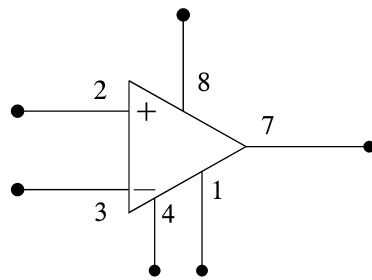


# High Performance Voltage Comparators

**IL311**

## LOGIC DIAGRAM



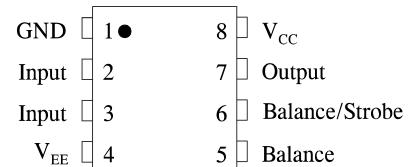
Input polarity is reversed when GND pin is used as an output.

N SUFFIX  
PLASTIC

D SUFFIX  
SOIC

**ORDERING INFORMATION**  
 IL311N Plastic  
 IL311D SOIC  
 $T_A = -45^{\circ}\text{C}$  to  $85^{\circ}\text{C}$  for all packages

## PIN ASSIGNMENT



## MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$V_{CC} +  V_{EE} $	Total Supply Voltage	36	V
$V_O - V_{EE}$	Output to Negative Supply Voltage	40	V
$V_{EE}$	Ground to Negative Supply Voltage	30	V
$V_{ID}$	Input Differential Voltage	$\pm 30$	V
$V_{IN}$	Input Voltage (Note)	$\pm 15$	V
-	Voltage at Strobe Pin	$V_{CC}$ to $V_{CC} - 5$	V
$P_D$ $1/\theta_{JA}$	Power Dissipation and Thermal Characteristics Plastic Dual In-Line Packages Derate above $T_A = +25^{\circ}\text{C}$	625 5.0	mW mW/ $^{\circ}\text{C}$
$T_{J(max)}$	Operating Junction Temperature	+150	$^{\circ}\text{C}$
Tstg	Storage Temperature Range	-60 to +150	$^{\circ}\text{C}$

Note: This rating applies for  $\pm 15$  volt supplies. The positive input voltage limit is 30 volts above the negative supply. The negative input voltage limit is equal to the negative supply voltage or 30 volts below the positive supply, whichever is less.

**RECOMMENDED OPERATING CONDITIONS**

Symbol	Parameter	Min	Max	Unit
$V_{CC+}   V_{EE}$	Total Supply Voltage		30	V
$T_A$	Operating Temperature, All Package Types	- 45	+85	°C

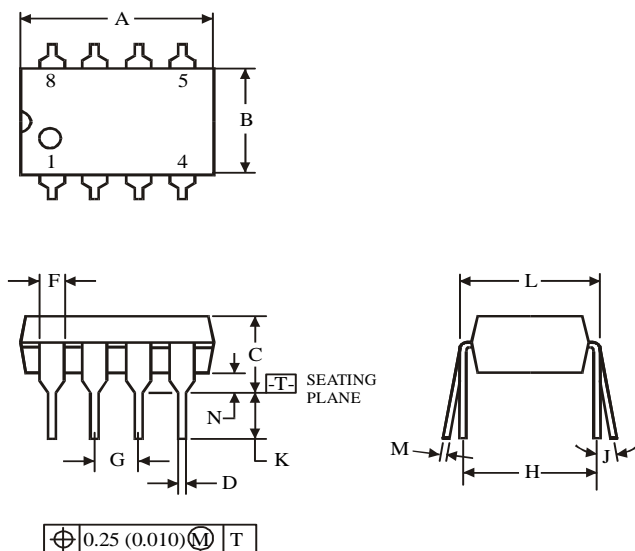
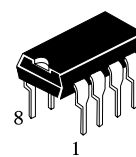
**ELECTRICAL CHARACTERISTICS** ( $V_{CC}=+15\text{ V}$ ,  $V_{EE}= -15\text{ V}$ ,  $T_A =+25^\circ\text{C}$  unless otherwise noted [Note 1])

