OVERVIEW

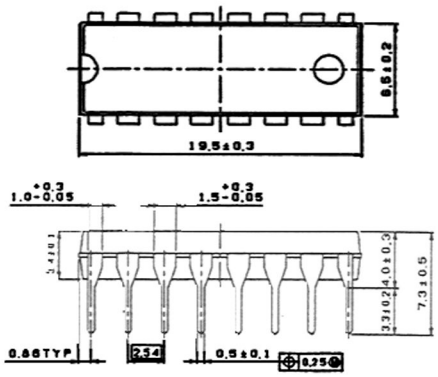
The SM5133SP is a CMOS-LSI that incorporates a PLL for wireless communications. It features 16 communication channels and parallel inputs for communication channel selection. It operates from a 2.4 to 5.5V supply and is available in 16-pin DIP.

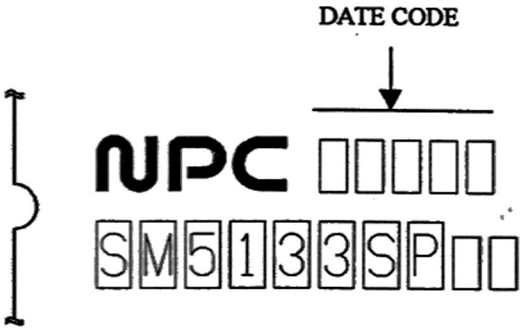
FEATURES

- 16 communication channels
- Parallel channel selection
- 60MHz maximum operating frequency
- 300mV$_{p-p}$ (min) input sensitivity
- 5kHz reference frequency
- Molybdenum-gate CMOS process
- 2.4 to 5.5V supply voltage
- 16-pin plastic DIP

PAKCAGE DIMENSIONS

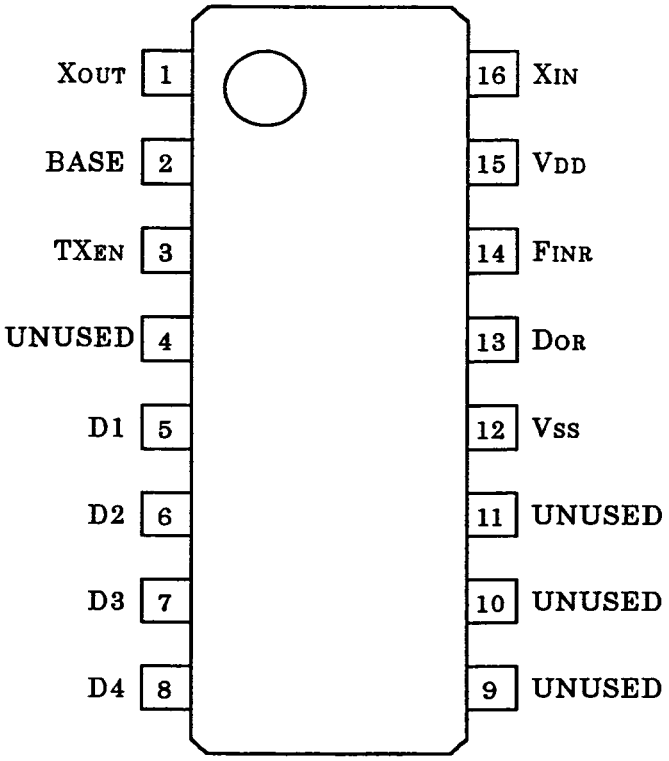
Unit : mm
Weight : 1.01g





PINOUT (Top View)

(TOP VIEW)



SPECIFICATIONS

Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Supply voltage range	V_{DD}-V_{SS}	-0.3 to 7.0	V
Input voltage range	V_{IN}	V_{SS} to V_{DD}	V
Operating temperature range	T_{OPR}	-30 to 80	℃
Storage temperature range	T_{STG}	-40 to 125	℃

