GS331

Single General Purpose Low Voltage Comparator

Product Description

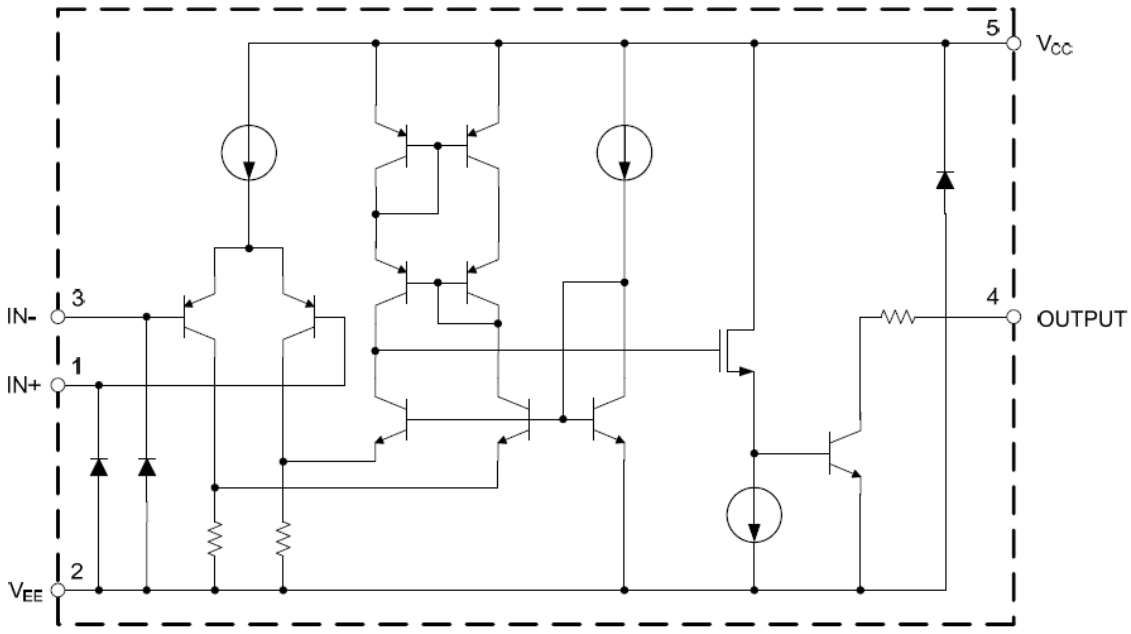
The GS331 is a low voltage 2.5V to 5.5V, single comparator, which has a very low supply current of 60µA, making the part an excellent choice for portable electronic systems. The device is pin-for-pin compatible replacement of the LMV331.

The GS331 is built with BiCMOS process with bipolar input and output stages for improved noise performance. It is a cost-effective solution for portable consumer products where space, low voltage, low power and price are the primary specification in circuit design.

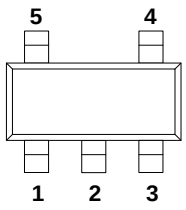
Features

- Guaranteed 2.5V to 5.5V Performance
- Industrial Temperature Range: -40° C to 85C
- Low Supply Current: 60µA Typical
- Input Common Mode Voltage Range Includes Ground
- Low Output Saturation Voltage 200mV Typical
- Open Collector Output for Maxima Flexibility
- SOT-23-5L Packages
- RoHS Compliant and Halogen Free

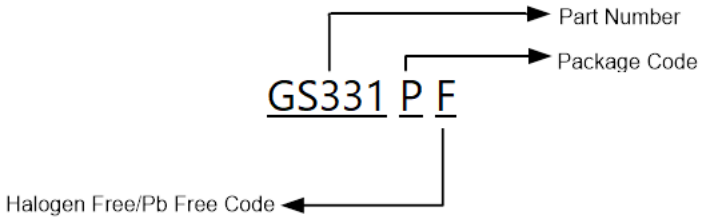
Block Diagram



Packages & Pin Assignments

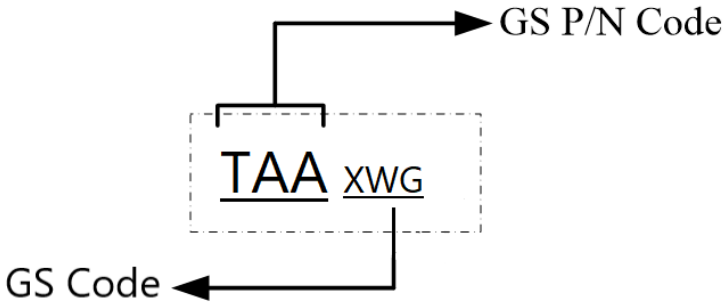
GS331LF(SOT-23-5L)	
	