Symbol	Parameter	Test Conditions	Guaranteed Limits		Unit
			Min	Max	
$V_{IO}$	Input Offset Voltage (Note 2)	$R_S \leq 50\text{ k}\Omega$ , $T_A = +25^\circ\text{C}$ $R_S \leq 50\text{ k}\Omega$ , $-45^\circ\text{C} \leq T_A \leq 85^\circ\text{C}$		7.5 10	mV
$I_{IO}$	Input Offset Current (Note 2)	$T_A = +25^\circ\text{C}$ $-45^\circ\text{C} \leq T_A \leq 85^\circ\text{C}$		50 100	nA
$I_{IB}$	Input Bias Current	$T_A = +25^\circ\text{C}$ $T_A = -45^\circ\text{C}$ $T_A = +85^\circ\text{C}$		250 375 500	nA
$A_V$	Voltage Gain		150000		
$t_{DLH}$	Propagation Delay Time			300	ns
$V_{DS}$	Saturation Voltage	$T_A = +25^\circ\text{C}$ $V_{ID} \leq -10\text{ mV}$ , $I_O=50\text{ mA}$		1.5	V
$V_{IR}$	Input Voltage Range		-14.5	13.0	V
$I_{CC}$	Positive Supply Current			+7.5	mA
$I_{EE}$	Negative Supply Current			-5.0	mA

NOTES:

- Offset voltage, offset current and bias current specifications apply for a supply voltage range from a single 5.0 volt supply up to  $\pm 15$  volt supplies.
- The offset voltages and offset currents given are the maximum values required to drive the output within a volt of either supply with a 1.0 mA load. Thus, these parameters define an error band and take into account the “worst case” effects of voltage gain and input impedance.

**N SUFFIX PLASTIC DIP  
(MS - 001BA)**

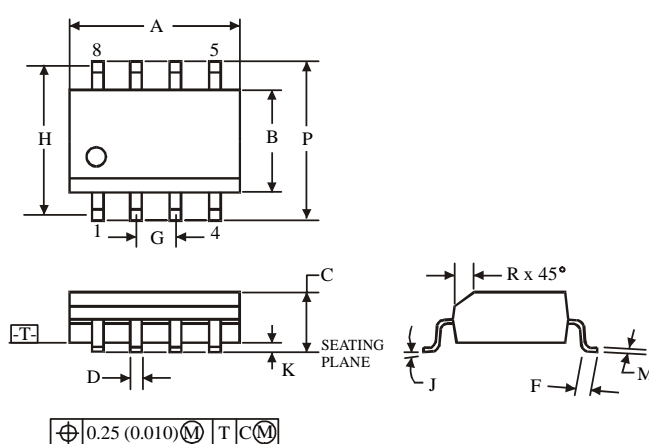
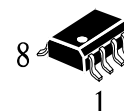


Symbol	Dimension, mm	
	MIN	MAX
A	8.51	10.16
B	6.1	7.11
C		5.33
D	0.36	0.56
F	1.14	1.78
G	2.54	
H	7.62	
J	0°	10°
K	2.92	3.81
L	7.62	8.26
M	0.2	0.36
N	0.38	

**NOTES:**

- Dimensions “A”, “B” do not include mold flash or protrusions.  
Maximum mold flash or protrusions 0.25 mm (0.010) per side.

**D SUFFIX SOIC  
(MS - 012AA)**



Symbol	Dimension, mm	
	MIN	MAX
A	4.8	5
B	3.8	4
C	1.35	1.75
D	0.33	0.51
F	0.4	1.27
G	1.27	
H	5.72	
J	0°	8°
K	0.1	0.25
M	0.19	0.25
P	5.8	6.2
R	0.25	0.5

**NOTES:**

- Dimensions A and B do not include mold flash or protrusion.
- Maximum mold flash or protrusion 0.15 mm (0.006) per side  
for A; for B - 0.25 mm (0.010) per side.