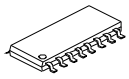
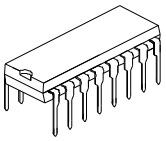
10/15 CH PLL FOR CORDLESS PHONE

DESCRIPTION

SC8803 is a programmable PLL circuit used for 10 channels transceiver. It is designed for cordless phone with frequency is 46/49MHz, frequencies of receive and transmit are controlled by pin D0~D3, and frequencies are different for base mode and remote mode. Unlock detect circuits are integrated here, and the lock_det pin outputs the lock state.



SOP-16-225-1.27



DIP-16-300-2.54

FEATURES

* 10 Channels selectable:(both transmit / receive)
* Include oscillation circuit with external x-tal (10.24MHz)
* Unlock detector (phase difference more than 6.25μs)
* Stand-by function for power saving

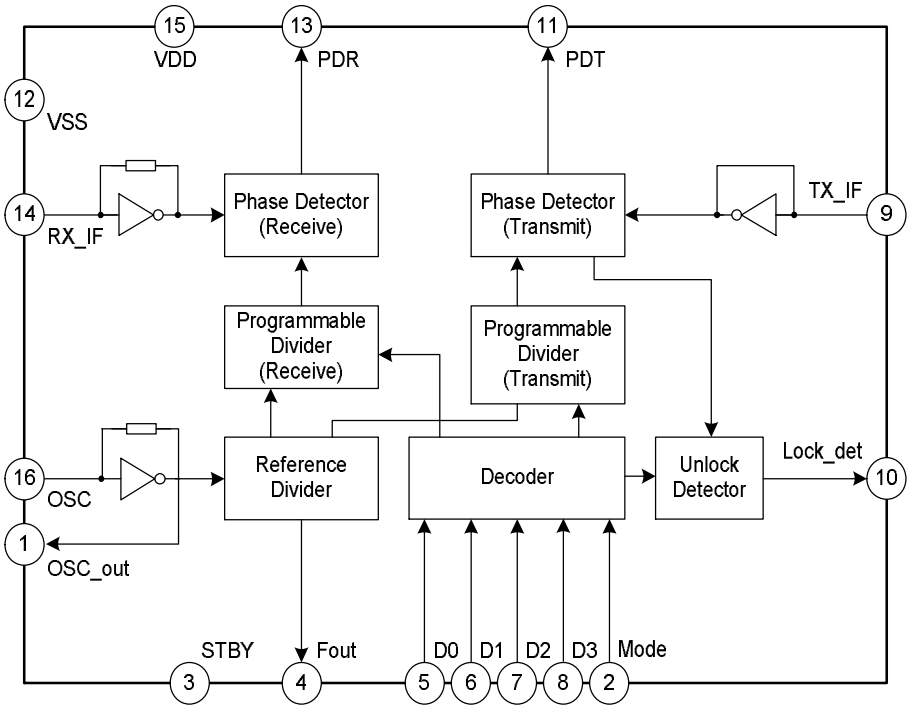
APPLICATIONS

* Cordless phone
* Cordless microphone

ORDERING INFORMATION

Device	Package
SC8803	DIP-16-300-2.54
SC8803S	SOP-16-225-1.27

BLOCK DIAGRAM



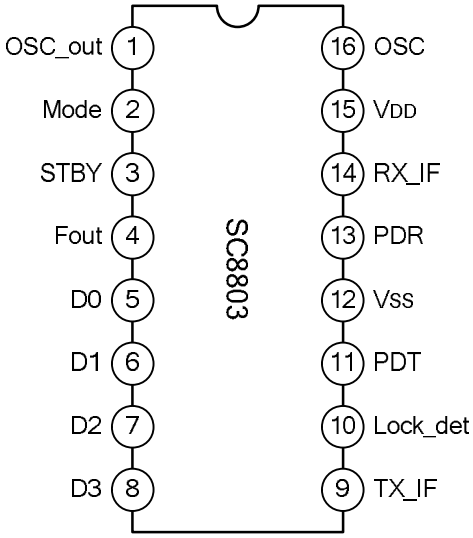
ABSOLUTE MAXIMUM RATINGS (Unless otherwise specified, T_{amb}=25°C)

Characteristics	Symbol	Value	Unit
Supply Voltage	V_{DD}	0.5~6.0	V
Operating Temperature	T_{opr}	-30 ~ +70	°C
Power Dissipation	P_D	-55 ~ +150	°C

ELECTRICAL CHARACTERISTICS (Unless otherwise specified, T_{amb}=25°C)

