.69	-103.20
-2	-73.60	-74.01	-74.82	-80.47	-80.69	-75.07	-84.27	-77.69	-96.28
-1	-64.88	-65.34	-65.45	-70.66	-71.42	-66.43	-72.99	-70.20	-82.38
0 ^{note 2}	-	-	-	-	-	-	-	-	-
+1	-64.58	-65.05	-65.16	-70.10	-70.93	-66.17	-72.39	-69.74	-82.66
+2	-73.21	-73.73	-74.43	-79.61	-80.10	-74.73	-83.11	-77.28	-94.28
+3	-79.66	-80.03	-80.55	-85.36	-85.55	-79.82	-89.30	-81.09	-99.92
+4	-84.48	-84.76	-85.39	-89.54	-89.12	-83.41	-91.58	-83.41	-104.05
+5	-87.75	-88.16	-88.72	-91.53	-90.36	-85.68	-93.36	-85.47	-100.44

Note 1: Comparison frequency 500 kHz

Note 2: All spurs are referenced to carrier signal (n=0).

REFERENCE SPURIOUS ORDER	REFERENCE SPURIOUS @Fcarrier 1200 MHz± (n*Freference) (dBc) NOTE 3			REFERENCE SPURIOUS @Fcarrier 1300 MHz± (n*Freference) (dBc) NOTE 3			REFERENCE SPURIOUS @Fcarrier 1400 MHz± (n*Freference) (dBc) NOTE 3		
	-40 °C	+25°C	+85 °C	-40 °C	+25°C	+85 °C	-40 °C	+25°C	+85 °C
-5	-114.81	-112.35	-107.54	-112.66	-114.53	-113.63	-113.75	-112.37	-111.74
-4	-111.71	-111.03	-117.00	-115.28	-115.94	-113.86	-116.34	-108.09	-111.05
-3	-119.87	-113.86	-108.21	-115.89	< -121.50	-107.52	-111.74	-104.00	-105.93
-2	-111.41	-103.94	-106.81	-114.27	-112.85	-104.84	-101.29	-98.66	-102.12
-1	-110.94	-108.69	-106.33	-111.36	-109.52	-99.06	-90.39	-84.99	-87.96
0 ^{note 4}	-	-	-	-	-	-	-	-	-
+1	-106.34	-104.82	-112.44	-119.02	-106.61	-100.13	-90.35	-84.68	-87.90
+2	-119.54	-115.31	-110.22	-110.24	-108.85	-107.45	-98.55	-96.00	-100.09
+3	-115.01	-114.88	-118.97	-117.33	-111.61	-107.54	-112.01	-101.41	-107.38
+4	-118.41	-116.26	-117.29	-113.84	-113.83	-110.00	-110.15	-106.51	-116.89
+5	-114.52	-113.80	-109.83	-114.82	-113.25	-105.88	-108.26	-110.78	-108.63

Note 3: Reference frequency 10 MHz

Note 4: All spurs are referenced to carrier signal (n=0).