1	IN(+)
2	GND
3	IN(-)
4	Output
5	V_{CC}

Ordering Information



GS Complete P/N	Package	Marking	Q'ty / Reel
GS331LF	SOT-23-5L	TAA_{XWG}	3K

Marking Information



Absolute Maximum Ratings (Note 1)

Symbol	Parameter	Value	Unit
V_{CC}	Supply Voltage	6	V
T_J	Operation Junction Temperature	150	ºC
T_{LEAD}	Lead Temperature (Soldering, 10 Seconds)	260	ºC
T_{STG}	Storage temperature Range	-65 to 150	ºC
ESD	Human Body Model	4000	V
	Machine Model	300	V

Note 1: Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "Recommended Operating Conditions" is not implied. Exposure to "Absolute Maximum Ratings" for extended periods may affect device reliability.

Recommended Operating Conditions

Symbol	Parameter	Min	Max	Unit
V_{CC}	Supply Voltage	2.5	5.5	V
T_A	Ambient Operating Temperature Range	-40	85	ºC

Electrical Characteristics

Limits in standard typeface are guaranteed for T_A=25ºC, V_{CC}=5V, V_{EE}=0V, R_L=5.1kΩ connected to V_{CC} and V_{ICR}=0, bold typeface applies over full temperature ranges, unless otherwise specified.

Symbol	Parameter	*Test conditions	Min	Typ	Max	Unit
V_{IO}	Input offset voltage			1.7	7	mV
					9	
I_{IO}	Input offset current	$I_{IN}^+ - I_{IN}^-$, V_{ICR}=0V		2	50	nA
					150	
I_{IB}	Input bias current	I_{IN}^+ or I_{IN}^- with output in linear range, V_{ICR}=0V		25	250	nA
					400	
V_{SAT}	Saturation Voltage	I_{SINK}≤4mA		200	400	mV
					500	
I_{SINK}	Output Sink Current	V_O≤1.5V	10	84		mA
V_{ICR}	Input Common-mode voltage range		-0.1		4.2	V
I_{CC}	Supply current			0.06	0.12	mA
					0.15	
$I_{LEAKAGE}$	Output Leakage Current			0.003		µA
A_{VD}	Voltage Gain		20	50		V/mV

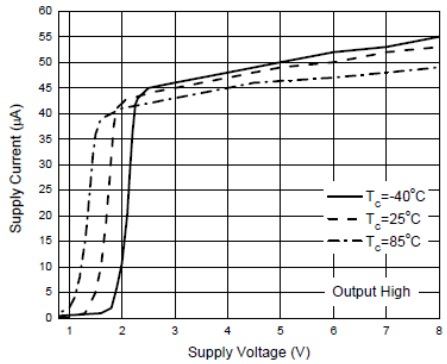
Switching Characteristics

All limits are guaranteed for T_A=25ºC, V_{CC}=5V, V_{EE}=0V, R_L=5.1kΩ connected to V_{CC} and V_{ICR}=0, unless otherwise specified.

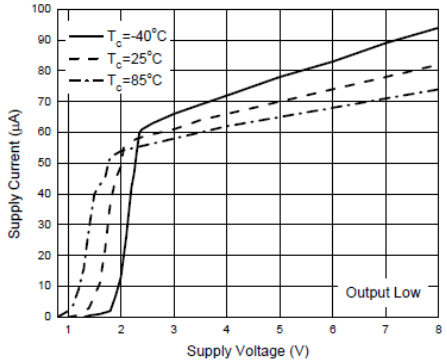
Symbol	Parameter	Test conditions	Typ	Unit
T_{PHL}	Propagation Delay High to Low	Input Overdrive=10mV	600	ns
		Input Overdrive=100mV	200	
T_{PLH}	Propagation Delay Low to High	Input Overdrive=10mV	450	ns
		Input Overdrive=100mV	300	

