

S/PDIF Signal Receiver

FEATURES

- High Output Current: $\pm 50\text{mA}$
- Minimum Input Signal: 80mV (Typ)
- Operating Voltage: 1.8V to 5.5V
- Operating Temperature: -40°C to 125°C
- Current Consumption: 2.5mA
- Low Propagation Delay: 6ns
- SOT-363 Package

APPLICATIONS

- S/PDIF Signal Receiving

PRODUCT SPECIFICATION

Part Number	Package	Marking
MS9113S	SOT-363	13S

PRODUCT DESCRIPTION

The MS9113S is a S/PDIF signal receiver. When the frequency of input signal is 0.1MHz to 40MHz, the MS9113S would magnify the signal to power supply voltage. The typical value of minimum input signal is 80mV. The MS9113S has a signal indication pin, which shows high-level with input signal and low-level without input signal. The MS9113S also has an EN control pin. When EN=1 or not connected, the MS9113S operates normally; when EN=0, OUT and INPUT_STAG outputs are in high-impedance state. The operating voltage ranges from 1.8V to 5.5V and maximum operating current is 2.5mA. The MS9113S can provide $\pm 50\text{mA}$ output driving current and propagation delay is 6ns. The MS9113S is available in SOT-363 package.

BLOCK DIAGRAM

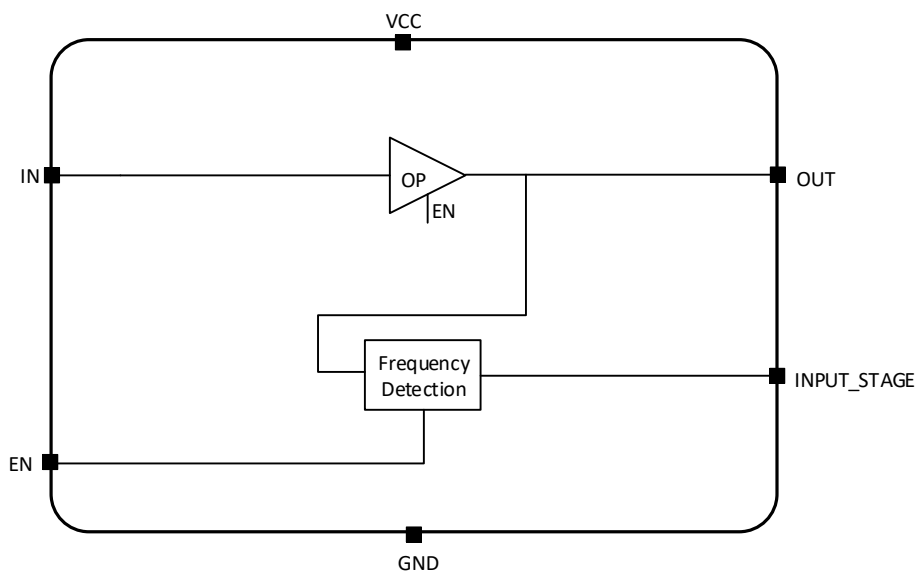
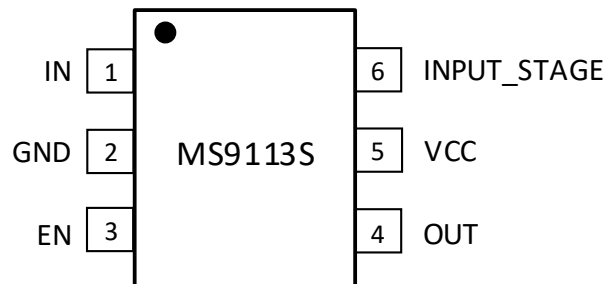


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PIN CONFIGURATION



PIN DESCRIPTION

Pin	Name	Type	Description
1	IN	I	S/PDIF Signal Input
2	GND	-	Ground
3	EN	I	Enable Signal. When EN is high-level or left floating, it operates normally; when EN is low-level, OUT and INPUT_STAG outputs are in high-impedance state.
4	OUT	O	TTL/CMOS Level Output
5	VCC	-	Power Supply
6	INPUT_STAGE	O	Signal Indication Pin. It outputs 1 with input signal and 0 without input signal.

