

Frequency Synthesizer

KSN-2346A+

50Ω 2286 to 2346 MHz

The Big Deal

- Low phase noise and spurious
- Robust design and construction
- Small size 0.800" x 0.584" x 0.154"



CASE STYLE: DK801

Product Overview

The KSN-2346A+ is a Frequency Synthesizer, designed to operate from 2286 to 2346 MHz for LTE base station application. The KSN-2346A+ is packaged in a metal case (size of 0.800" x 0.584" x 0.154") to shield against unwanted signals and noise.

Key Features

Feature	Advantages
Low phase noise and spurious: • Phase Noise: -88 dBc/Hz typ. @ 10 kHz offset • Comparison Spurious: -92 dBc typ. • Reference Spurious: -106 dBc typ.	Low phase noise and spurious improve system EVM (Error Vector Magnitude).
Robust design and construction	To enhance the robustness of KSN-2346A+, 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.
Small size, 0.800" x 0.584" x 0.154"	The small size enables the KSN-2346A+ to be used in compact designs.

Notes

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50Ω 2286 to 2346 MHz

Features

- Integrated VCO + PLL
- Low phase noise and spurious
- Robust design and construction
- Low operating voltage (VCC VCO=+5V, VCC PLL=+5V)
- Small size 0.800" x 0.584" x 0.154"



CASE STYLE: DK801

+RoHS Compliant

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

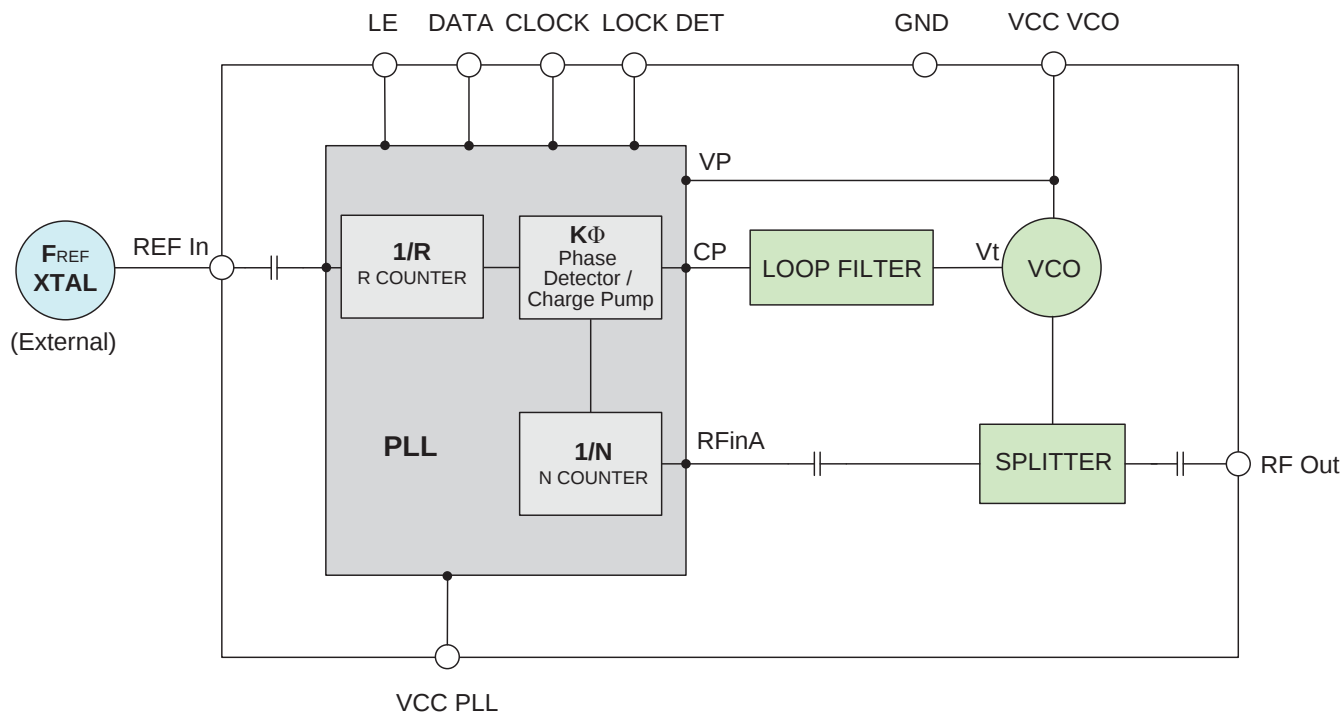
Applications

- LTE base station

General Description

The KSN-2346A+ is a Frequency Synthesizer, designed to operate from 2286 to 2346 MHz for LTE base station application. The KSN-2346A+ is packaged in a metal case (size of 0.800" x 0.584" x 0.154") to shield against unwanted signals and noise. To enhance the robustness of KSN-2346A+, 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.

Simplified Schematic



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Electrical Specifications (over operating temperature -40°C to +85°C)

Parameters					Test Conditions	Min.	Typ.	Max.	Units						
Frequency Range					-	2286	-	2346	MHz						
Step Size					-	-	1000	-	kHz						
Settling Time					Within ± 1 kHz	-	1.1	-	mSec						
Output Power					-	-2.5	-0.3	+2.5	dBm						
SSB Phase Noise					@ 100 Hz offset	-	-83	-	dBc/Hz						
					@ 1 kHz offset	-	-86	-80							
					@ 10 kHz offset	-	-88	-83							
					@ 100 kHz offset	-	-122	-116							
					@ 1 MHz offset	-	-143	-137							
Integrated SSB Phase Noise					@100 Hz to 1MHz	-	-45	-	dBc						
Reference Spurious Suppression					Ref. Freq. 15 MHz	-	-106	-80	dBc						
Comparison Spurious Suppression					Step Size 1000 kHz	-	-92	-70							
Non - Harmonic Spurious Suppression					-	-	-90	-							
Harmonic Suppression					-	-	-30	-20							
VCO Supply Voltage					+5.00	+4.75	+5.00	+5.25	V						
PLL Supply Voltage					+5.00	+4.75	+5.00	+5.25							
VCO Supply Current					-	-	24	30	mA						
PLL Supply Current					-	-	13	20							
Reference Input (External)		Frequency			15 (square wave)	-	15	-	MHz						
		Amplitude			1.0	0.8	1.0	1.2	V _{P-P}						
		Input impedance			-	-	100	-	KΩ						
		Phase Noise @ 1 kHz offset			-	-	-145	-	dBc/Hz						
RF Output port Impedance					-	-	50	-	Ω						
Input Logic Level		Input high voltage			-	4.20	-	-	V						
		Input low voltage			-	-	-	0.95	V						
Digital Lock Detect		Locked			-	4.35	-	5.25	V						
		Unlocked			-	-	-	0.40	V						
Frequency Synthesizer PLL					-	ADF4113									
PLL Programming					-	3-wire serial 5V CMOS									
Register Map ^{NOTE 1}	F_Register ^{NOTE 2}	Prescaler Value	Power-Down 2	Current Setting 2		Current Setting 1	Timer Counter Control	Fastlock Mode	Fastlock Enable	CP Three-State	PD Polarity	Muxout Control	Power-Down 1	Counter Reset	Control Bits
		01	0	111		111	0000	0	0	0	1	001	0	0	10
	N_Register @ 2346MHz	Reserved	CP Gain	13-Bit B Counter							6-Bit A Counter				Control Bits
		00	1	0000010010010							001010				01
	R_Register	Reserved	DLY	SYNC	Lock Detect Precision	Test Mode Bits	Anti-Backlash Width	14-BIT Reference Counter, R							Control Bits
		0	0	0	1	00	00	00000000001111							00

Note 1: Registers Load Sequence: Initialization Register, F Register, R Register, N Register.**Note 2:** For the Initialization Register use Register F with Control Bits 11.**Absolute Maximum Ratings**

Parameters	Ratings
VCO Supply Voltage ^{NOTE 3}	6V
PLL Supply Voltage ^{NOTE 3}	6V
VCO Supply Voltage to PLL Supply Voltage ^{NOTE 3}	-0.3V to +5.5V
Reference Frequency Voltage	-0.3Vmin, VCC PLL +0.3Vmax
Data, Clock, LE Levels	-0.3Vmin, VCC PLL +0.3Vmax
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

Note 3: Power on/off Sequence:
Power on: VCO Supply Voltage, followed by PLL Supply Voltage.
Power off: PLL Supply Voltage, followed by VCO Supply Voltage.**Notes**

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Typical Performance Data

FREQUENCY (MHz)	POWER OUTPUT (dBm)			VCO CURRENT (mA)			PLL CURRENT (mA)		
	-45°C	+25°C	+85°C	-45°C	+25°C	+85°C	-45°C	+25°C	+85°C
2286	-0.15	-0.13	-0.15	23.07	24.25	25.03	9.95	12.41	14.51
2295	-0.20	-0.23	-0.19	23.05	24.23	25.01	9.91	12.36	14.46
2310	-0.21	-0.17	-0.22	23.03	24.22	24.99	9.92	12.37	14.46
2325	-0.22	-0.18	-0.29	22.98	24.19	24.95	9.92	12.38	14.48
2340	-0.30	-0.27	-0.34	22.90	24.12	24.89	9.93	12.39	14.49
2346	-0.31	-0.29	-0.36	22.88	24.10	24.85	9.99	12.44	14.55

FREQUENCY (MHz)	HARMONICS (dBc)					
	F2			F3		
	-45°C	+25°C	+85°C	-45°C	+25°C	+85°C
2286	-33.48	-31.72	-31.73	-45.15	-48.70	-48.58
2295	-34.25	-31.16	-31.52	-46.84	-48.67	-49.75
2310	-31.85	-30.05	-29.50	-49.01	-52.38	-52.30
2325	-29.78	-28.86	-29.48	-54.42	-53.66	-52.29
2340	-26.90	-26.61	-27.98	-55.95	-56.06	-52.78
2346	-26.09	-25.72	-27.63	-58.88	-57.31	-53.86

FREQUENCY (MHz)	PHASE NOISE (dBc/Hz) @ OFFSETS				
	+25°C				
	100Hz	1kHz	10kHz	100kHz	1MHz
2286	-84.86	-87.03	-89.47	-122.84	-144.68
2295	-86.32	-87.87	-88.79	-122.63	-144.35
2310	-85.86	-86.30	-89.14	-122.68	-144.49
2325	-85.16	-85.90	-87.49	-122.08	-144.19
2340	-83.48	-86.43	-86.47	-121.51	-143.89
2346	-85.59	-85.28	-87.00	-121.55	-143.72

FREQUENCY (MHz)	PHASE NOISE (dBc/Hz) @ OFFSETS				
	-45°C				
	100Hz	1kHz	10kHz	100kHz	1MHz
2286	-83.57	-84.00	-88.50	-124.23	-146.82
2295	-84.94	-86.57	-89.33	-123.73	-146.44
2310	-81.73	-86.14	-88.41	-123.26	-146.28
2325	-82.31	-86.59	-88.51	-123.14	-145.80
2340	-84.14	-86.28	-88.06	-122.40	-145.12
2346	-83.06	-85.24	-86.87	-122.34	-145.13

FREQUENCY (MHz)	PHASE NOISE (dBc/Hz) @ OFFSETS				
	+85°C				
	100Hz	1kHz	10kHz	100kHz	1MHz
2286	-82.95	-88.05	-88.16	-121.17	-142.81
2295	-81.91	-85.95	-87.68	-120.91	-142.72
2310	-81.37	-85.13	-87.07	-120.76	-142.80
2325	-85.12	-84.89	-86.39	-120.39	-142.07
2340	-81.99	-86.33	-86.65	-120.18	-142.08
2346	-83.98	-86.34	-86.72	-119.99	-141.32

