

Frequency Synthesizer

DSN-2520A-219+

50Ω 1120 to 2520 MHz

The Big Deal

- Low phase noise and spurious
- Robust design and construction
- Fast settling time
- Wide bandwidth



CASE STYLE: KL1294

Product Overview

The DSN-2520A-219+ is a Frequency Synthesizer, designed to operate from 1120 to 2520 MHz for wireless sensor application. The DSN-2520A-219+ is packaged in a metal case (size of 1.250" x 1.000" x 0.232") to shield against unwanted signals and noise.

Key Features

Feature	Advantages
Low phase noise and spurious: • Phase Noise: -97 dBc/Hz typ. @ 10 kHz offset • Comparison Spurious: -70 dBc typ. • Reference Spurious: -79 dBc typ.	Low phase noise and spurious improve system EVM (Error Vector Magnitude).
Robust design and construction	To enhance the robustness of DSN-2520A-219+, each internal component is secured to the substrate with chip bonder, thereby eliminating the risk of tombstoning during subsequent solder reflow operations by the customer.
Fast settling time. 0.5mSec typical	Settling time, 0.5mSec typical can be used for settling applications such as jammers etc.



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50Ω 1120 to 2520 MHz

Features

- Integrated VCO + PLL
- Low phase noise and spurious
- Robust design and construction
- Operating voltage (VCC VCO=+10V, VCC PLL=+22V)
- Fast settling time
- Wide bandwidth

Applications

- Wireless sensor

General Description

The DSN-2520A-219+ is a Frequency Synthesizer, designed to operate from 1120 to 2520 MHz for wireless sensor application. The DSN-2520A-219+ is packaged in a metal case (size of 1.250" x 1.000" x 0.232") to shield against unwanted signals and noise. To enhance the robustness of DSN-2520A-219+, each internal component is secured to the substrate with chip bonder, thereby eliminating the risk of tombstoning during subsequent solder reflow operations by the customer.

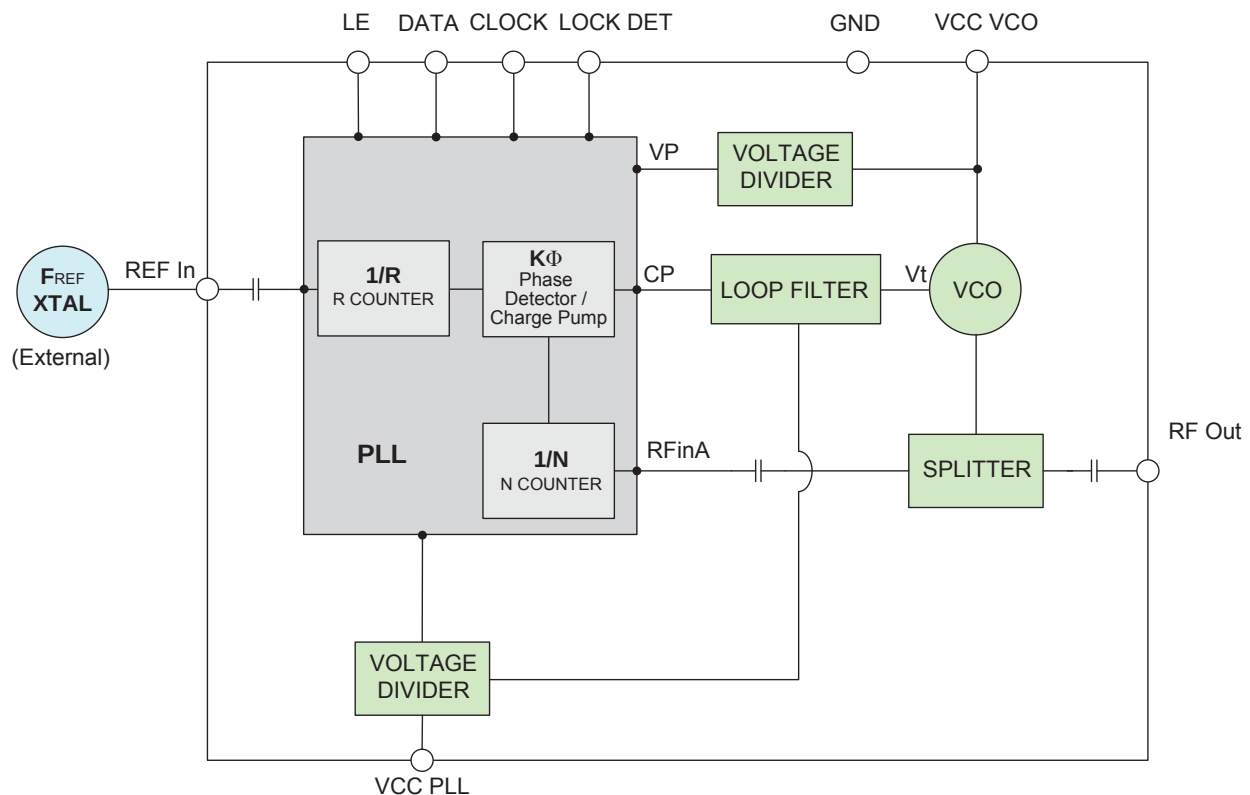


CASE STYLE: KL1294

+ RoHS compliant in accordance with EU Directive (2002/95/EC)

The +Suffix has been added in order to identify RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications.

Simplified Schematic



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REV. B
M149087
EDR-8565/1F1
DSN-2520A-219+
Category-G9
RAV
150104
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Electrical Specifications (over operating temperature -40°C to +85°C)

Parameters	Test Conditions	Min.	Typ.	Max.	Units
Frequency Range	-	1120	-	2520	MHz
Step Size	-	-	2.5	-	MHz
Settling Time	Within ± 1 deg	-	0.03	-	mSec
Output Power	-	+3.5	+6.5	+9.5	dBm
SSB Phase Noise	@ 100 Hz offset	-	-84	-	dBc/Hz
	@ 1 kHz offset	-	-94	-89	
	@ 10 kHz offset	-	-95	-90	
	@ 100 kHz offset	-	-92	-87	
	@ 1 MHz offset	-	-119	-114	
Integrated SSB Phase Noise	@ 100Hz - 1MHz	-	-40	-	dBc
Reference Spurious Suppression	Ref. Freq. 20 MHz	-	-75	-60	dBc
Comparison Spurious Suppression	Step Size 2.5 MHz	-	-70	-55	
Non - Harmonic Spurious Suppression	-	-	-90	-	
Harmonic Suppression	-	-	-25	-10	
VCO Supply Voltage	+10.00	+9.75	+10.00	+10.25	V
PLL Supply Voltage	+22.00	+21.75	+22.00	+22.25	
VCO Supply Current	-	-	74	80	mA
PLL Supply Current	-	-	18	24	
Reference Input (External)	Frequency	20 (square wave)	-	20	MHz
	Amplitude	1	-	1	V _{P-P}
	Input impedance	-	-	100	K Ω
	Phase Noise @ 1 kHz offset	-	-	-145	dBc/Hz
RF Output port Impedance	-	-	50	-	Ω
Input Logic Level	Input high voltage	-	2.65	-	V
	Input low voltage	-	-	0.65	V
Digital Lock Detect	Locked	-	2.15	-	V
	Unlocked	-	-	0.4	V
Frequency Synthesizer PLL	-	ADF4106			
PLL Programming	-	3-wire serial 3.3V CMOS			
Register Map @ 2520 MHz	F_Register *	-	(MSB) 010XYZ111000000000010011 (LSB)		
	N_Register	-	(MSB) 001000000011111100000001 (LSB)		
	R_Register	-	(MSB) 0001000000000000000100000 (LSB)		

* Refer to Charge Pump Settings

FREQ. LOCK [MHz]	Charge Pump Settings		
	X	Y	Z
1120	0	0	0
1122.5 - 1400	0	1	0
1402.5 - 2100	0	1	1
2102.5 - 2240	1	0	0
2242.5 - 2360	1	0	1
2362.5 - 2460	1	1	0
2462.5 - 2520	1	1	1

Absolute Maximum Ratings

Parameters	Ratings
VCO Supply Voltage	11V
PLL Supply Voltage	23V
VCO Supply Voltage to PLL Supply Voltage	N.A
Reference Frequency Voltage	-0.3Vmin, +3.6Vmax
Data, Clock, LE Levels	-0.3Vmin, +3.6Vmax
Operating Temperature	-40°C to +85°C
Storage Temperature	-55°C to +100°C

Permanent damage may occur if any of these limits are exceeded



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Typical Performance Data

FREQUENCY (MHz)	POWER OUTPUT (dBm)			VCO CURRENT (mA)			PLL CURENT (mA)		
	-45°C	+25°C	+85°C	-45°C	+25°C	+85°C	-45°C	+25°C	+85°C
1120	6.38	6.19	5.87	73.66	73.86	74.06	17.69	18.77	20.47
1225	6.48	6.20	5.94	74.20	74.32	74.43	17.82	18.94	20.65
1375	6.73	6.52	6.32	74.77	74.76	74.75	17.85	18.98	20.70
1525	7.02	6.84	6.64	75.01	74.95	74.79	17.87	19.03	20.75
1675	7.21	6.99	6.79	75.05	75.04	74.86	18.02	19.19	20.92
1825	7.20	7.01	6.78	74.97	75.05	74.91	18.03	19.22	20.96
1975	7.25	7.00	6.73	74.57	74.79	74.76	18.06	19.25	21.00
2125	7.22	7.03	6.69	74.15	74.46	74.54	18.08	19.28	21.04
2275	6.81	6.74	6.33	73.60	74.01	74.20	18.23	19.45	21.21
2425	6.53	6.27	5.85	73.10	73.62	73.93	18.25	19.48	21.25
2520	6.55	5.96	5.39	72.91	73.43	73.76	18.18	19.42	21.19

