

Engineering Development Model

Frequency Synthesizer

DSN-EDR11167

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 : 99-01-1928

ELECTRICAL SPECIFICATIONS 50Ω, over -30°C to +70°C				
Parameter	Min.	Typ.	Max.	Units
Frequency	1025		1475	MHz
Step size		100		kHz
Settling Time Within ±1kHz		40		msec
Output Power	+10	+14	+18	dBm
Phase Noise				
at 100 Hz offset		-89		dBc/Hz
at 1 kHz offset		-97		dBc/Hz
at 10 KHz offset		-98	-92	dBc/Hz
at 100 KHz offset		-121	-115	dBc/Hz
at 1000 kHz offset		-144		dBc/Hz
Integrated SSB Phase Noise		-52		dBc
Ref & Comp Spurious Suppression		-95		dBc
0.5 Step size Spurious Suppression		-107		dBc
Non-Harm. Spurious Suppression		-90		dBc
Harmonic Suppression		-44	-18	dBc
Supply voltage	A-VCC	5		V
	D-VCC	5		V
Supply current	A-VCC	68	78	V
	D-VCC	46	55	V
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	3.3	V
	Logic Low		0.5	V
Digital Lock Detect	Locked	1.4	3.3	V
	Unlocked		0.4	V
Frequency Synthesizer PLL	Automatic startup at specified frequency (via internal microcontroller) & user programable (ADF4153)			

ABSOLUTE MAXIMUM RATINGS	
Operating Temperature	-45°C to 85°C
Storage Temperature	-55°C to 100°C
A-VCC Supply Voltage	6V
D-VCC Supply Voltage	6V
Reference Frequency voltage	3.6Vp-p
Data, Clock & LE levels	3.6V

Power On sequence: A-VCC followed by D-VCC
Power Off sequence: D-VCC followed by A-VCC

PIN CONNECTIONS			
RF OUT	14	CLOCK	5
A-VCC	16	DATA	6
D-VCC	1	LATCH ENABLE	7
REF IN	8	GROUND	2,3,9,10,12,13,15
LOCK DETECT	4		

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Typical Performance Data

FREQ. (MHz)	POWER OUTPUT (dBm)			HARMONICS						A-VCC CURRENT (mA)			D-VCC CURRENT (mA)		
				(dBc)											
	F2			F3											
-30 °C	+25°C	+70 °C	-30 °C	+25°C	+70 °C	-30 °C	+25°C	+70 °C	-30 °C	+25°C	+70 °C	-30 °C	+25°C	+70 °C	
1025.0	14.05	14.55	14.56	-22.39	-24.05	-26.39	-45.30	-46.73	-48.33	66.30	70.00	72.33	46.05	46.87	52.98
1070.0	14.09	14.37	14.39	-26.38	-28.00	-30.51	-48.15	-50.26	-52.81	66.24	69.83	71.97	46.16	47.02	53.10
1115.0	13.96	14.21	14.23	-31.54	-33.49	-36.64	-52.27	-55.06	-58.76	66.23	69.59	71.63	46.18	47.07	53.12
1160.0	14.03	14.48	14.48	-37.89	-40.54	-44.49	-57.44	-59.80	-63.60	66.10	69.30	71.26	44.33	44.94	51.05
1205.0	14.06	14.64	14.61	-49.80	-53.54	-61.18	-56.46	-57.17	-59.27	65.79	68.87	70.79	46.05	46.94	53.00
1250.0	14.14	14.33	14.28	-48.32	-51.15	-56.08	-53.17	-54.71	-57.24	65.40	68.45	70.40	46.15	47.06	53.09
1295.0	14.28	14.43	14.24	-44.61	-49.36	-54.21	-51.26	-53.44	-56.58	64.62	67.74	69.89	46.19	47.12	53.14
1340.0	14.30	14.74	14.39	-43.62	-49.08	-50.56	-50.25	-53.12	-54.92	63.94	67.13	69.52	44.33	44.96	51.05
1385.0	14.25	14.43	13.88	-45.79	-52.20	-49.02	-50.66	-49.36	-48.86	63.25	66.73	69.42	46.07	46.98	52.99
1430.0	14.00	13.85	13.30	-45.55	-49.29	-46.42	-50.05	-46.94	-46.72	62.90	66.47	69.23	46.16	47.09	53.10
1475.0	13.65	13.55	12.90	-47.92	-51.87	-46.81	-47.04	-44.79	-45.18	62.44	66.20	69.07	46.21	47.16	53.15