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COMPARISON SPURIOUS ORDER	COMPARISON SPURIOUS @ Fcarrier 2286MHz+(n*Freference) (dBc) note 1			COMPARISON SPURIOUS @ Fcarrier 2316MHz+(n*Freference) (dBc) note 1			COMPARISON SPURIOUS @ Fcarrier 2346MHz+(n*Freference) (dBc) note 1		
	-45°C	+25°C	+85°C	-45°C	+25°C	+85°C	-45°C	+25°C	+85°C
-5	-123.87	-110.95	-102.84	-103.40	-114.80	-114.22	-101.62	-109.45	-103.02
-4	-107.19	-103.79	-102.93	-108.95	-115.60	-103.42	-104.85	-111.60	-102.05
-3	-104.94	-101.32	-100.61	-106.71	-118.82	-102.27	-103.17	-107.74	-101.18
-2	-96.60	-98.32	-95.78	-107.04	-111.53	-96.02	-106.72	-108.16	-94.86
-1	-90.49	-92.26	-91.26	-100.77	-104.97	-89.76	-99.00	-102.58	-89.41
0 note 2	-	-	-	-	-	-	-	-	-
+1	-88.83	-92.62	-90.66	-96.43	-99.88	-89.54	-94.43	-98.82	-88.76
+2	-95.34	-97.79	-95.01	-100.90	-104.68	-94.78	-104.13	-109.22	-93.51
+3	-99.87	-101.07	-100.85	-102.12	-116.50	-100.96	-107.67	-107.94	-99.74
+4	-105.26	-104.65	-104.33	-106.85	-117.19	-102.66	-107.22	-112.01	-100.31
+5	-107.88	-105.48	-103.18	-104.68	-106.32	-108.57	-101.22	-113.46	-104.21

Note 1: Comparison frequency 1000 kHz

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

REFERENCE SPURIOUS ORDER	REFERENCE SPURIOUS @ Fcarrier 2286MHz+(n*Freference) (dBc) note 3			REFERENCE SPURIOUS @ Fcarrier 2316MHz+(n*Freference) (dBc) note 3			REFERENCE SPURIOUS @ Fcarrier 2346MHz+(n*Freference) (dBc) note 3		
	-45°C	+25°C	+85°C	-45°C	+25°C	+85°C	-45°C	+25°C	+85°C
-5	-115.10	-126.60	-116.04	-117.31	-114.85	-119.26	-116.91	-117.03	-119.52
-4	-116.83	-123.42	-117.54	-120.37	-118.83	-116.87	-120.32	-116.24	-124.91
-3	-115.57	-122.81	-115.09	-119.28	-117.07	-115.10	-115.94	-114.59	-117.35
-2	-111.77	-113.45	-113.50	-112.72	-112.98	-118.55	-110.09	-113.67	-118.43
-1	-109.04	-108.01	-113.27	-109.38	-117.43	-117.04	-98.95	-106.22	-112.71
0 note 4	-	-	-	-	-	-	-	-	-
+1	-106.52	-106.39	-114.45	-112.11	-120.00	-122.20	-106.69	-112.16	-116.50
+2	-110.48	-111.83	-117.44	-112.53	-119.86	-116.72	-109.84	-112.19	-117.96
+3	-116.78	-117.87	-116.02	-116.56	-116.24	-117.86	-113.59	-113.02	-113.79
+4	-117.88	-123.24	-121.64	-122.15	-123.29	-116.84	-118.74	-116.43	-118.53
+5	-117.56	-123.72	-118.34	-116.34	-117.79	-117.49	-115.40	-114.86	-117.56

Note 3: Reference frequency 15 MHz

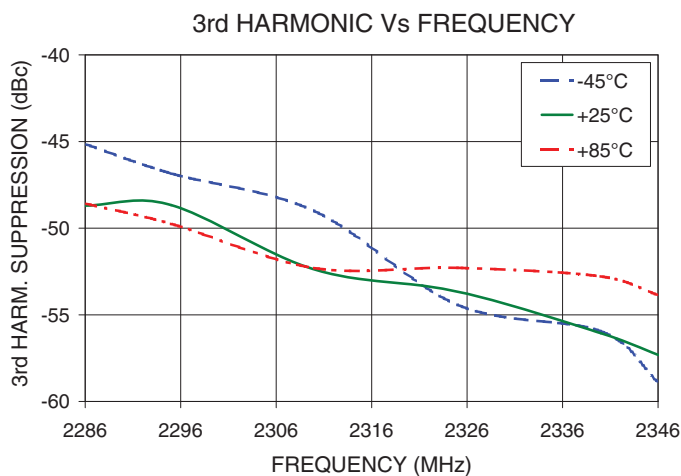
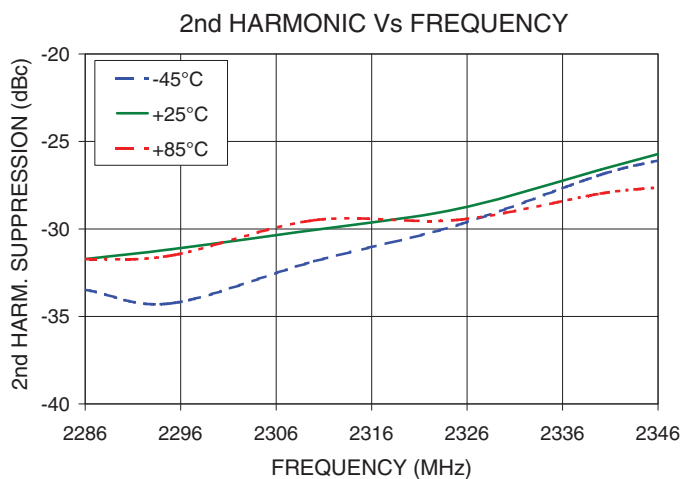
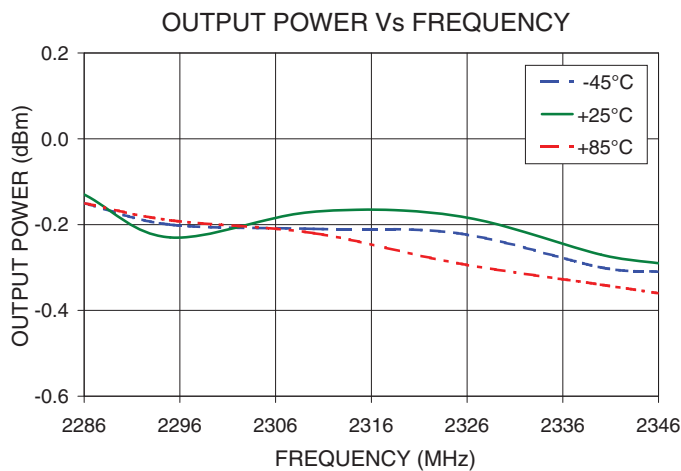
Note 4: All spurs are referenced to carrier signal (n=0).

Notes

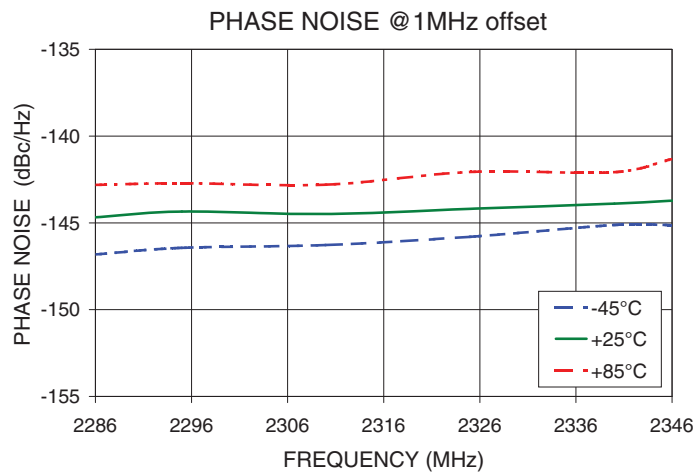
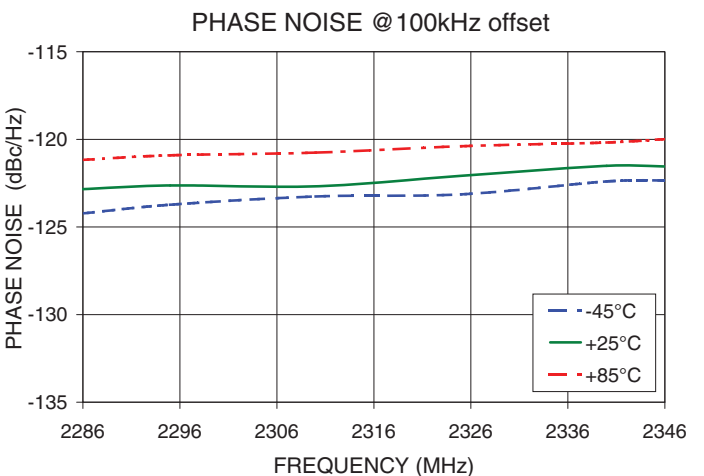
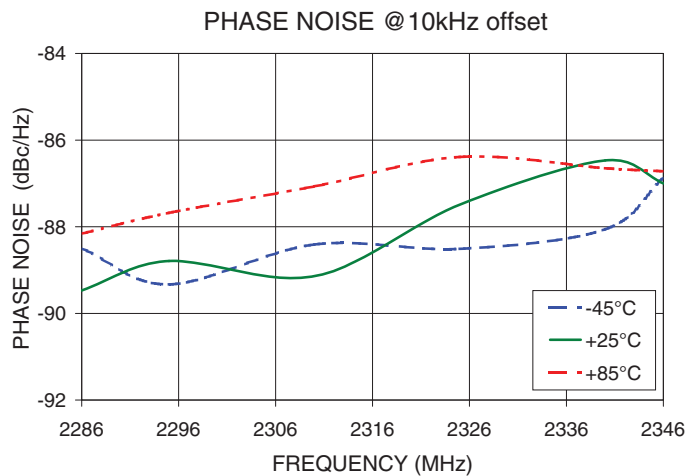
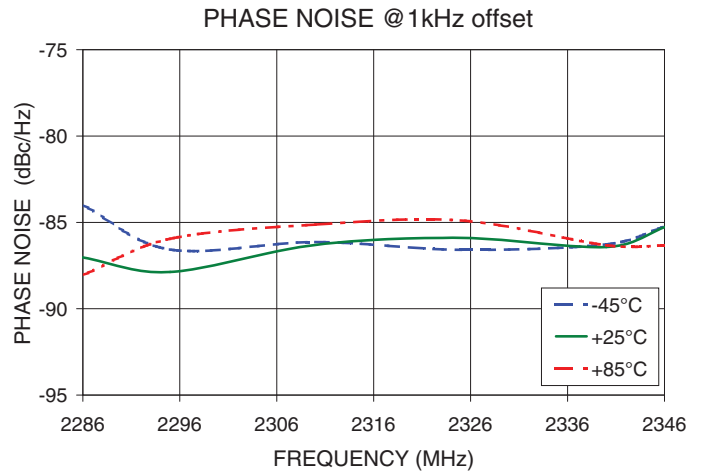
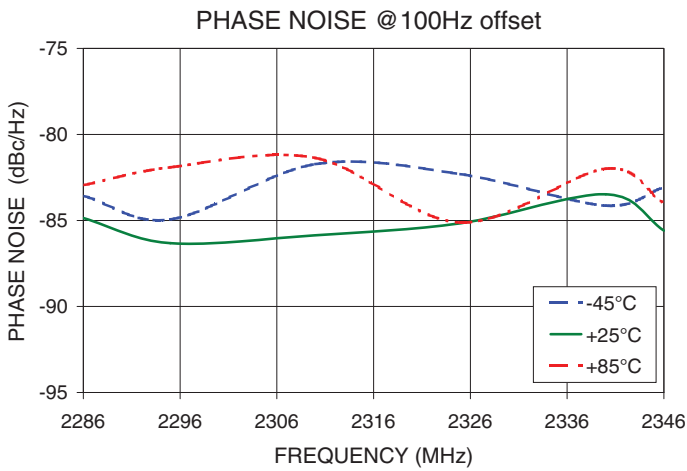
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Typical Performance Curves



