

AN1311, AN1311S

Single High-Speed Comparators

Overview

The AN1311 and the AN1311S are single high-speed voltage comparators with large output sink current, wide operating supply voltage range, and excellent characteristics for $\pm 15\text{V}$ operation as well as for 5V single power supply operation. They are provided with strobe pins and input balance pins and can be applied widely to drive the standard logic circuit directly.

Features

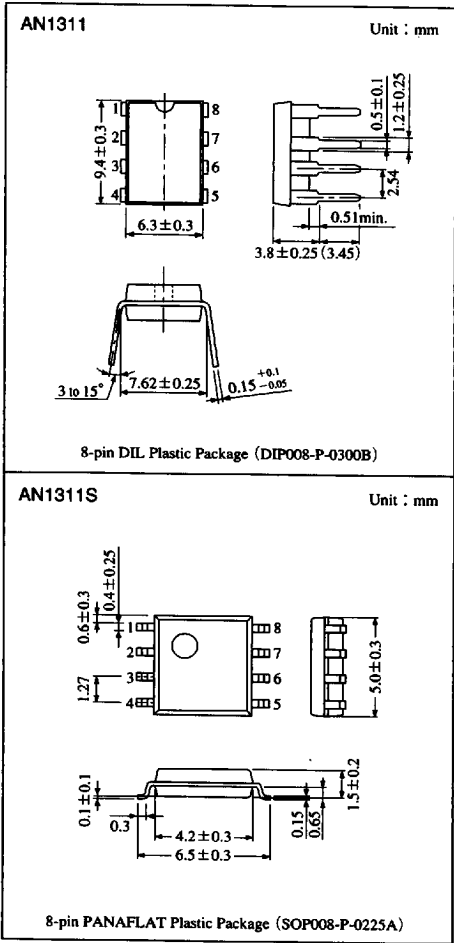
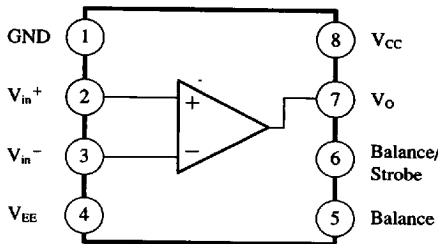
- The output levels are compatible with TTL and MOS logic.
- Offset balancing and strobe capability are available.
- Large output sink current drives LED and lamps.
- Output stage forms open collector and emitter follower.

Pin Descriptions

Pin No.	Pin name
1	GND
2	Non inverting input
3	Inverting input
4	V _{EE}
5	Balance
6	Balance/Strobe
7	Output
8	V _{CC}

Block Diagram

AN1311,AN1311S



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■ Absolute Maximum Ratings (Ta=25℃)

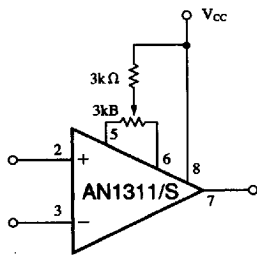
Parameter		Symbol	Rating	Unit
Voltage	Supply voltage	V _{CC}	±18	V
	Differential input voltage	V _{ID}	±30	V
	Common-mode input voltage	V _{ICM}	±15	V
	Voltage between output and negative power supply	V _O - V _{EE}	36	V
	Voltage between ground and negative power supply	V _{GND} - V _{EE}	30	V
Output short-circuit duration		t _{OS}	10	s
Power dissipation	AN1311	P _D	500	mW
	AN1311S		360	
Operating ambient temperature		T _{opr}	-20 to +75	℃
Storage temperature	AN1311	T _{stg}	-55 to +150	℃
	AN1311S		-55 to +125	

■ Electrical Characteristics (V_{CC}=15V, V_{EE}= -15V, Ta=25℃)

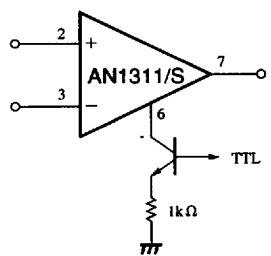
Parameter	Symbol	Condition	min	typ	max	Unit
Input offset voltage	V _{I(offset)}	R _S ≤ 50k Ω	—	2.0	7.5	mV
Input offset current	I _{IO}	R _S ≤ 50k Ω	—	6.0	50	nA
Input bias current	I _{bias}	R _S ≤ 50k Ω	—	100	250	nA
Voltage gain	G _V	R _L = 1k Ω	—	106	—	dB
Response time	t _r	Step input 100mV, Overdrive 5mV	—	200	—	ns
Saturation voltage	V _{O(sat)}	V _{IN} ≥ 10mV, I _O = 50mA	—	0.75	1.5	V
Strobe on current	I _{ST}		—	3	—	mA
Output leakage current	I _{O(leak)}	V _{IN} ≥ 10mV, V _O = 35V	—	0.2	50	nA
Positive supply current	I _{CC}		—	5.1	7.5	mA
Negative supply current	I _{EE}		—	4.1	5.0	mA
Input voltage range	V _I		—	±14	—	V
Saturation voltage	V _{O(sat)}	V _{CC} ≥ 4.5V, V _{EE} = 0V, V _{IN} ≥ 10mV, I _O = 8mA	—	0.23	0.4	V