Notes

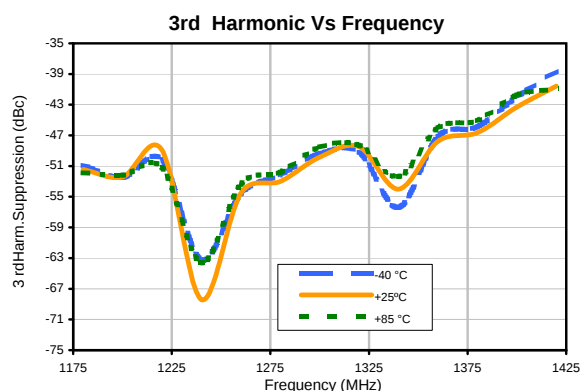
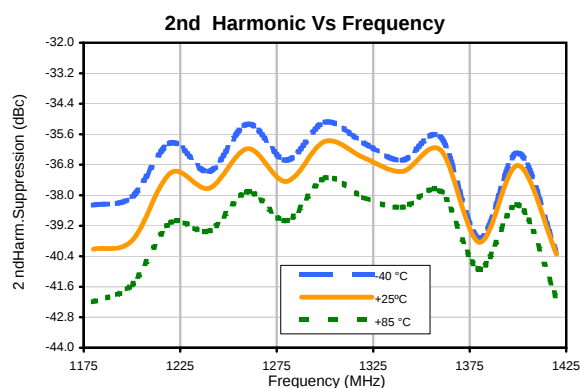
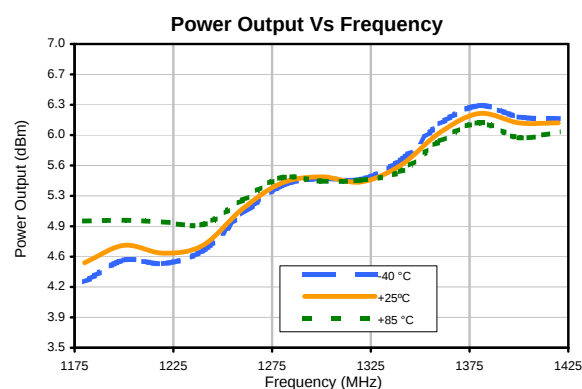
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Frequency Synthesizer