Typical Performance Characteristics

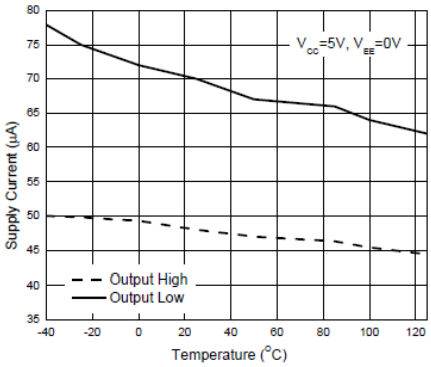
Supply Current vs. Supply Voltage



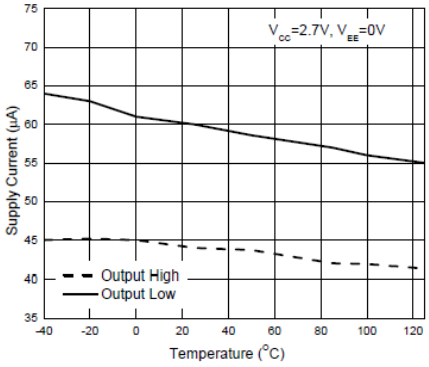
Supply Current vs. Supply Voltage



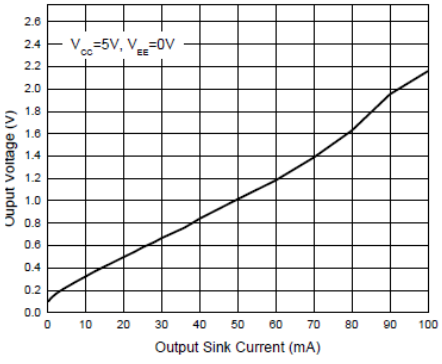
Supply Current vs. Temperature



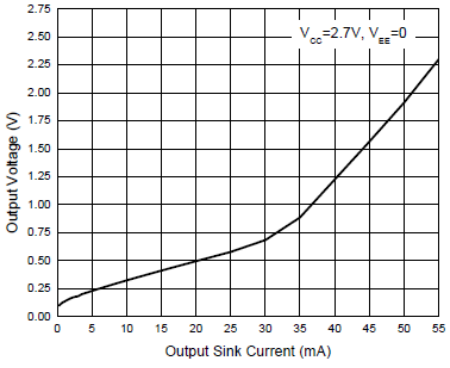
Supply Current vs. Temperature



Output Voltage vs. Output Sink Current

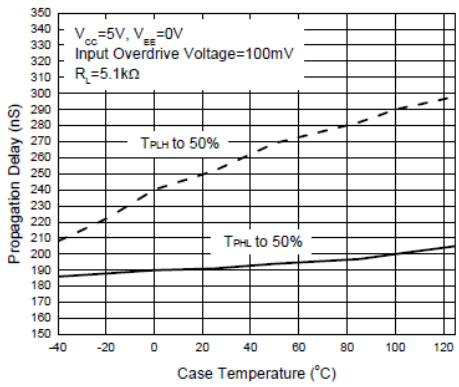


Output Voltage vs. Output Sink Current

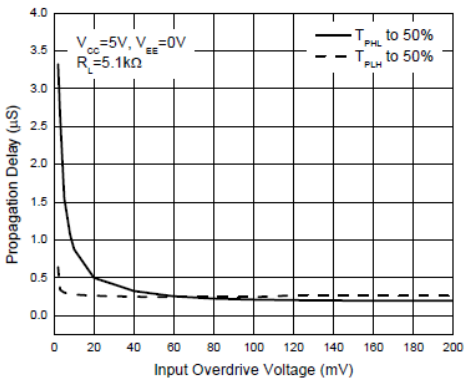


Typical Performance Characteristics (Continue)

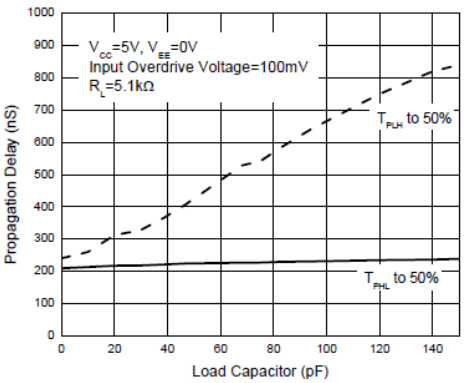
Propagation Delay vs. Temperature



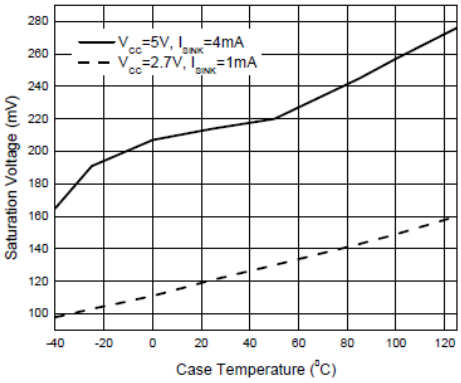
Propagation Delay vs. Input Overdrive Voltage