FREQ. (MHz)	PHASE NOISE (dBc/Hz) @ OFFSETS														
	-30 °C					+25°C					+70 °C				
	100Hz	1kHz	10kHz	100kHz	1MHz	100Hz	1kHz	10kHz	100kHz	1MHz	100Hz	1kHz	10kHz	100kHz	1MHz
1025.0	-91.74	-97.92	-100.13	-121.66	-145.76	-89.40	-98.32	-99.76	-120.08	-144.26	-93.97	-98.67	-99.05	-119.56	-137.85
1070.0	-89.54	-97.34	-99.03	-122.14	-146.22	-88.12	-98.94	-98.24	-120.64	-144.13	-92.03	-97.68	-97.92	-119.73	-138.78
1115.0	-88.48	-95.78	-97.78	-122.23	-146.22	-92.84	-96.62	-97.01	-120.77	-143.86	-90.50	-96.92	-96.03	-119.88	-139.32
1160.0	-89.54	-96.93	-97.68	-121.88	-145.91	-89.44	-96.94	-98.68	-120.54	-143.48	-91.76	-96.71	-97.30	-119.76	-139.61
1205.0	-88.29	-96.67	-97.34	-121.63	-145.54	-90.46	-97.34	-97.59	-120.63	-143.57	-91.17	-96.70	-96.80	-120.01	-140.05
1250.0	-91.99	-97.12	-98.36	-121.30	-145.35	-88.29	-96.31	-97.80	-120.35	-143.31	-87.94	-96.83	-97.29	-120.08	-140.26
1295.0	-85.20	-95.75	-97.26	-120.96	-145.20	-88.51	-96.78	-97.47	-120.29	-143.35	-89.59	-96.68	-97.53	-120.41	-140.57
1340.0	-86.53	-94.76	-97.05	-121.10	-145.18	-87.27	-97.80	-97.24	-120.43	-143.47	-89.34	-96.29	-97.20	-120.80	-140.71
1385.0	-86.08	-98.47	-97.59	-120.79	-145.04	-87.57	-96.64	-97.81	-120.42	-143.75	-88.60	-96.66	-98.51	-121.04	-141.11
1430.0	-89.46	-93.27	-96.06	-120.51	-145.16	-87.77	-96.26	-98.22	-120.47	-143.95	-91.95	-96.55	-97.73	-121.36	-141.34
1475.0	-85.12	-95.16	-96.10	-120.41	-145.00	-86.20	-95.24	-96.88	-120.73	-144.16	-88.58	-95.37	-97.64	-121.65	-141.90

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Typical Performance Data

COMPARISON SPURIOUS ORDER	COMPARISON & REFERENCE SPURIOUS @Fcarrier 1025 MHz± (n*Fcomparison) (dBc) NOTE 1			COMPARISON & REFERENCE SPURIOUS @Fcarrier 1250 MHz± (n*Fcomparison) (dBc) NOTE 1			COMPARISON & REFERENCE SPURIOUS @Fcarrier 1475 MHz± (n*Fcomparison) (dBc) NOTE 1		
	-30 °C	+25°C	+70 °C	-30 °C	+25°C	+70 °C	-30 °C	+25°C	+70 °C
-5	-131.47	-98.27	-100.63	-105.26	-101.17	-98.90	-112.33	-100.64	-107.63
-4	-81.33	-81.93	-82.77	-81.14	-82.46	-83.36	-82.66	-85.62	-88.63
-3	-96.21	-95.60	-97.58	-94.61	-97.62	-102.18	-92.68	-100.35	-100.70
-2	-78.93	-78.97	-80.76	-74.96	-75.81	-76.96	-76.66	-78.46	-79.39
-1	-108.19	-109.52	-107.82	-107.53	-98.46	-109.81	-112.91	-117.52	-104.66
0 ^{note 2}	-	-	-	-	-	-	-	-	-
+1	-104.54	-105.02	-103.41	-104.86	-105.33	-109.72	-108.93	-107.21	-112.94
+2	-76.93	-75.67	-74.58	-71.68	-71.29	-70.62	-73.47	-74.25	-74.09
+3	-97.25	-96.77	-97.03	-95.26	-98.40	-107.07	-94.03	-100.31	-108.67
+4	-83.01	-83.27	-82.84	-81.23	-81.98	-81.89	-84.36	-87.76	-89.90
+5	-112.14	-99.19	-101.83	-104.18	-110.08	-99.17	-108.12	-102.61	-109.39