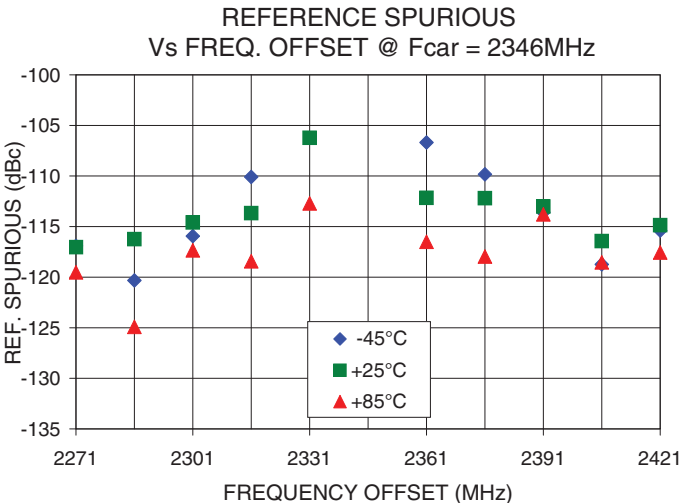
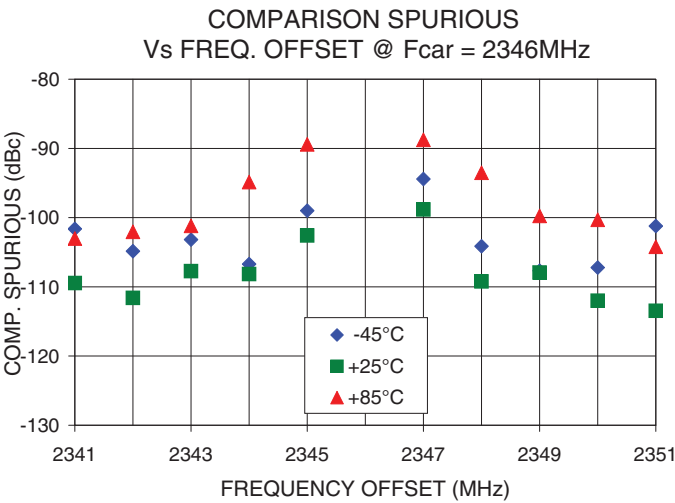
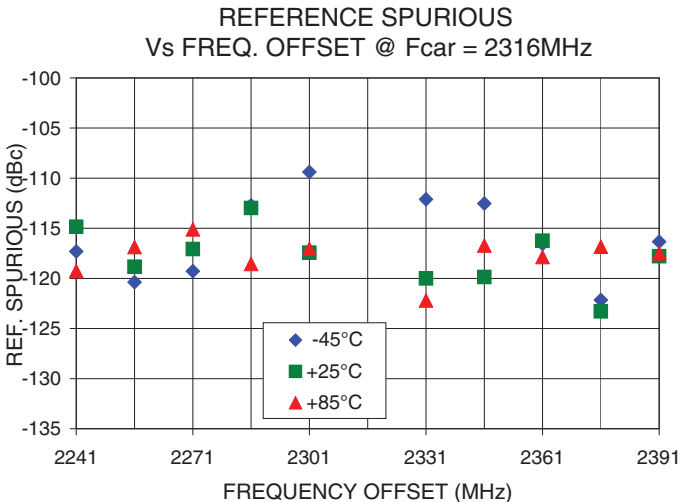
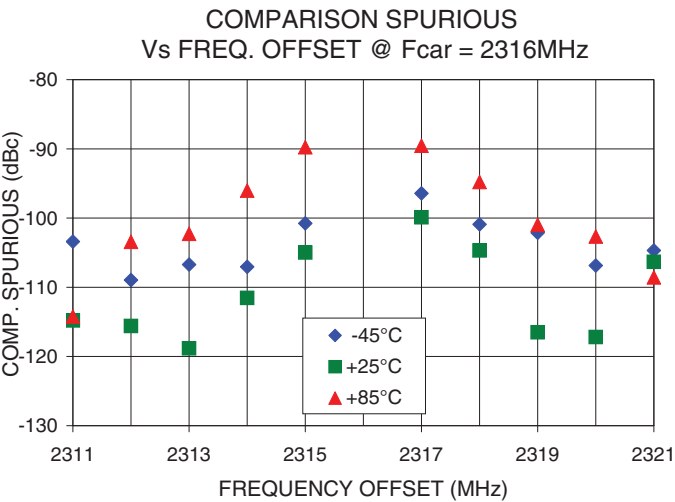
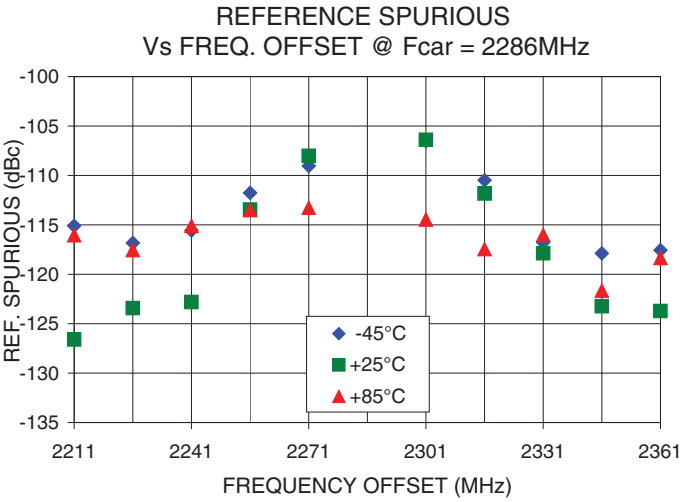
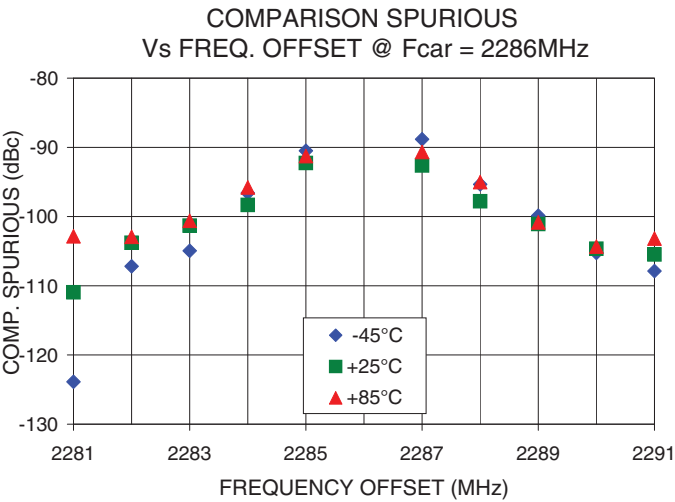
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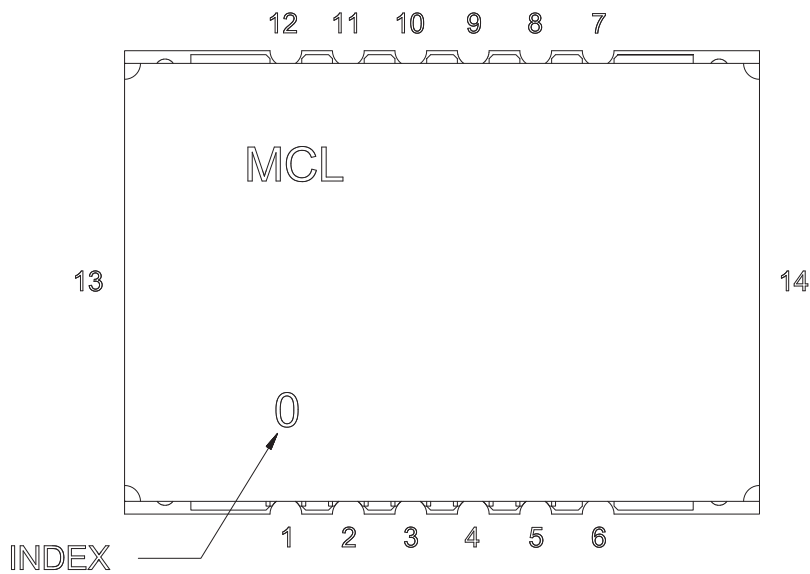




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Pin Configuration

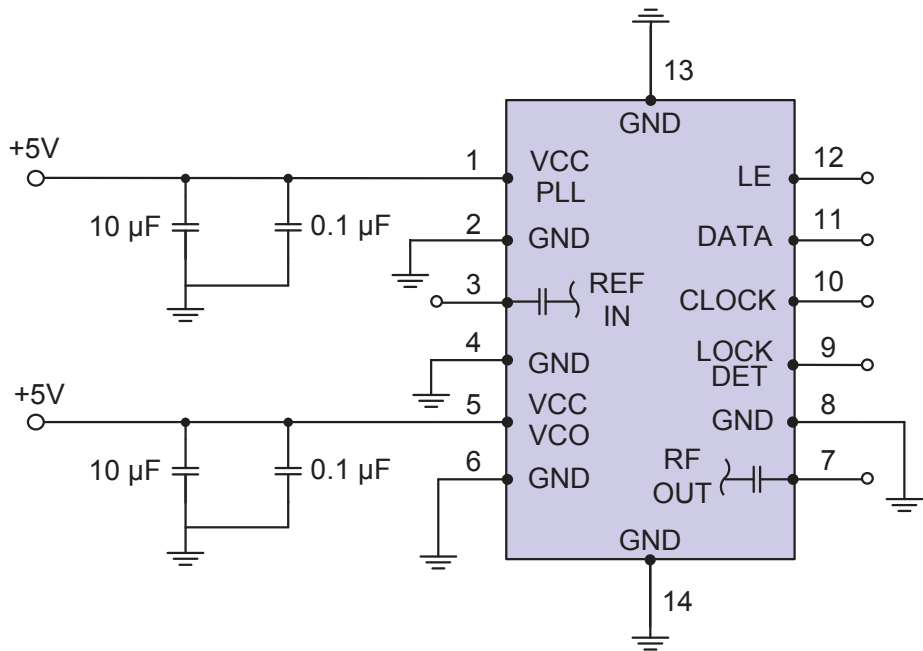


Pin Connection

Pin Number	Function
1	VCC PLL
2	GND
3	REF IN
4	GND
5	VCC VCO
6	GND
7	RF OUT
8	GND
9	LOCK DET
10	CLOCK
11	DATA
12	LE
13	GND
14	GND

Recommended Application Circuit

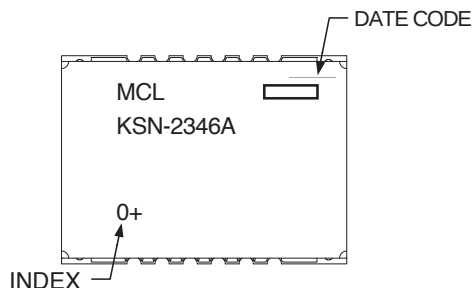
Note: REF IN and RF OUT ports are internally AC coupled.