FREQUENCY (MHz)	HARMONICS (dBc)					
	F2			F3		
	-45°C	+25°C	+85°C	-45°C	+25°C	+85°C
1120	-22.21	-15.04	-17.15	-17.37	-16.75	-17.33
1225	-14.78	-16.39	-17.74	-20.60	-20.30	-20.79
1375	-19.08	-19.55	-19.98	-29.82	-29.31	-30.02
1525	-23.60	-22.55	-21.95	-33.41	-32.78	-33.87
1675	-25.41	-23.74	-22.76	-28.51	-27.61	-28.36
1825	-29.07	-27.19	-26.04	-27.41	-27.03	-28.09
1975	-30.67	-29.16	-28.61	-24.98	-24.47	-25.25
2125	-35.57	-35.27	-35.49	-22.49	-21.19	-21.99
2275	-41.39	-49.82	-57.24	-20.39	-19.63	-20.85
2425	-40.55	-36.94	-34.71	-19.22	-19.53	-21.16
2520	-35.61	-32.37	-31.07	-18.88	-18.23	-19.40



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NON-CATALOG

Frequency Synthesizer

DSN-2520A-219+

FREQUENCY (MHz)	PHASE NOISE (dBc/Hz) @OFFSETS				
	+25°C				
	100Hz	1kHz	10kHz	100kHz	1MHz
1120	-90.77	-100.03	-99.22	-94.77	-119.64
1225	-91.35	-99.88	-100.58	-96.45	-121.11
1375	-90.76	-99.76	-100.17	-96.04	-121.58
1525	-91.53	-98.21	-99.38	-96.90	-119.53
1675	-85.55	-96.75	-98.72	-95.94	-118.99
1825	-89.02	-97.77	-97.09	-94.45	-119.22
1975	-86.00	-94.35	-96.41	-92.79	-119.57
2125	-87.12	-95.30	-94.73	-92.07	-119.07
2275	-86.20	-94.38	-93.80	-91.36	-119.22
2425	-88.80	-94.90	-95.68	-92.58	-119.79
2520	-84.95	-95.17	-94.75	-91.98	-120.82

FREQUENCY (MHz)	PHASE NOISE (dBc/Hz) @OFFSETS				
	-45°C				
	100Hz	1kHz	10kHz	100kHz	1MHz
1120	-92.21	-99.15	-99.36	-95.04	-119.05
1225	-91.98	-99.12	-100.06	-96.63	-120.67
1375	-88.73	-98.57	-99.69	-95.85	-121.63
1525	-89.92	-98.20	-99.40	-96.87	-119.67
1675	-88.83	-98.00	-98.84	-96.21	-119.18
1825	-87.40	-96.51	-97.69	-94.51	-119.24
1975	-85.62	-96.53	-96.88	-93.59	-119.30
2125	-85.75	-94.70	-95.34	-92.32	-118.81
2275	-86.94	-94.27	-94.16	-90.89	-119.23
2425	-86.03	-94.74	-95.11	-92.18	-119.98
2520	-86.27	-94.86	-94.87	-91.91	-120.59

FREQUENCY (MHz)	PHASE NOISE (dBc/Hz) @OFFSETS				
	+85°C				
	100Hz	1kHz	10kHz	100kHz	1MHz
1120	-93.40	-102.34	-102.03	-97.18	-121.70
1225	-91.16	-100.59	-101.08	-97.25	-121.97
1375	-89.67	-99.07	-99.87	-96.67	-120.68
1525	-89.16	-99.44	-99.36	-97.16	-118.65
1675	-89.23	-98.49	-98.31	-95.63	-118.18
1825	-88.32	-96.34	-96.63	-94.34	-118.30
1975	-88.27	-94.66	-95.75	-92.17	-118.79
2125	-88.42	-94.23	-95.60	-92.36	-118.85
2275	-86.89	-95.19	-95.46	-92.65	-119.19
2425	-88.76	-94.41	-95.57	-93.22	-119.70
2520	-84.91	-94.41	-94.16	-91.54	-120.24



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COMPARISON SPURIOUS ORDER	COMPARISON SPURIOUS @Fcarrier 1120MHz+(n*Fcomparison) (dBc) note 1			COMPARISON SPURIOUS @Fcarrier 1820MHz+(n*Fcomparison) (dBc) note 1			COMPARISON SPURIOUS @Fcarrier 2520MHz+(n*Fcomparison) (dBc) note 1		
	-45°C	+25°C	+85°C	-45°C	+25°C	+85°C	-45°C	+25°C	+85°C
-5	-100.56	-97.62	-94.59	-84.04	-85.04	-86.17	-89.75	-89.20	-91.42
-4	-93.24	-97.46	-92.81	-86.01	-84.06	-85.07	-85.32	-87.82	-90.28
-3	-94.50	-93.93	-90.53	-80.56	-81.86	-83.24	-85.75	-85.94	-88.56
-2	-90.14	-90.43	-87.40	-76.87	-78.77	-80.48	-82.21	-83.01	-85.71
-1	-79.16	-83.05	-82.24	-69.76	-72.76	-75.68	-74.18	-76.15	-79.64
0 ^{note 2}	-	-	-	-	-	-	-	-	-
+1	-79.26	-82.89	-82.99	-71.27	-75.72	-79.45	-79.36	-82.46	-84.71
+2	-87.71	-88.12	-85.67	-76.72	-78.74	-80.33	-81.29	-82.81	-84.93
+3	-90.72	-90.54	-88.43	-79.47	-81.25	-82.40	-83.12	-84.74	-86.35
+4	-90.64	-92.74	-90.25	-84.73	-83.29	-84.08	-82.90	-86.21	-87.59
+5	-93.75	-93.24	-91.50	-82.58	-84.13	-84.97	-85.99	-87.23	-88.38

Note 1: Comparison frequency 2.5 MHz

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

REFERENCE SPURIOUS ORDER	REFERENCE SPURIOUS @Fcarrier 1120MHz+(n*Freference) (dBc) note 3			REFERENCE SPURIOUS @Fcarrier 1820MHz+(n*Freference) (dBc) note 3			REFERENCE SPURIOUS @Fcarrier 2520MHz+(n*Freference) (dBc) note 3		
	-45°C	+25°C	+85°C	-45°C	+25°C	+85°C	-45°C	+25°C	+85°C
-5	-124.61	-110.80	-119.92	-112.12	-114.01	-112.65	-114.52	-108.00	-112.21
-4	-99.69	-99.49	-101.18	-107.35	-106.99	-106.84	-104.31	-102.71	-105.83
-3	-104.14	-102.38	-103.17	-94.66	-95.57	-96.08	-97.57	-98.47	-97.77
-2	-89.97	-89.97	-89.39	-79.06	-78.70	-79.79	-82.13	-84.04	-85.12
-1	-101.64	-98.58	-96.63	-84.82	-85.71	-86.70	-90.50	-88.97	-92.08
0 ^{note 4}	-	-	-	-	-	-	-	-	-
+1	-94.43	-94.22	-92.80	-83.41	-84.69	-85.35	-86.88	-88.39	-88.41
+2	-87.30	-88.34	-88.49	-78.93	-79.56	-80.61	-83.96	-83.93	-84.80
+3	-103.88	-108.95	-111.21	-103.29	-100.83	-103.09	-110.32	-106.46	-103.94
+4	-99.44	-99.18	-103.24	-109.04	-107.71	-109.69	-110.36	-105.14	-110.05
+5	-115.21	-115.52	-112.19	-114.89	-114.69	-111.56	-131.09	-115.20	-114.01