Note 1: Reference & Comparison frequency 10 MHz

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

Notes

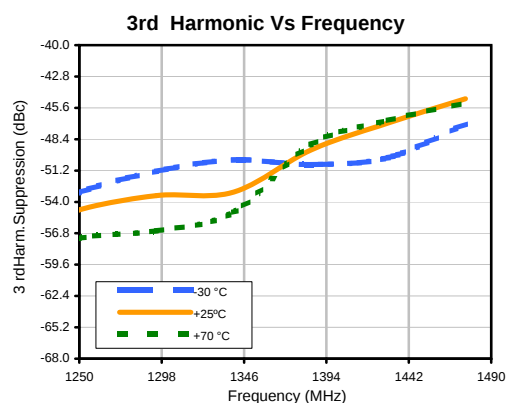
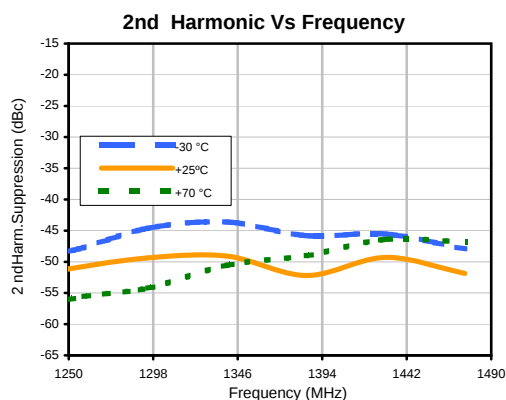
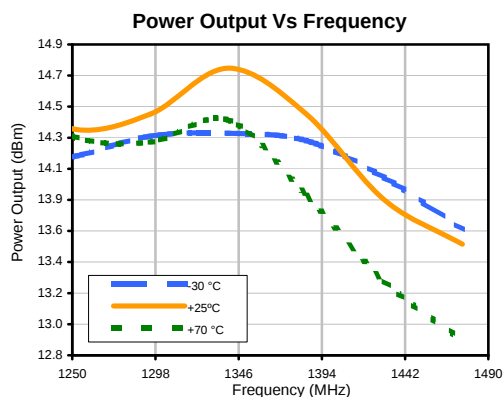
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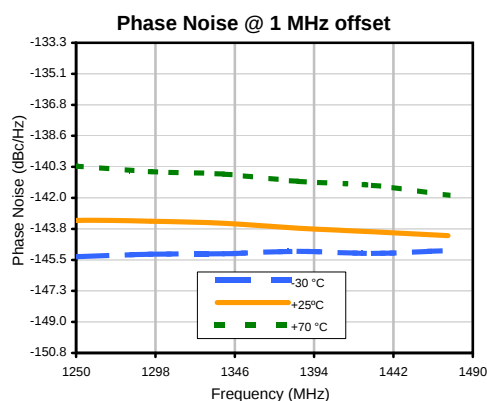
