

Product Introduction

ZDH1420 is a high-performance, highly integrated RF front-end IC that integrates a power amplifier (PA), a low noise amplifier (LNA) and an RF switch (SW). ZDH1420 uses a wide operating voltage of 3V~5V, has fully matched 50ΩTX (or TX_ALT) and RX inputs and antenna outputs, and digital control compatible with 1.6~3.6V CMOS levels. ZDH1420 uses a green lead-free standard QFN3x3-16 package with good reliability, economy and extremely high cost performance.

Typical application scenarios

- LP-WAN Devices
- Internet of Things
- Smart Meter
- Industrial Applications
- Range Extender

Maximum Ratings

Parameter	Value
Storage temperature	-65°C~+150°C
Operating temperature	-55°C~+125°C
PA operating voltage (VCC)	+6V
LNA, switch operating voltage (VDD)	+6V
TX RF input power	+20dBm
Bypass mode input power	+24dBm
ANT Input Power	+13dBm

工作状态控制逻辑表

状态	CRX	CTX	CPS
LNA mode	1	0	0
Transmit	0	1	0
Transmit Bypass	0	0	1
Shutdown	0	0	0

“1”：高电平=VCC

“0”：低电平=0V

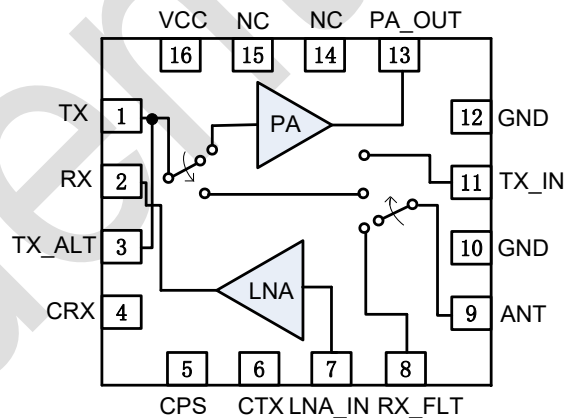
Features

- 3V~5V single voltage power supply, typical operating current 300mA @ 3.3V
- TX small signal gain: 15dB @ 915MHz
- TX saturated output power: 28dBm @ VCC=3.3V
- TX typical P1dB: 24dBm @ VCC=VCTX=3.3V
- Input/output 50Ω impedance matching
- Green lead-free 16-pin QFN3x3 package

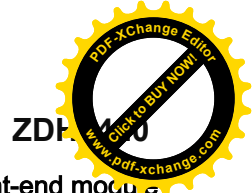


This product complies with all relevant regulations and is Pb-free and halogen-free.

Pin diagram (Top View)



编号	管脚名称	说明
1	TX	射频信号输出
2	RX	射频信号输入
3	TX_ALT	射频信号输入（备用引脚）
4	CRX	选择接收模式
5	CPS	选择旁路模式
6	CTX	选择发送模式
7	LNA_IN	LNA 输入
8	RX_FLT	天线信号输入
9	ANT	连接滤波器
10,12	GND	接地
11	TX_IN	天线信号输出
13	PA_OUT	PA 输出
14,15	NC	空，接地或悬空
16	VCC	电源电压
17	EPAD	底部接地



直流电气参数

测试条件: VCC=+3.3V, Temp= +25°C, Freq=915MHz, 50Ω 测试系统。

参数	条件	最小值	典型值	最大值	单位
Icc_TX	POUT=+27dBm	-	300	-	mA
Icc_RX	No RF	-	8.5	-	mA
Icc_BYP	No RF	-	0.4	-	uA
Icq_TX	No RF	-	64	-	mA
Icc_OFF	No RF	-	0.5	-	uA

