

KA311

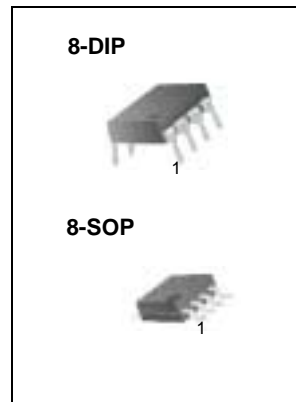
Single Comparator

Features

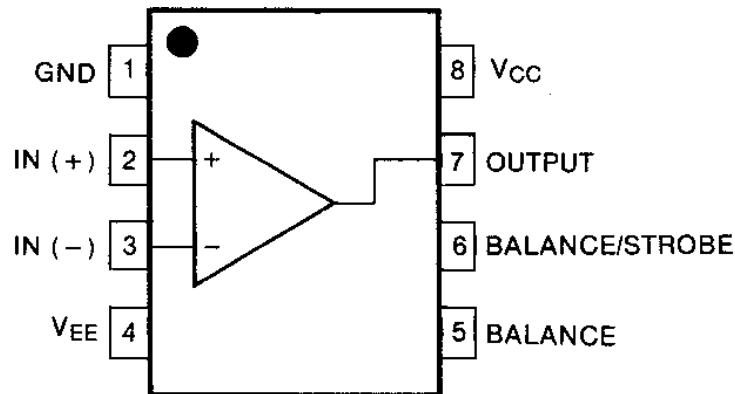
- Low input bias current : 250nA (Max)
- Low input offset current : 50nA (Max)
- Differential Input Voltage : $\pm 30V$
- Power supply voltage : single 5.0V supply to $\pm 15V$.
- Offset voltage null capability.
- Strobe capability.

Description

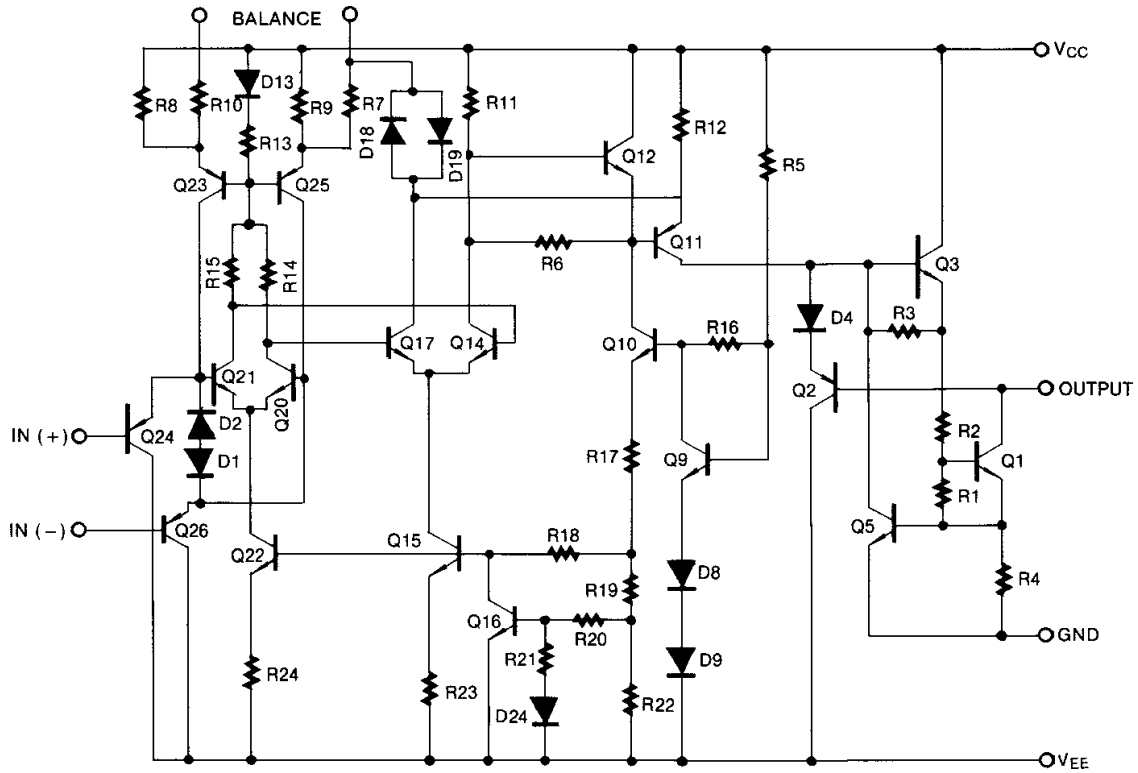
The KA311 series is a monolithic, low input current voltage comparator. The device is also designed to operate from dual or single supply voltage.