SSN-EDR11130SA

Typical Performance Data



Notes

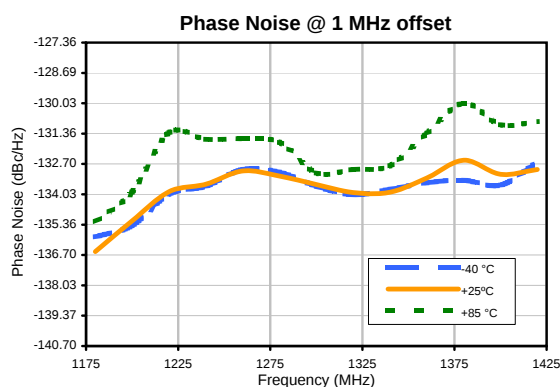
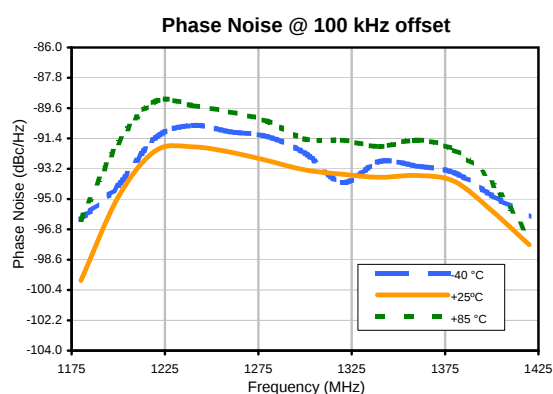
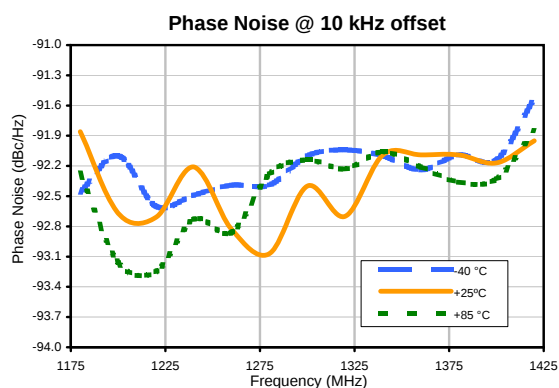
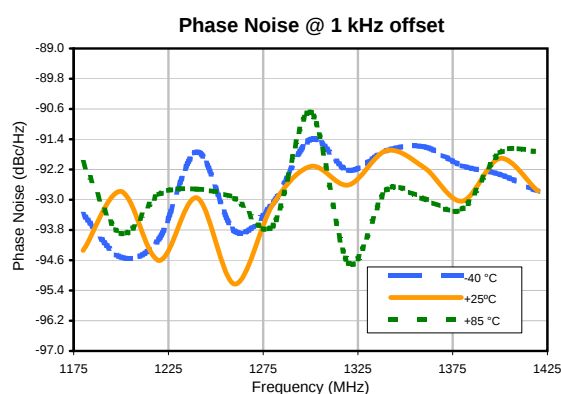
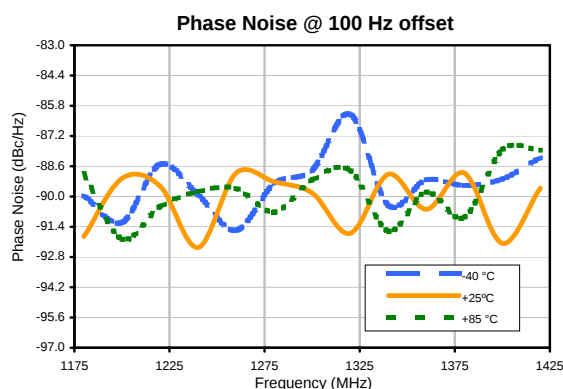
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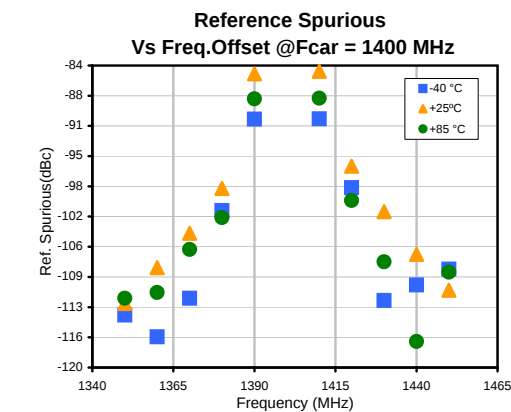
