

Feature

- 30ns propagation delay (@100mV Overdrive)
- Rail to Rail output, CMOS/TTL Compatible
- Internal Hysteresis to ensure clean switching
- DC coupled Input
- Offset voltage: +/-3mV Max.
- Low HYS voltage Temperature Drift: 5uV/°C.
- 2.7~5.5V power supply Voltage.
- Low quiescent current: 200uA
- Chip available in SOT23-5 Package

Applications

- High speed Line Receivers;
- Threshold Detector /Discriminators;
- Sampling Circuits;
- IR Receivers.

Block Diagram

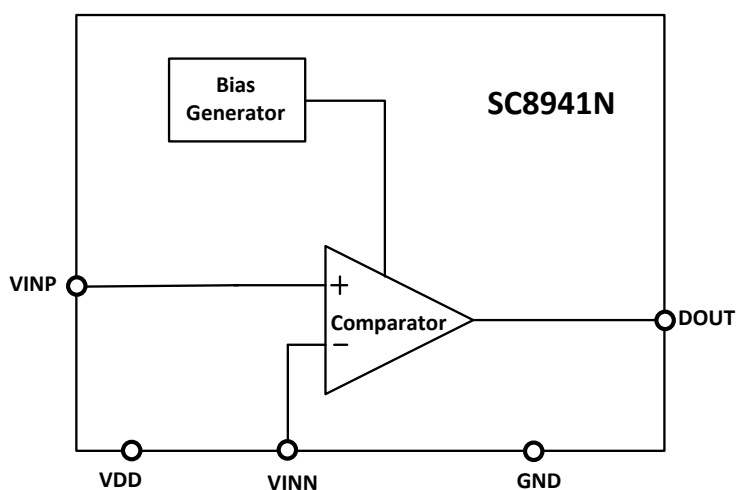


Fig.1 block diagram of SC8941N

General Description

SC8941N is a high speed, low power dissipation comparator. It applies 30ns Propagation Delay at 100mV Overdrive voltage.

SC8941N is DC coupled normally, and It includes internal hysteresis(5mV) to ensure clean output switch, the HYS voltage has a ultra-low temperature drift 5uV/°C;

SC8941N consists of a high speed Class AB structure, which supports rail to rail output.

Package

The package of SC8941N is SOT23-5

REV. 1.1

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Absolute Maximum Ratings

(If out of these ratings, the filter may be fail or damaged)

Table 1

Symbol	Parameter	Rating	Units
VDD	Power supply	5.5	V
T _A	Operating ambient Temperature Range	-40~+85	°C
T _{STG}	Storage Temperature	-65~+150	°C

Recommended Operating Conditions

Table 2

Symbol	Parameter	Rating	Units
VDD	Power supply	2.7~5.5	V
T _A	Operating ambient Temperature Range	-40~+85	°C

Electrical Characteristics

Table 3

Specifications are at VDD=+2.7V ~ +5.5V Vin+=VDD, Vin-=1.2V RL=10Kohm CL=15pF Vin-=1.2V tt corner & T=30 °C)

Symbol	Parameter	Spec			Units
		Min	Typ	Max	
VCC	Operating Supply Voltage	2.7	3.3	5.5	V
VOS	Input Offset Voltage	-3	+/-0.15	+3	mV
VOS_TC	Input Offset voltage Temp Drift	0.64	1.96	4.7	uV/°C
Vhyst	Input Hysteresis Voltage	4	5	10.8	mV
Vhyst_TC	Input Hysteresis Voltage Temp Drift		4.8	5.4	uV/°C
CIN	Input Capacitance	Differential	1.8		pF
		Common Mode	3.6		
RIN	Input Resistance		>100		GΩ
IQ	Quiescent Current		200		uA
ISC	Output short to VDD		25		mA
Vin_cm	Common mode Input voltage	GND+0.2	-	VDD-0.2	V
VOH	Output Voltage High Swing	VDD-0.3			V
VOL	Output Voltage Low Swing			GND+0.3	mV
CMRR	Common Mode Rejection Ratio		70		dB
PSRR	Power supply rejection ratio		63		dB
tR	Rising time		3.5		ns
tF	Falling time		2.8		ns
TPD+	Propagation Delay(Low to High)		30		ns
TPD-	Propagation Delay(High to Low)		28.5		ns
TPDSKEW	Propagation Delay Skew		1.5		ns

*Note1: The input offset voltage is the average of the input-referred trip points. The input hysteresis is the difference between the input-referred trip points.