ABSOLUTE MAXIMUM RATINGS

Any exceeding absolute maximum rating application causes permanent damage to device. Because long-time absolute operation state affects device reliability. Absolute ratings just conclude from a series of extreme tests. It doesn't represent chip can operate normally in these extreme conditions.

Parameter	Symbol	Ratings	Unit
Power Supply	V _{CC}	2 ~ 6.0	V
Storage Temperature	T _{STG}	-65 ~ 150	°C

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Min	Typ	Max	Unit
Power Supply	V _{CC}	1.8	3.3	5.5	V
Operating Temperature	T _A	-40		+125	°C

ELECTRICAL CHARACTERISTICS (3.3V)

Unless otherwise noted, $V_{CC}=3.3V$, $T_A=25^{\circ}C$.

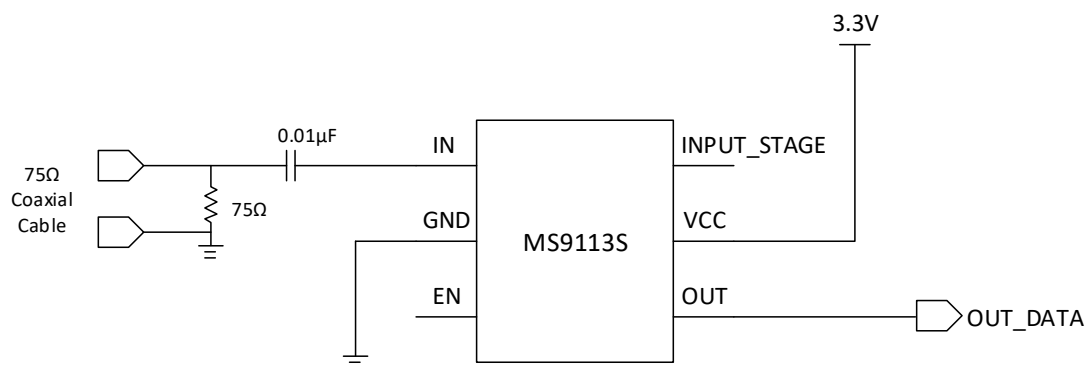
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Input Impedance	R_{IN}		13	14.5	15	k Ω
Propagation Delay	t_{PD}	80mV, Peak-to-Peak Value for Input Signal		11		ns
		200mV, Peak-to-Peak Value for Input Signal		8		ns
		1V, Peak-to-Peak Value for Input Signal		6		ns
Minimum Input Signal Amplitude	V_{INMIN}			80		mV
Maximum Input Signal Amplitude	V_{INMAX}			5.5		V
Minimum Input Signal Frequency	f_{MIN}		0.1			MHz
Input Signal Frequency (Output is abnormal if the frequency is exceeded)	f_{MAX}				40	MHz
Output Voltage	V_O		0		V_{CC}	V
Output Current	I_{OH}	$R_L=39\Omega$		-50		mA
	I_{OL}	$R_L=39\Omega$		50		mA
High-impedance Output Current	I_{OZ}		-0.1		0.1	μA
Operating Temperature	T_A		-40		125	$^{\circ}C$
Quiescent Operating Current	I_Q	No Load	1	1.4	2.1	mA
Off Current	I_{OFF}	No Load, No Input	0.1	0.2	0.3	mA
Input High-level Voltage	V_{IH}	EN Pin	2.4			V
Input Low-level Voltage	V_{IL}	EN Pin			1.9	V

ELECTRICAL CHARACTERISTICS (5V)

Unless otherwise noted, $V_{CC}=5V$, $T_A=25^{\circ}C$.