Note 3: Reference frequency 20 MHz

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



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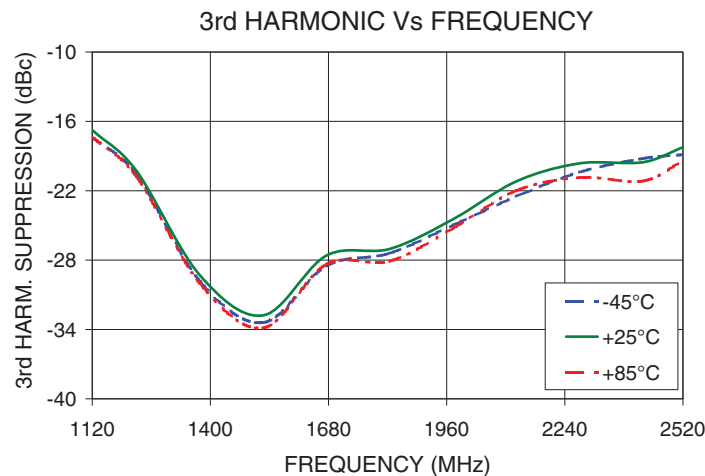
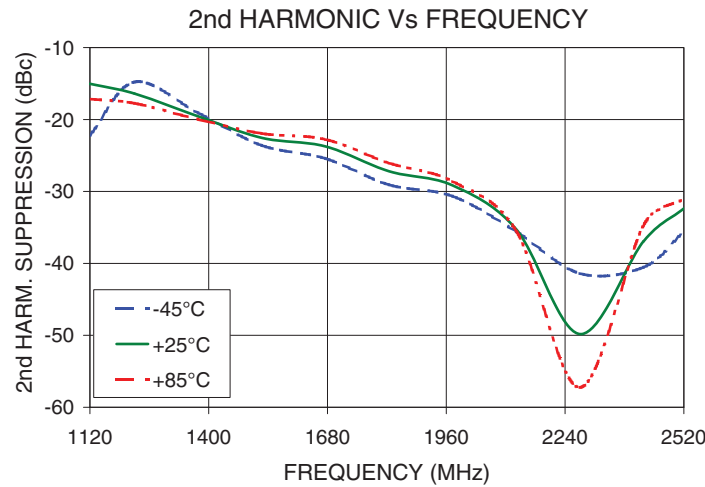
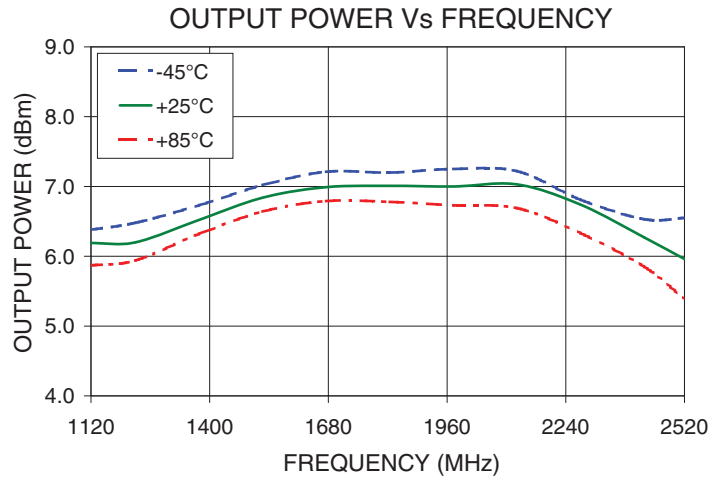