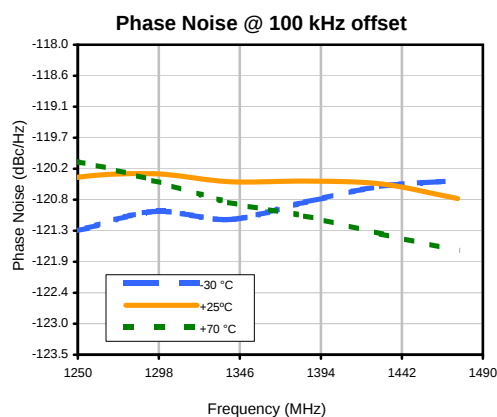
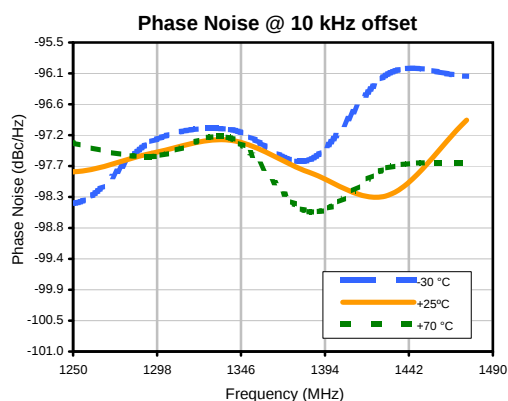
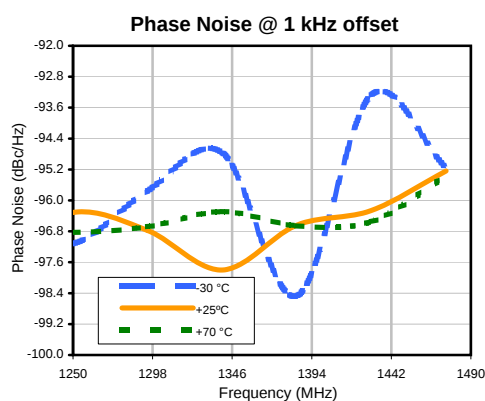
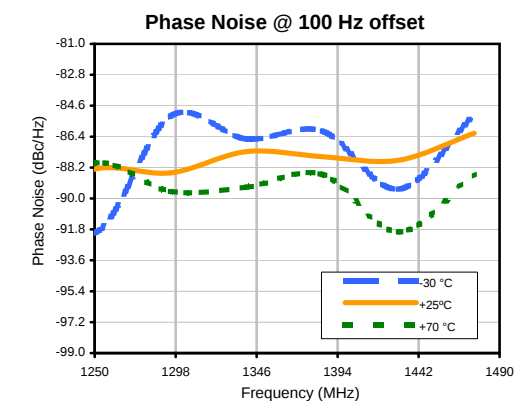
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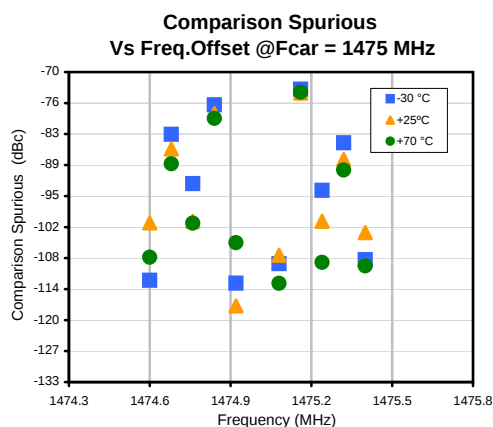
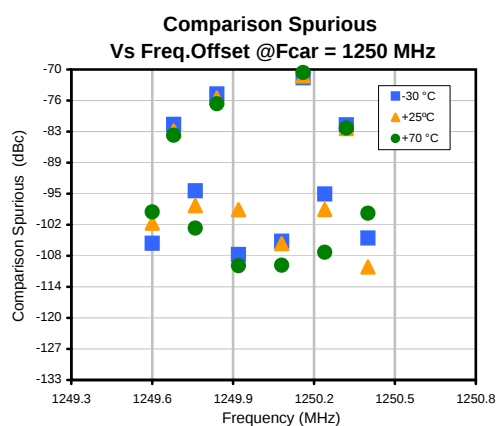
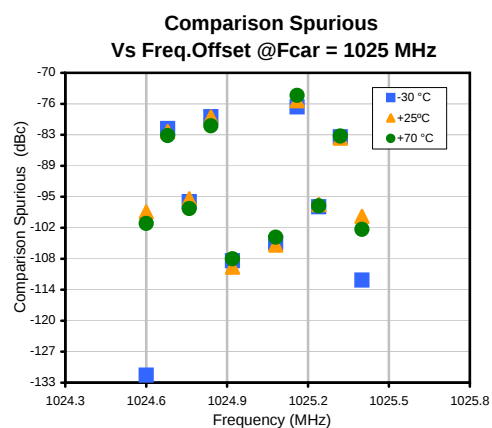