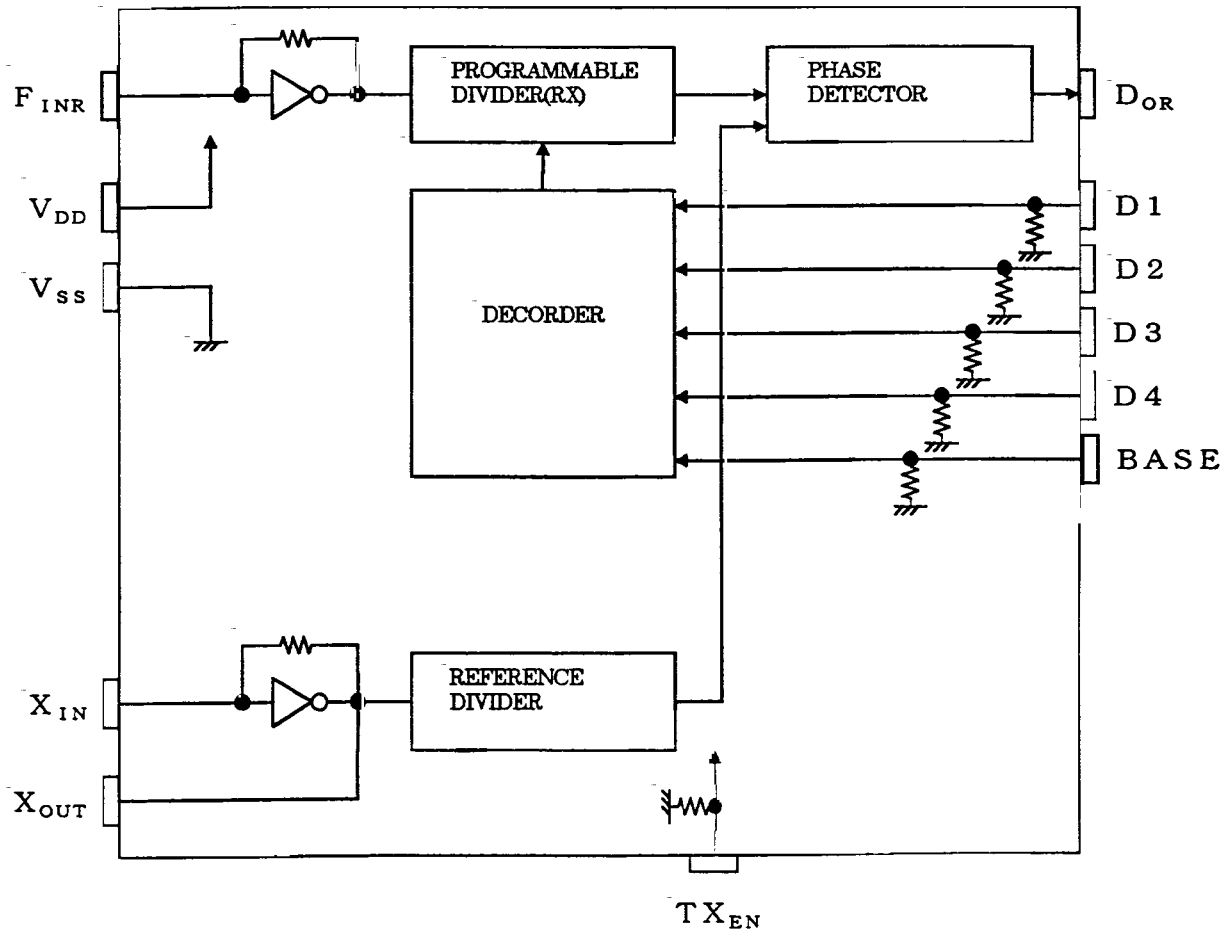
Electrical Characteristics

Parameter	Symbol	Condition	Rating min	Rating typ	Rating max	Unit
Supply voltage range	V_{DD}		2.4		5.5	V
Current consumption	I_{DD}	V_{DD}=3.0V TX_{EN}=LOW F_{RX}=57.3000MHz V_{INR}=300mV_{P-P} Sine wave		2.5	5.0	mA
		V_{DD}=5.0V TX_{EN}=LOW F_{RX}=57.3000MHz V_{INR}=300mV_{P-P} Sine wave		9.5		
F_{INR} Maximum receive operating frequency	f_{RX}	V_{INR}=300mV_{P-P} Sine Wave	60			MHz
F_{INR} input amplitude	V_{INR}	F_{RX}=60MHz,f_{XIN}=10.24MHz Sine Wave	0.3		V_{DD}-0.5	V_{P-P}
X_{IN} input amplitude	V_{INX}		0.8		V_{DD}-0.5	
D1 to D4, BASE and TX_{EN} HIGH-level input current	I_{IH}	V_{IH}= V_{DD}			300	μA
DOR HIGH-level output current	I_{OH}	V_{OH}= V_{DD}-0.4V	0.4			mA
DOR LOW-level output current	I_{OL}	V_{OL}=0.4V	0.4			
D1 to D4, BASE and TX_{EN} HIGH-level input voltage	V_{IH}		V_{DD}-0.4		V_{DD}	V
D1 to D4, BASE and TX_{EN} LOW-level input voltage	V_{IL}		0		0.4	

