NIIGATA SEIMITSU
Engineering Division
TEL:+81-3-3437-3570 FAX:+81-3-3437-5622
http://www.niigata-s.co.jp

NS741 Catalog

NS741 is the low-power FM band transmitter with which the left and right audio signals can be modulated in FM with stereo multiplexing.

Chip Description:

NS741 is the low-power FM band transmitter which enables the RDS (Radio Data System) data transmission. It is manufactured by full CMOS process. The built-in DSP realizes stable stereo signal generation and RDS data attachment. The direct modulation (the modulation by directly providing the audio signal to the MOS varactor which constitutes the resonant circuit of the local oscillation circuit) is employed. I^2C or 3-wire can be applied to the interface with CPU.

Applications:

- Wireless microphone
- Portable CD and MP-3
- Mobile phone

Note: Set the transmission output based on the law, regulations, etc. of respective areas.

Features:

- Transmitting frequency coverage: 76.1 to 108.0 MHz
- Stereo modulation
- Direct Frequency Modulation
- RDS transmission, available
- ALC (Automatic Level Control) function in Analog input
- Less external components
- Crystal oscillator: 32.768kHz
- External reference frequency input, available (19.2 and 32.768 kHz)
- Built-in MOS Varactor for local oscillator
- Modulation index, adjustable by MPU
- I^2C bus or 3-wire serial interface with MPU
- Easy control of software programming
- Operating Voltage: 2.7 to3.6V (3.0V typ.)
- Low Power Consumption: 17mA (typ.)
- Operating Temperature: -30 to +85 degC
- Package: 35-pin Wafer Level Package and 36-pin QFN Package
- Full CMOS process
- RF output program, variable (APC)

Electrical Specification:

Operating Range

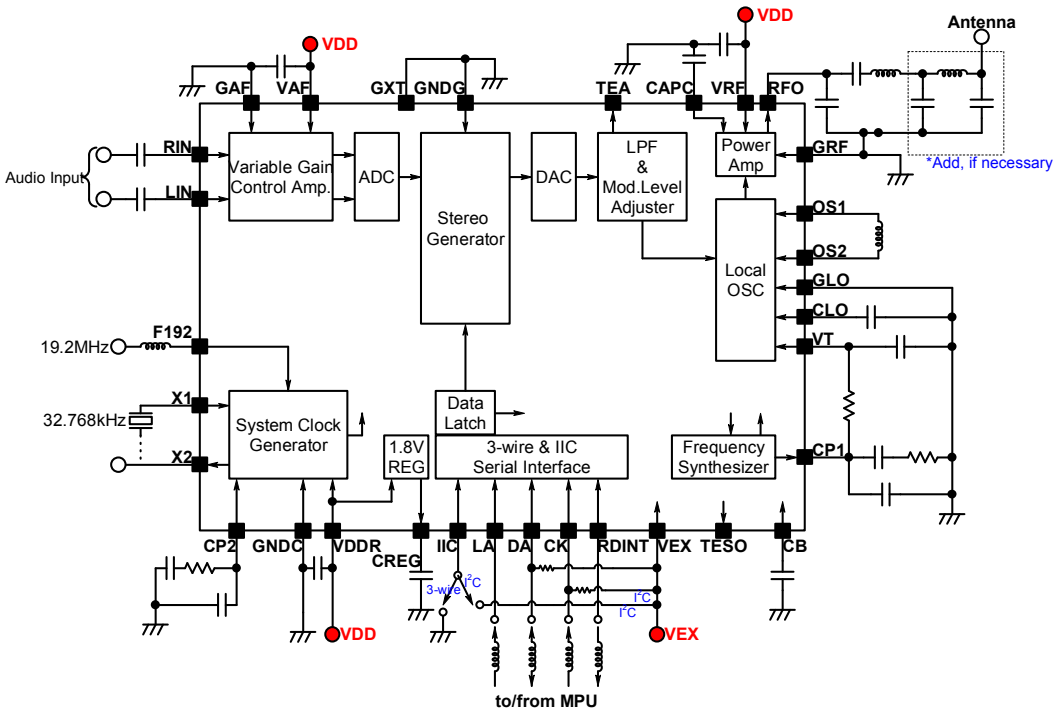
Parameter	Sym	Condition	Min	Typ	Max	Unit
Operating voltage	VDD		2.7	3.0	3.6	V
	VEX		1.7	1.8	3.6	V
Operating temperature	Ta		-30		+85	degC
Storage temperature	Tstg		-40		+125	degC

Electrical Performance

Unless otherwise specified, conditions are: VDD: 3.0+/-0.05V, Ta: 25degC, f-AF: 400Hz, Vi-AF: 140mVrms, ALC: Off, fo: 88MHz.

