KA311 SINGLE COMPARATOR

VOLTAGE COMPARATOR

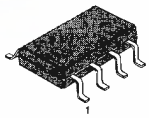
The KA311 series is a monolithic, low input current voltage comparator. This device is also designed to operate from dual or single supply voltage.

FEATURE

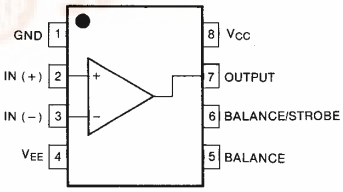
- Low input bias current : 250nA (Max)
- Low input offset current : 50nA (Max)
- Differential Input Voltage : ±30V.
- Power supply voltage : single 5.0V supply to ±15V.
- Offset voltage null capability.
- Strobe capability.

8 DIP

8 SOP



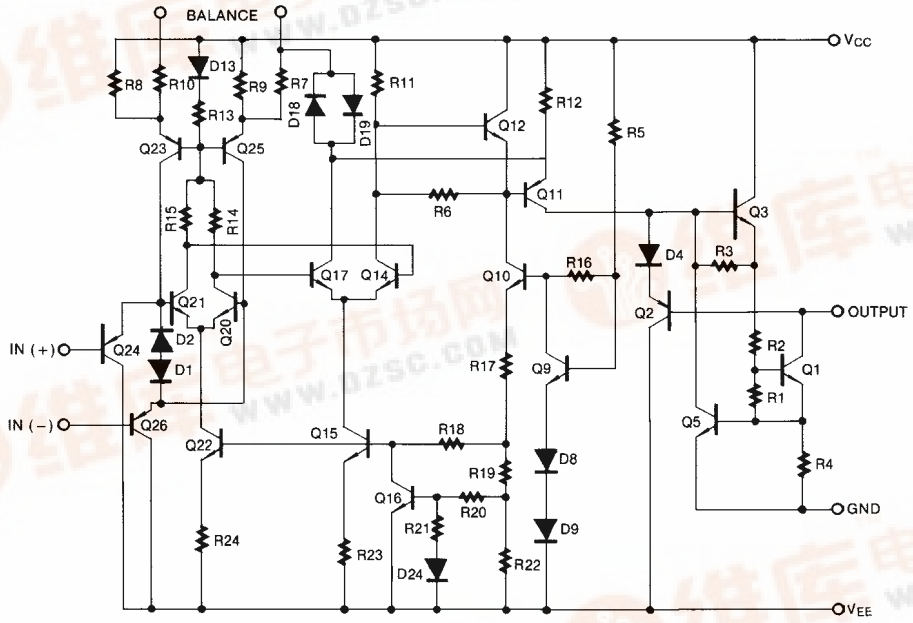
BLOCK DIAGRAM



ORDERING IN FORMATION

Device	Package	Operating Temperature
KA311	8 DIP	0 ~ +70℃
KA311D	8 SOP	

SCHEMATIC DIAGRAM



SAMSUNG ELECTRONICS

ABSOLUTE MAXIMUM RATINGS

Characteristic	Symbol	Value	Unit
Total Supply Voltage	V_{CC}	36	V
Output to Negative Supply Voltage KA311	V_O - V_{EE}	40	V
Ground to Negative voltage	V_{EE}	30	V
Differential Input Voltage	$V_{I(DIFF)}$	±30	V
Input Voltage	V_I	±15	V
Output Short Circuit Duration		10	sec
Power Dissipation	P_D	500	mW
Operating Temperature Range	T_{OPR}	0 ~ +70	℃
Storage Temperature Range	T_{STG}	- 65 ~ +150	℃

