KA311

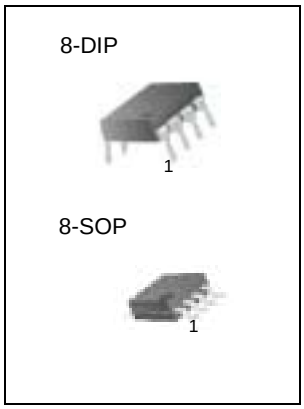
Single Comparator

Features

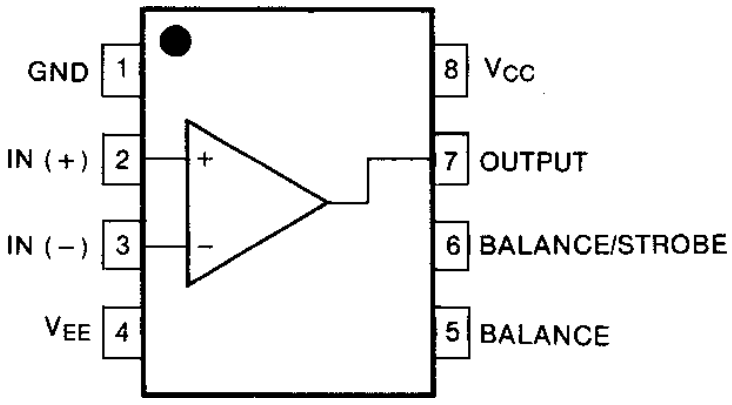
- Low input bias current : 250nA (Max)
- Low input offset current : 50nA (Max)
- Differential Input Voltage : ±30V
- Power supply voltage : single 5.0V supply to ±15V.
- Offset voltage null capability.
- Strobe capability.

Description

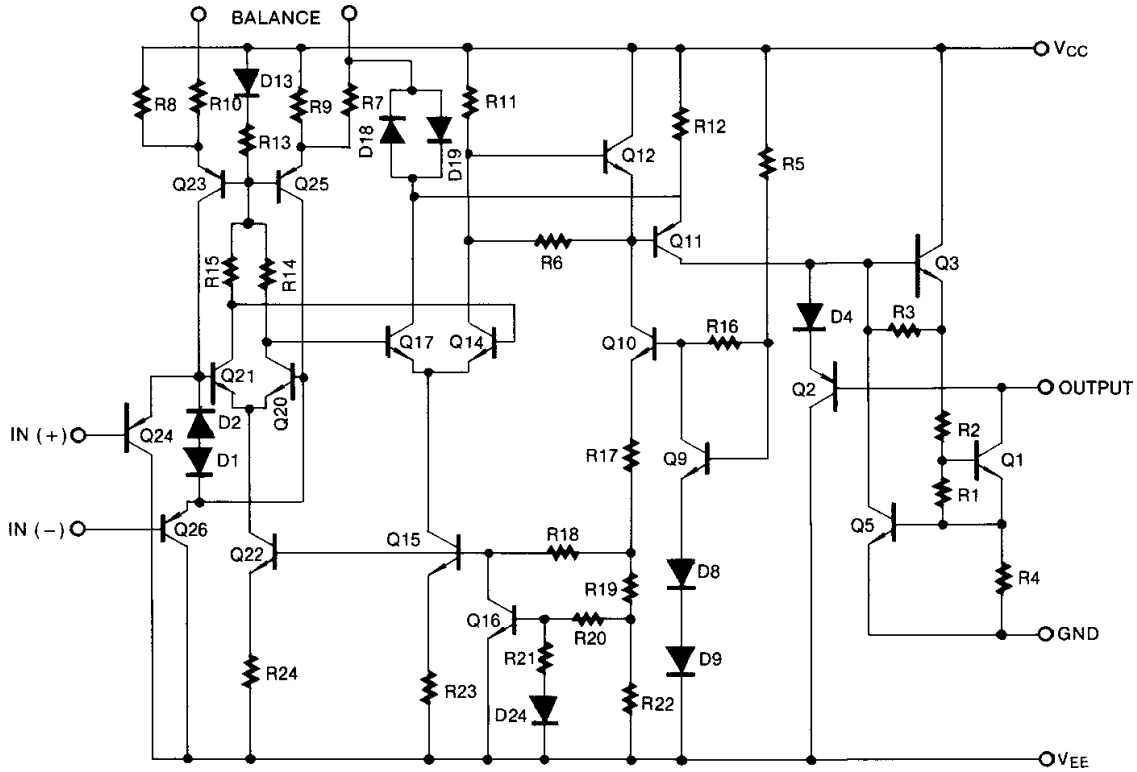
The KA311 series is a monolithic, low input current voltage comparator. The device is also designed to operate from dual or single supply voltage.