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Typical Performance Curves



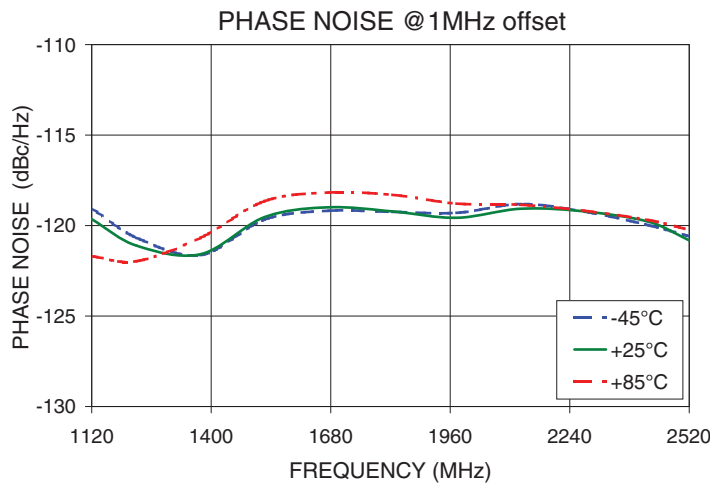
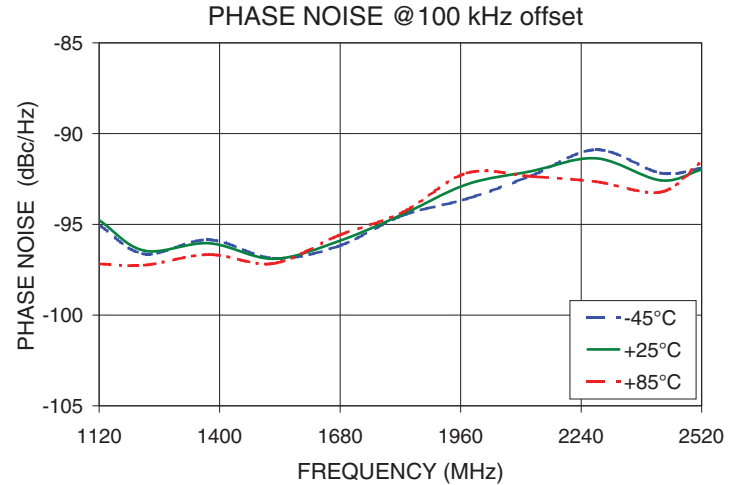
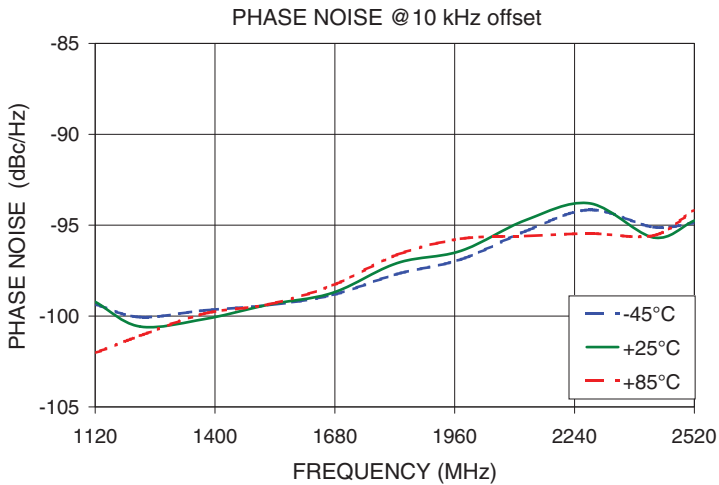
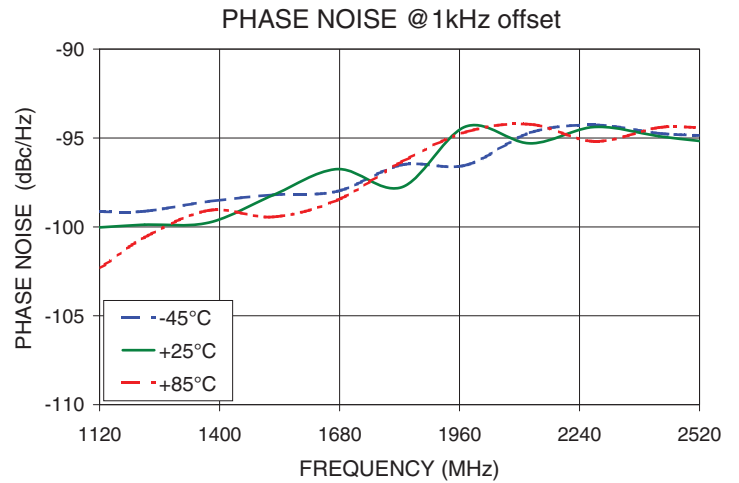
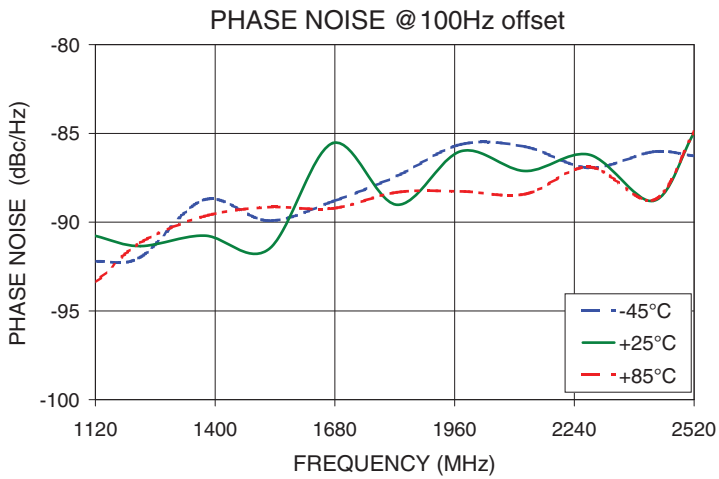
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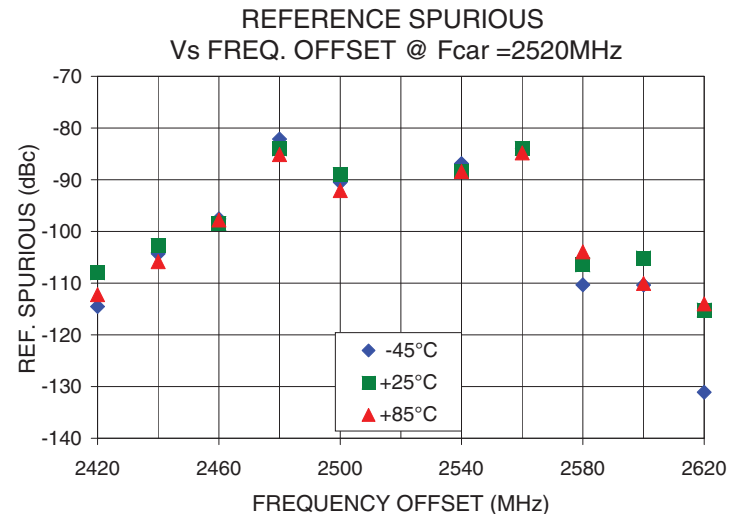
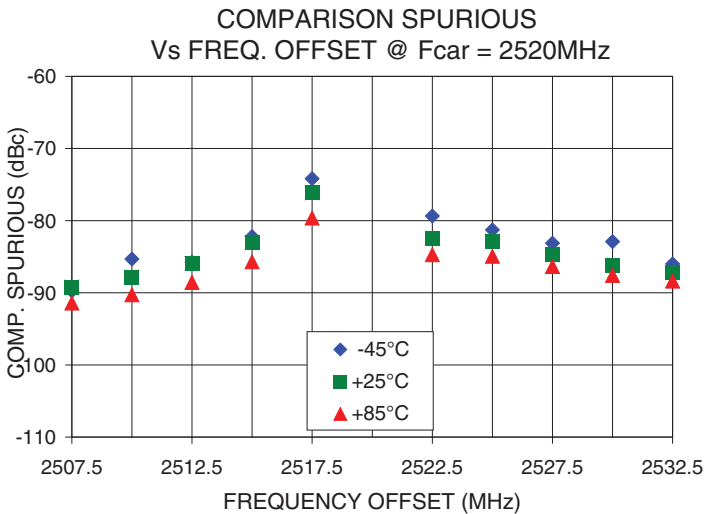
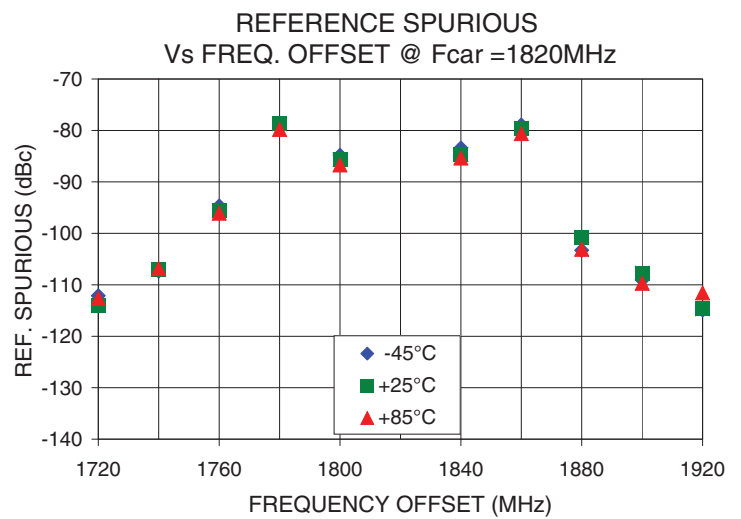
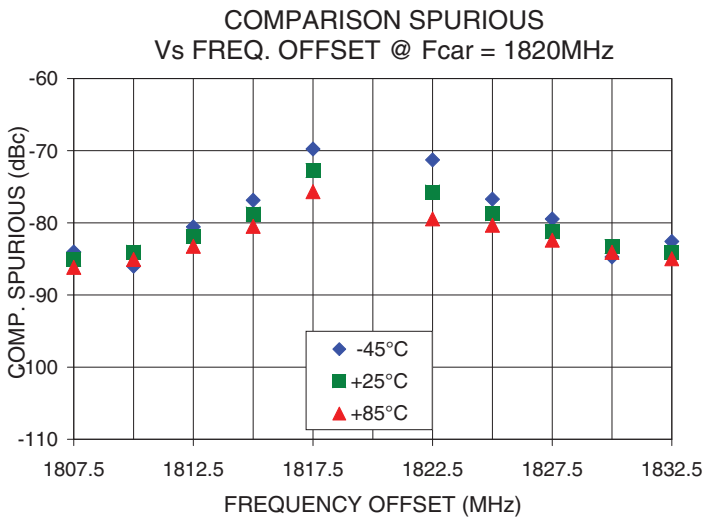
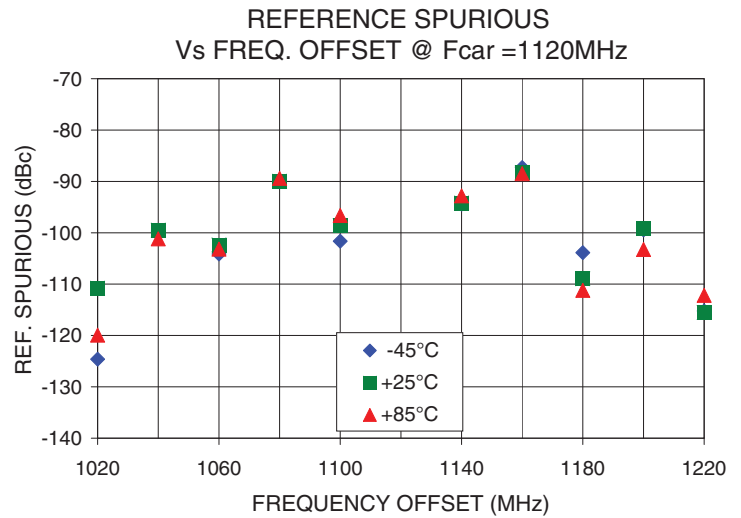
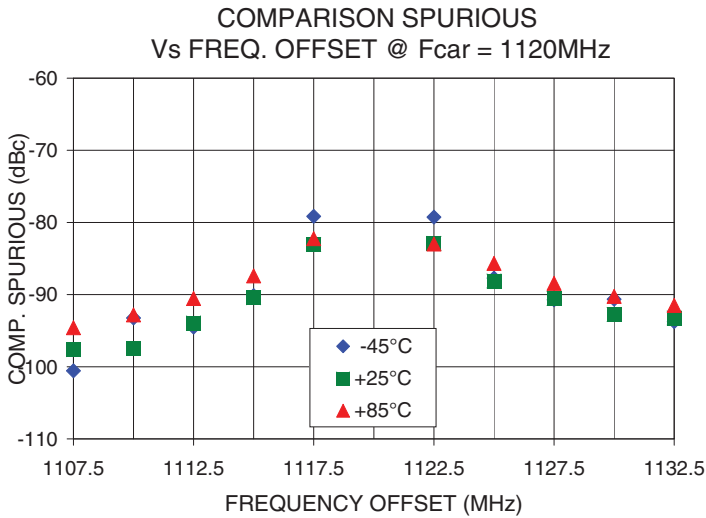
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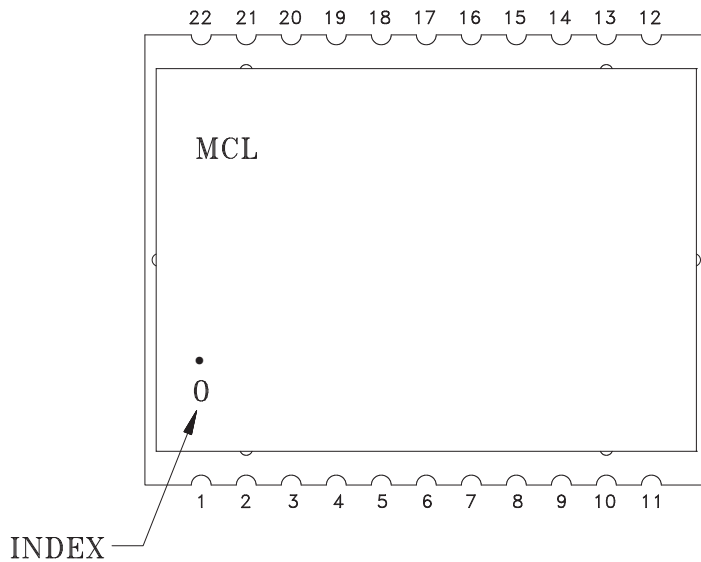
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Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuit's applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet 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/MCStore/terms.jsp.



Pin Configuration

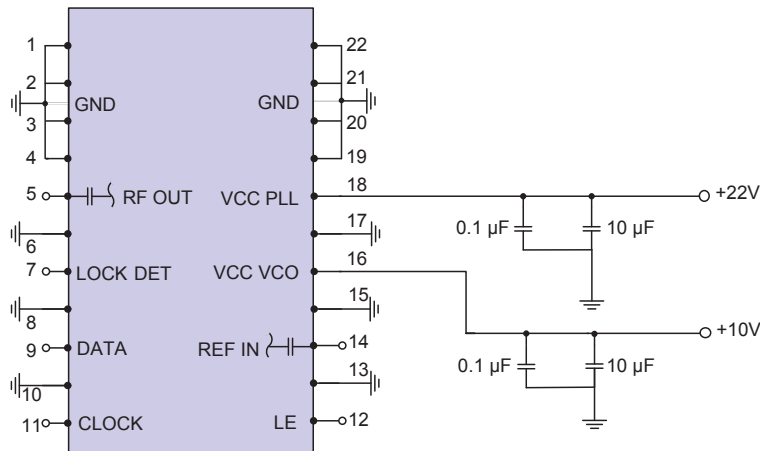


Pin Connection

Pin Number	Function	Pin Number	Function
1	GND	12	LE
2	GND	13	GND
3	GND	14	REF IN
4	GND	15	GND
5	RF OUT	16	VCC VCO
6	GND	17	GND
7	LOCK DET	18	VCC PLL
8	GND	19	GND
9	DATA	20	GND
10	GND	21	GND
11	CLOCK	22	GND

Recommended Application Circuit

Note: REF IN and RF OUT ports are internally AC coupled.



