

Nano-Power, CMOS Input, RRIO, Push-Pull Output Comparator

FEATURES

- Low supply current
400nA (TYP) at $V_s = 1.4V$
- Low input offset voltage: $V_{os(max)} = 5mV$
- Rail-to-Rail Input and output
- SUPPLY RANGE: +1.4V to +5.5V
- SPECIFIED UP TO +125°C
- Micro SIZE PACKAGES: SOT353(SC70-5), SOT23-5

APPLICATIONS

- OVERVOLTAGE AND UNDERVOLTAGE DETECTION
- MULTIVIBRATORS
- OVERCURRENT DETECTION
- SYSTEM MONITORING
- BATTERY POWERED SYSTEM

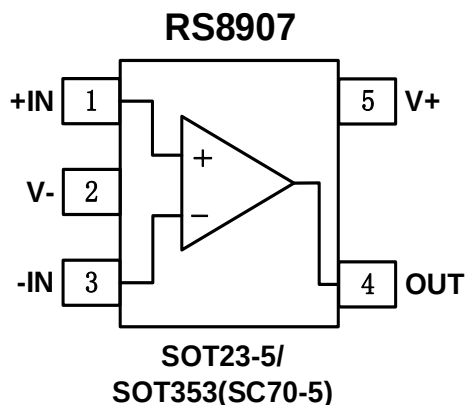
DESCRIPTION

The RS8907 offers a wide supply range, low quiescent current 400nA (TYP), and rail-to-rail inputs. All of these features come in industry-standard and extremely small packages, making this device an excellent choice for low-voltage and low-power applications for portable electronics and industrial systems.

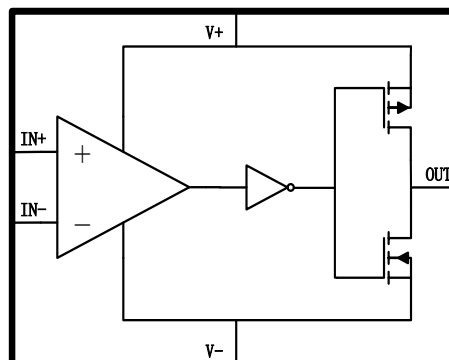
Featuring a push-pull output stage, the RS8907 allows for operation with absolute minimum power consumption when driving any capacitive or resistive load.

The devices are ideal for system monitoring, include tablets, portable medical, smart phones. The RS8907 is specified at the full temperature range of -40°C to +125°C under single power supplies of 1.4V to 5.5V.

PIN CONFIGURATIONS



FUNCTION BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS ⁽¹⁾

Supply Voltage, V+ to V-.....	7.0V
Input Terminals, Voltage ⁽²⁾	- 0.5 to (V+) + 0.5V
Current ⁽²⁾	±10mA
Storage Temperature	-65°C to +150°C
Operating Temperature	-40°C to +125°C
Junction Temperature.....	150°C
Lead Temperature (Soldering, 10s)	260°C
ESD Susceptibility	
HBM	3000V
MM	400V

(1) Stresses above these ratings may cause permanent damage. Exposure to absolute maximum conditions for extended periods may degrade device reliability. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those specified is not implied.

(2) Input terminals are diode-clamped to the power-supply rails. Input signals that can swing more than 0.5V beyond the supply rails should be current-limited to 10mA or less.



ESD SENSITIVITY CAUTION

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

PACKAGE/ORDERING INFORMATION

PRODUCT	ORDERING NUMBER	TEMPERATURE RANGE	PACKAGE LEAD	PACKAGE MARKING	PACKAGE OPTION
RS8907	RS8907XF	-40°C~+125°C	SOT23-5	8907	Tape and Reel,3000
	RS8907XC5	-40°C~+125°C	SOT353 (SC70-5)	8907	Tape and Reel,3000



