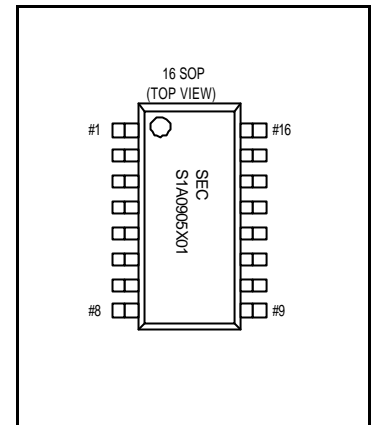


INTRODUCTION

- Recovers the RDS data which is transmitted by FM radio broadcasting.
- (European Broadcasting Union) specifications.
- The IC includes
 - two stage antialiasing filter
 - 57kHz switched capacitor bandpass filter
 - comparator
 - 57kHz carrier recovery circuit
 - bit rate clock recovery circuit
 - BPSK decoder
 - differential decoding circuit
 - RDS signal quality output



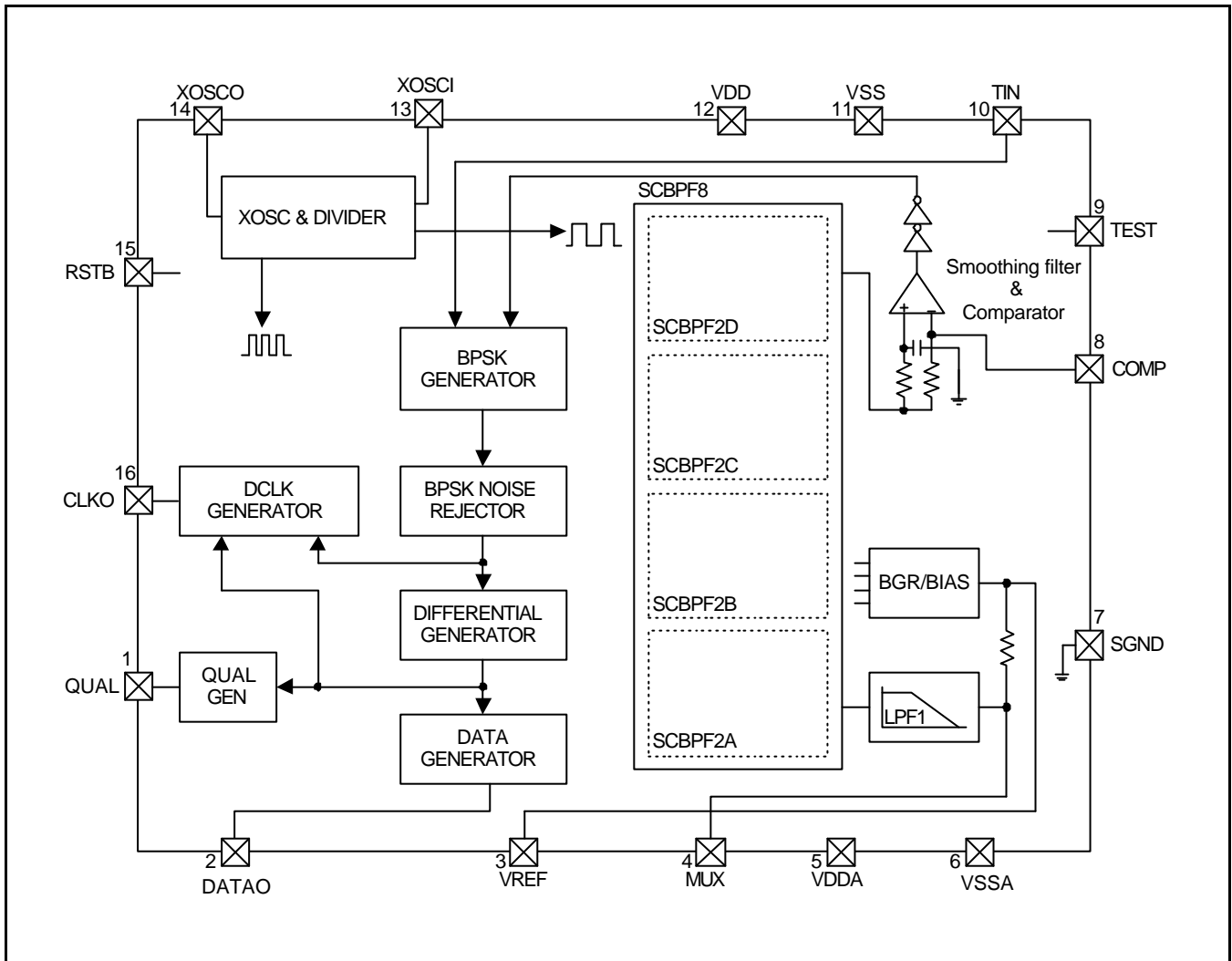
ORDERING INFORMATION

DEVICE	PACKAGE	OPERATING TEMPERATURE
S1A0905X01	16-SOP-225	-20 — +85 °C

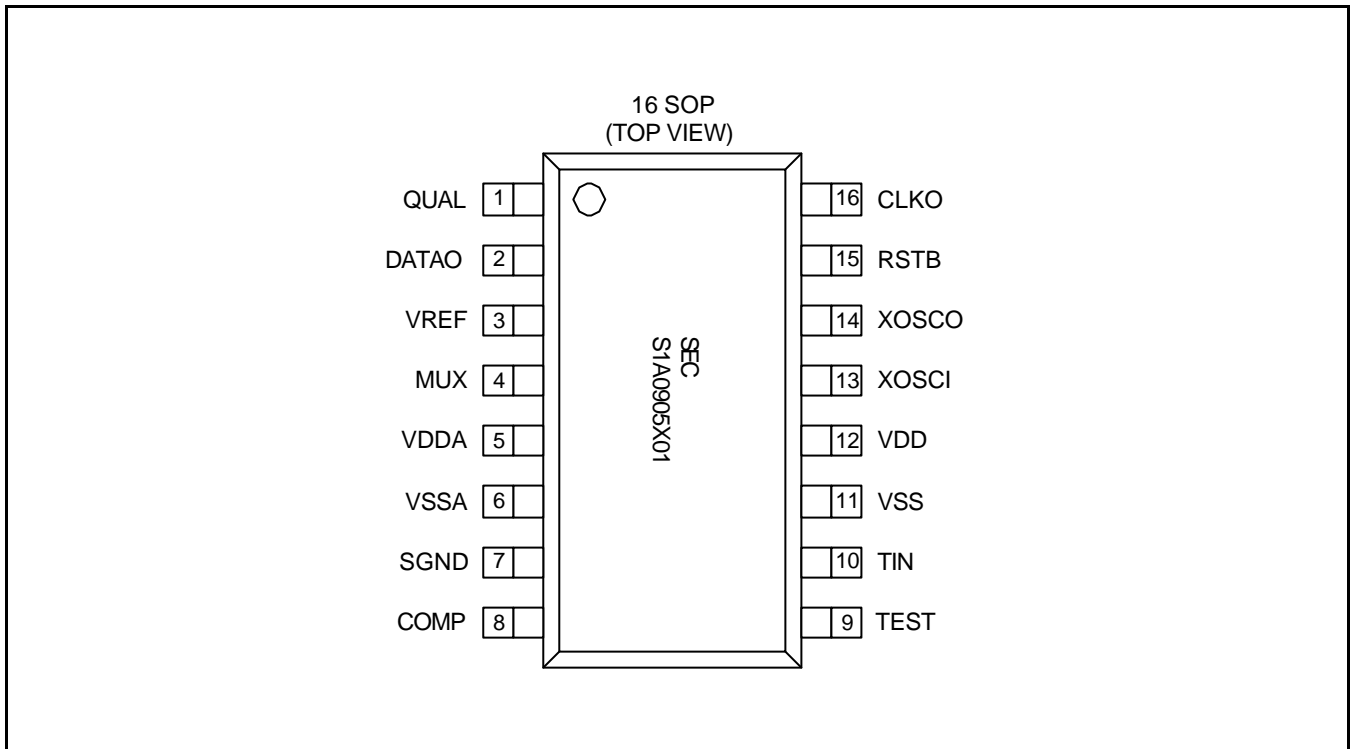
FEATURES

- Low Current
- Two Stage Anti- Aliasing Filter
- 8'th 57kHz Switched Capacitor Bandpass Filter
- DSB Demodulation(Carrier Recovery)
- Clock Recovery Circuit
- Biphase Decoder & Differential Decoder
- Quality Indication Output for Demodulated Data