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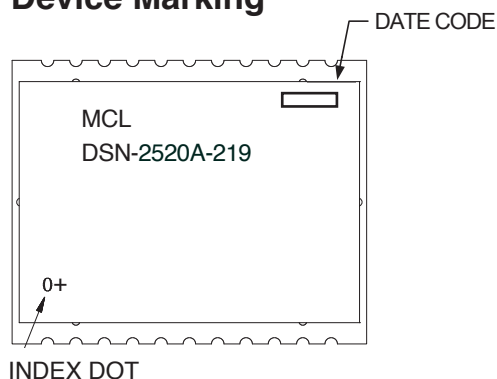


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Device Marking



Additional Detailed Technical Information

Additional information is available on our web site. To access this information enter the model number on our web site home page.

Case Style: KL1294

Tape & Reel: TR-F97

Suggested Layout for PCB Design: PL-318

Evaluation Board: TB-553+

Environment Ratings: ENV03T2



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Frequency Synthesizer

DSN-2520A-219+

Typical Performance Data

FREQ. (MHz)	POWER OUTPUT (dBm)			HARMONICS						VCO CURRENT (mA)			PLL CURENT (mA)		
				(dBc)											
	F2			F3											
-45°C	+25°C	+85°C	-45°C	+25°C	+85°C	-45°C	+25°C	+85°C	-45°C	+25°C	+85°C	-45°C	+25°C	+85°C	
1120	6.38	6.19	5.87	-22.21	-15.04	-17.15	-17.37	-16.75	-17.33	73.66	73.86	74.06	17.69	18.77	20.47
1225	6.48	6.20	5.94	-14.78	-16.39	-17.74	-20.60	-20.30	-20.79	74.20	74.32	74.43	17.82	18.94	20.65
1375	6.73	6.52	6.32	-19.08	-19.55	-19.98	-29.82	-29.31	-30.02	74.77	74.76	74.75	17.85	18.98	20.70
1525	7.02	6.84	6.64	-23.60	-22.55	-21.95	-33.41	-32.78	-33.87	75.01	74.95	74.79	17.87	19.03	20.75
1675	7.21	6.99	6.79	-25.41	-23.74	-22.76	-28.51	-27.61	-28.36	75.05	75.04	74.86	18.02	19.19	20.92
1825	7.20	7.01	6.78	-29.07	-27.19	-26.04	-27.41	-27.03	-28.09	74.97	75.05	74.91	18.03	19.22	20.96
1975	7.25	7.00	6.73	-30.67	-29.16	-28.61	-24.98	-24.47	-25.25	74.57	74.79	74.76	18.06	19.25	21.00
2125	7.22	7.03	6.69	-35.57	-35.27	-35.49	-22.49	-21.19	-21.99	74.15	74.46	74.54	18.08	19.28	21.04
2275	6.81	6.74	6.33	-41.39	-49.82	-57.24	-20.39	-19.63	-20.85	73.60	74.01	74.20	18.23	19.45	21.21
2425	6.53	6.27	5.85	-40.55	-36.94	-34.71	-19.22	-19.53	-21.16	73.10	73.62	73.93	18.25	19.48	21.25
2520	6.55	5.96	5.39	-35.61	-32.37	-31.07	-18.88	-18.23	-19.40	72.91	73.43	73.76	18.18	19.42	21.19

FREQ. (MHz)	PHASE NOISE (dBc/Hz)														
	@ OFFSETS														
	-45°C					+25°C					+85°C				
	100Hz	1kHz	10kHz	100kHz	1MHz	100Hz	1kHz	10kHz	100kHz	1MHz	100Hz	1kHz	10kHz	100kHz	1MHz
1120	-92.21	-99.15	-99.36	-95.04	-119.05	-90.77	-100.03	-99.22	-94.77	-119.64	-93.40	-102.34	-102.03	-97.18	-121.70
1225	-91.98	-99.12	-100.06	-96.63	-120.67	-91.35	-99.88	-100.58	-96.45	-121.11	-91.16	-100.59	-101.08	-97.25	-121.97
1375	-88.73	-98.57	-99.69	-95.85	-121.63	-90.76	-99.76	-100.17	-96.04	-121.58	-89.67	-99.07	-99.87	-96.67	-120.68
1525	-89.92	-98.20	-99.40	-96.87	-119.67	-91.53	-98.21	-99.38	-96.90	-119.53	-89.16	-99.44	-99.36	-97.16	-118.65
1675	-88.83	-98.00	-98.84	-96.21	-119.18	-85.55	-96.75	-98.72	-95.94	-118.99	-89.23	-98.49	-98.31	-95.63	-118.18
1825	-87.40	-96.51	-97.69	-94.51	-119.24	-89.02	-97.77	-97.09	-94.45	-119.22	-88.32	-96.34	-96.63	-94.34	-118.30
1975	-85.62	-96.53	-96.88	-93.59	-119.30	-86.00	-94.35	-96.41	-92.79	-119.57	-88.27	-94.66	-95.75	-92.17	-118.79
2125	-85.75	-94.70	-95.34	-92.32	-118.81	-87.12	-95.30	-94.73	-92.07	-119.07	-88.42	-94.23	-95.60	-92.36	-118.85
2275	-86.94	-94.27	-94.16	-90.89	-119.23	-86.20	-94.38	-93.80	-91.36	-119.22	-86.89	-95.19	-95.46	-92.65	-119.19
2425	-86.03	-94.74	-95.11	-92.18	-119.98	-88.80	-94.90	-95.68	-92.58	-119.79	-88.76	-94.41	-95.57	-93.22	-119.70
2520	-86.27	-94.86	-94.87	-91.91	-120.59	-84.95	-95.17	-94.75	-91.98	-120.82	-84.91	-94.41	-94.16	-91.54	-120.24

REV. X1

DSN-2520A-219+

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Typical Performance Data

COMPARISON SPURIOUS ORDER	COMPARISON SPURIOUS @Fcarrier 1120MHz± (n*Fcomparison) (dBc) NOTE 1			COMPARISON SPURIOUS @Fcarrier 1820MHz± (n*Fcomparison) (dBc) NOTE 1			COMPARISON SPURIOUS @Fcarrier 2520MHz± (n*Fcomparison) (dBc) NOTE 1		
	-45°C	+25°C	+85°C	-45°C	+25°C	+85°C	-45°C	+25°C	+85°C
-5	-100.56	-97.62	-94.59	-84.04	-85.04	-86.17	-89.75	-89.20	-91.42
-4	-93.24	-97.46	-92.81	-86.01	-84.06	-85.07	-85.32	-87.82	-90.28
-3	-94.50	-93.93	-90.53	-80.56	-81.86	-83.24	-85.75	-85.94	-88.56
-2	-90.14	-90.43	-87.40	-76.87	-78.77	-80.48	-82.21	-83.01	-85.71
-1	-79.16	-83.05	-82.24	-69.76	-72.76	-75.68	-74.18	-76.15	-79.64
0 ^{note 2}	-	-	-	-	-	-	-	-	-
+1	-79.26	-82.89	-82.99	-71.27	-75.72	-79.45	-79.36	-82.46	-84.71
+2	-87.71	-88.12	-85.67	-76.72	-78.74	-80.33	-81.29	-82.81	-84.93
+3	-90.72	-90.54	-88.43	-79.47	-81.25	-82.40	-83.12	-84.74	-86.35
+4	-90.64	-92.74	-90.25	-84.73	-83.29	-84.08	-82.90	-86.21	-87.59
+5	-93.75	-93.24	-91.50	-82.58	-84.13	-84.97	-85.99	-87.23	-88.38

Note 1: Comparison frequency 2.5 MHz

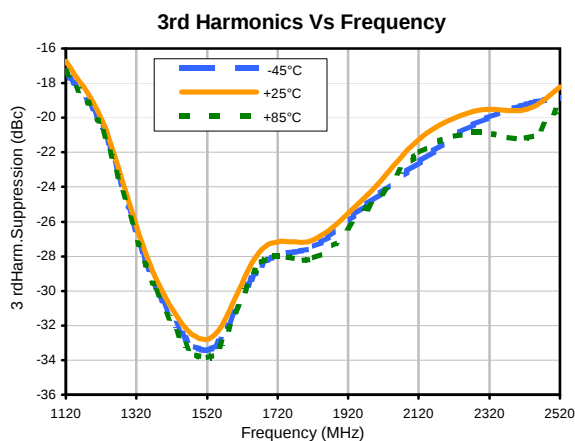
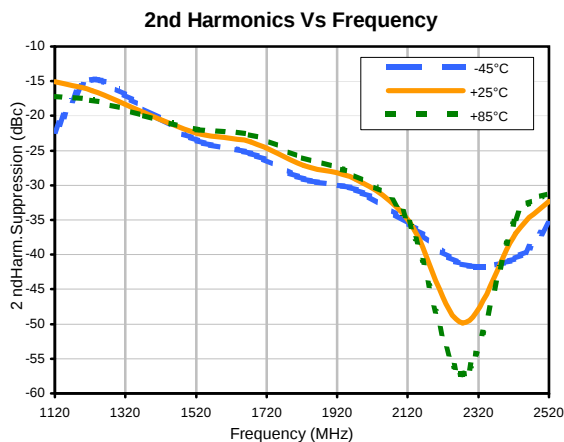
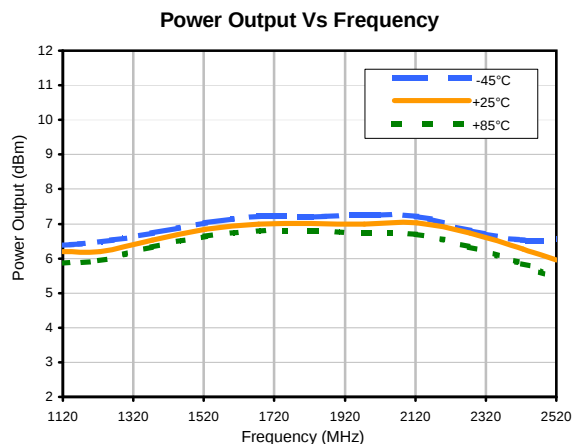
Note 2: All spurs are referenced to carrier signal (n=0).