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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: DK801

Tape & Reel: TR-F28

Suggested Layout for PCB Design: PL-249

Evaluation Board: TB-567+

Environment Ratings: ENV03T2

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Frequency Synthesizer

KSN-2346A+

Typical Performance Data

FREQ. (MHz)	POWER OUTPUT (dBm)			HARMONICS (dBc)						VCO CURRENT (mA)			PLL CURENT (mA)		
				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
2286	-0.15	-0.13	-0.15	-33.48	-31.72	-31.73	-45.15	-48.70	-48.58	23.07	24.25	25.03	9.95	12.41	14.51
2295	-0.20	-0.23	-0.19	-34.25	-31.16	-31.52	-46.84	-48.67	-49.75	23.05	24.23	25.01	9.91	12.36	14.46
2310	-0.21	-0.17	-0.22	-31.85	-30.05	-29.50	-49.01	-52.38	-52.30	23.03	24.22	24.99	9.92	12.37	14.46
2325	-0.22	-0.18	-0.29	-29.78	-28.86	-29.48	-54.42	-53.66	-52.29	22.98	24.19	24.95	9.92	12.38	14.48
2340	-0.30	-0.27	-0.34	-26.90	-26.61	-27.98	-55.95	-56.06	-52.78	22.90	24.12	24.89	9.93	12.39	14.49
2346	-0.31	-0.29	-0.36	-26.09	-25.72	-27.63	-58.88	-57.31	-53.86	22.88	24.10	24.85	9.99	12.44	14.55

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
2286	-83.57	-84.00	-88.50	-124.23	-146.82	-84.86	-87.03	-89.47	-122.84	-144.68	-82.95	-88.05	-88.16	-121.17	-142.81
2295	-84.94	-86.57	-89.33	-123.73	-146.44	-86.32	-87.87	-88.79	-122.63	-144.35	-81.91	-85.95	-87.68	-120.91	-142.72
2310	-81.73	-86.14	-88.41	-123.26	-146.28	-85.86	-86.30	-89.14	-122.68	-144.49	-81.37	-85.13	-87.07	-120.76	-142.80
2325	-82.31	-86.59	-88.51	-123.14	-145.80	-85.16	-85.90	-87.49	-122.08	-144.19	-85.12	-84.89	-86.39	-120.39	-142.07
2340	-84.14	-86.28	-88.06	-122.40	-145.12	-83.48	-86.43	-86.47	-121.51	-143.89	-81.99	-86.33	-86.65	-120.18	-142.08
2346	-83.06	-85.24	-86.87	-122.34	-145.13	-85.59	-85.28	-87.00	-121.55	-143.72	-83.98	-86.34	-86.72	-119.99	-141.32

Frequency Synthesizer

KSN-2346A+

Typical Performance Data

COMPARISON SPURIOUS ORDER	COMPARISON SPURIOUS @Fcarrier 2286MHz± (n*Fcomparison) (dBc) NOTE 1			COMPARISON SPURIOUS @Fcarrier 2316MHz± (n*Fcomparison) (dBc) NOTE 1			COMPARISON SPURIOUS @Fcarrier 2346MHz± (n*Fcomparison) (dBc) NOTE 1		
	-45°C	+25°C	+85°C	-45°C	+25°C	+85°C	-45°C	+25°C	+85°C
-5	-123.87	-110.95	-102.84	-103.40	-114.80	-114.22	-101.62	-109.45	-103.02
-4	-107.19	-103.79	-102.93	-108.95	-115.60	-103.42	-104.85	-111.60	-102.05
-3	-104.94	-101.32	-100.61	-106.71	-118.82	-102.27	-103.17	-107.74	-101.18
-2	-96.60	-98.32	-95.78	-107.04	-111.53	-96.02	-106.72	-108.16	-94.86
-1	-90.49	-92.26	-91.26	-100.77	-104.97	-89.76	-99.00	-102.58	-89.41
0 ^{note 2}	-	-	-	-	-	-	-	-	-
+1	-88.83	-92.62	-90.66	-96.43	-99.88	-89.54	-94.43	-98.82	-88.76
+2	-95.34	-97.79	-95.01	-100.90	-104.68	-94.78	-104.13	-109.22	-93.51
+3	-99.87	-101.07	-100.85	-102.12	-116.50	-100.96	-107.67	-107.94	-99.74
+4	-105.26	-104.65	-104.33	-106.85	-117.19	-102.66	-107.22	-112.01	-100.31
+5	-107.88	-105.48	-103.18	-104.68	-106.32	-108.57	-101.22	-113.46	-104.21

Note 1: Comparison frequency 1000 kHz

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

REFERENCE SPURIOUS ORDER	REFERENCE SPURIOUS @Fcarrier 2286MHz± (n*Freference) (dBc) NOTE 3			REFERENCE SPURIOUS @Fcarrier 2316MHz± (n*Freference) (dBc) NOTE 3			REFERENCE SPURIOUS @Fcarrier 2346MHz± (n*Freference) (dBc) NOTE 3		
	-45°C	+25°C	+85°C	-45°C	+25°C	+85°C	-45°C	+25°C	+85°C
-5	-115.10	-126.60	-116.04	-117.31	-114.85	-119.26	-116.91	-117.03	-119.52
-4	-116.83	-123.42	-117.54	-120.37	-118.83	-116.87	-120.32	-116.24	-124.91
-3	-115.57	-122.81	-115.09	-119.28	-117.07	-115.10	-115.94	-114.59	-117.35
-2	-111.77	-113.45	-113.50	-112.72	-112.98	-118.55	-110.09	-113.67	-118.43
-1	-109.04	-108.01	-113.27	-109.38	-117.43	-117.04	-98.95	-106.22	-112.71
0 ^{note 4}	-	-	-	-	-	-	-	-	-
+1	-106.52	-106.39	-114.45	-112.11	-120.00	-122.20	-106.69	-112.16	-116.50
+2	-110.48	-111.83	-117.44	-112.53	-119.86	-116.72	-109.84	-112.19	-117.96
+3	-116.78	-117.87	-116.02	-116.56	-116.24	-117.86	-113.59	-113.02	-113.79
+4	-117.88	-123.24	-121.64	-122.15	-123.29	-116.84	-118.74	-116.43	-118.53
+5	-117.56	-123.72	-118.34	-116.34	-117.79	-117.49	-115.40	-114.86	-117.56

Note 3: Reference frequency 15 MHz

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

REV. X1
KSN-2346A+
100707
Page 2 of 2



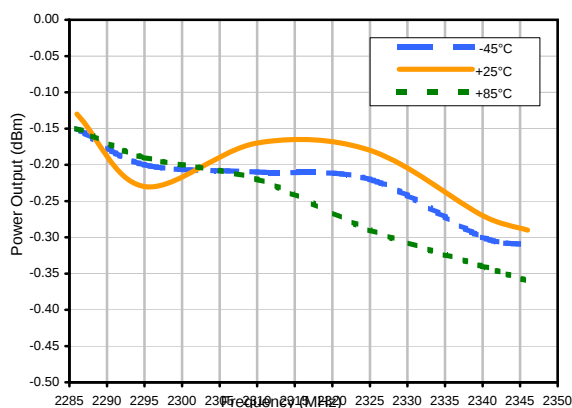
IF/RF MICROWAVE COMPONENTS • ISO 9001 ISO 14001 AS 9100 CERTIFIED RoHS compliant
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661

The Design Engineers Search Engine finds the model you need, instantly • For detailed performance specs & shopping online see