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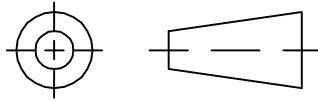


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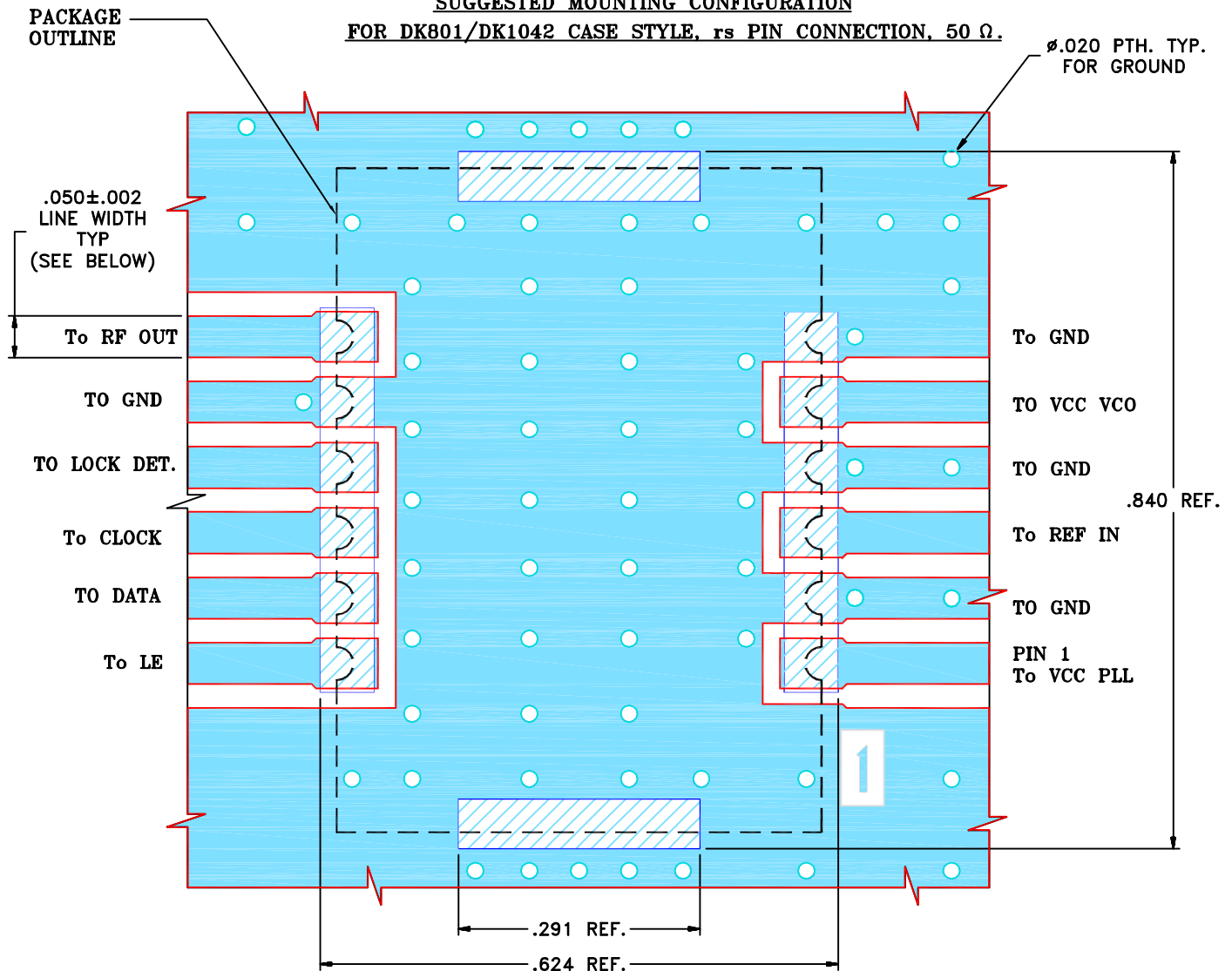
THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M108069	NEW RELEASE	11/06	DK	HH
A	M110535	MODIFY GROUND PADS	03/07	DK	HH
B	M126537	DELETE CHIP COMP. & TABLE OF VALUES	03/10	DK	HH
B	R78979	DELETE CHIP COMP. & TABLE OF VALUES	03/10	DK	HH

SUGGESTED MOUNTING CONFIGURATION

FOR DK801/DK1042 CASE STYLE, rs PIN CONNECTION, 50 Ω . ϕ .020 PTH. TYP.
FOR GROUND

NOTES:

- TRACE WIDTH IS SHOWN FOR FR4 WITH DIELECTRIC THICKNESS. .025"±.002". 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)

27 MAR 07

CHECKED

RZ (RAVON)

27 MAR 07

APPROVED

HH (RAVON)

27 MAR 07

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


Mini-Circuits® 13 Neptune Avenue
Brooklyn NY 11235

PL, rs ,DK801/DK1042, KSN
TB-567+ (50 Ω)