Internal Block Diagram



Schematic Diagram



Absolute Maximum Ratings

Parameter	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	°C
Storage Temperature Range	T_{STG}	- 65 ~ +150	°C

Electrical Characteristics

(V_{CC} = 15V, T_A = 25°C, unless otherwise specified)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Units
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

Notes :

1. $0 \leq T_A \leq +70°C$
2. The response time specified is for a 100mV input step with 5mV over drive.

Typical Performance Characteristics

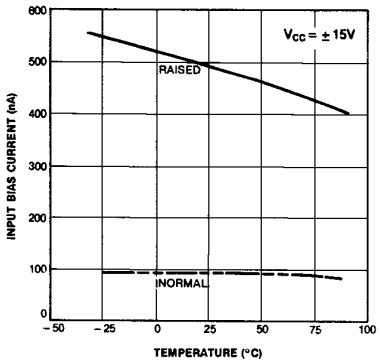


Figure 1. Input Bias Current Vs Temperature

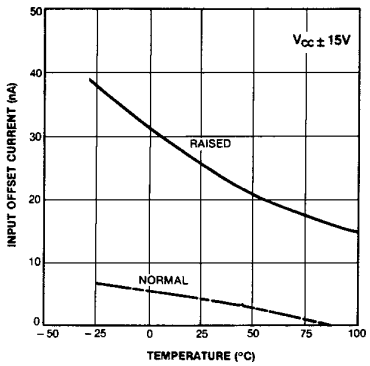


Figure 2. Input Offset Current Vs Temperature

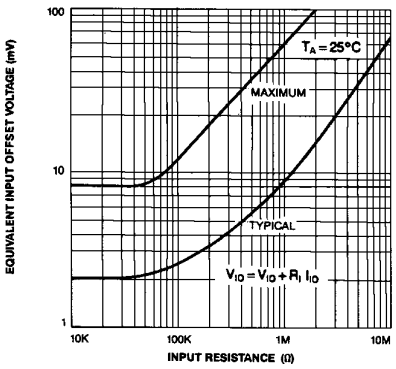


Figure 3. Offset Voltage vs Input Resistance

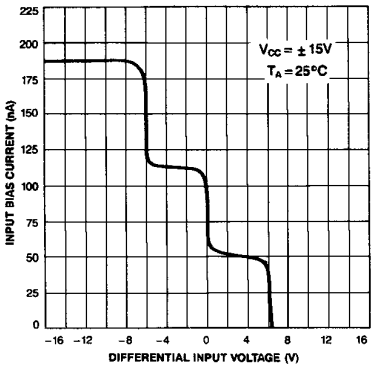


Figure 4. Input Bias Current vs Dfferential input voltage

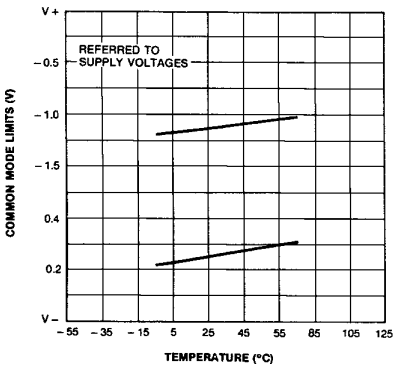


Figure 5. Common Mode Limits vs Temperature

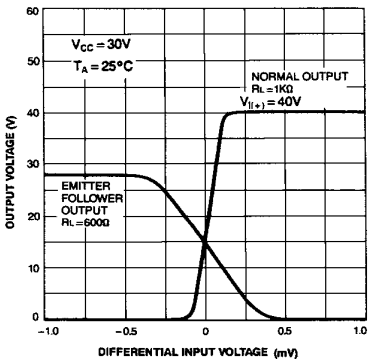


Figure 6. Output Voltage vs Differential input voltage

Typical Performance Characteristics (continued)