Characteristics	Symbol	Test condition	Min.	Typ.	Max.	Unit
Operating supply Voltage	V_{DD}	-	3	--	5.5	V
Input Voltage	V_{IH1}	D0-D3, STBY	0.7V_{DD}	--	V_{DD}	V
	V_{IL1}	D0-D3, STBY	--	--	0.3V_{DD}	V
	V_{IH2}	Mode	0.9	--	V_{DD}	V
	V_{IL2}	Mode	--	--	0.1V_{DD}	V
Input Amplitude	V_{iamp1}	F_{TX}=52MHz	0.1	--	0.3V_{DD}	Vrns
	V_{iamp2}	F_{RX}=42MHz	0.1	--	0.3V_{DD}	Vrns
	V_{iamp3}	F_{osc}=11MHz	0.3	--	0.3V_{DD}	Vrns
Input Frequency	Fin1	V_{TX}=0.15Vrms	10	--	52	MHz
Input Frequency	Fin2	V_{RX}=0.15Vrms	30	--	42	MHz
	Fin3	V_{OSC}=0.3Vrms	5	10.24	11	MHz
Input Current	I_{IH}	V_{IH}=V_{DD}	--	--	40	μA
	I_{IL}	V_{IL}=V_{SS}	--	--	40	μA
Output Voltage	V_{OH1}	PDT, PDR (I_O=0.5mA)	V_{DD}-1	--	--	V
	V_{OL1}	PDT, PDR (I_O=0.5mA)	--	--	1.0	V
	V_{OH2}	LDT (I_O=1mA)	V_{DD}-1	--	--	V
	V_{OL2}	F1 (I_O=1mA)	--	--	--	V
Output Shutdown Leakage Current	I_{LKG1}	PDT, PDR (V_O= V_{OO}/ V_{SS})	--	0.01	1.0	μA
	I_{LKG2}	LDT (V_O=V_{SS})	--	-	5.0	μA
Standby Current	I_{STBY1}	V_{DD}=3v,SB=V_{DD}, PIN3=V_{DD}	--	1.0	2.0	mA
	I_{STBY2}	V_{DD}=5v,SB=V_{DD}, PIN3=V_{DD}	3.5	4.0	--	mA
Operating Current	I_1	V_{DD}=3v,SB=V_{SS}, PIN3=V_{DD}	--	2.0	3.0	mA
	I_2	V_{DD}=5v,SB=V_{SS}, PIN3=V_{DD}	--	6.0	7.0	mA

PIN CONFIGURATION



PIN DESCRIPTION

PIN No	Symbol	Pin description
1	OSC_OUT	This pin connect with pin 16, it generate the reference frequency.
2	Mode	Base/remote mode select pin.
3	STBY	Stand by pin, standing by when input is low.
4	Fout	5KHz frequency output pin.
5	D0	Channel select pin, for detail information, refer to the following function table.
6	D1	
7	D2	Channel select pin, for detail information, refer to the following function table.
8	D3	
9	TX_IF	Input the programmable divider for the TX, the min. voltage is 0.1Vrms.
10	Lock_det	Unlock detect pin.
11	PDT	Output the phase detector for the TX, and it connect with external filter to the transmit VCO.
12	Vss	The negative power supply, it general connects to the ground.
13	PDR	Output the phase detector for the receiver, and it connect with the external filter to the receive VCO.
14	RX_IF	Input the programmable divider for the receiver, the min. voltage is 0.1Vrms.
15	VDD	Power supply pin, it is +3~+5.5V more positive than VSS pin.
16	OSC	Oscillator input pin.

FUNCTION

SC8803 is a programmable PLL circuit used for 10 channels transceiver. It is designed for cordless phone with frequency is 46/49MHz, frequencies of receive and transmit are controlled by pin D0~D3, and frequencies are different for base mode and remote mode. Please refer to the following tables:

Base & mode=1

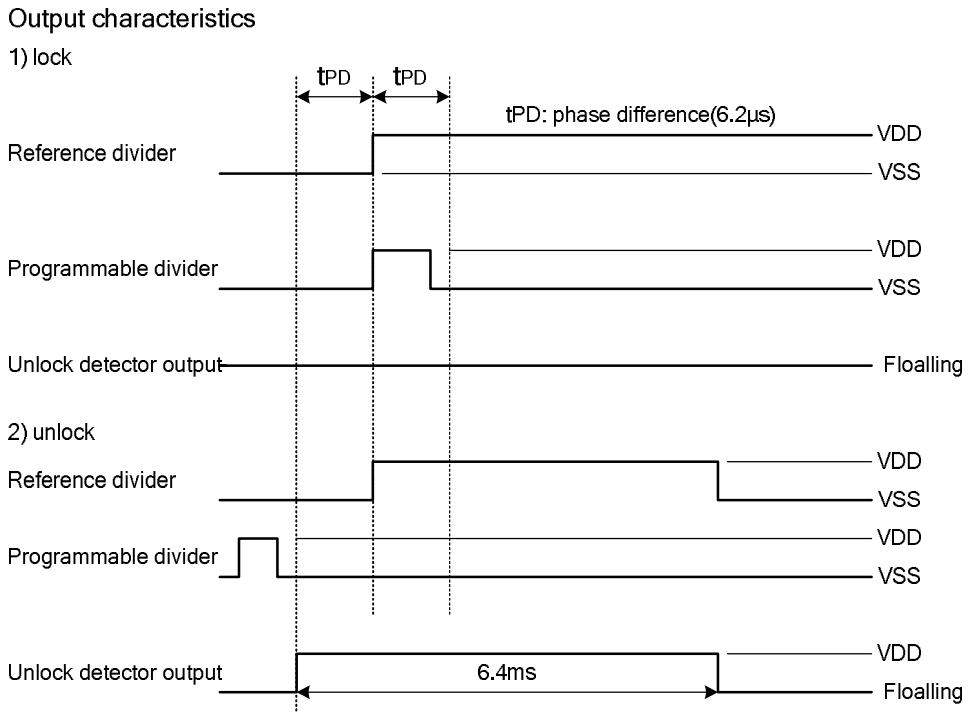
INPUT					RX			TX		
D0	D1	D2	D3	CH	FRX (MHz)	FVCO (MHz)	N	FRX (MHz)	FVCO (MHz)	N
1	0	0	0	1	49.670	38.975	7795	46.610	46.610	9322
0	1	0	0	2	49.845	39.150	7830	46.630	46.630	9326
1	1	0	0	3	49.860	39.165	7833	46.670	46.670	9334
0	0	1	0	4	49.770	39.075	7815	46.710	46.710	9342
1	0	1	0	5	49.875	39.180	7836	46.730	46.730	9346
0	1	1	0	6	49.830	39.135	7827	46.770	46.770	9354
1	1	1	0	7	49.890	39.195	7839	46.830	46.830	9366
0	0	0	1	8	49.930	39.235	7847	46.870	46.870	9374
1	0	0	1	9	49.990	39.295	7859	46.930	46.930	9386
0	1	0	1	10	49.970	39.275	7855	46.970	46.970	9394
1	1	0	1	10	49.970	39.275	7855	46.970	46.970	9394
0	0	1	1	10	49.970	39.275	7855	46.970	46.970	9394
1	0	1	1	10	49.970	39.275	7855	46.970	46.970	9394
0	1	1	1	10	49.970	39.275	7855	46.970	46.970	9394
1	1	1	1	10	49.970	39.275	7855	46.970	46.970	9394
0	0	0	0	10	49.970	39.275	7855	46.970	46.970	9394