*Note2: Propagation Delay Skew is defined as: TPD+-TPD-;

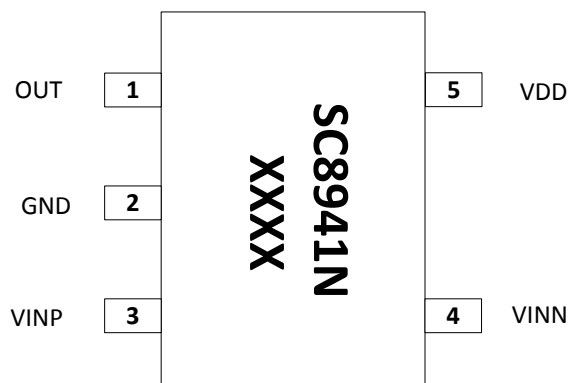
PAD Definition


Fig.2 Pad definition of SC8941N

Table 4 Pad definition

Pad	Name	I/O	Analog/Digital	Description
1	OUT	O	A	Comparator Output PAD, High Voltage level is Pulled to VDD, Low Voltage is GND;
2	GND	GROUND	GROUND	Ground pin. Connect to the most negative supply, ALL GND pads are connected on die.
3	VINP	I	A	Video signal input PAD, DC coupled
4	VINN	I	A	DC Reference voltage input PAD;
5	VDD	POWER	POWER	Power supply (3.3V/5V) ,connect to positive voltage supply

Application Circuits

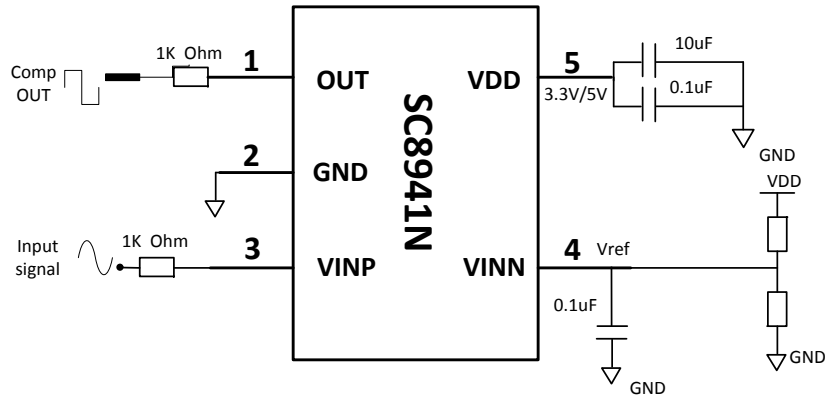


Fig.3 Applications Circuits of SC8941N

Package

SOT23-5

Symbol	Unit(mm)		
	Min	Typ	Max
A	-	-	1.35
A1	0.04	-	0.15
A2	1.00	1.10	1.20
b	0.38	-	0.48
b1	0.37	0.40	0.43
c	0.11	-	0.21
c1	0.10	0.13	0.16
D	2.72	2.92	3.12
E	2.60	2.80	3.00
E1	1.40	1.60	1.80
e	0.95BSC		
θ	0°	-	8°
L	0.30	-	0.60

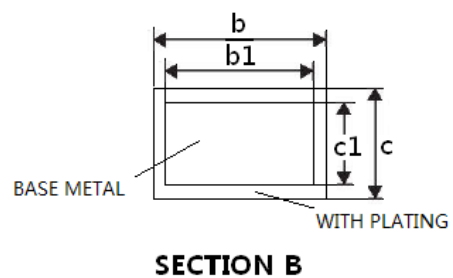
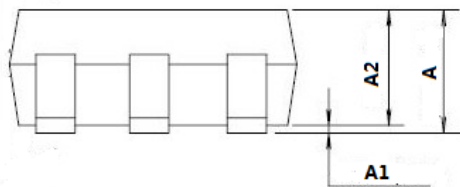
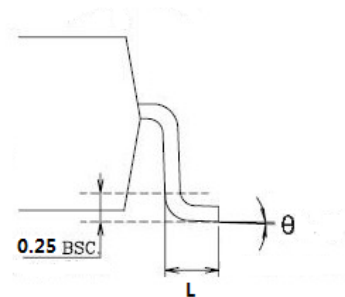
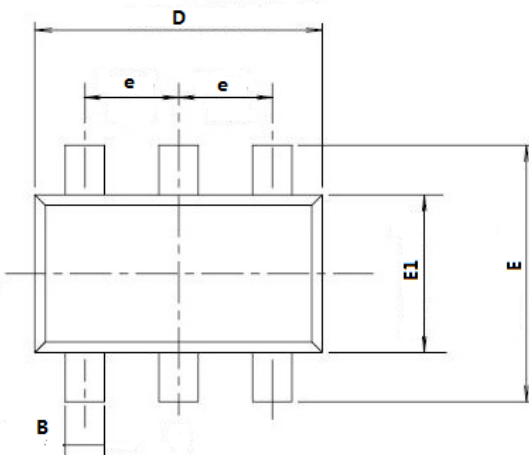


Fig.4 Package of SC8941N