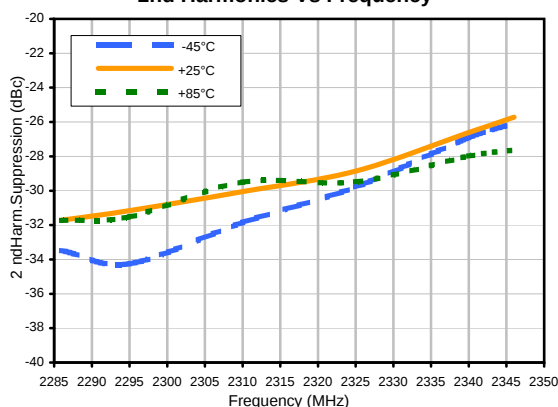


Typical Performance Data

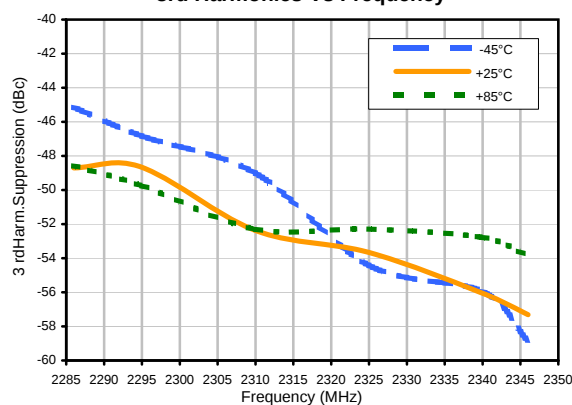
Power Output Vs Frequency



2nd Harmonics Vs Frequency

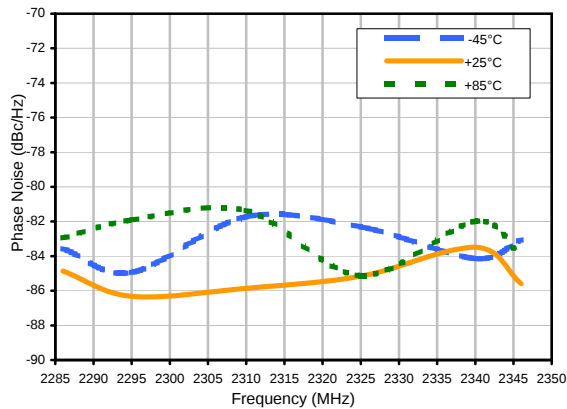


3rd Harmonics Vs Frequency

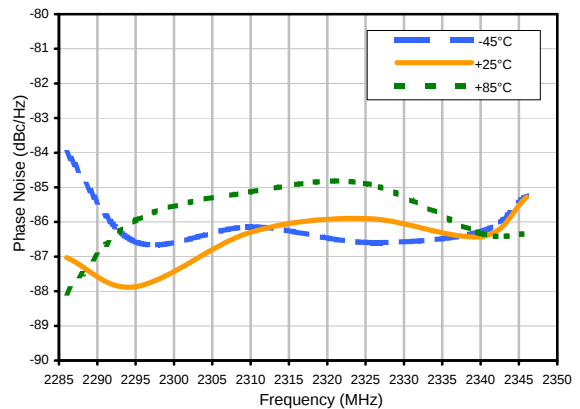


Typical Performance Data

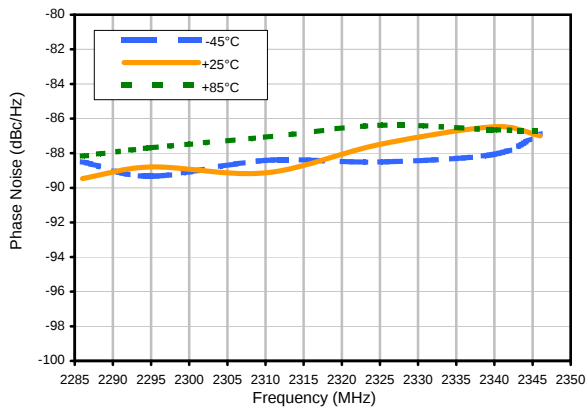
Phase Noise @ 100 Hz offset



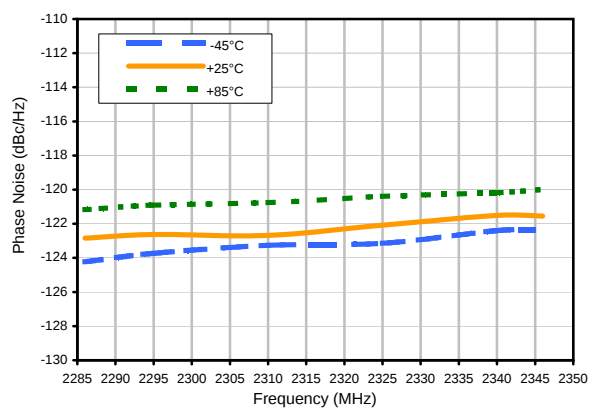
Phase Noise @ 1 kHz offset



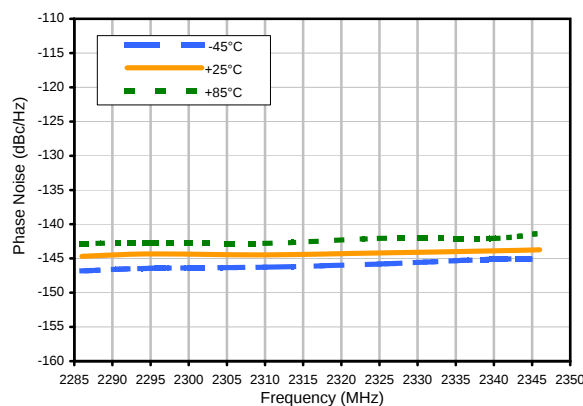
Phase Noise @ 10 kHz offset



Phase Noise @ 100 kHz offset



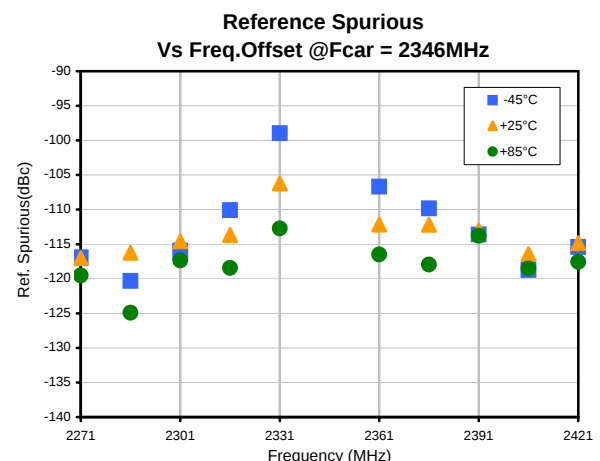
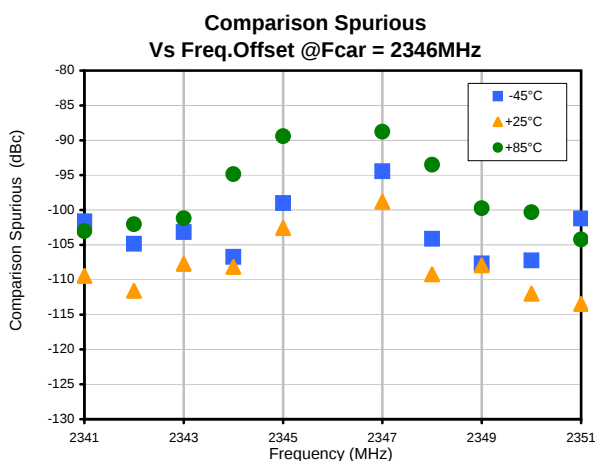
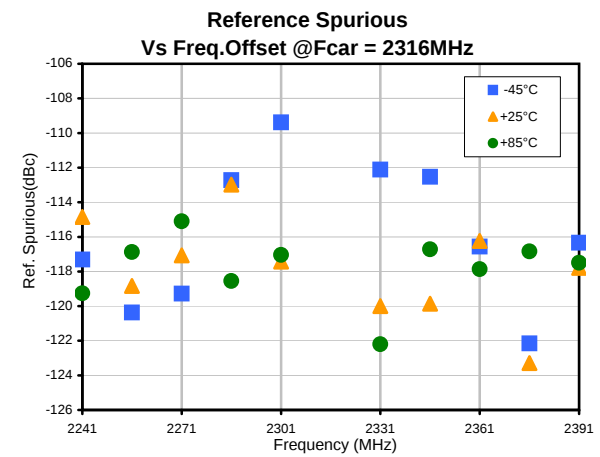
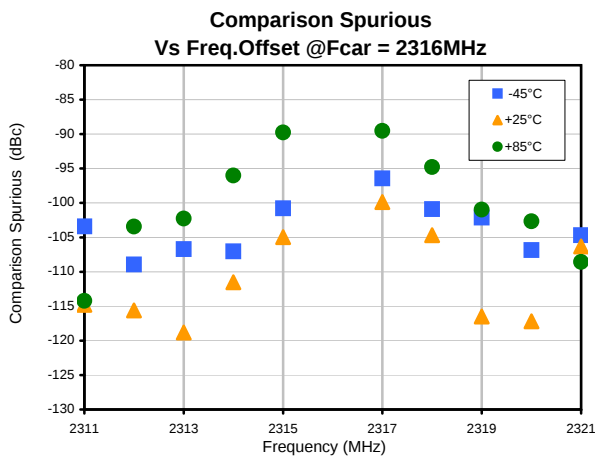
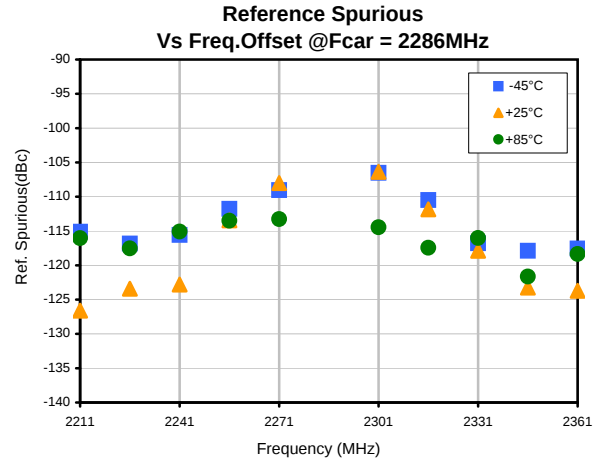
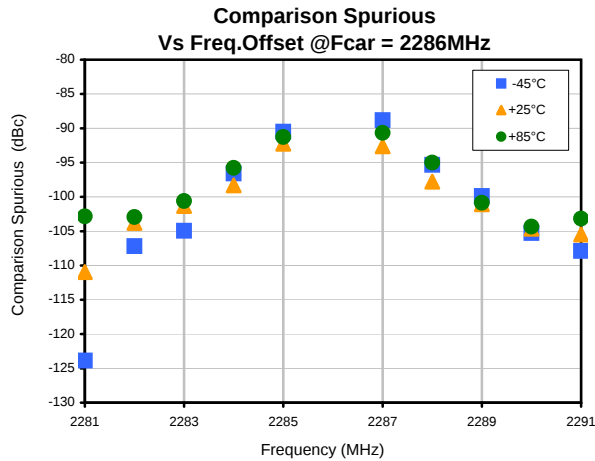
Phase Noise @ 1 MHz offset



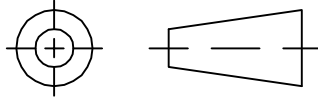
Frequency Synthesizer

KSN-2346A+

Typical Performance Data



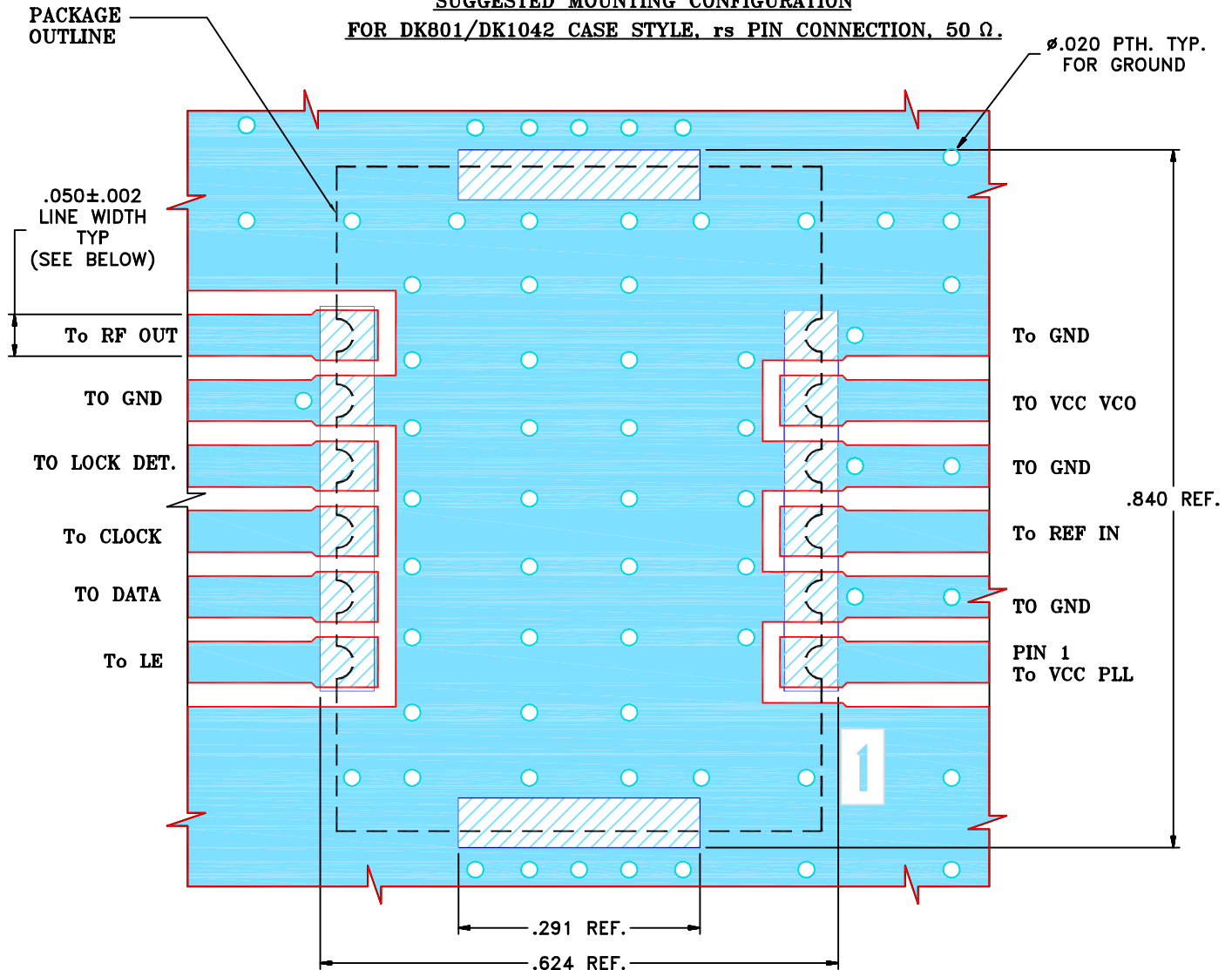
THIRD ANGLE PROJECTION



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 11235PL, rs ,DK801/DK1042, KSN
TB-567+ (50 Ω)SIZE
ACODE IDENT
15542DRAWING NO:
98-PL-249REV:
B