REFERENCE SPURIOUS ORDER	REFERENCE SPURIOUS @Fcarrier 1120MHz± (n*Reference) (dBc) NOTE 3			REFERENCE SPURIOUS @Fcarrier 1820MHz± (n*Reference) (dBc) NOTE 3			REFERENCE SPURIOUS @Fcarrier 2520MHz± (n*Reference) (dBc) NOTE 3		
	-45°C	+25°C	+85°C	-45°C	+25°C	+85°C	-45°C	+25°C	+85°C
-5	-124.61	-110.80	-119.92	-112.12	-114.01	-112.65	-114.52	-108.00	-112.21
-4	-99.69	-99.49	-101.18	-107.35	-106.99	-106.84	-104.31	-102.71	-105.83
-3	-104.14	-102.38	-103.17	-94.66	-95.57	-96.08	-97.57	-98.47	-97.77
-2	-89.97	-89.97	-89.39	-79.06	-78.70	-79.79	-82.13	-84.04	-85.12
-1	-101.64	-98.58	-96.63	-84.82	-85.71	-86.70	-90.50	-88.97	-92.08
0 ^{note 4}	-	-	-	-	-	-	-	-	-
+1	-94.43	-94.22	-92.80	-83.41	-84.69	-85.35	-86.88	-88.39	-88.41
+2	-87.30	-88.34	-88.49	-78.93	-79.56	-80.61	-83.96	-83.93	-84.80
+3	-103.88	-108.95	-111.21	-103.29	-100.83	-103.09	-110.32	-106.46	-103.94
+4	-99.44	-99.18	-103.24	-109.04	-107.71	-109.69	-110.36	-105.14	-110.05
+5	-115.21	-115.52	-112.19	-114.89	-114.69	-111.56	-131.09	-115.20	-114.01

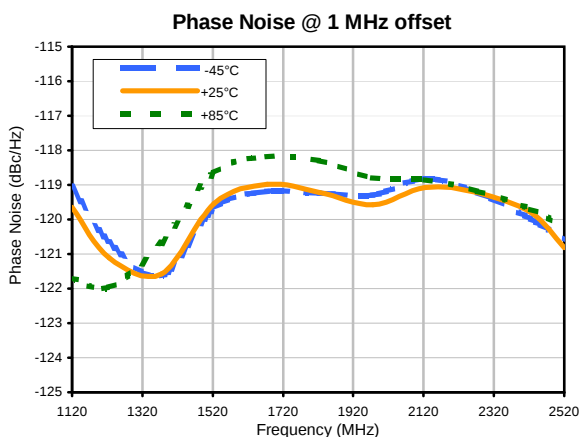
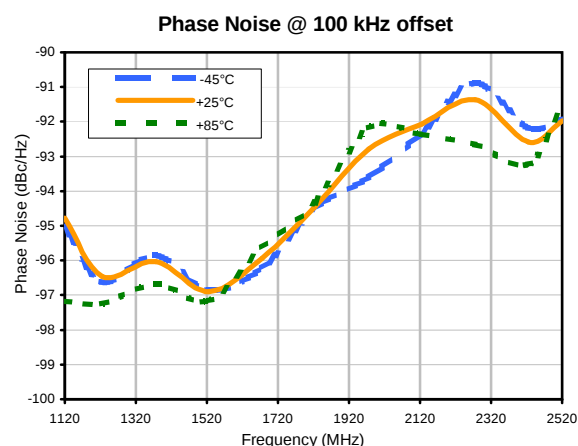
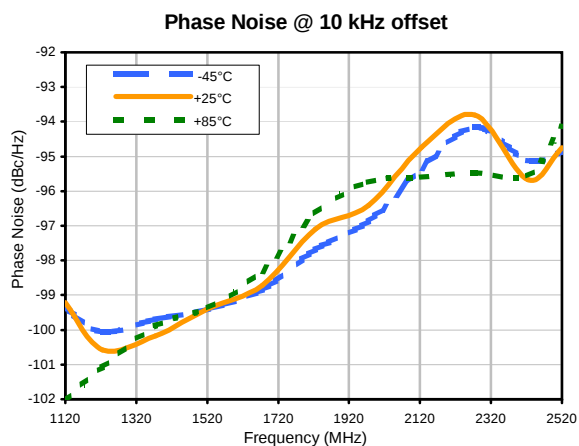
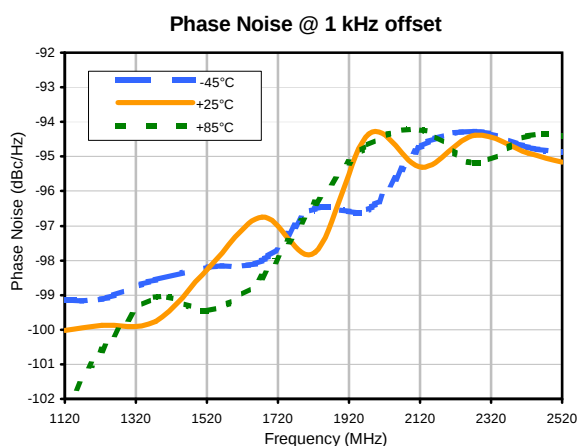
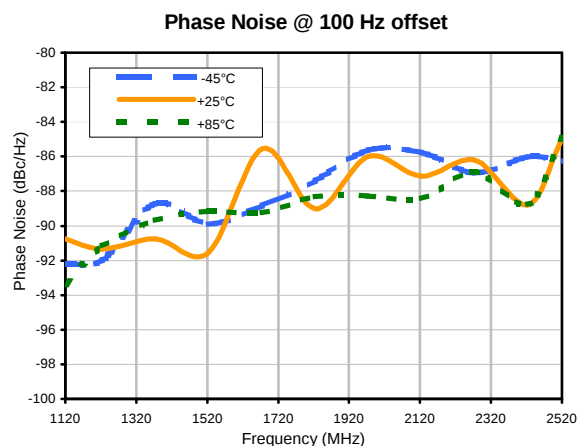
Note 3: Reference frequency 20 MHz