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Input Impedance	R_{IN}		13	14.5	15	k Ω
Propagation Delay	t_{PD}	80mV, Peak-to-Peak Value for Input Signal		11		ns
		200mV, Peak-to-Peak Value for Input Signal		8		ns
		1V, Peak-to-Peak Value for Input Signal		6		ns
Minimum Input Signal Amplitude	V_{INMIN}			80		mV
Maximum Input Signal Amplitude	V_{INMAX}			7		V
Minimum Input Signal Frequency	f_{MIN}		0.1			MHz
Input Signal Frequency (Output is abnormal if the frequency is exceeded)	f_{MAX}				40	MHz
Output Voltage	V_O		0		V_{CC}	V
Output Current	I_{OH}	$R_L=75\Omega$		-50		mA
	I_{OL}	$R_L=75\Omega$		50		mA
High-impedance Output Current	I_{OZ}		-0.1		0.1	μA
Operating Temperature	T_A		-40		125	$^{\circ}C$
Quiescent Operating Current	I_Q	No Load	1.8	2.5	3.2	mA
Off Current	I_{OFF}	No Load, No Input	0.1	0.3	0.5	mA
Input High-level Voltage	V_{IH}	EN Pin	3.8			V
Input Low-level Voltage	V_{IL}	EN Pin			3.3	V

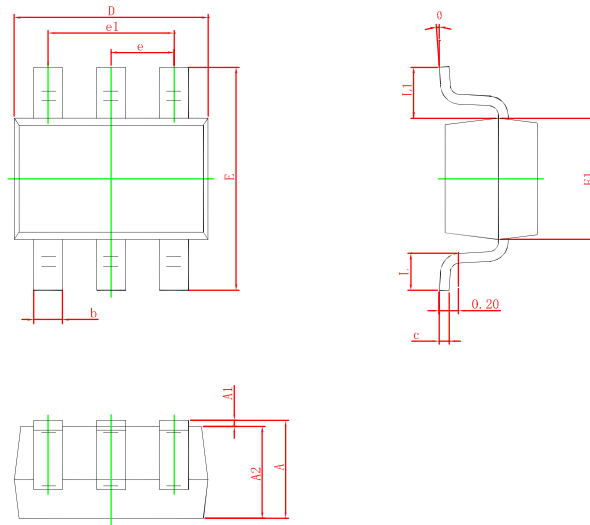
TYPICAL APPLICATION DIAGRAM



MS9113S Typical Application Circuit

PACKAGE OUTLINE DIMENSIONS

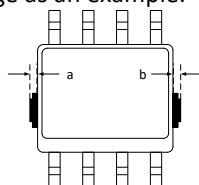
SOT-363



Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.350	0.006	0.014
c	0.110	0.175	0.004	0.007
D	2.000	2.200	0.079	0.087
E	2.150	2.450	0.085	0.096
E1	1.150	1.350	0.045	0.053
e	0.650TYP		0.026TYP	
e1	1.200	1.400	0.047	0.055
L	0.260	0.460	0.010	0.018
L1	0.525REF		0.021REF	
θ	0°	8°	0°	8°

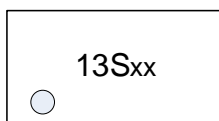
Note: In addition to the package size, a and b are allowed to have the maximum size of 0.15mm for waste glue simultaneously.

The diagram is as follows: taking SOP8 package as an example.



MARKING and PACKAGING SPECIFICATION

1. Marking Drawing Description



Product Name: 13S

Product Code: XX

2. Marking Drawing Demand

Laser printing, contents in the middle, font type Arial.

3. Packaging Specification

Device	Package	Piece/Reel	Reel/Box	Piece/Box	Box/Carton	Piece/Carton
MS9113S	SOT-363	3000	10	30000	4	120000

STATEMENT

- All Revision Rights of Datasheets Reserved for Ruimeng. Don't release additional notice.
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- When using Ruimeng products to design and produce, purchaser has the responsibility to observe safety standard and adopt corresponding precautions, in order to avoid personal injury and property loss caused by potential failure risk.
- The process of improving product is endless. And our company would sincerely provide more excellent product for customer.

**MOS CIRCUIT OPERATION PRECAUTIONS**

Static electricity can be generated in many places. The following precautions can be taken to effectively prevent the damage of MOS circuit caused by electrostatic discharge:

1. The operator shall ground through the anti-static wristband.
2. The equipment shell must be grounded.
3. The tools used in the assembly process must be grounded.
4. Must use conductor packaging or anti-static materials packaging or transportation.



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