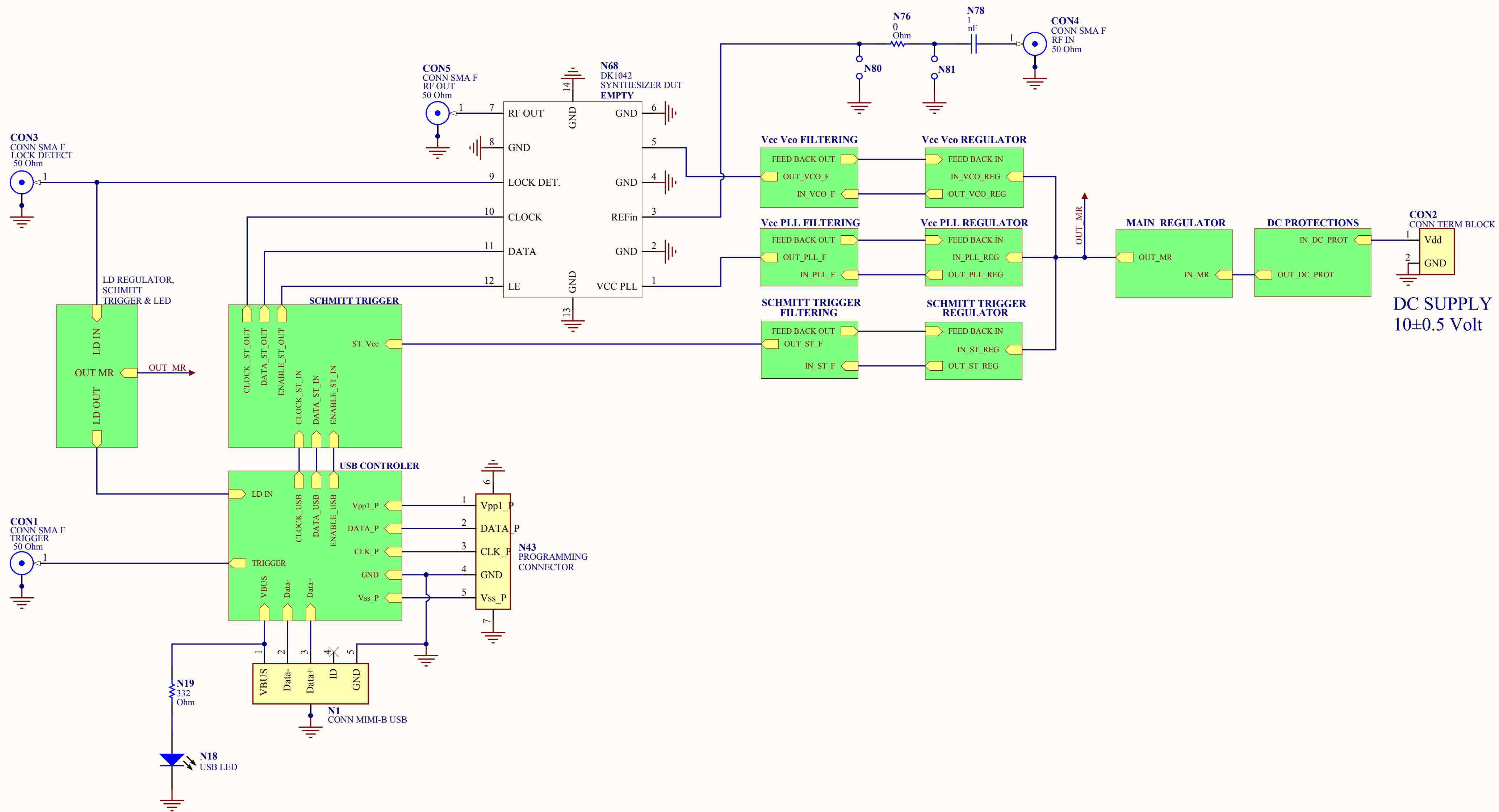
FILE: 98PL249

SCALE: 5:1

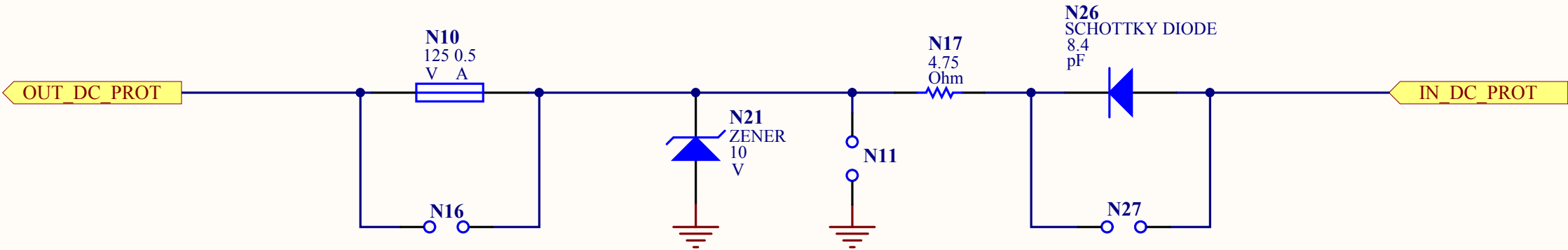
SHEET: 1 OF 1

ELECTRICAL SCHEME-GENERAL

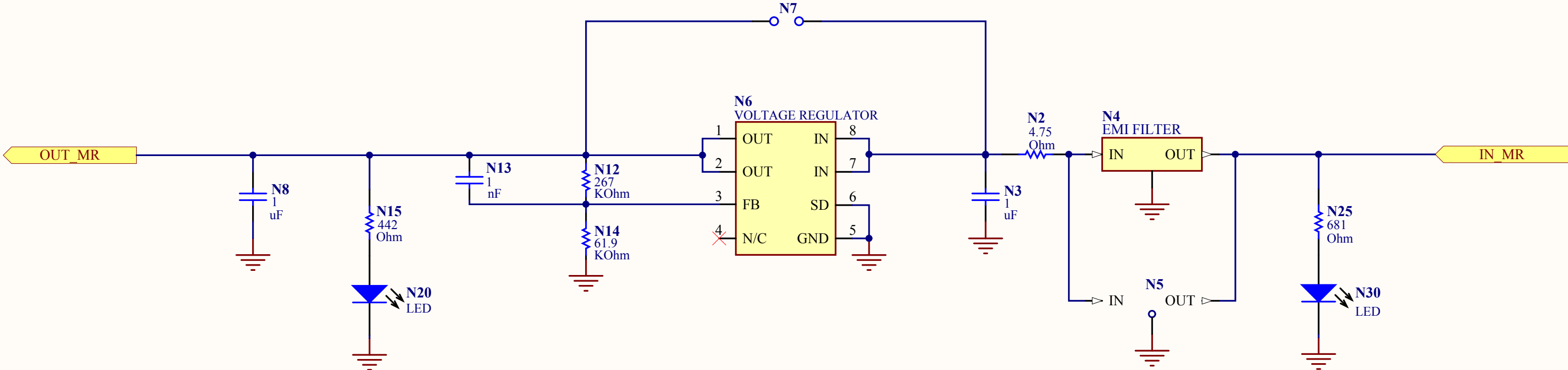
(TB for KSN)