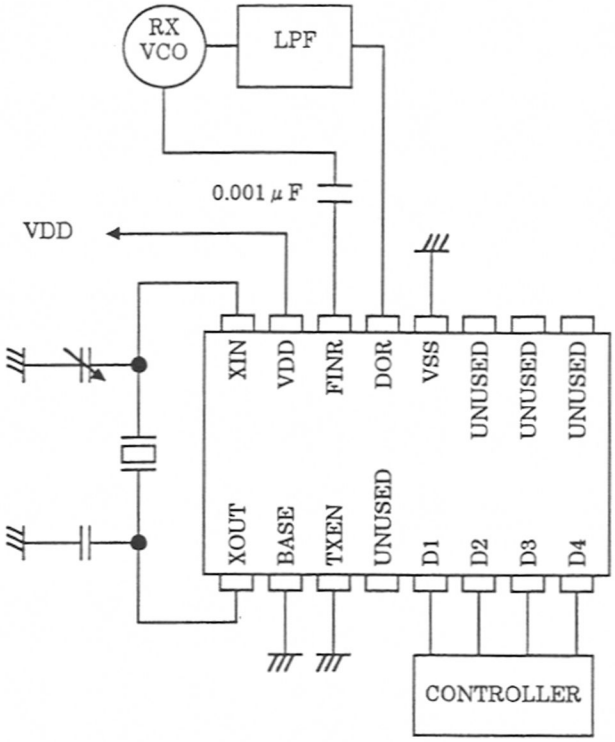
PIN DESCRIPTION

No.	Name	I/O	Function
1	X_{OUT}	O	Crystal oscillator (10.24MHz) and capacitor connection.
2	BASE	I	Mode setting pin. Should be left open or grounded. Internal pull-down resistor.
3	TX_{EN}	I	Test pin. Should be left open or grounded. Internal pull-down resistor.
4	UNUSED	-	Unused pin. Should be left open.
5-8	D1 to D4	I	Communication channel select parallel data input. See the Communication Channel Selection. Internal pull-down resistor.
9-11	UNUSED	-	Unused pin. Should be left open.
12	V_{SS}	-	Ground.
13	D_{OR}	O	Passive lowpass filter connection.
14	F_{INR}	I	Programmable divider input. Internal feedback resistor. Allows AC coupling.
15	V_{DD}	-	2.4 to 5.5V supply voltage.
16	X_{IN}	I	Crystal oscillator and capacitor connection. Internal feedback resistor.

BLOCK DIAGRAM



TYPICAL APPLICATIONS



X'tal (10.24MHz, CI 20Ω, CL 30pF)

*Notes

LPF should be a passive type.

Frequency of VCO should be increased when input voltage shifts higher.

Communication Channel Selection

The SM5133SP has parallel inputs for communication channel selection.
The states of D1 to D4 are used to select to one of the available channels.

BASE	D4	D3	D2	D1	Channel	TX_{EN}=0 (f_{REF}=5.0kHz)	
						f_{VCO}(MHz)	N
0	0	0	0	1	1	32.390	6478
	0	0	1	0	2	32.395	6479
	0	0	1	1	3	32.400	6480
	0	1	0	0	4	32.405	6481
	0	1	0	1	5	32.410	6482
	0	1	1	0	6	32.415	6483
	0	1	1	1	7	32.420	6484
	1	0	0	0	8	32.420	6484
	1	0	0	1	9	32.420	6484
	1	0	1	0	10	32.420	6484
	1	0	1	1	11	32.420	6484
	1	1	0	0	12	32.420	6484
	1	1	0	1	13	32.420	6484
	1	1	1	0	14	32.420	6484
	1	1	1	1	15	32.420	6484
	0	0	0	0	0	32.420	6484

*Notes
'0' for BASE, D4 to D1 and TX_{EN} implies LOW-level input voltage.
'1' implies HIGH-level input voltage.