Internal Block Diagram



Schematic Diagram



Absolute Maximum Ratings

| Parameter | Symbol | Value | Unit |
|---|----------|-------------|------|
| Total Supply Voltage | VCC | 36 | V |
| Output to Negative Supply Voltage KA311 | VO - VEE | 40 | V |
| Ground to Negative voltage | VEE | -30 | V |
| Differential Input Voltage | VI(DIFF) | 30 | V |
| Input Voltage | VI | ±15 | V |
| Output Short Circuit Duration | - | 10 | sec |
| Power Dissipation | PD | 500 | mW |
| Operating Temperature Range | TOPR | 0 ~ +70 | °C |
| Storage Temperature Range | TSTG | - 65 ~ +150 | °C |

Electrical Characteristics

(VCC = 15V, TA = 25°C, unless otherwise specified)

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|-------------------------|----------------------|--|------------------|------------------|------|------|
| Input Offset Voltage | V _{IO} | R _S ≤ 50KΩ | - | 1.0 | 7.5 | mV |
| | | | Note 1 | - | - | |
| Input Offset Current | I _{IO} | | - | 6 | 50 | nA |
| | | | Note 1 | - | - | |
| Input Bias Current | I _{BIAS} | | - | 100 | 250 | nA |
| | | | Note 1 | - | - | |
| Voltage Gain | G _V | - | 40 | 200 | - | V/mV |
| Response Time | T _{RES} | | | | | |
| Saturation Voltage | V _{SAT} | I _O = 50mA, V _I ≤ -10mV | - | 0.75 | 1.5 | V |
| | | V _{CC} ≥ 4.5V, V _{EE} = 0V I _O = 8mA, V _I ≤ -10mV, Note 1 | - | 0.23 | 0.4 | |
| Strobe "ON" Current | I _{STR(ON)} | - | - | 3 | - | mA |
| Output Leakage Current | I _{SINK} | I _{STR} = 3mA, V _I ≥ 10mV V _O = 15V, V _{CC} = ±15V | - | 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 :

- 0 ≤ T_A ≤ +70°C
- The response time specified is for a 100mV input step with 5mV over drive.