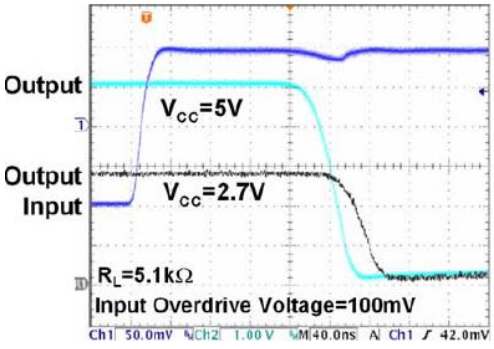
Propagation Delay vs. Load Capacitors



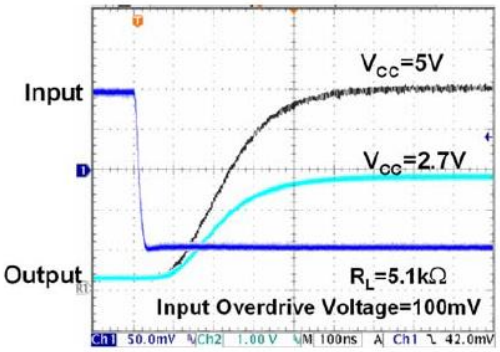
Saturation Voltage vs. Case Temperature



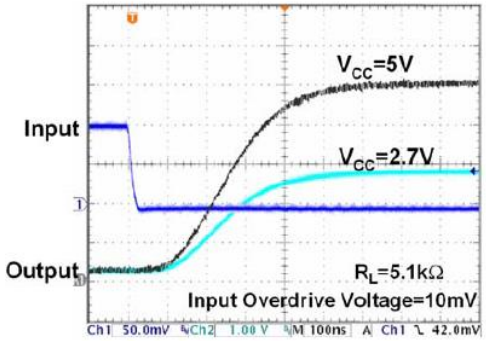
Response Time for Positive Transition



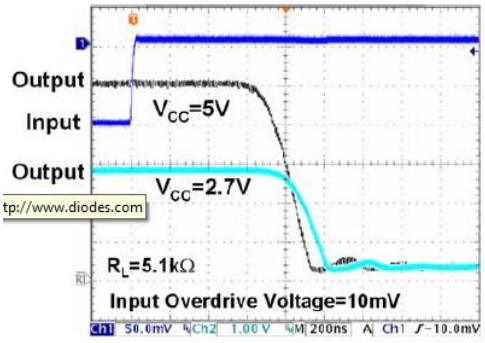
Response Time for Negative Transition



Response Time for Positive Transition

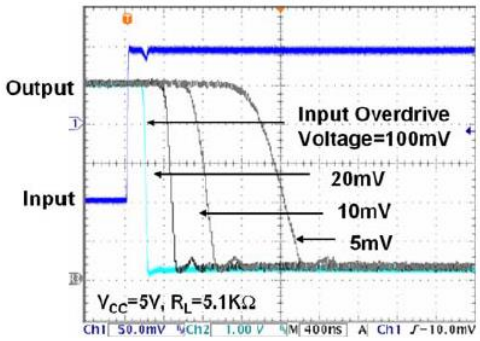


Response Time for Negative Transition

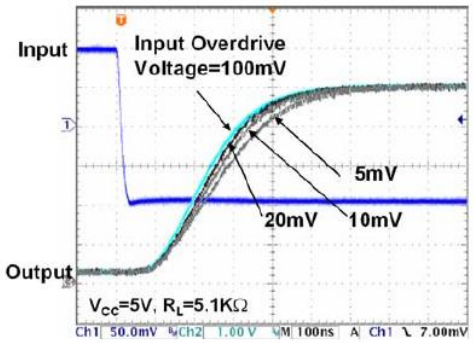


Typical Performance Characteristics (Continue)