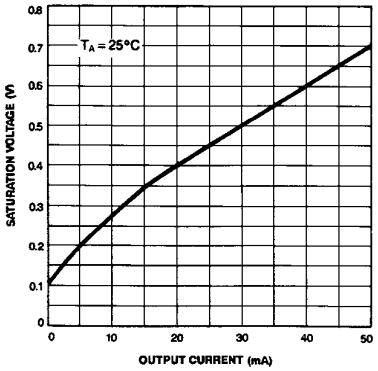


Figure 7. Saturation voltage vs Current

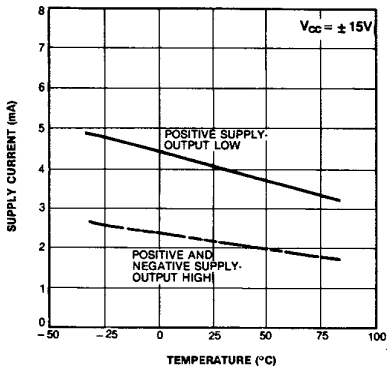


Figure 8. Supply Current vs Temperature

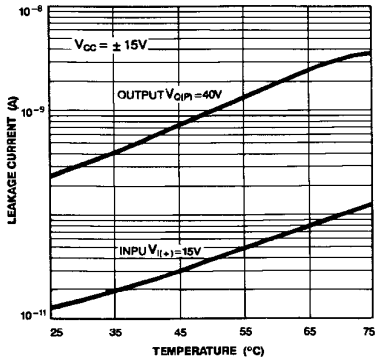


Figure 9. Leakage Current vs Temperature