Remote & mode=0

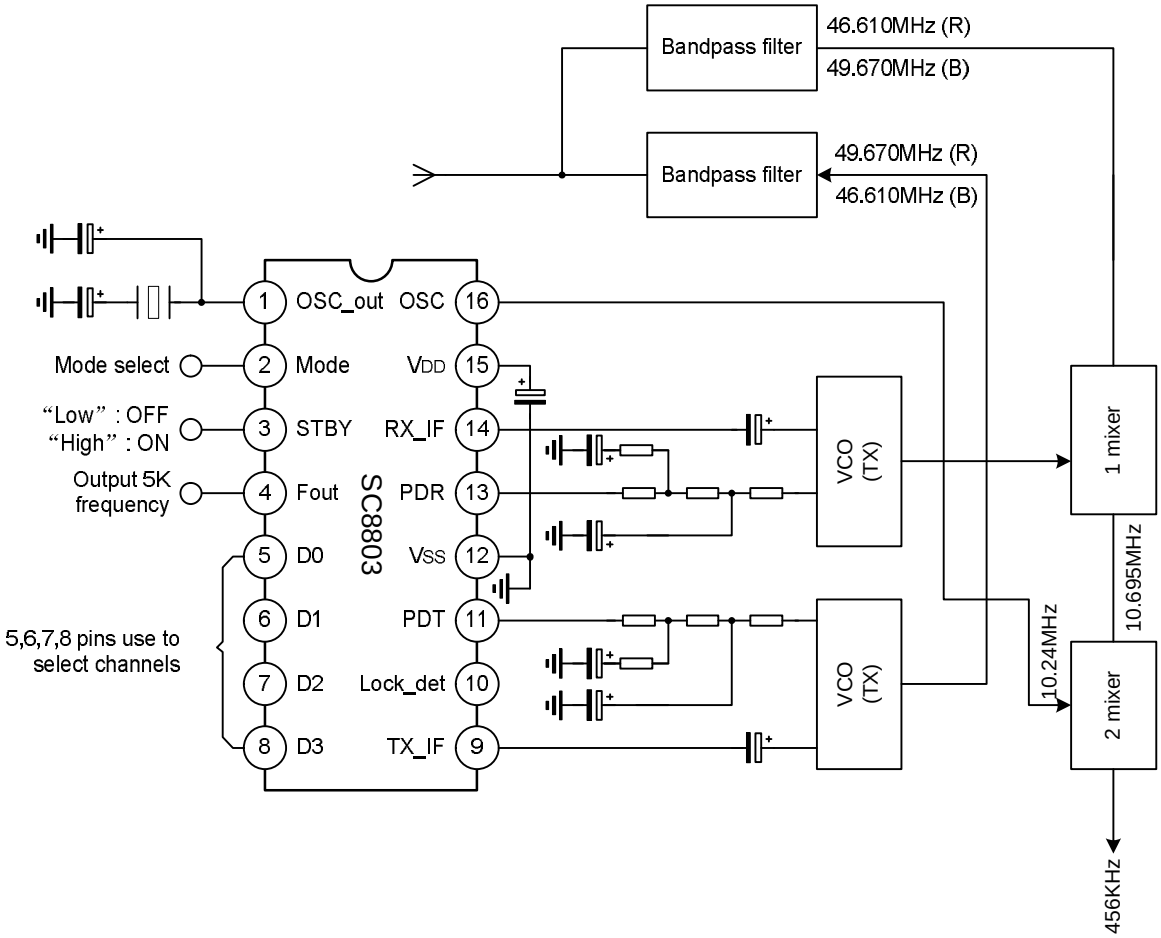
INPUT					RX			TX		
D0	D1	D2	D3	CH	FRX (MHz)	FVCO (MHz)	N	FRX (MHz)	FVCO (MHz)	N
1	0	0	0	1	46.610	35.915	7183	49.670	49.670	9934
0	1	0	0	2	46.630	36.935	7187	49.845	49.845	9969
1	1	0	0	3	46.670	36.975	7195	49.860	49.860	9972
0	0	1	0	4	46.710	36.015	7203	49.770	49.770	9954
1	0	1	0	5	46.730	36.035	7207	49.875	49.875	9975
0	1	1	0	6	46.770	36.075	7215	49.830	49.830	9966
1	1	1	0	7	46.830	36.135	7227	49.890	49.890	9978
0	0	0	1	8	46.870	36.175	7235	49.930	49.930	9986
1	0	0	1	9	46.930	36.235	7247	49.990	49.990	9998
0	1	0	1	10	46.970	36.275	7255	49.970	49.970	9994
1	1	0	1	10	46.970	36.275	7255	49.970	49.970	9994
0	0	1	1	10	46.970	36.275	7255	49.970	49.970	9994
1	0	1	1	10	46.970	36.275	7255	49.970	49.970	9994
0	1	1	1	10	46.970	36.275	7255	49.970	49.970	9994
1	1	1	1	10	46.970	36.275	7255	49.970	49.970	9994
0	0	0	0	10	46.970	36.275	7255	49.970	49.970	9994

Unlock detect circuits are integrated here, and the lock_det pin outputs the lock state. Please refer to the following figure:

Unlock detector output waveform

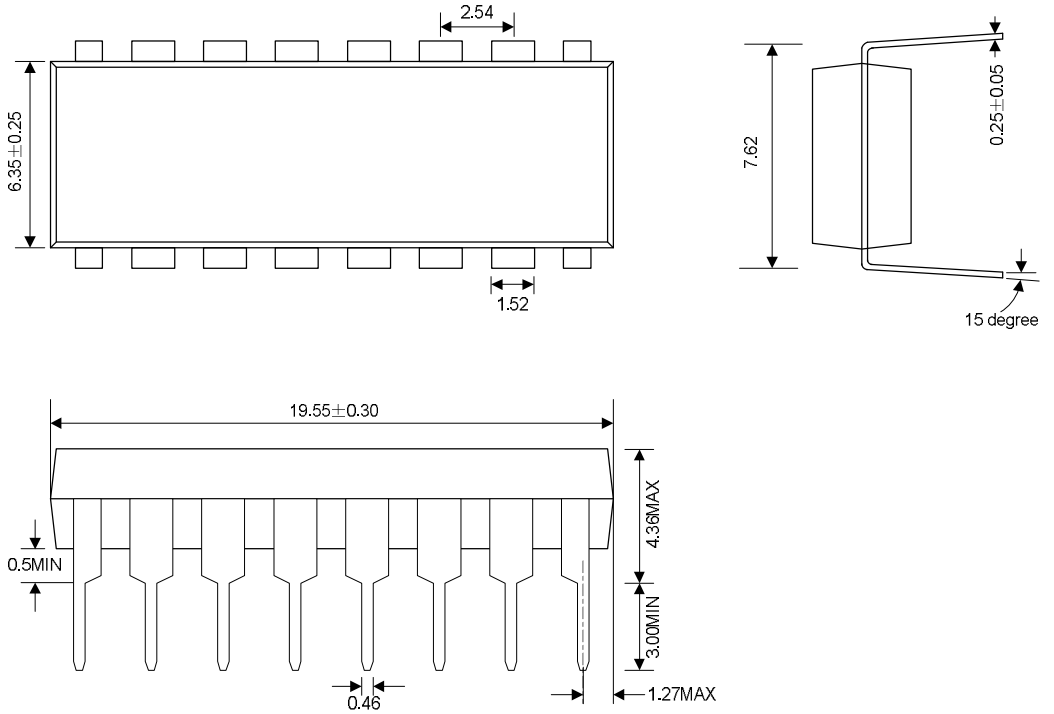


TYPICAL APPLICATION CIRCUIT

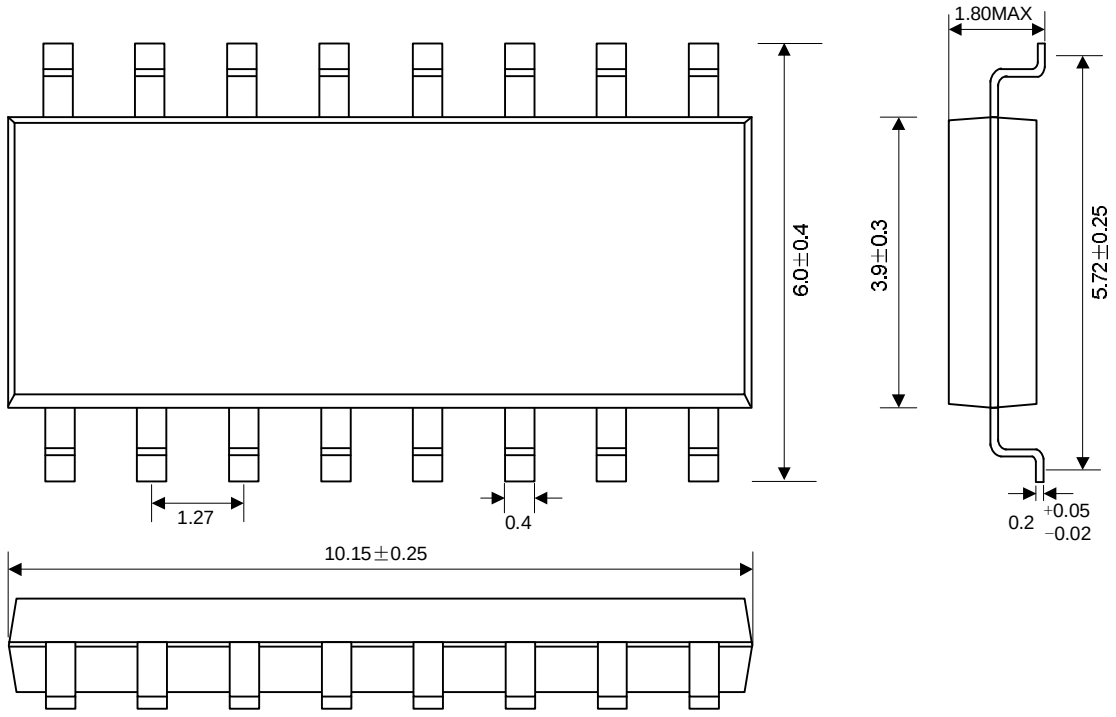


PACKAGE OUTLINE

DIP-16-300-2.54 UNIT: mm



SOP-16-225-1.27 UNIT: mm



HANDLING MOS DEVICES:

Electrostatic charges can exist in many things. All of our MOS devices are internally protected against electrostatic discharge but they can be damaged if the following precautions are not taken:

- Persons at a work bench should be earthed via a wrist strap.
- Equipment cases should be earthed.
- All tools used during assembly, including soldering tools and solder baths, must be earthed.
- MOS devices should be packed for dispatch in antistatic/conductive containers.