BLOCK DIAGRAM



PIN DESCRIPTION



PIN DESCRIPTION

PIN NO.	SYMBOL	IN/OUT	FUNCTION
1	QUAL	O	Output for signal quality indication. (High = good ,Low = bad data)
2	DATAO	O	RDS data output (1187.5bps)
3	VREF	O	Reference voltage output (1/2*VDDA)
4	MUX	I	RDS signal input (DSB-SC)
5	VDDA	P	Analog power supply (5.0V)
6	VSSA	P	
7	SGND	P	Signal ground
8	COMP	O	Positive comparator input
9	TEST	I	Control pin for test mode.(Normal = GND)
10	TIN	I	Input for test mode.(Normal = GND)
11	VSS	P	Digital power supply (5.0V)
12	VDD	P	
13	XOSCI	I	Crystal oscillator Input
14	XOSCO	O	Crystal oscillator output
15	RSTB	I	Input for system reset
16	CLKO	O	RDS clock output (1.1875kHz)

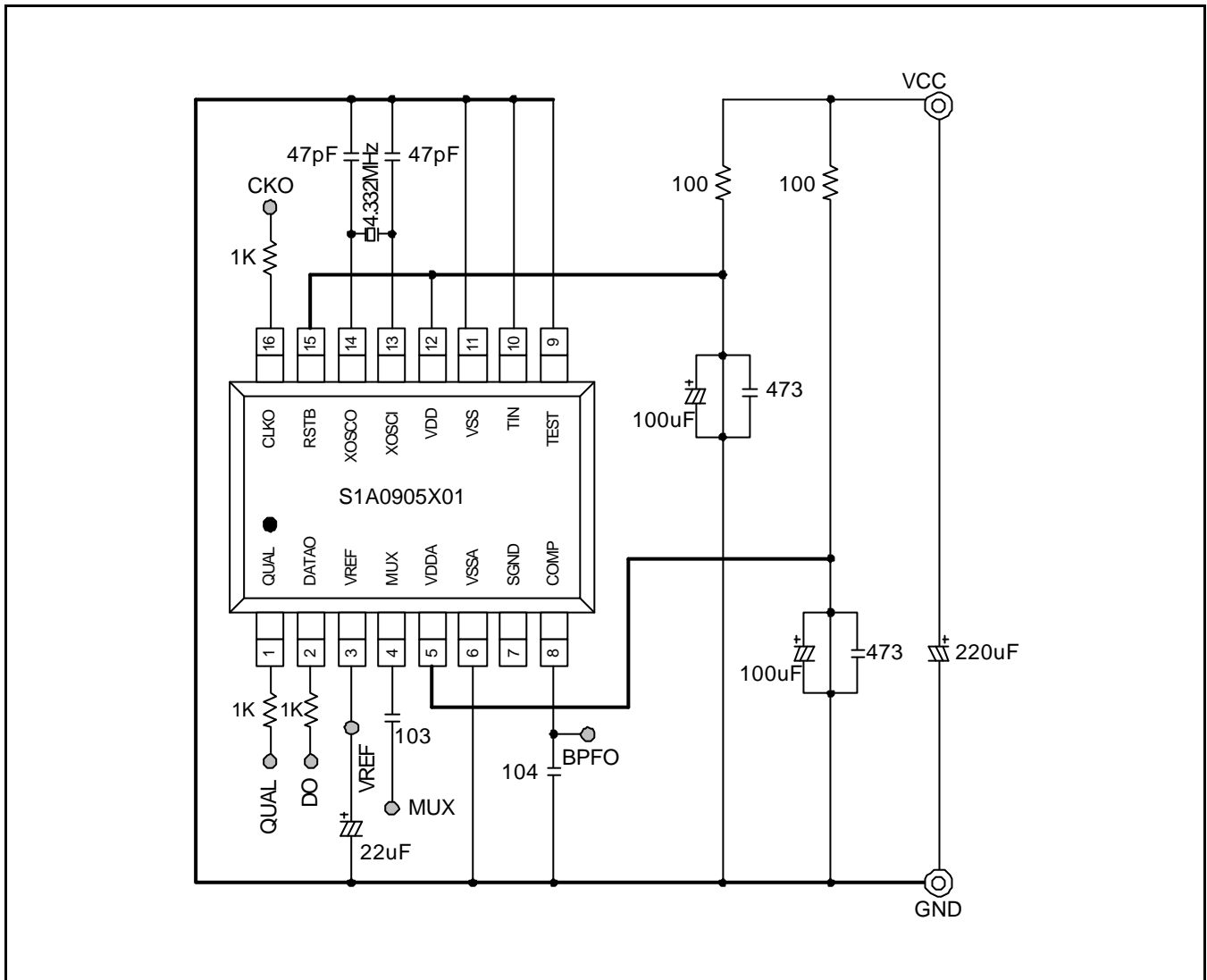
ELECTRICAL CHARACTERISTICS**Recommended Operating Conditions (Ta = 25°C)**