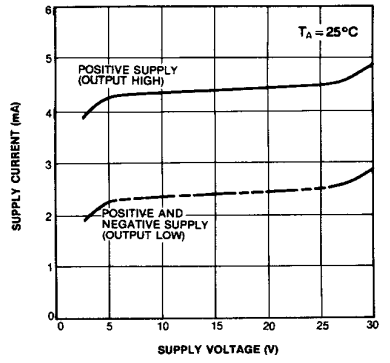


Figure 10. Supply Current vs Supply Voltage

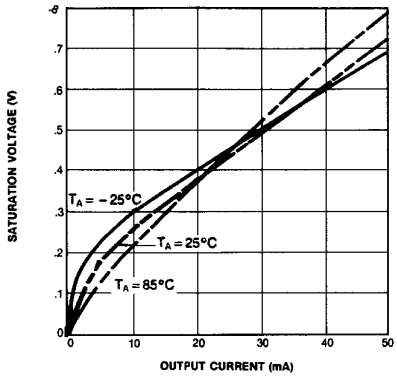


Figure 11. Current Saturation Voltage

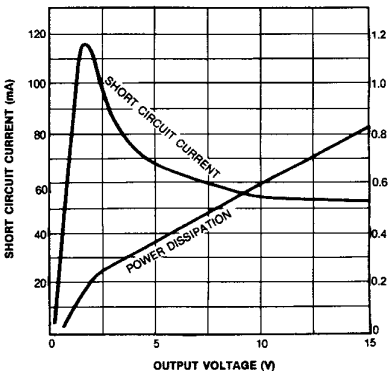
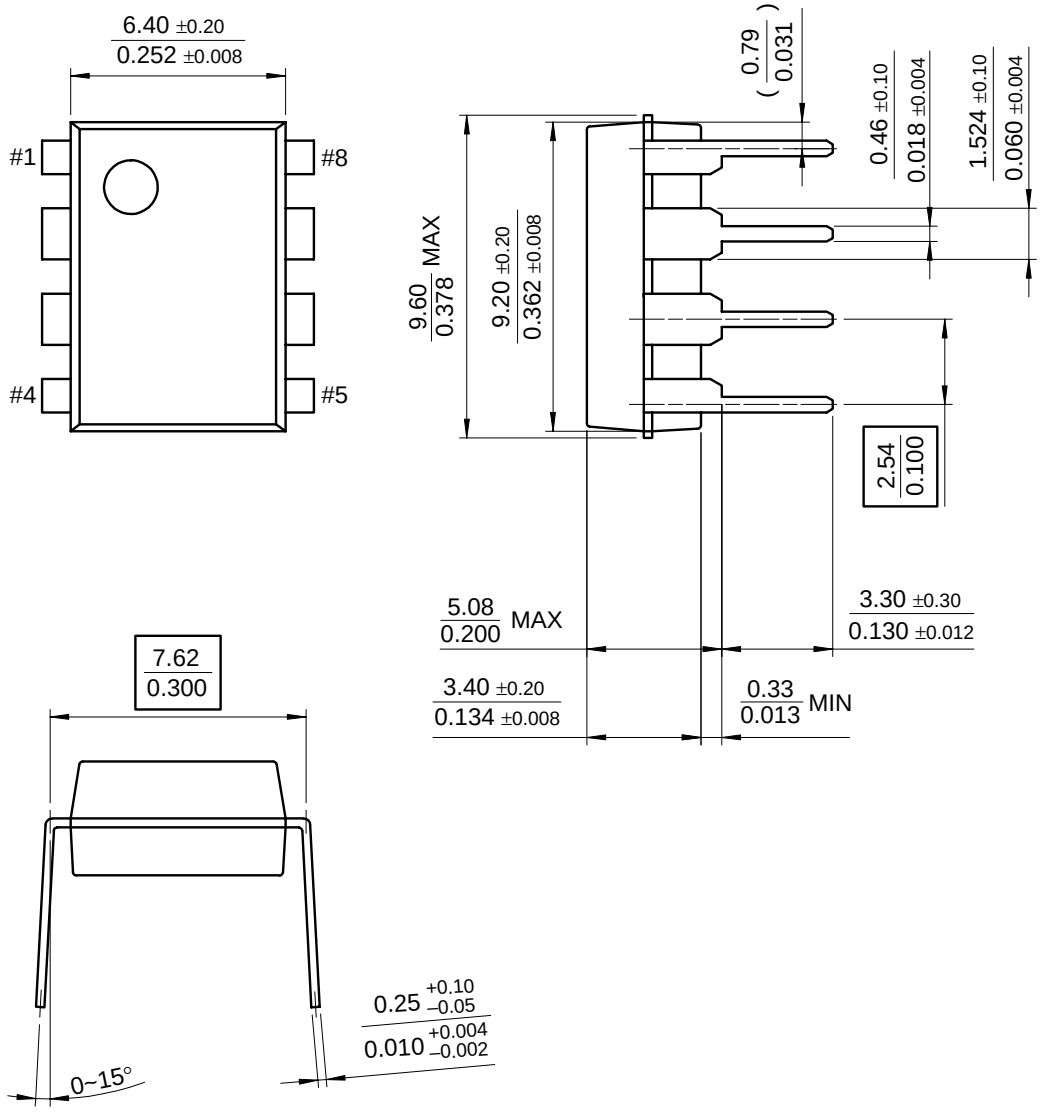