Parameter	Sym	Condition		Min	Typ	Max	Unit
Consumption current	Idd	VDD: 3.0V PO: RFG=0		-	17	27	mA
Standby current	Istb	VDD: 3.6V		-	-	20	uA
Transmission frequency	fTX			76.1	-	108.0	MHz
Transmission power output	PO	RI: 50-ohm	RFG: 0	-7	-2	1	dBm
			RFG: 1	-3	0	3	
			RFG: 2	-1	2	5	
			RFG: 3	1	4	7	
Modulation deviation	Dev	Pre-emphasis: ON Mono ALC: OFF		+/-60	+/-75	+/-100	kHz
Modulation distortion	THD	Stereo Dev: +/-75kHz ALC: OFF		-	-	1.5	%
Modulation SN ratio	SNR	Mono and Stereo ALC: OFF		47	53	-	dB
Stereo separation	SEP	Dev: +/-75kHz ALC: OFF		25	30	-	dB
Audio frequency response	FR	f = 50 to 15kHz VIN=18 mVrms		-3	0	+3	dB
Audio input impedance	Zaf	f = 50 to 15kHz VIN=18mVrms		100	-	-	k ohm
Pilot tone level	PL				10		%
RDS level	RDS				2		kHz
Crystal oscillator **Frequency**	fXT				32.768		kHz
Crystal oscillator **Absolute tolerance**	dXT	Ta: -30 to 85degC VDD: 2.7 to 3.6V		-20		+20	ppm

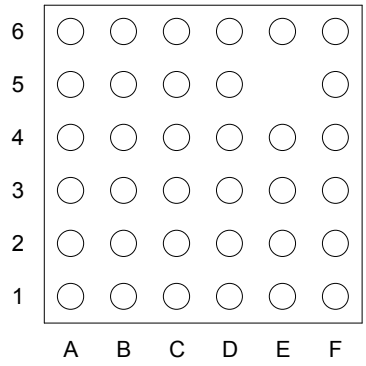
NS741 Block Diagram



Pin Assignment:

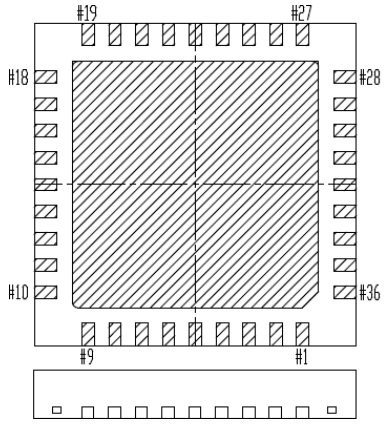
WLP (Top view)

Outline dimension: 2.93 x 2.93 mm
Ball pitch: 0.5mm
Ball size: 0.25mm
(Pb free)



#	Name	#	Name
A1	LIN	D1	CAPC
A2	GXT	D2	VRF
A3	X1	D3	TEA
A4	GNDC	D4	VT
A5	VDDR	D5	Connect to ground
A6	GNDG	D6	DA
B1	RIN	E1	RFO
B2	CB	E2	CLO
B3	X2	E3	OS2
B4	CREG	E4	VEX
B5	IIC	E6	Connect to ground
B6	F192	F1	GRF
C1	VAF	F2	OS1
C2	GAF	F3	GLO
C3	CP2	F4	CP1
C4	RDINT	F5	TESO
C5	CK	F6	Connect to ground
C6	LA		

QFN (Bottom view)



#	Name	#	Name
1	CB	19	RST
2	GXT	20	TESO
3	X1	21	VEX
4	X2	22	CP1
5	GNDC	23	VT
6	CP2	24	GLO
7	VDDR	25	OS2
8	CREG	26	OS1
9	GNDG	27	CLO
10	F192	28	GRF
11	IIC	29	RFO
12	RDINT	30	VRF
13	LA	31	CAPC
14	CK	32	TEA
15	DA	33	VAF
16	Connect to ground	34	GAF
17	Connect to ground	35	RIN
18	Connect to ground	36	LIN