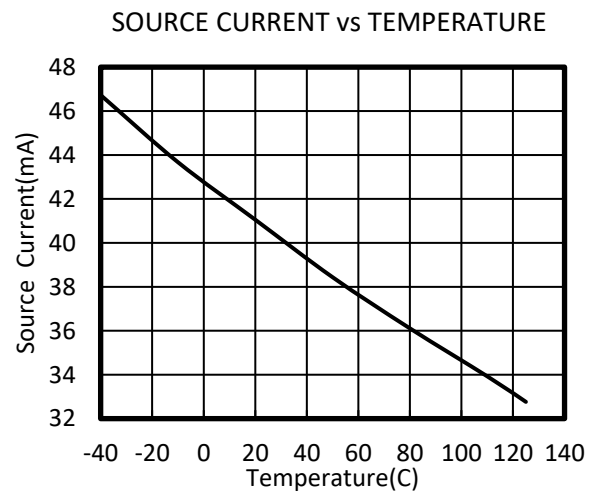
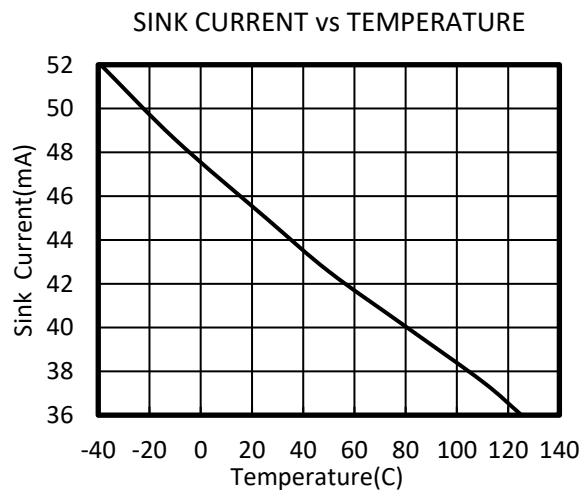
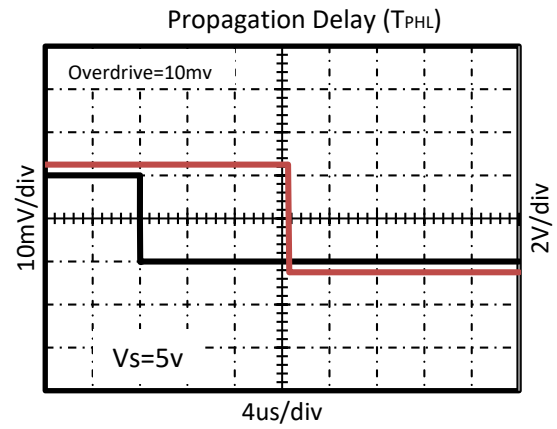
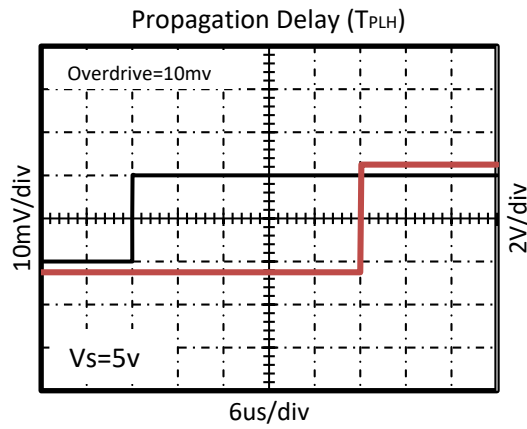
ELECTRICAL CHARACTERISTICS

(At $T_A = +25^{\circ}\text{C}$, $V_S = 1.4\text{V}$ to 5.5V , $V_{CM} = V_S/2$, $C_L = 15\text{pF}$, unless otherwise noted.)