ELECTRICAL CHARACTERISTICS (V_{CC} = 15V, T_A = 25℃, unless otherwise specified)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Offset Voltage	V_{IO}	$R_S \leq 50K\Omega$		1.0	7.5	mV
		NOTE 1			10	
Input Offset Current	I_{IO}			6	50	nA
		NOTE 1			70	
Input Bias Current	I_{BIAS}			100	250	nA
		NOTE 1			300	
Voltage Gain	G_V		40	200		V/mV
Response Time	t_{RES}	NOTE 2		200		nS
Saturation Voltage	V_{SAT}	I_O =50mA, $V_I \leq$ -10mV		0.75	1.5	V
		$V_{CC} \geq$ 4.5V, V_{EE} = 0V I_{SINK} =8mA, $V_I \geq$ -10mV, NOTE 1		0.23	0.4	
Strobe "NO" Current	$I_{STR(ON)}$			3		mA
Output Leakage Current	I_{SINK}	I_{STR} =3mA, $V_I \geq$ 10mV $V_{O(P)}$ =35V, V_{EE} =V_{GND} =-5V		0.2	50	nA
Input Voltage Range	$V_{I(R)}$	NOTE 1	-14.5 to 13.0	-14.7 to 13.8		V
Positive Supply Current	I_{CC}			3.0	7.5	mA
Negative Supply Current	I_{EE}			-2.2	-5.0	mA
Strobe Current	I_{STR}			3		mA