■ Typical Application (Balance Strobe Pin, Output Pin, GND Pin)

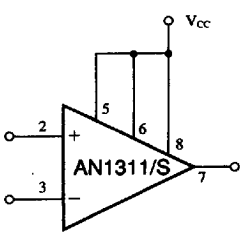
Offset Null Circuit



Strobe Circuit



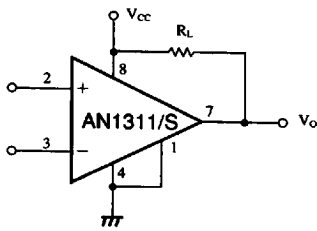
Increasing Input Stage Current



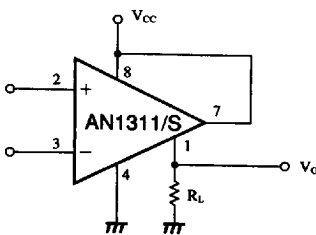
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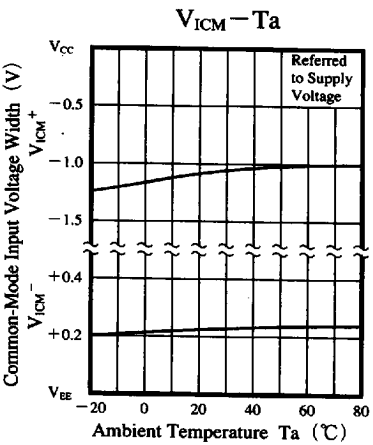
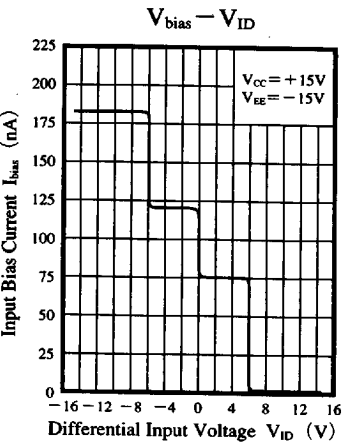
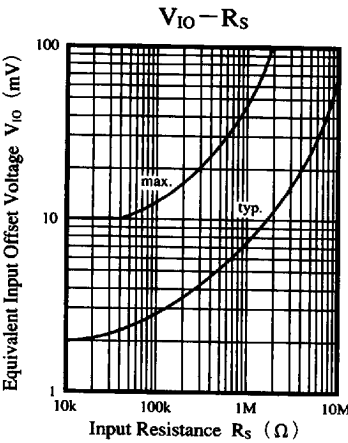
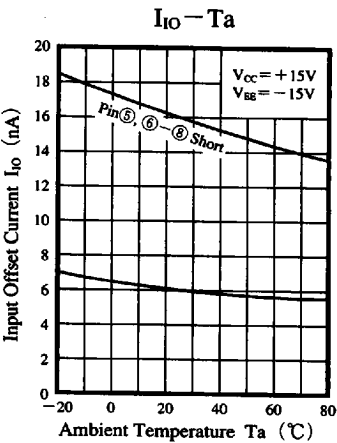
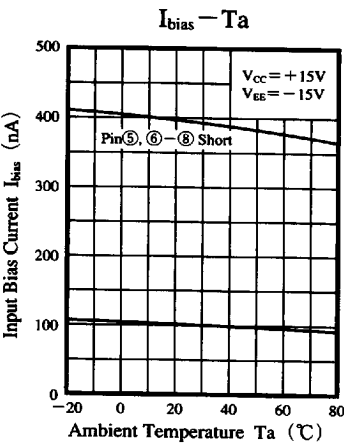
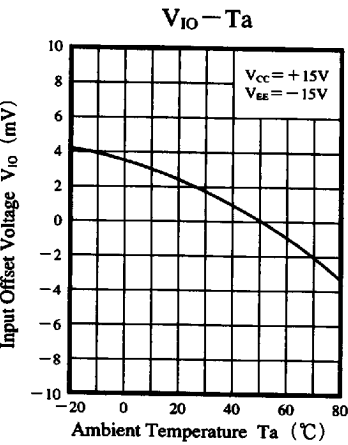
Collector Output