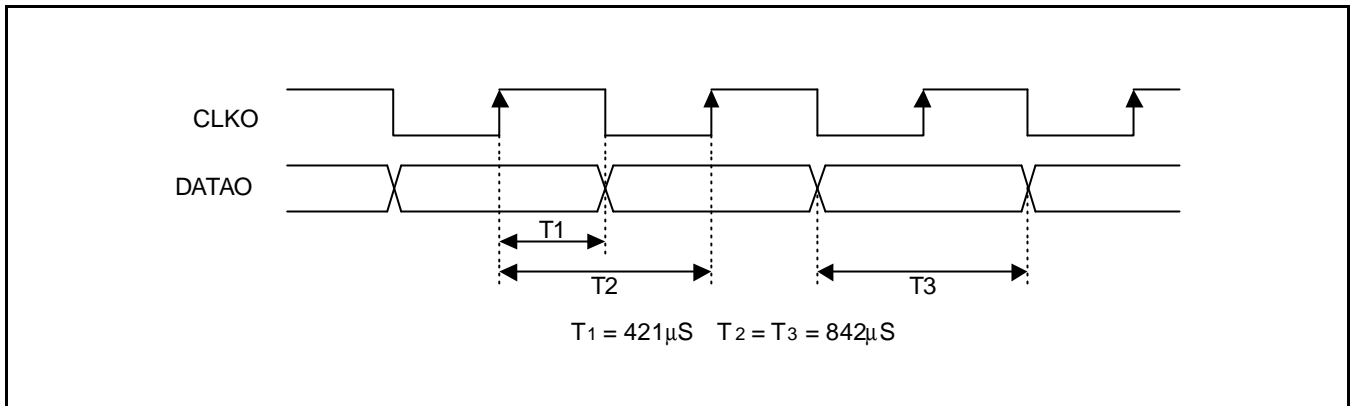
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Analog Power Supply	VDDA	4.5	-	5.5	V	
Digital Power Supply	VDD	4.5	-	5.5	V	
Operating Temperature	T _{OP}	-20		85	°C	
Storage Temperature	T _{STG}	-40		150	°C	

Electrical Characteristics(VDDA,VDD = 5.0V,Tamp = 25°C, unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Operating Current	I _{SUM}	-	4.0	7.0	mA	I _{VDDA} + I _{VDD}
Reference Voltage	VREF	2.3	2.5	2.7	V	
MPX input (Signal before the capacitor pin 4)						
RDS Amplitude	V _{RDS}	-	-	1.0	mVrms	Δf = ± 2kHz RDS
Maximum Input Capability	V _{MAX}	0.2	-	-	Vpp	
Input Impedance	R _i	40	-	-	kΩ	f = 0 to 100kHz
Filter block						
Center Frequency	F _c	56.5	57.0	57.5	kHz	
Gain	A _v	23	26	29	dB	F _c = 57kHz
Attenuation	ATT1	31	-	-	dB	F = ± 7kHz
	ATT2					
	ATT3	40	-	-	dB	F < 45kHz
	ATT4	60	-	-	dB	F < 20kHz
	ATT5	40	-	-	dB	F > 70kHz
Signal to Noise Ratio	SN	30	40	-	dB	57kHz V _{in} =3mVrms
Demodulator block						
High Level Output	V _{OH}	4.0	-	-	V	
Low level Output	V _{OL}	-	-	0.4	V	
Clock Rate	C _{RATE}	-	1187.5	-	Hz	
Oscillator block						
Oscillation Frequency	F _{OSC}	-	4.332	-	MHz	
Clock Input High Level	X _{OSCI}	4.0	-	-	V	
Clock Input Low Level	X _{OSCO}	-	-	1.0	V	
Output Amplitude	X _{OSC}	-	4.5	-	Vpp	
Load Capacitance	CL	-	47	-	pF	

TEST & APPLICATION CIRCUIT



OUTPUT DATA & CLOCK TIMING

The clock(CLKO) frequency is 1187.5kHz. The data (DATAO) is in synchronous with the rising edge of the clock. To read the valid data, you must use the rising edge of the clock as the reference. The data is valid for 416.7ms. after the reference clock rising edge.

QUAL indicates the quality of the demodulated data.

HIGH : Good RDS DATA
LOW : Poor RDS DATA

BAND-PASS FILTER CHARACTERISTICS