TX 电气参数

测试条件: VCC=+3.3V, Temp= +25°C, 50Ω 测试系统。

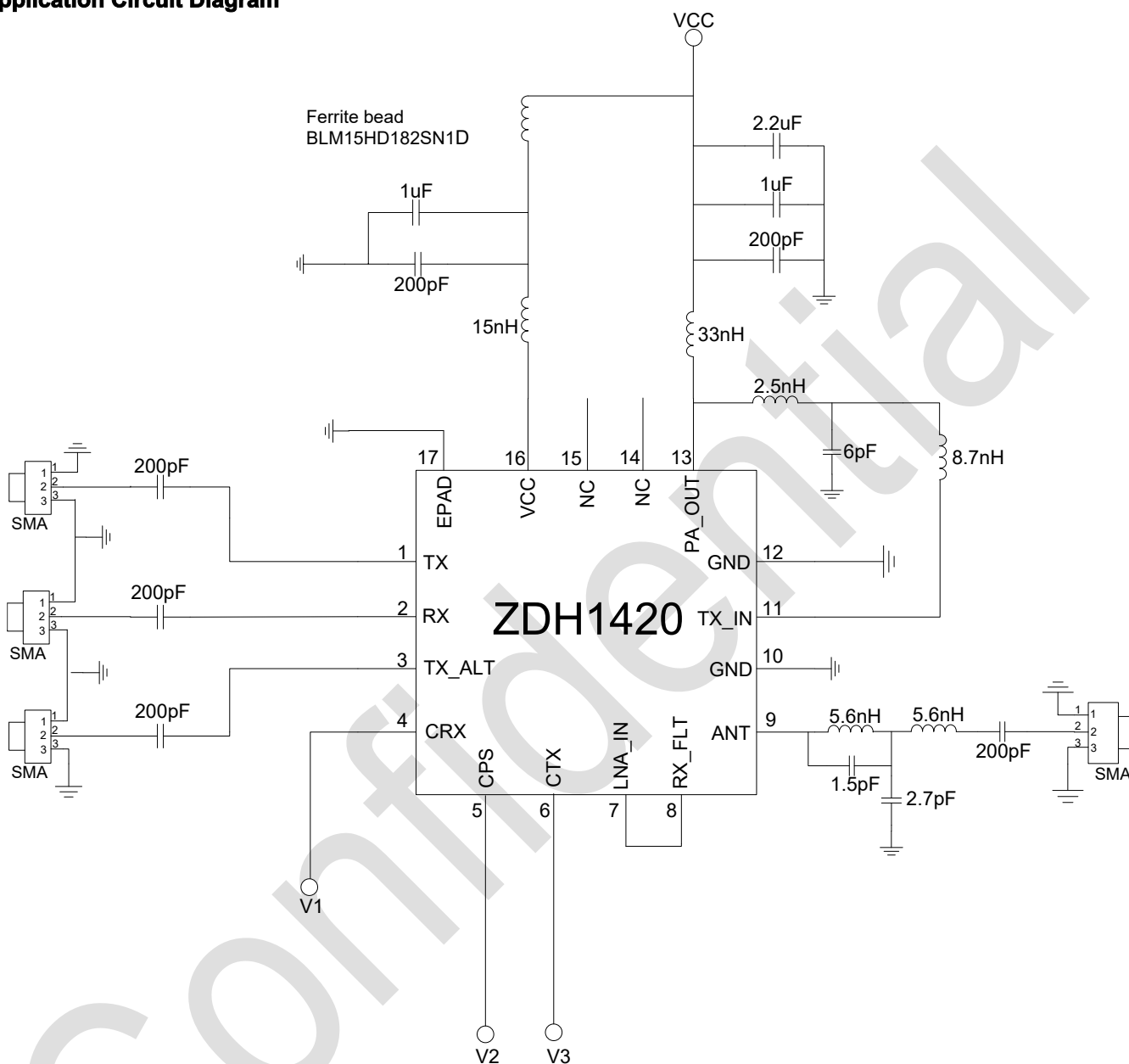
参数	最小值	典型值	最大值	单位	条件
频率范围 (f)	860	-	930	MHz	-
输出功率 (Pout)	-	27	-	dBm	Freq=868MHz
	-	28	-	dBm	Freq=915MHz
小信号增益 (Gain)	-	16	-	dB	Freq=868MHz
	-	15	-	dB	Freq=915MHz
增益平坦度 (Gain Flatness)	-	±1	-	dB	-
输入回损 (S11)	-	-15	-	dB	-
输出回损 (S22)	-	-13	-	dB	-
P1dB (Bypass)	-	24	-	dB	旁路模式
谐波	-	-36	-	dBm	H2, Pout=+27dBm
	-	-50	-	dBm	H3, Pout=+27dBm
插入损耗 (Bypass)	-	1.2	-	dB	旁路模式
开启时间 (ton)	-	0.5	-	us	-
关断时间 (toff)	-	0.02	-	us	-
Stability	-	-	-42	dBm	PIN=+16dBm, VSWR=6: 1
Ruggedness	无损坏				POUT=+27dBm, VSWR=10: 1

RX 电气参数

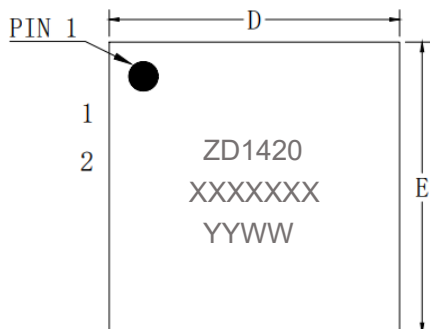
测试条件: VCC=+3.3V, Temp= +25°C, 50Ω 测试系统。

参数	最小值	典型值	最大值	单位	条件
频率范围	860	-	930	MHz	-
增益 (Gain)	-	19	-	dB	-
ANT 回波损耗 (S11)	-	-10	-	dB	ANT port
RX 回波损耗 (S22)	-	-15	-	dB	RX port
噪声系数 (NF)	-	1.4	-	dB	-
IP1dB	-	-15	-	dBm	-
IIP3	-	-6.5	-	dBm	-
开启时间 (ton)	-	0.1	-	us	-
关断时间 (toff)	-	0.05	-	us	-

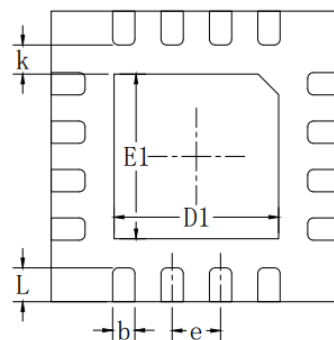
Application Circuit Diagram



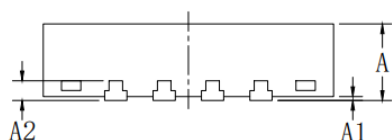
Packaging diagram



顶视图



底视图



侧视图

符号	尺寸单位：毫米		
	最小值	标准值	最大值
A	0.700	0.750	0.800
A1	0.000	--	0.050
A2	0.195	0.203	0.211
D	2.950	3.000	3.050
E	2.950	3.000	3.050
D1	1.600	1.700	1.800
E1	1.600	1.700	1.800
k	0.300 Min.		
b	0.180	0.230	0.280
e	0.500 Typ.		
L	0.300	0.350	0.400

Order Information

Model/Part No.	Silkscreen/Marking	Encapsulation/Package
ZDH1420	ZD1420	QFN3X3-16