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

Typical Performance Data



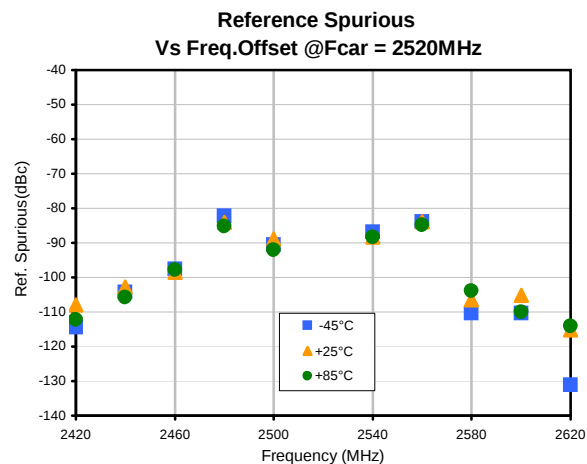
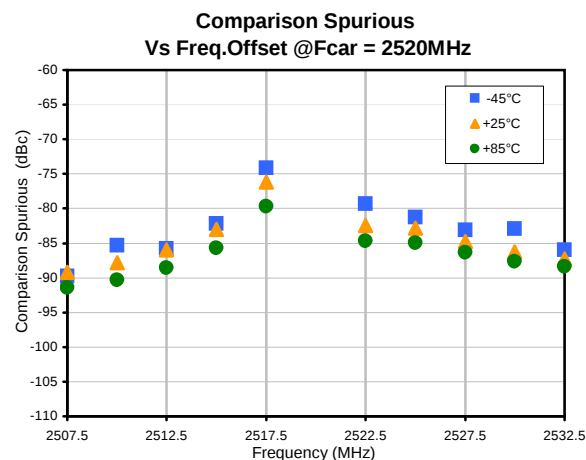
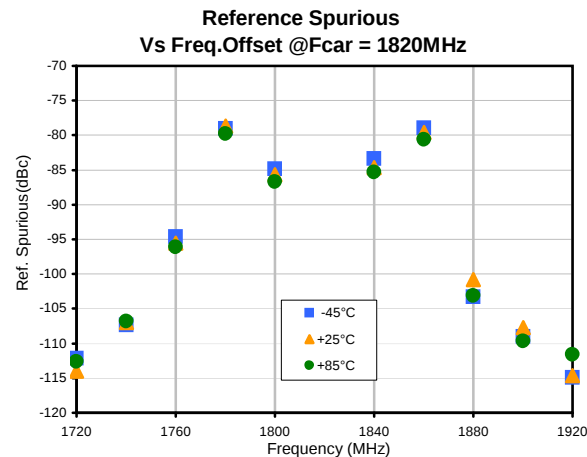
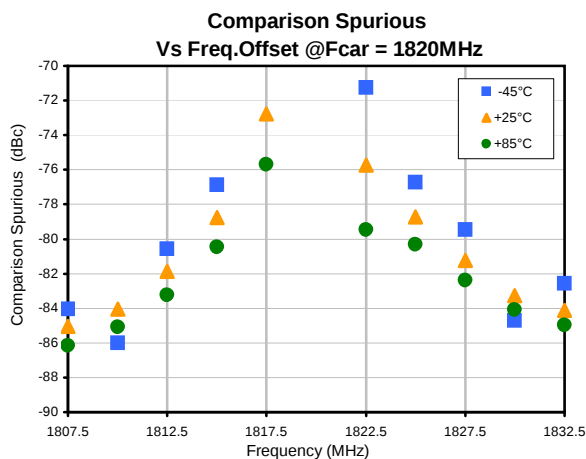
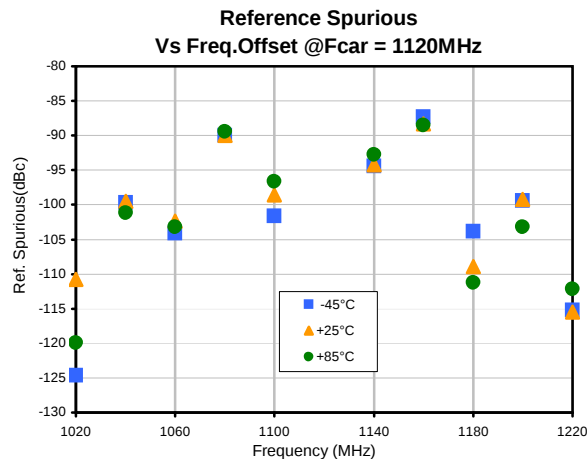
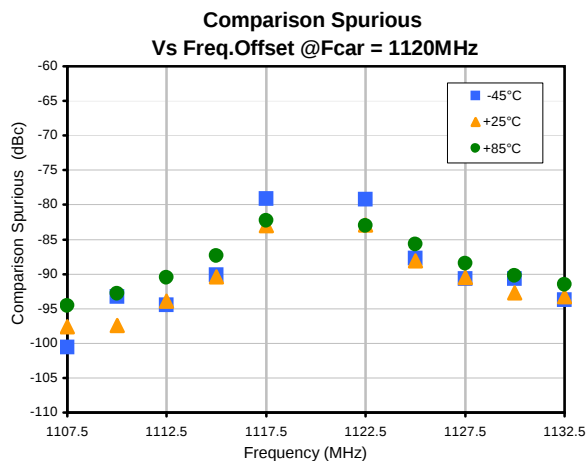
Typical Performance Data



Frequency Synthesizer

DSN-2520A-219+

Typical Performance Data



REV. X1

DSN-2520A-219+

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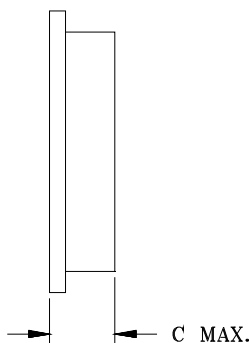
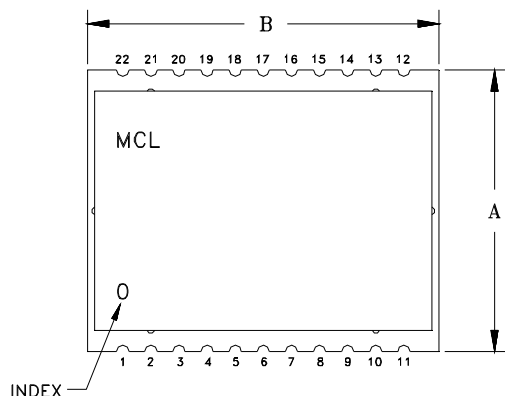


Case Style

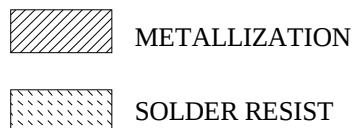
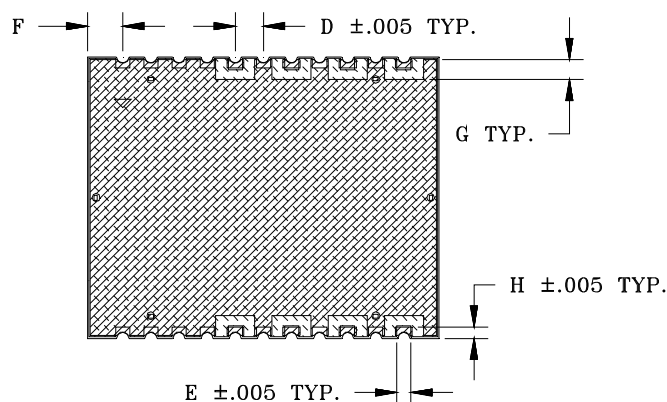
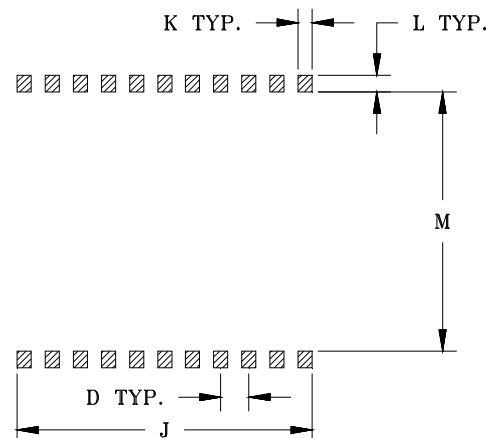
KL

Outline Dimensions

KL1294



Suggested PCB Land Pattern



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	WT.GRAM
KL1294	1.000 (25.40)	1.250 (31.75)	.232 (5.89)	.100 (2.54)	.050 (1.27)	.125 (3.18)	.080 (2.03)	.040 (1.02)	1.05 (26.67)	.050 (1.27)	.060 (1.52)	.920 (23.37)	6.0

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.



INTERNET <http://www.minicircuits.com>

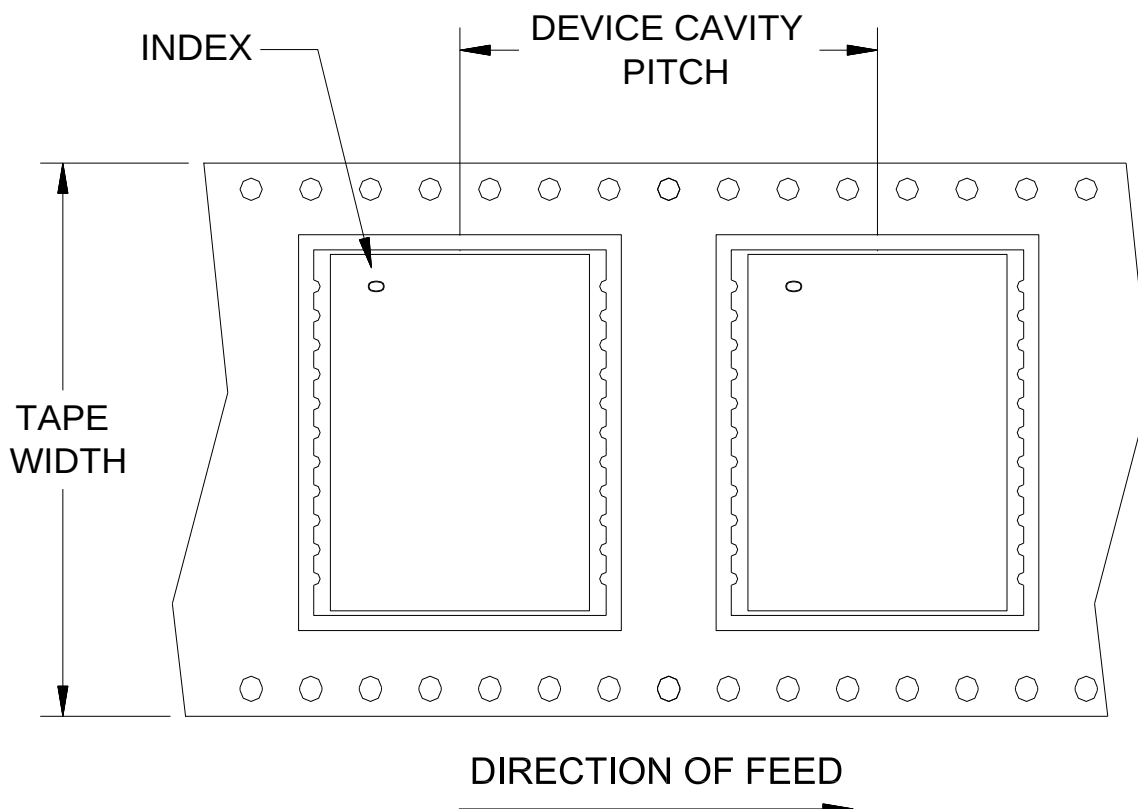
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Tape & Reel Packaging TR-F97

DEVICE ORIENTATION IN T&R



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel	
44	32	13	Small quantity standards (see note)	20
				50
				100
			Standard	200

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.