NOTE 1. $0 \geq T_A \geq$ +70℃

2. The response time specified is for a 100mV input step with 5mV over drive.

TYPICAL PERFORMANCE CHARACTERISTICS

Fig. 1 INPUT BIAS CURRENT

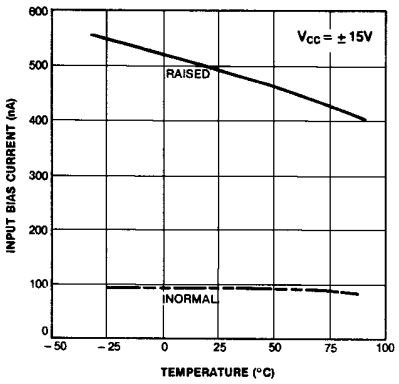


Fig. 2 INPUT OFFSET CURRENT

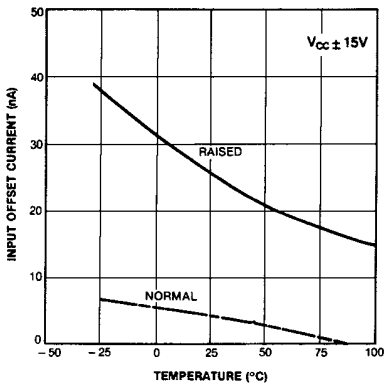


Fig. 3 OFFSET VOLTAGE VS INPUT RESISTANCE

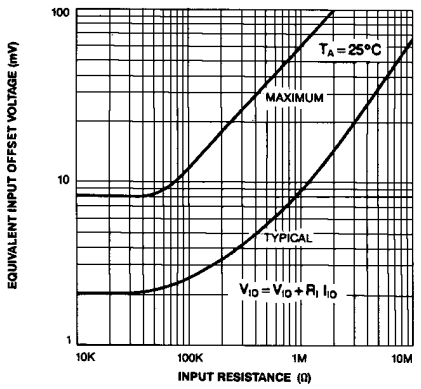


Fig. 4 INPUT BIAS CURRENT VS DIFFERENTIAL

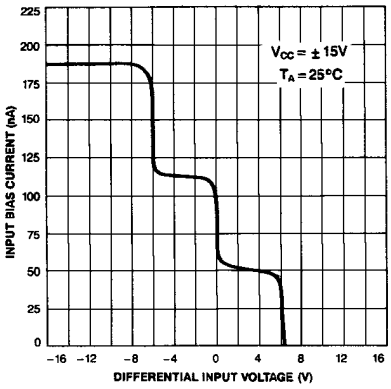


Fig. 5 COMMON MODE LIMITS VS TEMPERATURE

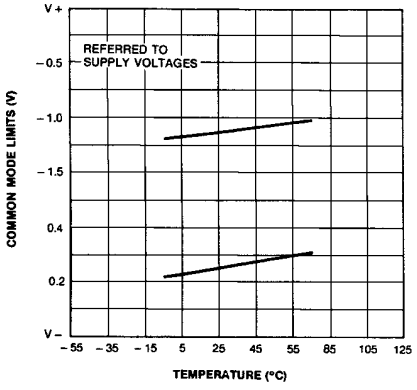


Fig. 6 OUTPUT VOLTAGE VS DIFFERENTIAL

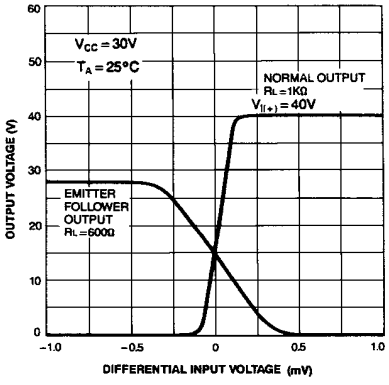


Fig. 7 SATURATION VOLTAGE VS CURRENT

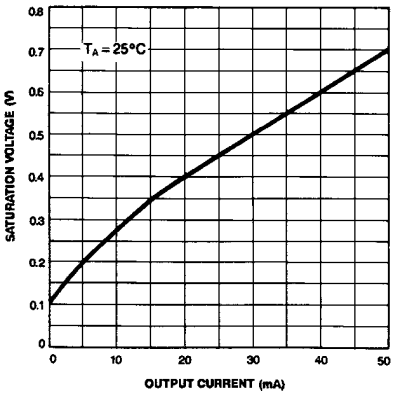


Fig. 8 SUPPLY CURRENT VS TEMPERATURE

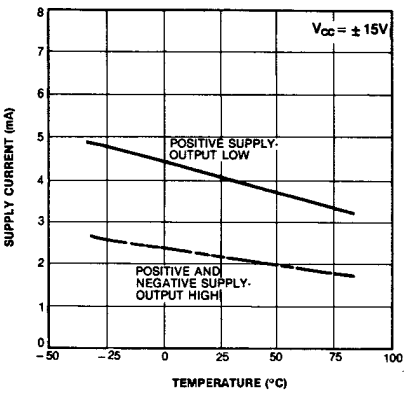


Fig. 9 LEAKAGE CURRENTS VS TEMPERATURE

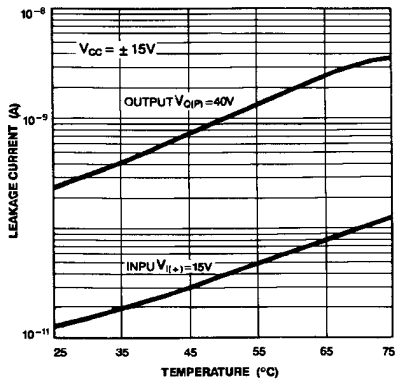


Fig. 10 SUPPLY CURRENT VS SUPPLY VOLTAGE

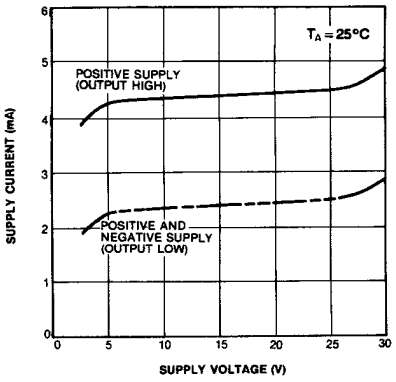


Fig. 11 OUTPUT SATURATION VOLTAGE

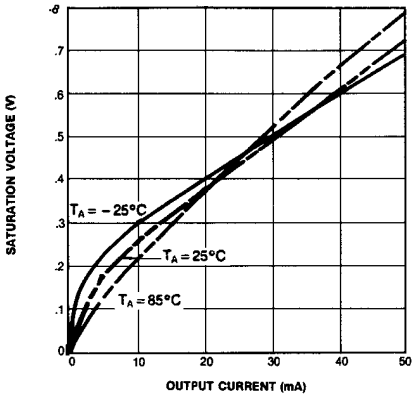


Fig. 12 OUTPUT LIMITING CHARACTERISTICS