Typical Performance Characteristics

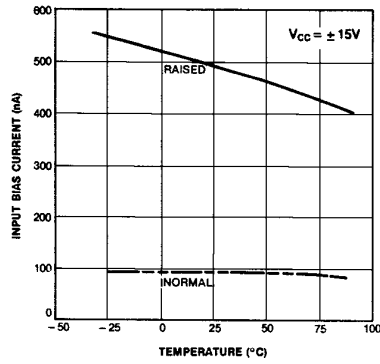


Figure 1. Input Bias Current vs Temperature

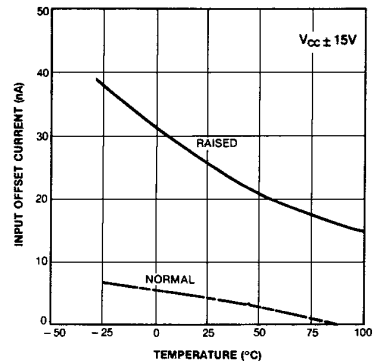


Figure 2. Input Offset Current vs Temperature

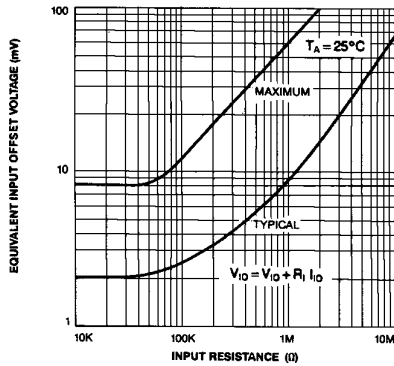


Figure 3. Offset Voltage vs Input Resistance

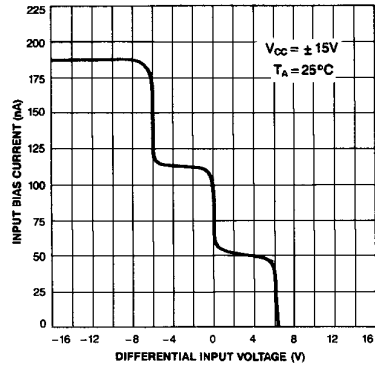


Figure 4. Input Bias Current vs Differential input voltage

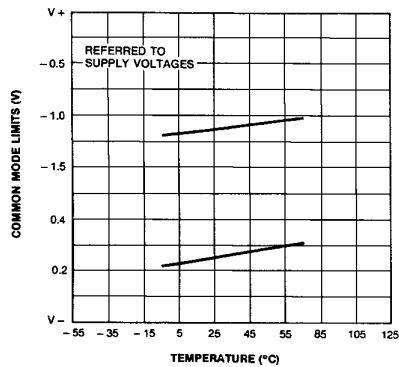


Figure 5. Common Mode Limits vs Temperature

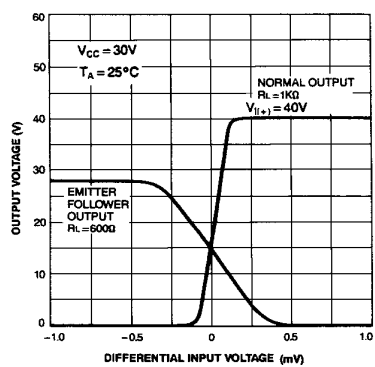


Figure 6. Output Voltage vs Differential input voltage

Typical Performance Characteristics (continued)