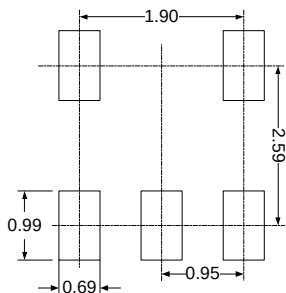
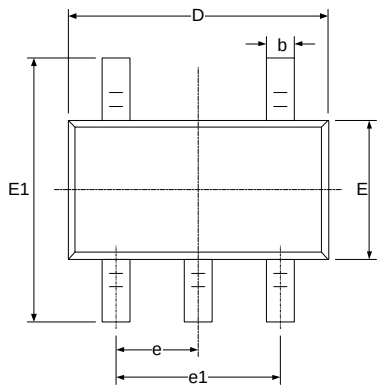
PARAMETER		CONDITIONS	RS8907			
			MIN	TYP	MAX	UINTS
POWER SUPPLY						
Vs	Operating Voltage Range		1.4		5.5	V
Iq	Quiescent Current			400	1500	nA
PSRR	Power-Supply Rejection Ratio	Vs=1.4V to 5.5V, V _{CM} =(V)+0.5V		70		dB
INPUT						
Vos	Input Offset Voltage	V _{CM} =Vs/2		±1	±3	mV
ΔVos/ΔT	Input Offset Voltage Drift	V _{CM} =Vs/2, -40°C ≤ TA ≤125°C		2		μV/°C
IB	Input Bias Current			1	10	pA
V _{CM}	Common-Mode Voltage Range	T _A = −40°C to 125°C	(V-)-0.1		(V+)+0.1	V
CMRR	Power-Supply Rejection Ratio	Vs=5.5V, V _{CM} =-0.1 to 5.6V		70		dB
OUTPUT						
V _{OH}	Output Swing From Upper Rail	Vs=1.4V, Io=0.1mA		70	75	mV
		Vs=5.0V, Io=2.5mA		140	170	mV
V _{OL}	Output Swing From Lower Rail	Vs=1.4V, Io=-0.1mA		35	40	mV
		Vs=5.0V, Io=-2.5mA		85	115	mV
I _{SC}	Short Circuit Sink Current	Vs=5.0V		42		mA
	Short Circuit Source Current	Vs=5.0V		38		mA
SWITCHING						
T _{PHL}	Propagation Delay H To L	Vs = 5.0 V, Overdrive = 10 mV		13		μs
		Vs = 5.0 V, Overdrive = 100 mV		9		
		Vs = 2.5 V, Overdrive = 10 mV		12		
		Vs = 2.5 V, Overdrive = 100 mV		8		
		Vs = 1.4 V, Overdrive = 10 mV		13		
		Vs = 1.4 V, Overdrive = 100 mV		9		
T _{PLH}	Propagation Delay L To H	Vs = 5.0 V, Overdrive = 10 mV		30		
		Vs = 5.0 V, Overdrive = 100 mV		40		
		Vs = 2.5 V, Overdrive = 10 mV		22		
		Vs = 2.5 V, Overdrive = 100 mV		35		
		Vs = 1.4 V, Overdrive = 10 mV		22		
		Vs = 1.4 V, Overdrive = 100 mV		35		
T _R	Rise Time	Overdrive = 100 mV		240		ns
T _F	Fall Time	Overdrive = 100 mV		260		ns

TYPICAL CHARACTERISTICS

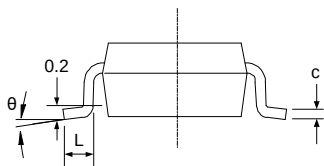
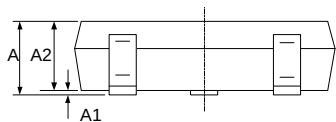
At $T_A = +25^\circ\text{C}$, $V_S = 5\text{V}$, $V_{CM} = V_S/2$, $C_L = 15\text{pF}$ unless otherwise noted.



PACKAGE OUTLINE DIMENSIONS
SOT23-5

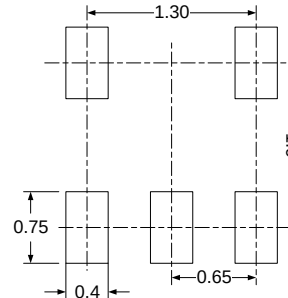
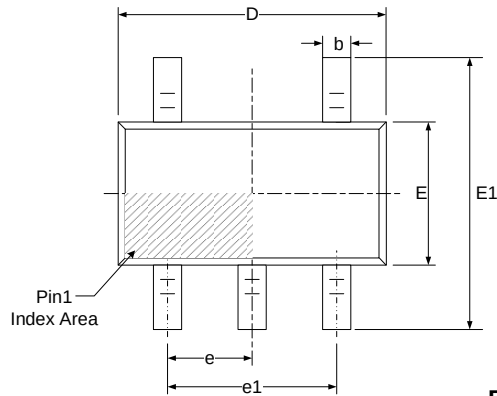


RECOMMENDED LAND PATTERN (Unit: mm)

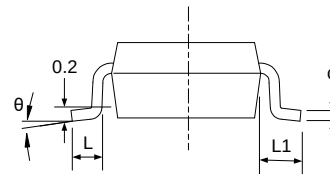
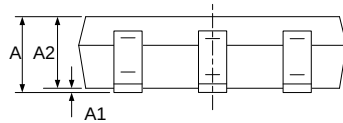


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

SOT353(SC70-5)



RECOMMENDED LAND PATTERN (Unit: mm)



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	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650(BSC)		0.026(BSC)	
e1	1.300(BSC)		0.051(BSC)	
L	0.260	0.460	0.010	0.018
L1	0.525		0.021	
θ	0°	8°	0°	8°