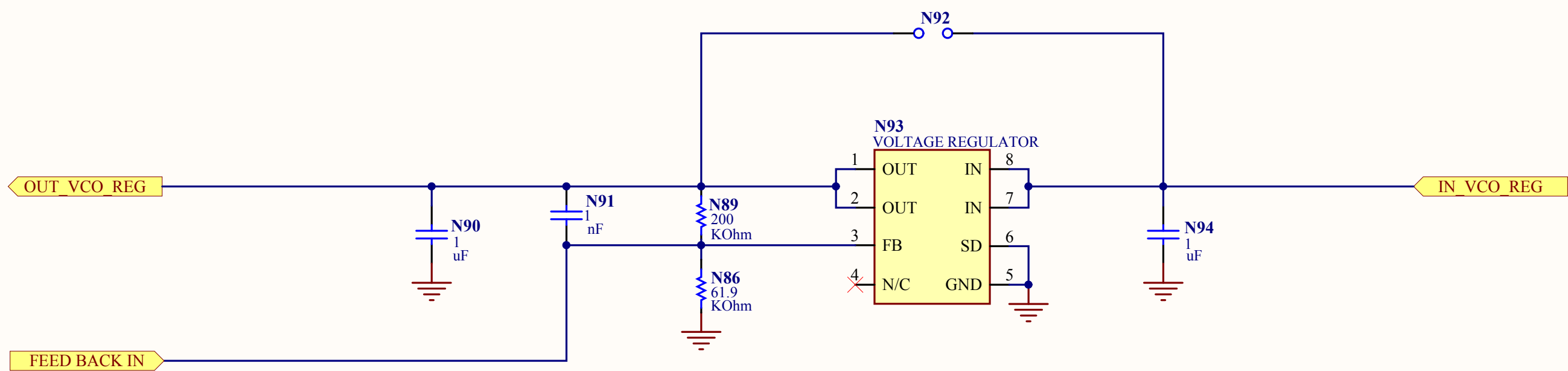
DC PROTECTIONS



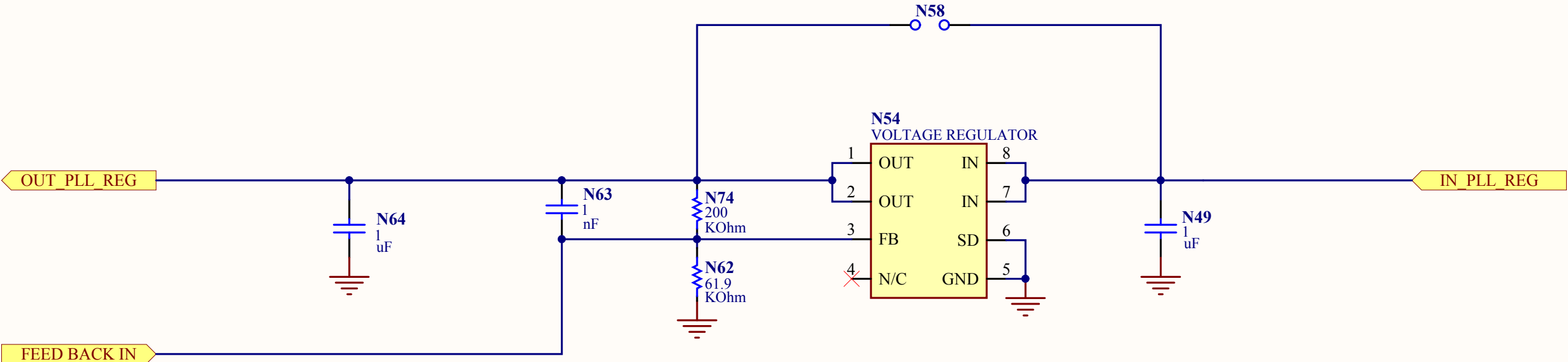
MAIN REGULATOR



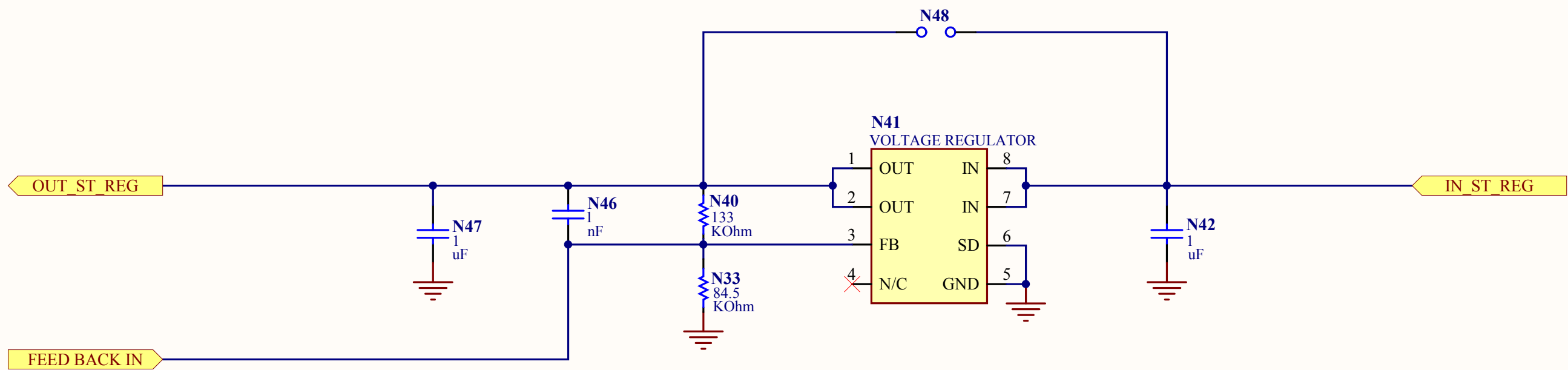
VCC VCO REGULATOR



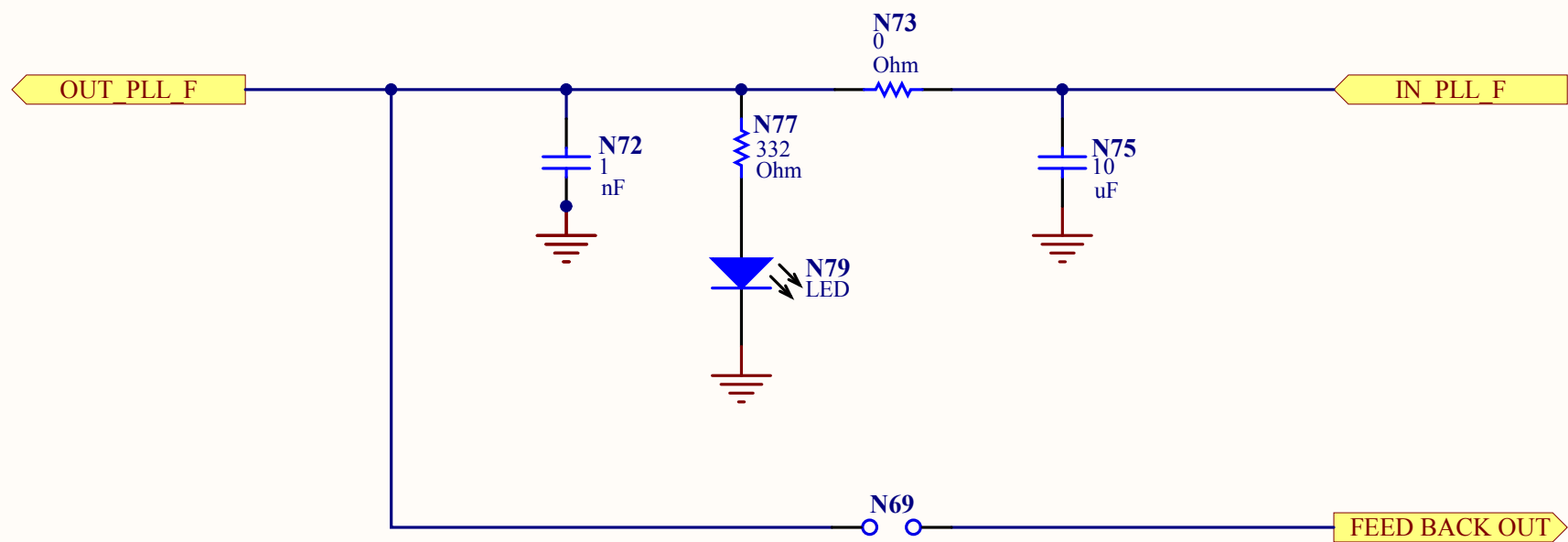
VCC PLL REGULATOR



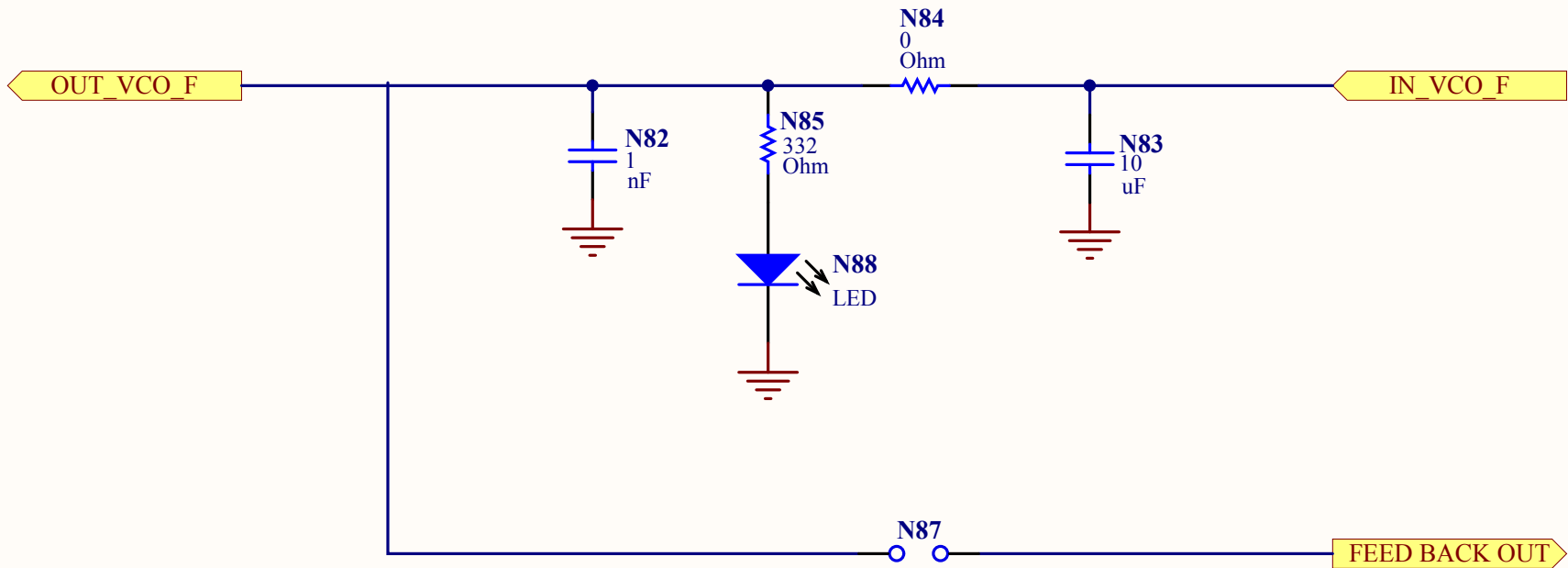
SCHMITT TRIGGER REGULATOR



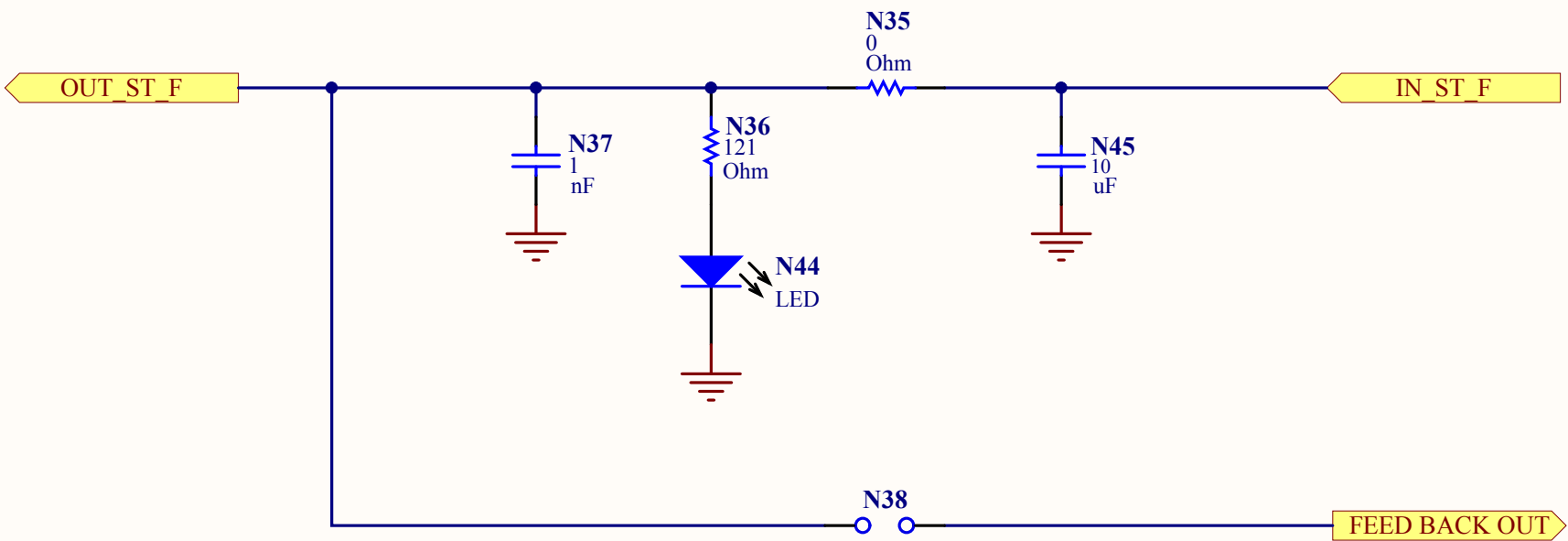
VCC PLL FILTERING



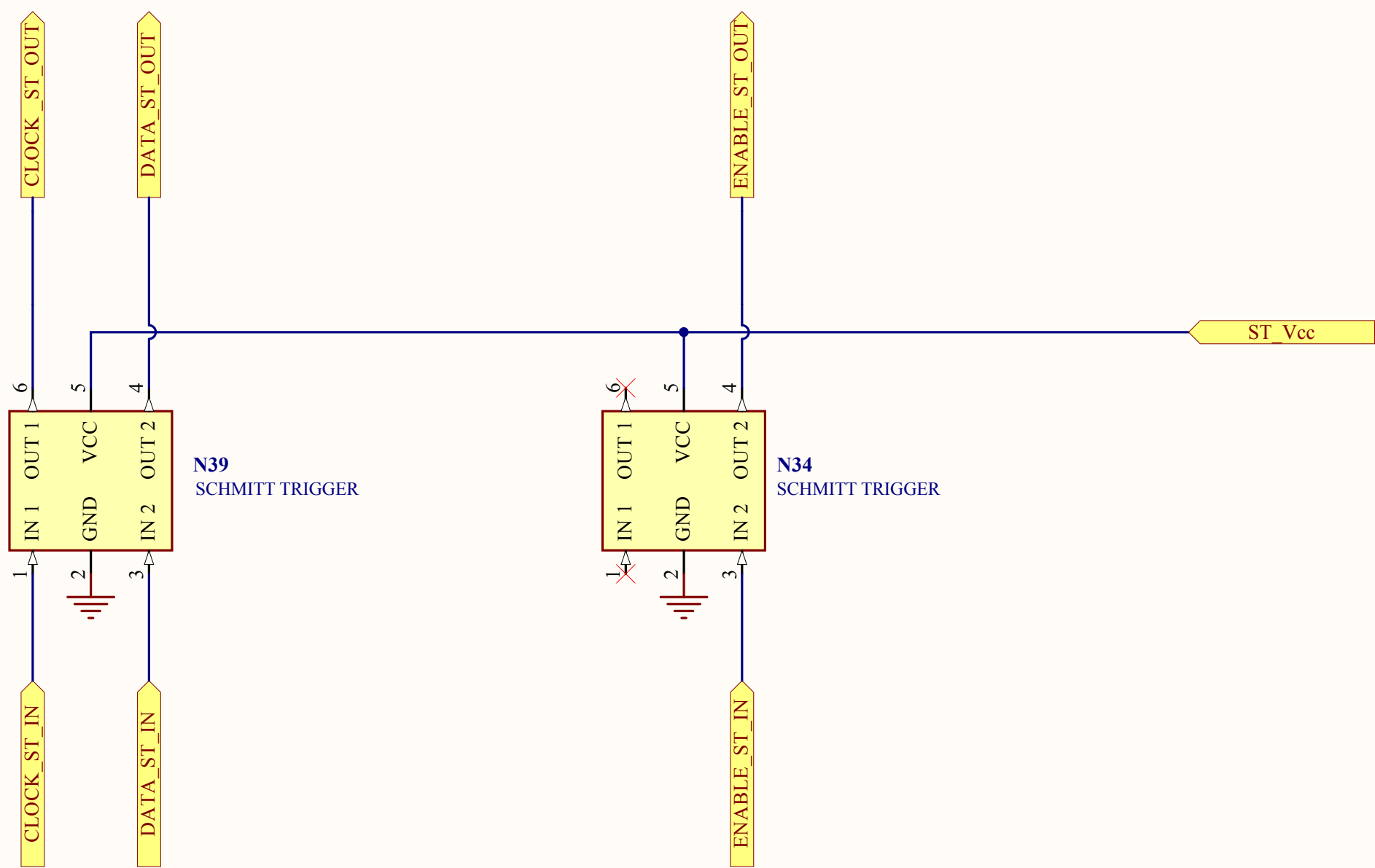
VCC VCO FILTERING