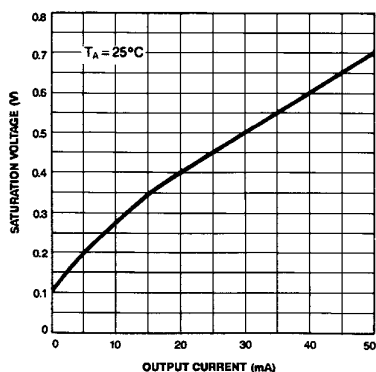


Figure 7. Saturation voltage vs Current

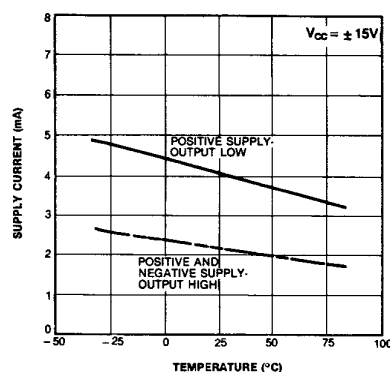


Figure 8. Supply Current vs Temperature

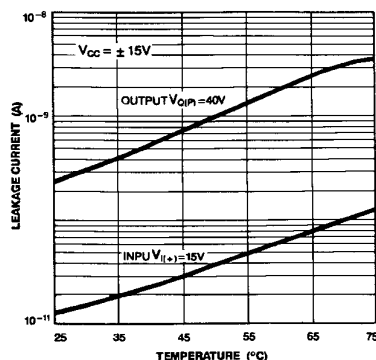


Figure 9. Leakage Current vs Temperature

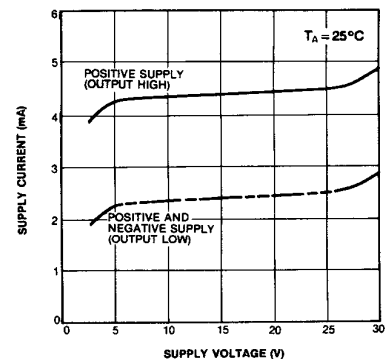


Figure 10. Supply Current vs Supply Voltage

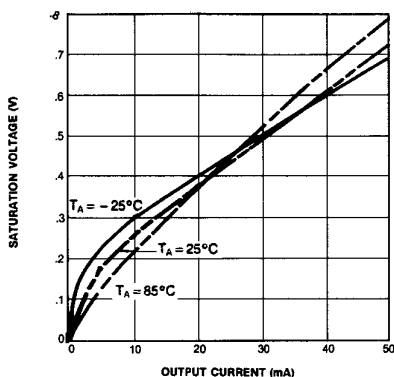


Figure 11. Current Saturation Voltage

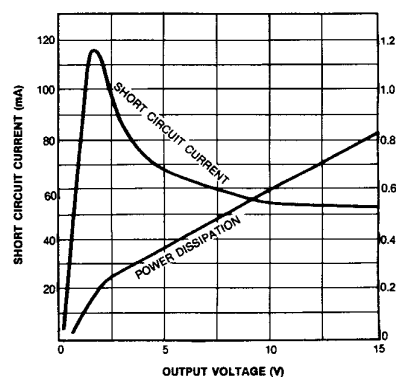
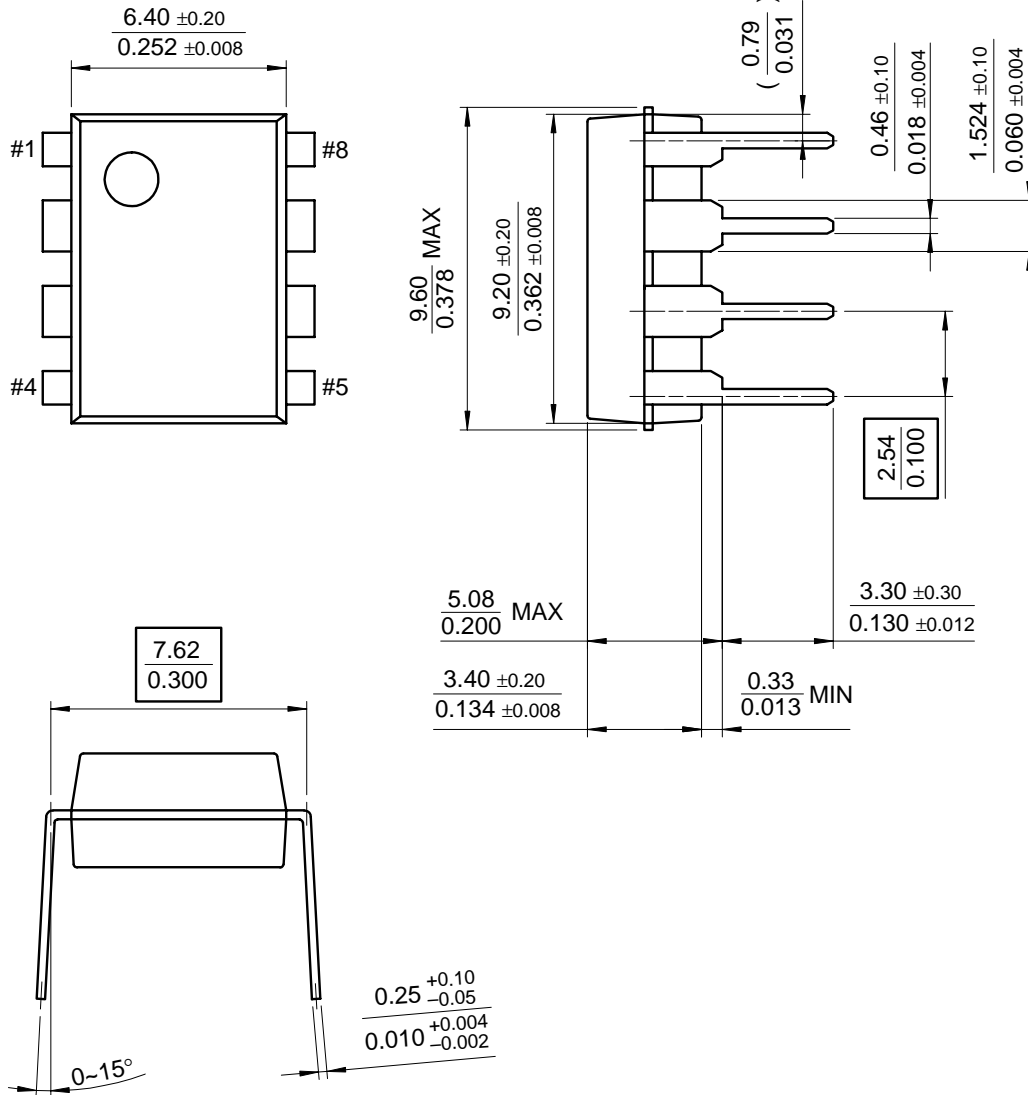


Figure 12. Output Limiting Characteristics

Mechanical Dimensions

Package

8-DIP



Ordering Information

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

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