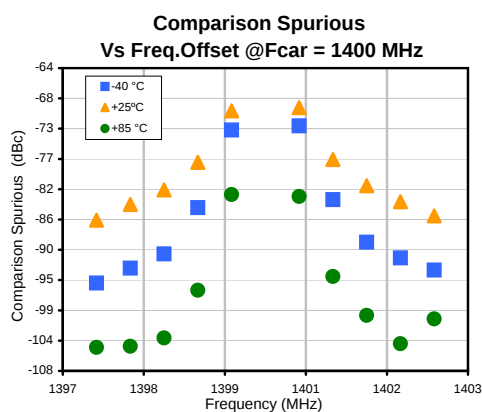
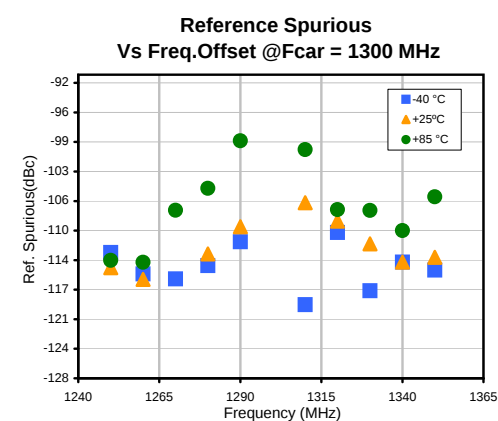
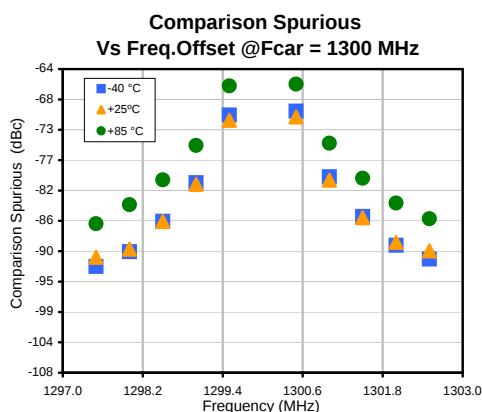
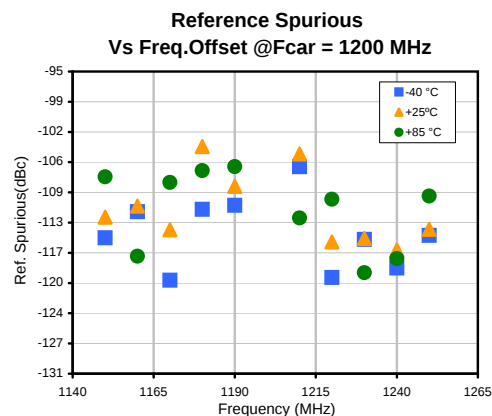
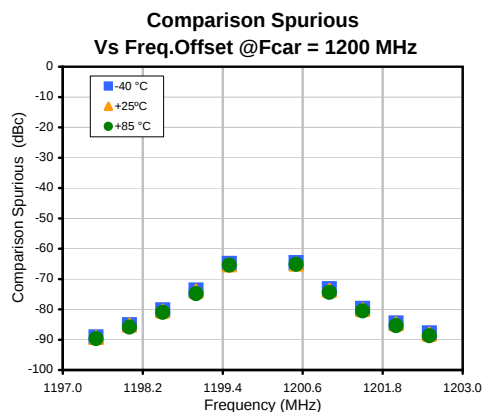
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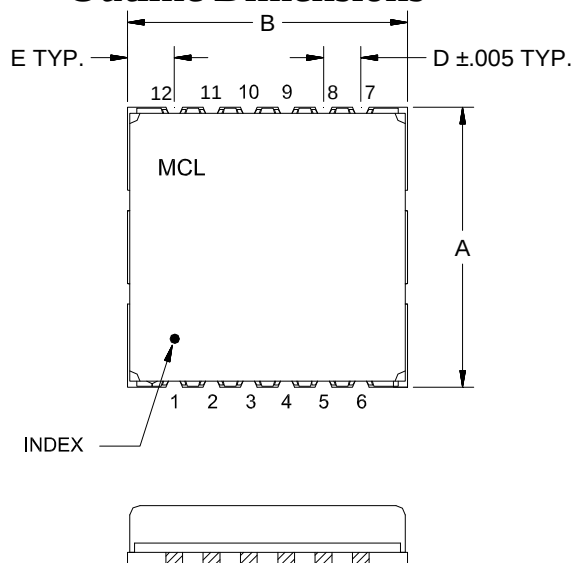