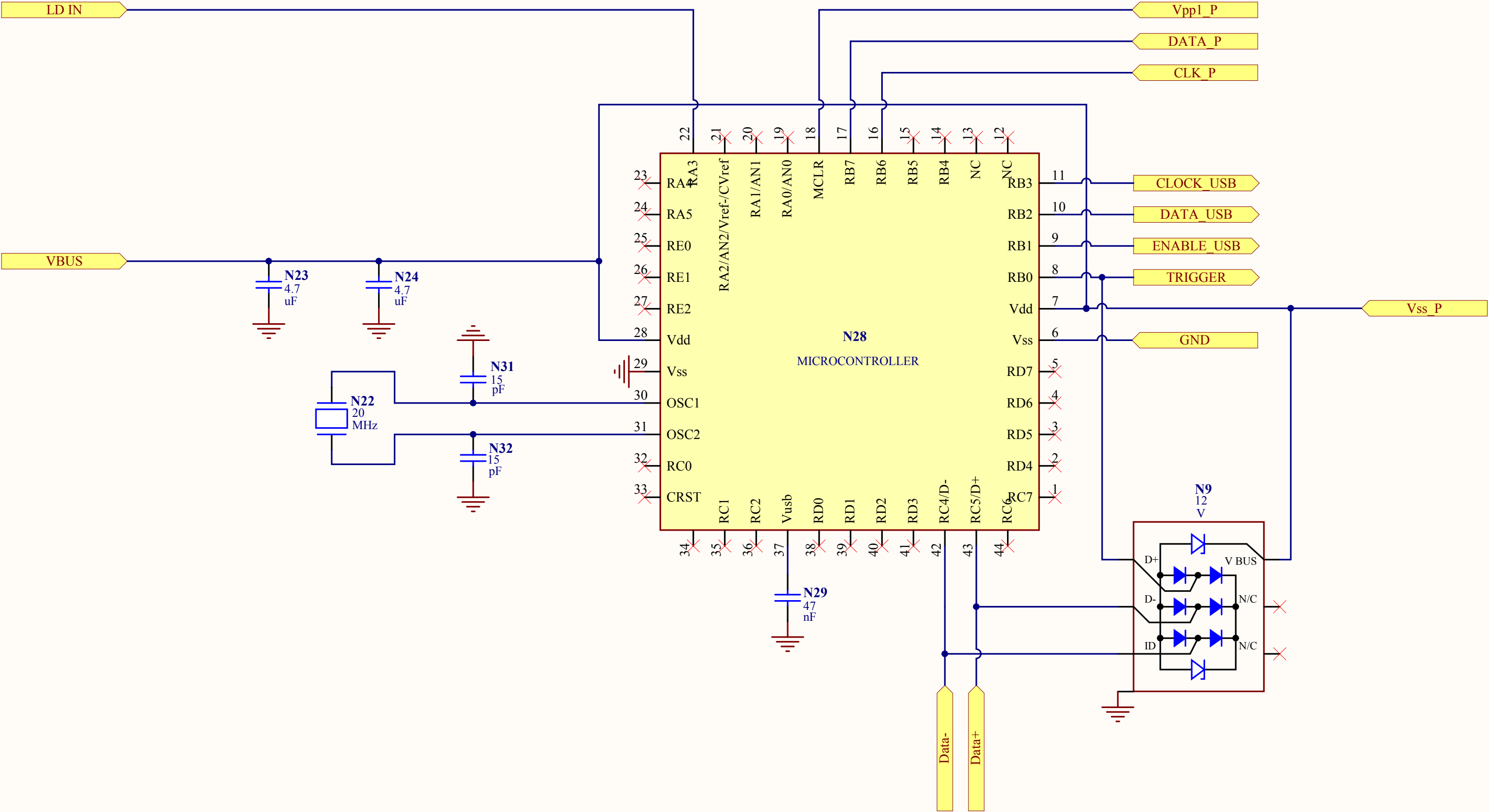
SCHMITT TRIGGER FILTERING



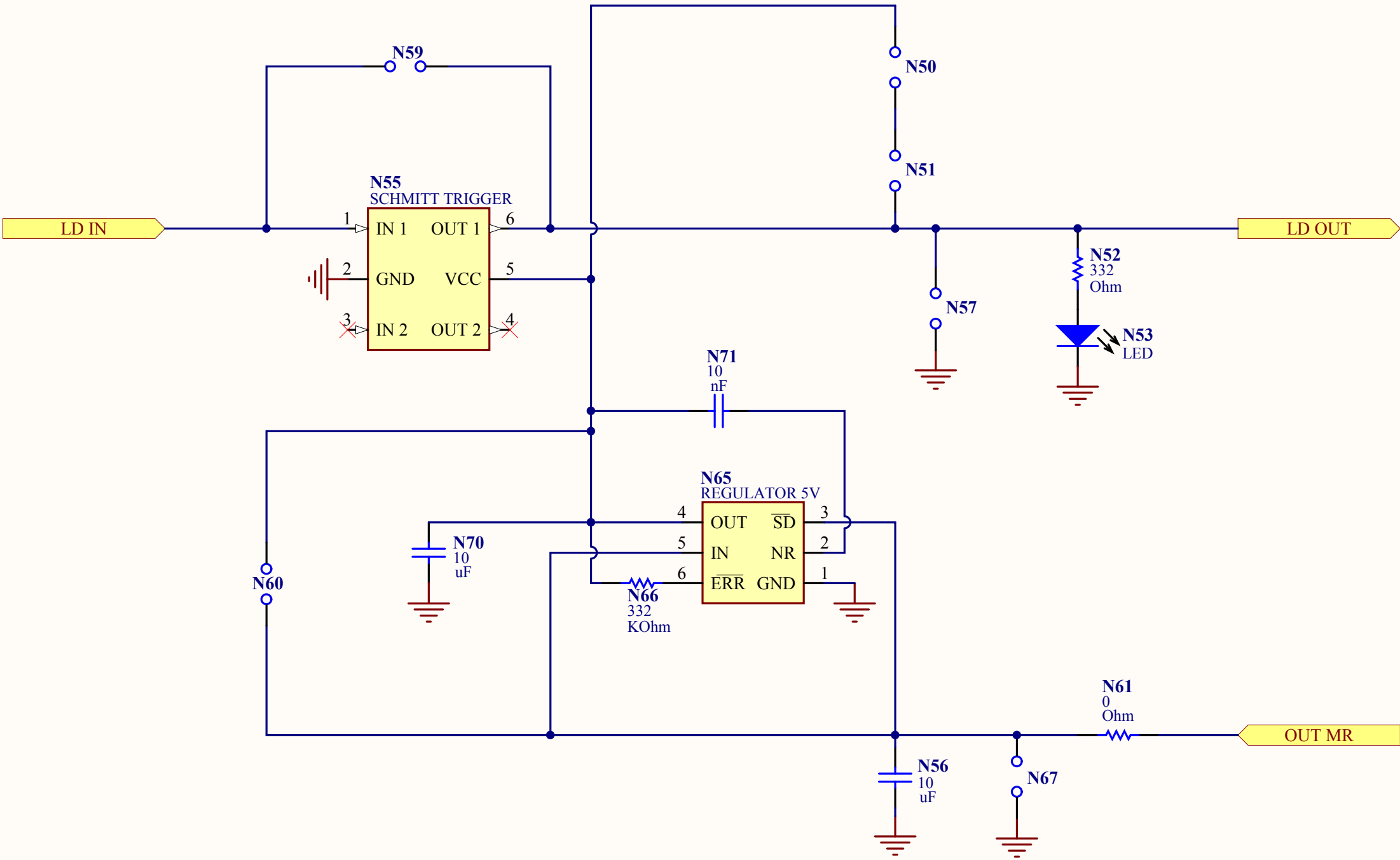
SCHMITT TRIGGER



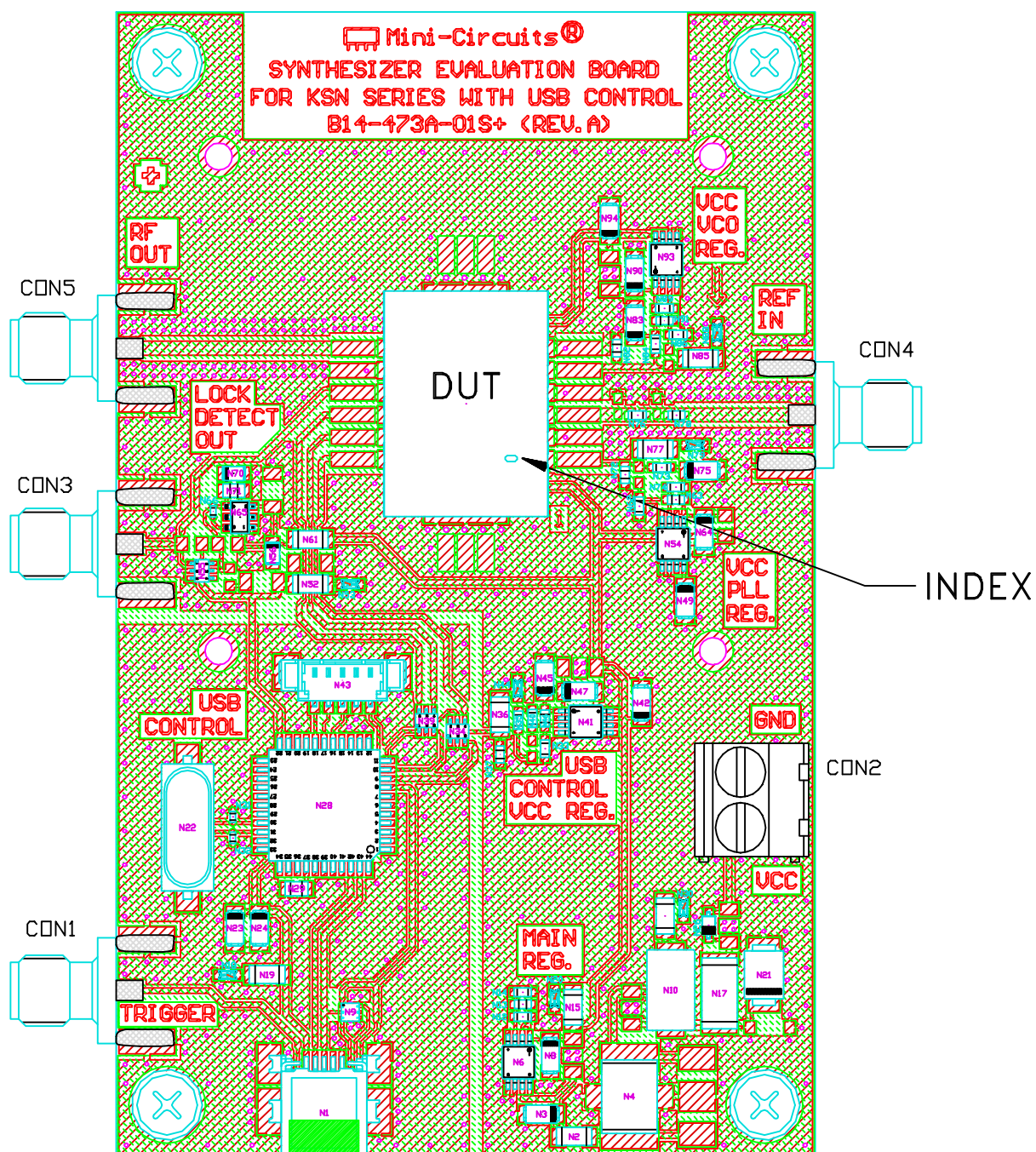
USB CONTROLER



LD REGULATOR SCHMITT TRIGGER AND LED



Evaluation Board and Circuit



TB-567+

NOTES:

1. SMA F JACK CONNECTORS.
2. PCB MATERIAL: FR4 OR EQUIVALENT, DIALECTRIC CONSTANT=4.7, DIALECTRIC THICKNESS=.059 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