SIZE
A

CODE IDENT
15542

DRAWING NO:
98-PL-249

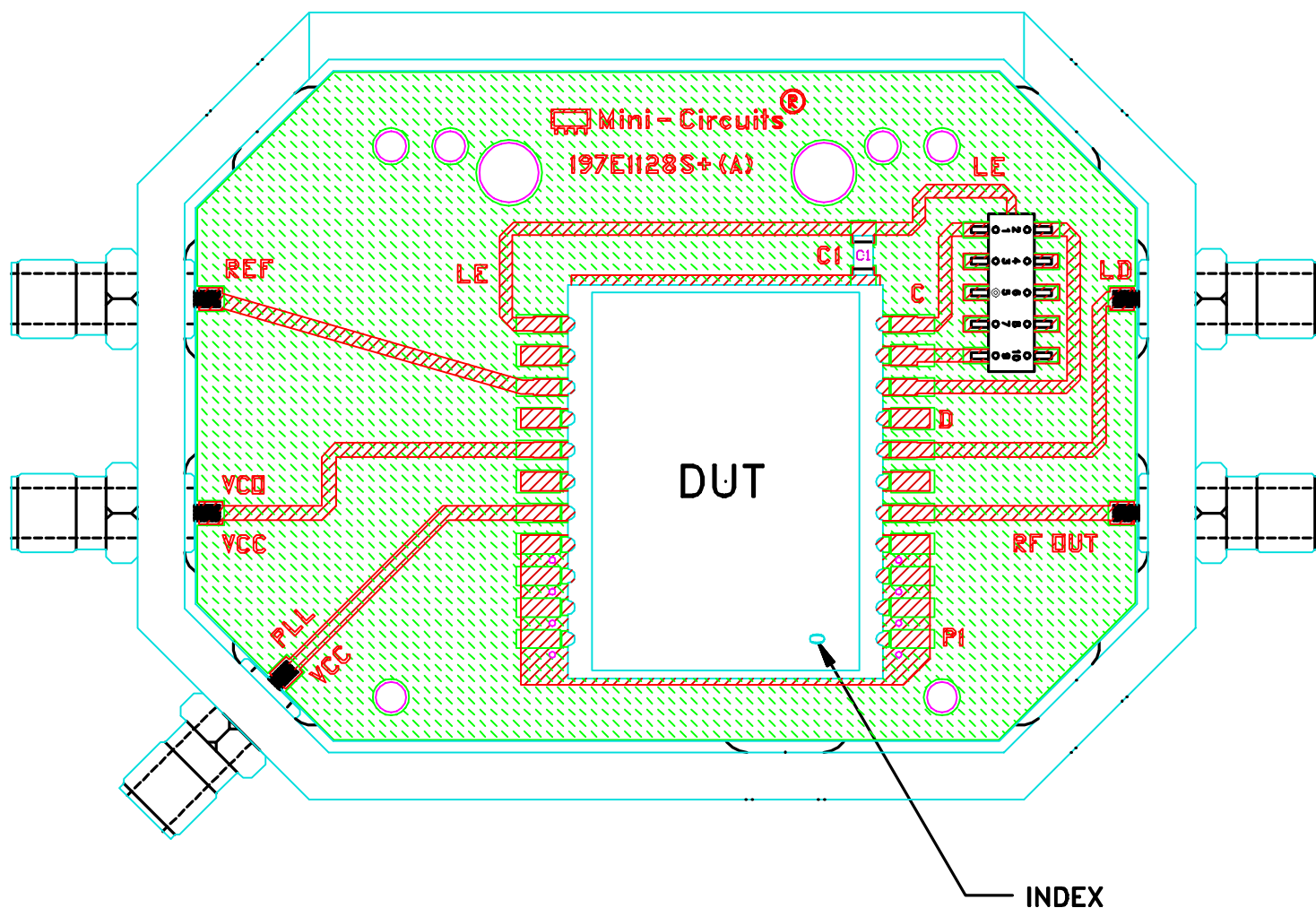
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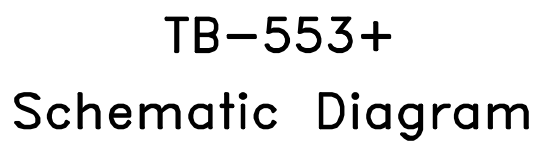
Evaluation Board and Circuit



TB-553+

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	-45° 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