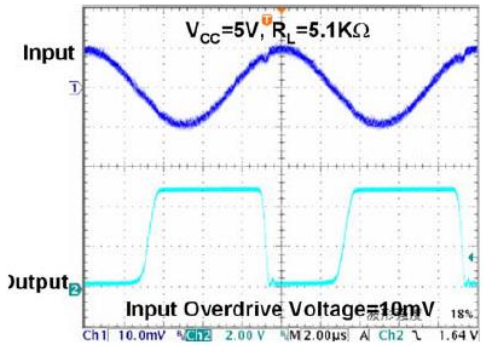
Response Time for Positive Transition



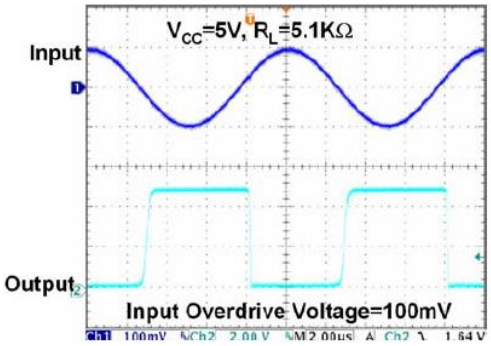
Response Time for Negative Transition



100kHz Response

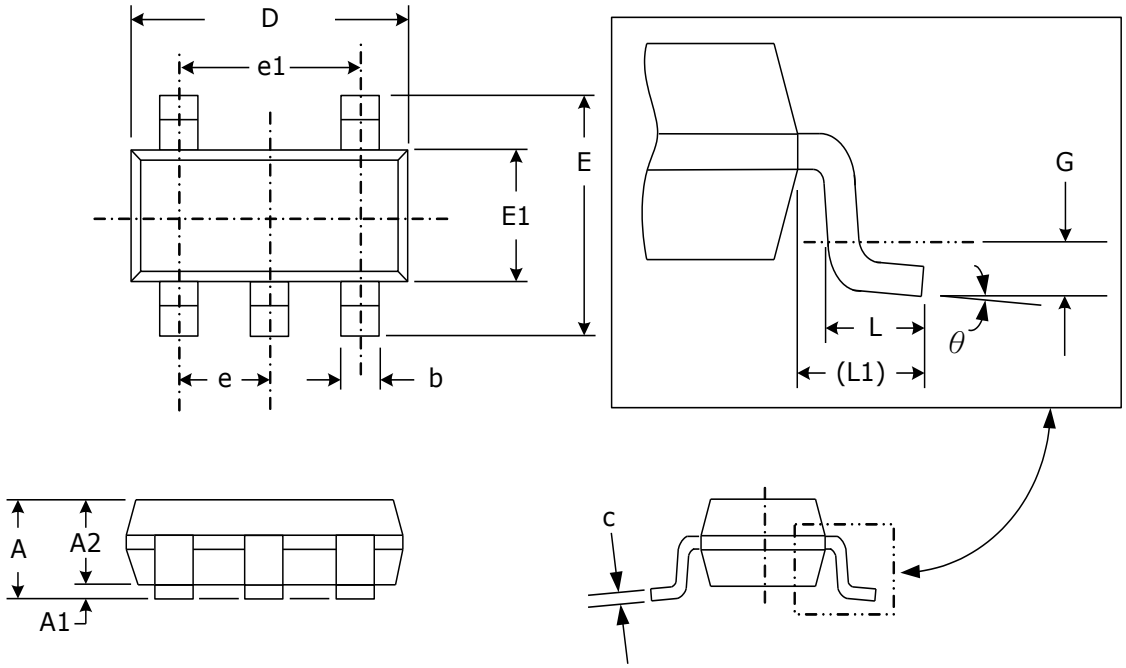


100kHz Response



Package Dimension

SOT-23-5L



Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.95	1.45	.037	.057
A1	0.05	0.15	.002	.006
A2	0.90	1.30	.035	.051
b	0.30	0.50	.012	.020
c	0.08	0.20	.003	.008
D	2.80	3.00	.110	.118
E	2.60	3.00	.102	.118
E1	1.50	1.70	.059	.067
e	0.95 (TYP)		.037 (TYP)	
e1	1.90 (TYP)		.075 (TYP)	
L	0.35	0.55	.014	.022
L1	0.60 (TYP)		.024 (TYP)	
G	0.25 (TYP)		.010 (TYP)	
Y	0°	8°	0°	8°

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