Case Style

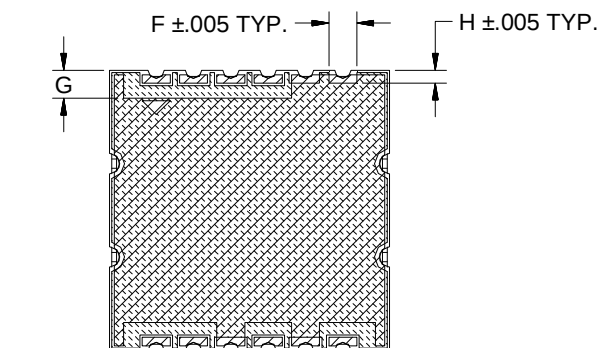
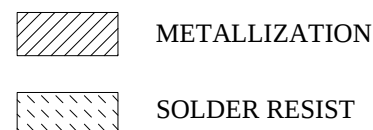
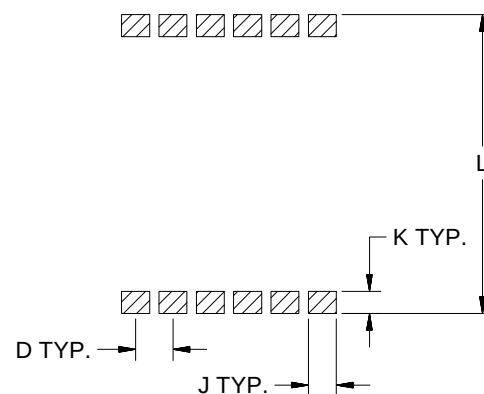
KJ

Outline Dimensions

KJ1367



PCB Land Pattern



CASE#	A	B	C	D	E	F	G	H	J	K	L	WT.GRAM
KJ1367	.600 (15.24)	.600 (15.24)	.138 (3.51)	.080 (2.03)	.100 (2.54)	.060 (1.52)	.060 (1.52)	.028 (0.71)	.060 (1.52)	.047 (1.19)	.640 (16.26)	2.0

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.
All models, (+) suffix.