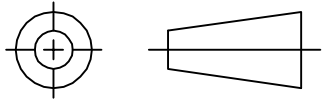
Go to: www.minicircuits.com/pages/pdfs/tape.pdf



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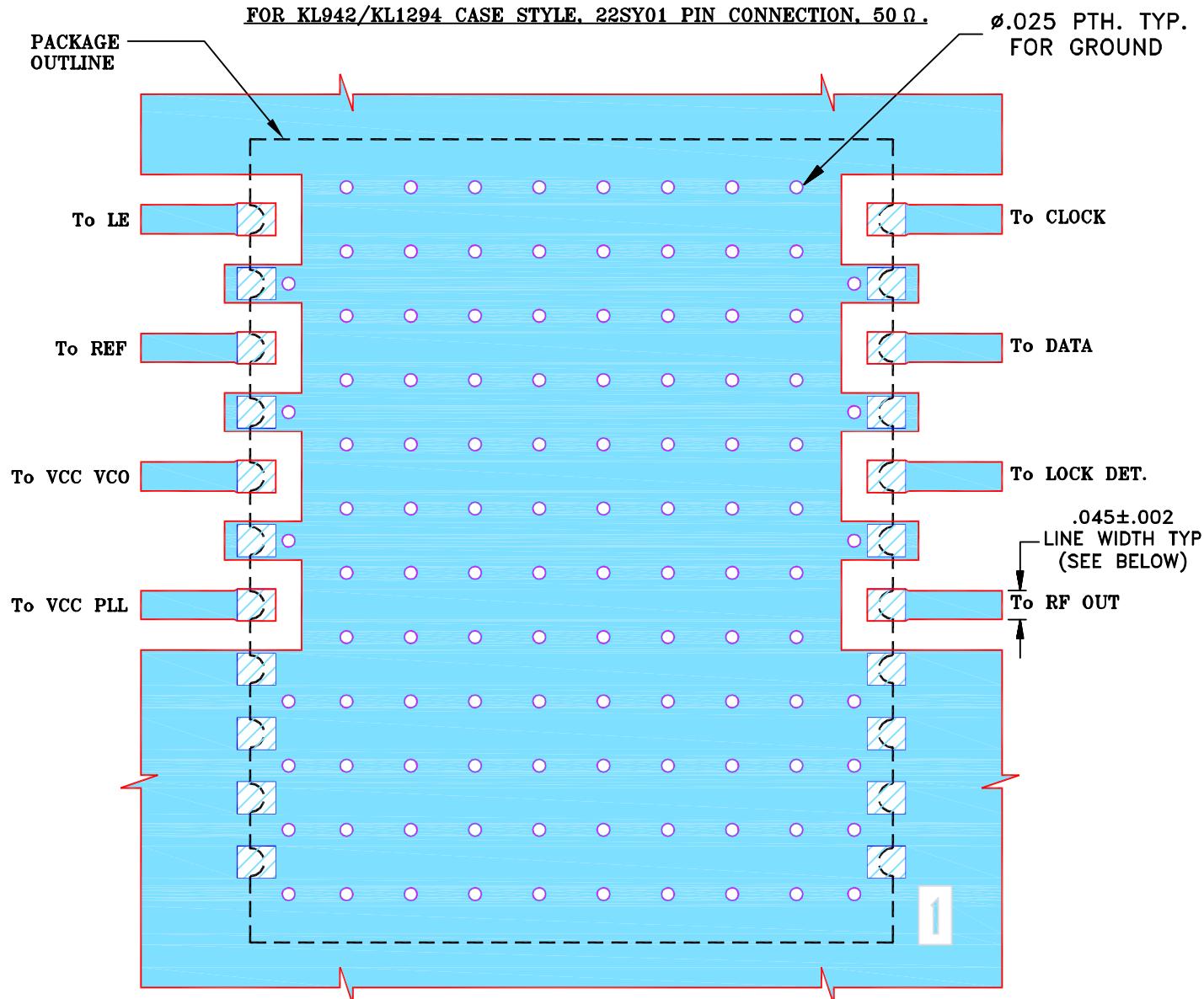
INTERNET <http://www.minicircuits.com>

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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 KL942/KL1294 CASE STYLE, 22SY01 PIN CONNECTION, 50 Ω.



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.



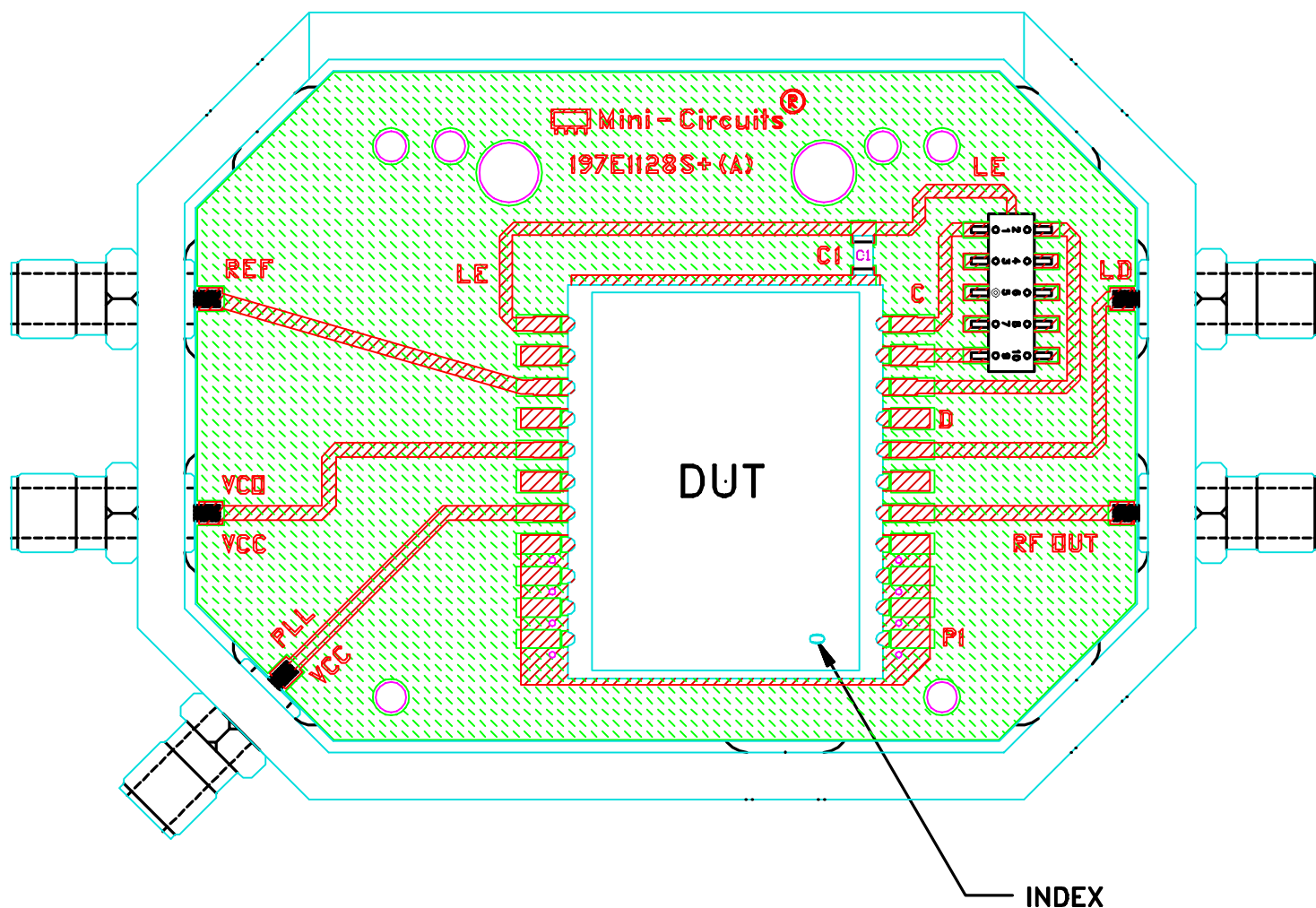
DENOTES PCB COPPER LAYOUT WITH SMOBC
(SOLDER MASK OVER BARE COPPER)



DENOTES COPPER LAND PATTERN
FREE OF SOLDERMASK

UNLESS OTHERWISE SPECIFIED		INITIALS		DATE		Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235							
DIMENSIONS ARE IN INCHES		DRAWN	DK (RAVON)	06 APR 10		PL, 22SY01, KL942/KL1294, DSN TB-553+ (50 Ω)							
TOLERANCES ON:		CHECKED	DH (RAVON)	07 APR 10									
2 PL DECIMALS ±		APPROVED	HH (RAVON)	07 APR 10									
3 PL DECIMALS ± .005													
ANGLES ±						SIZE A							
FRACTIONS ±										CODE IDENT 15542			
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ASHEETA1.DWG REV:A DATE:01/12/95						REV: OR		FILE: 98PL318		SCALE: 4:1		SHEET: 1 OF 1	

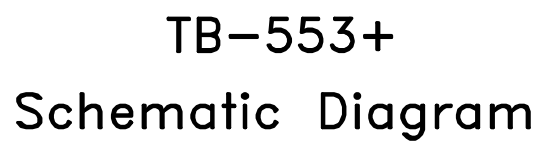
Evaluation Board and Circuit



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	-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