Emitter Output



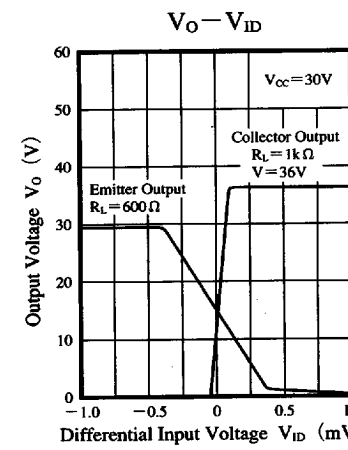
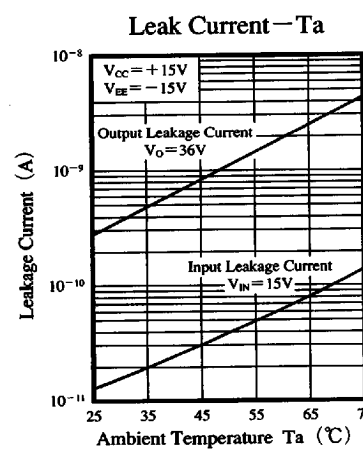
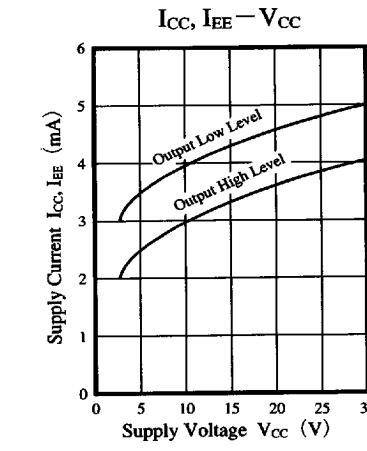
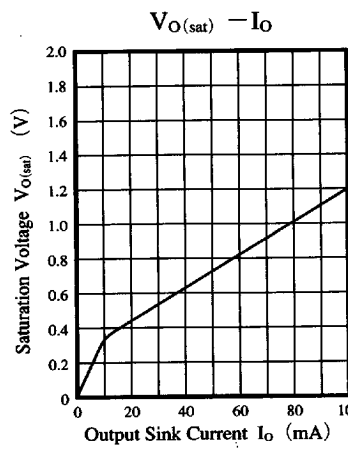
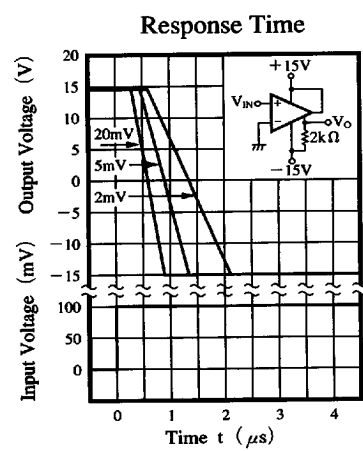
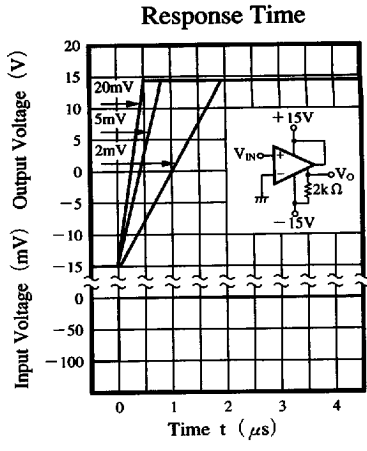
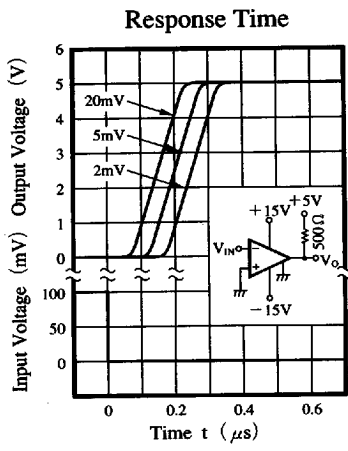
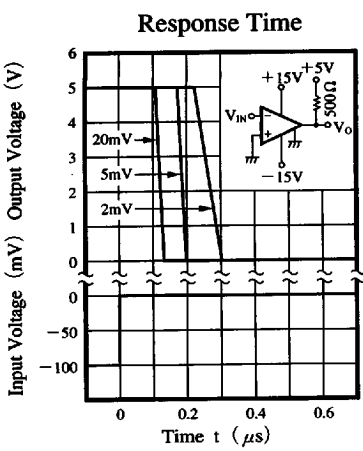
■ Characteristics Curve



Comparators

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