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ISO 9001 ISO 14001 CERTIFIED

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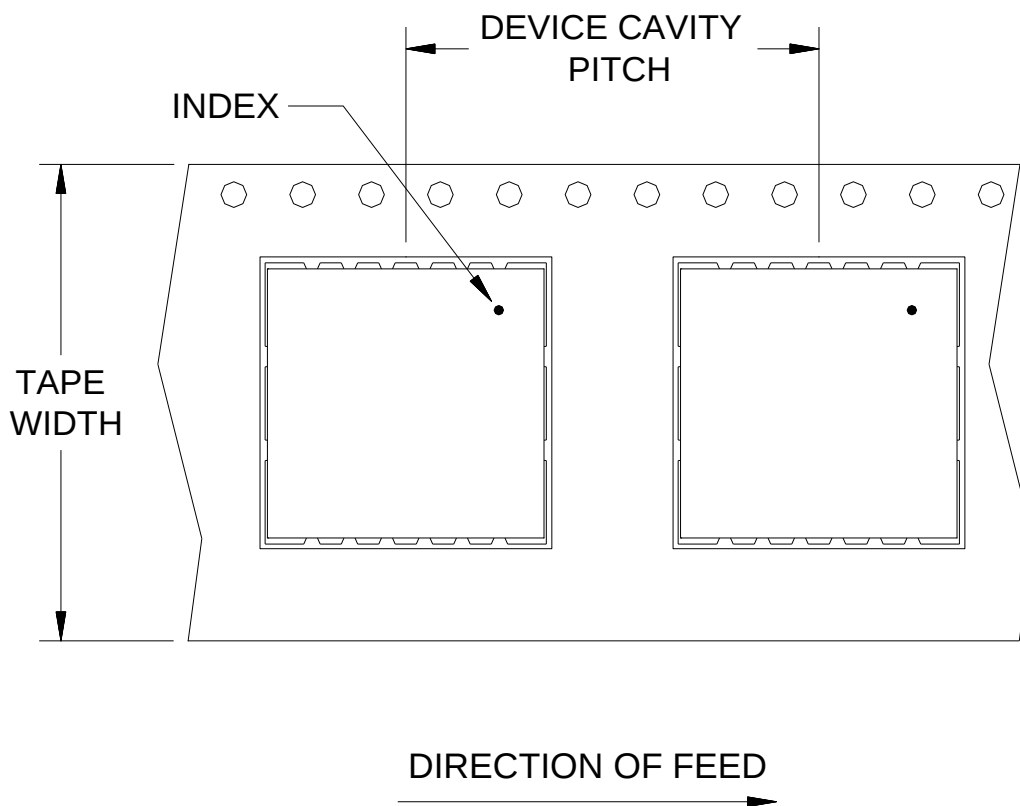


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RF/IF MICROWAVE COMPONENTS

Tape & Reel Packaging TR-F95

DEVICE ORIENTATION IN T&R



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel	
24	24	13	Small quantity standards (see note)	20
				50
				100
				200
			Standard	500

Note: Please consult individual model data sheet 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