Figure 12. Output Limiting Characterstics

Mechanical Dimensions

Package

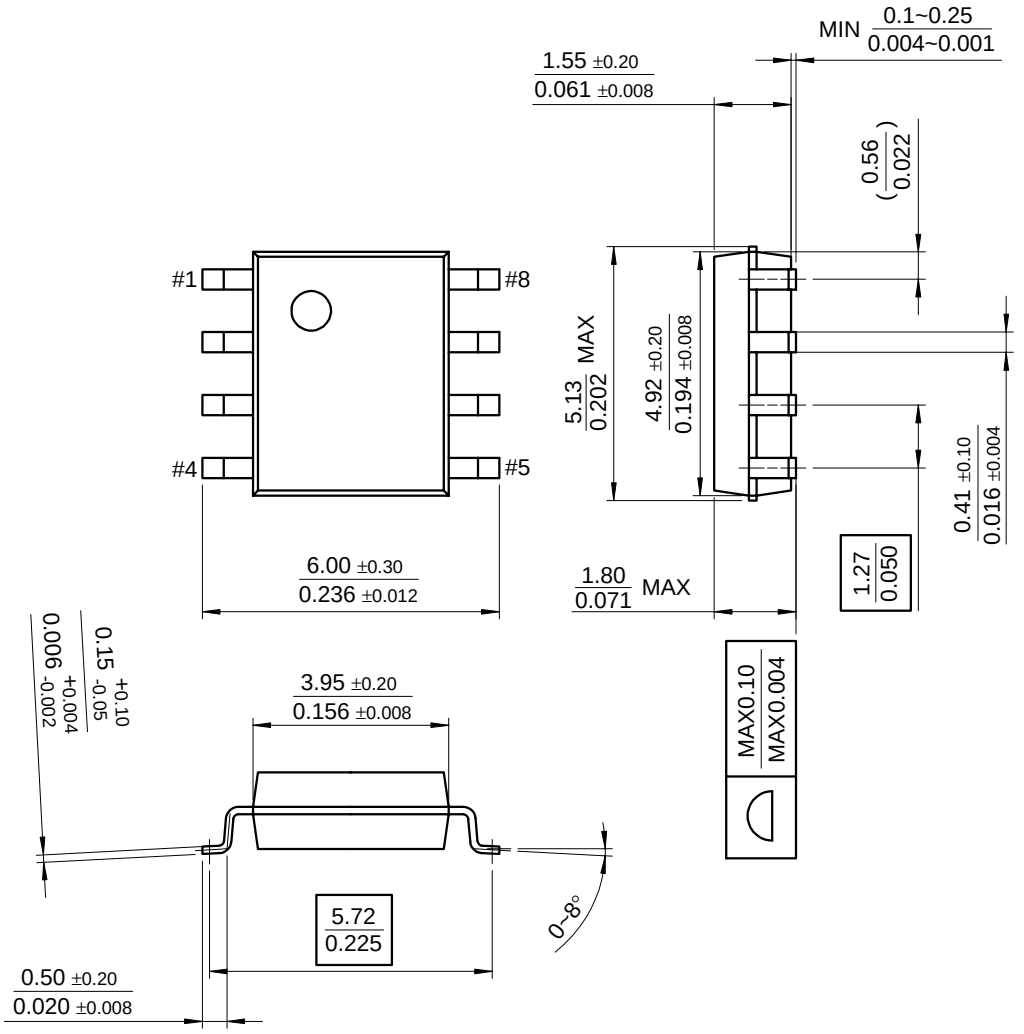
8-DIP



Mechanical Dimensions (Continued)

Package

8-SOP



Ordering Information

Product Number	Package	Operating Temperature
KA311	8-DIP	0 ~ +70°C
KA311D	8-SOP	

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