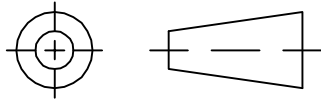
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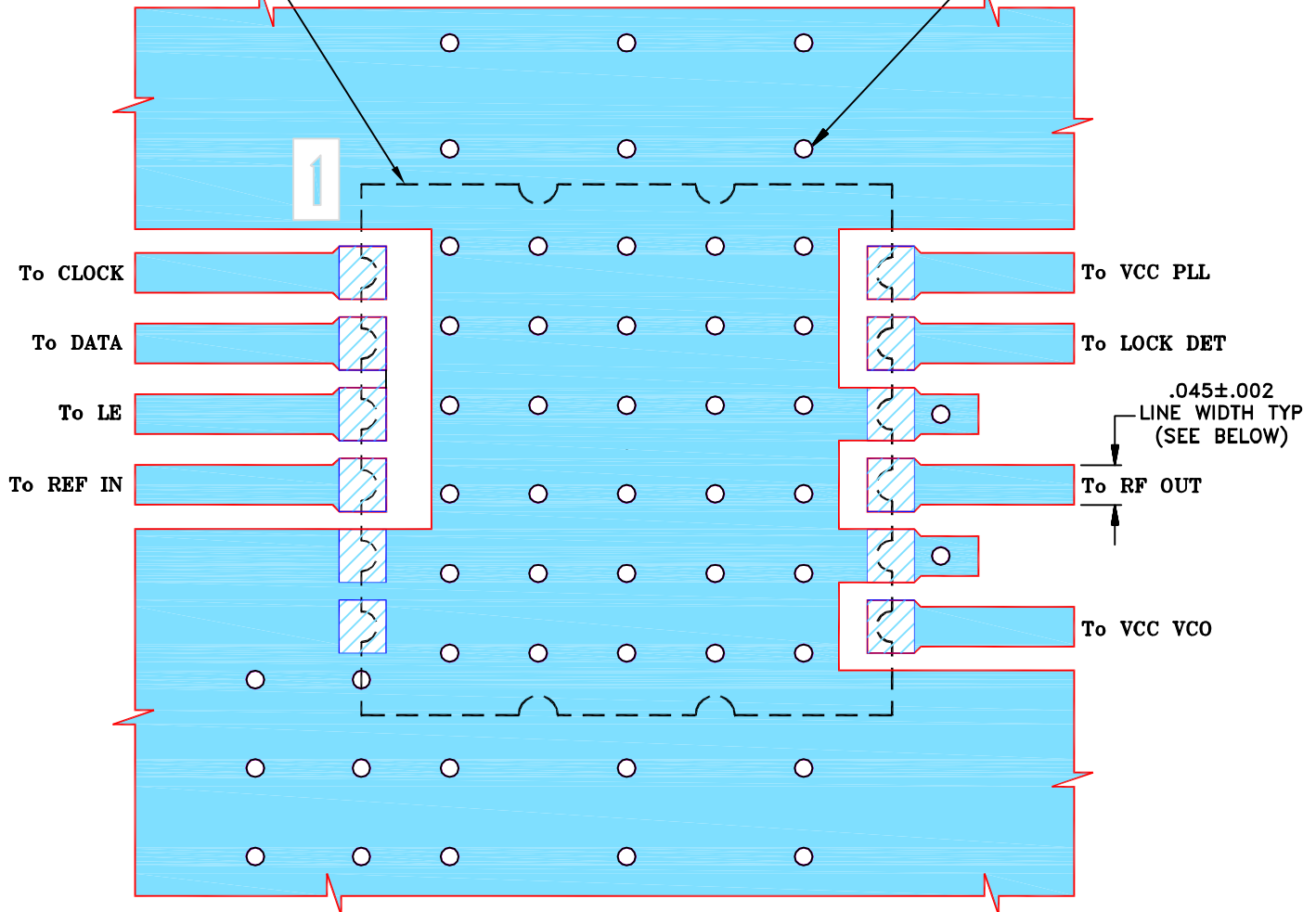
THIRD ANGLE PROJECTION



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 KJ1367 CASE STYLE, 12SY01 PIN CONNECTION, 50 Ω .Ø.020 PTH. TYP.
FOR GROUNDPACKAGE
OUTLINE

NOTES:

- TRACE WIDTH IS SHOWN FOR R04350B WITH DIELECTRIC THICKNESS.
.020"±.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

TOLERANCES ON:
2 PL DECIMALS ±
3 PL DECIMALS ± .005
ANGLES ±
FRACTIONS ±

DRAWN

DK (RAVON)

06 APR 10

CHECKED

DH (RAVON)

07 APR 10

APPROVED

HH (RAVON)

07 APR 10

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


Mini-Circuits® 13 Neptune Avenue
Brooklyn NY 11235

PL, 12SY01, KJ1367, SSN
TB-552+ (50 Ω)

SIZE
A

CODE IDENT
15542

DRAWING NO:
98-PL-317

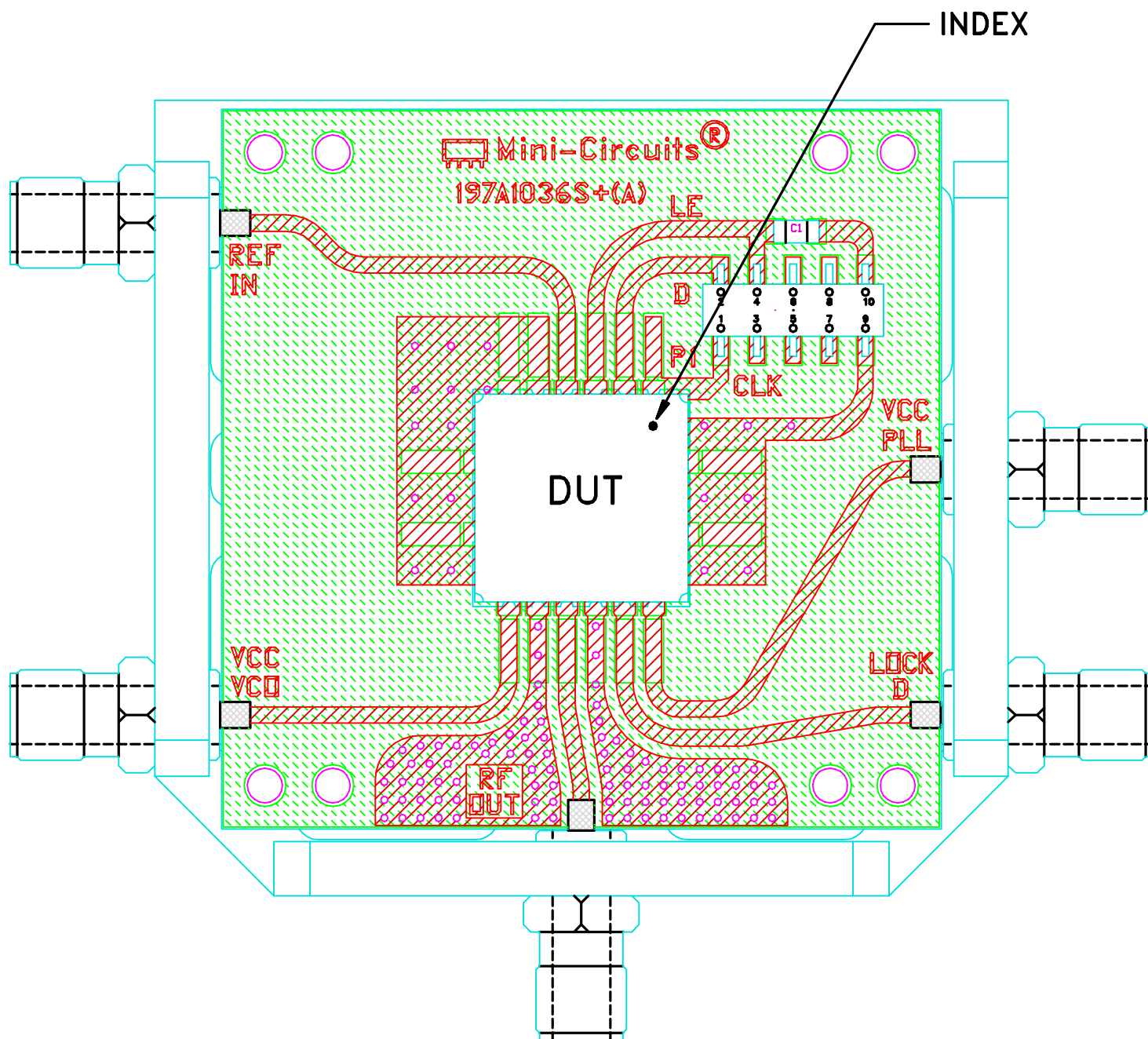
REV:
OR

FILE: 98PL317

SCALE: 5:1

SHEET: 1 OF 1

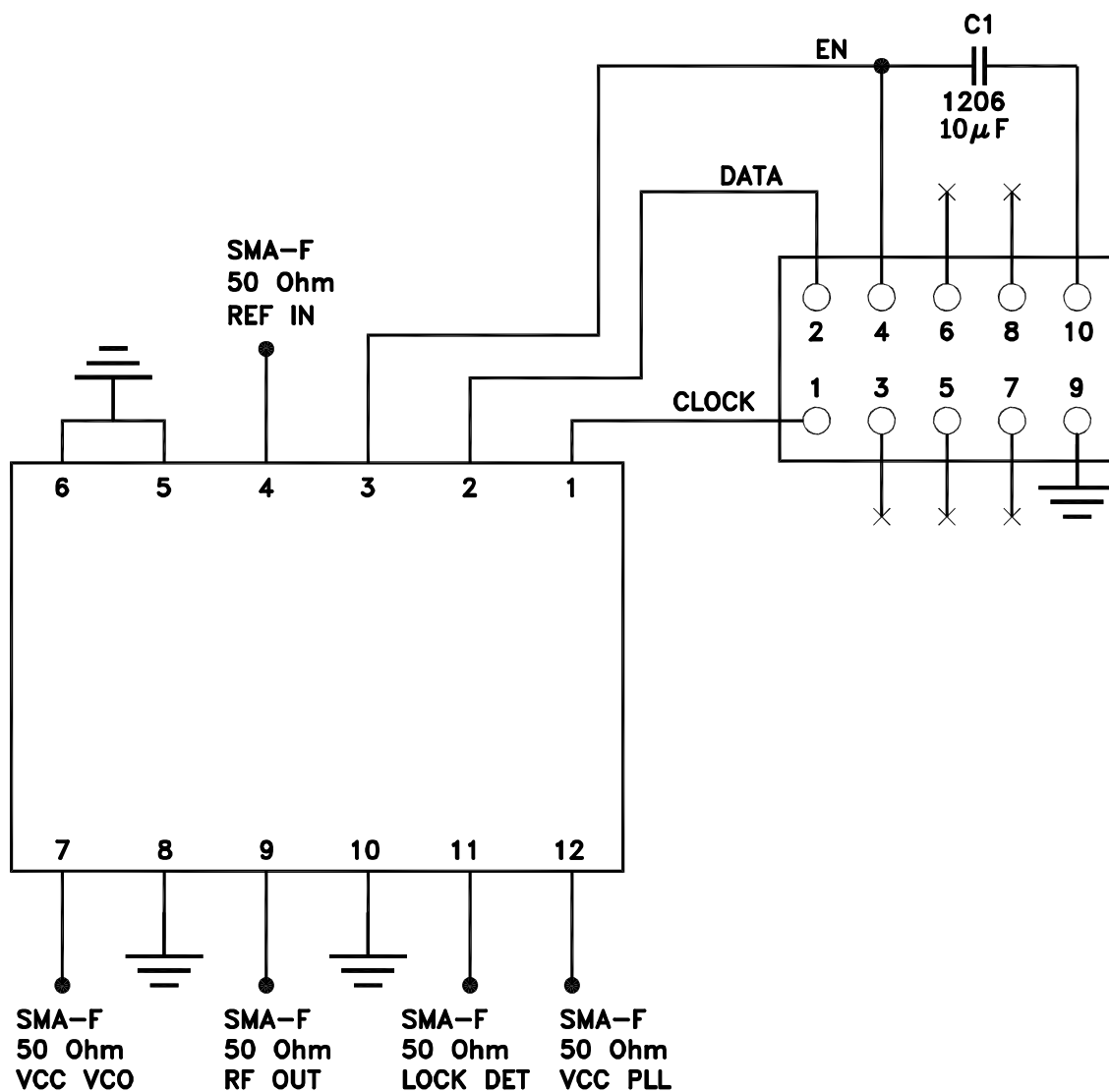
Evaluation Board and Circuit



TB-552+

NOTES:

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



TB-552+ Schematic Diagram



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