

RoHS Compliant Product
A suffix of "-C" specifies halogen or lead -free

DESCRIPTION

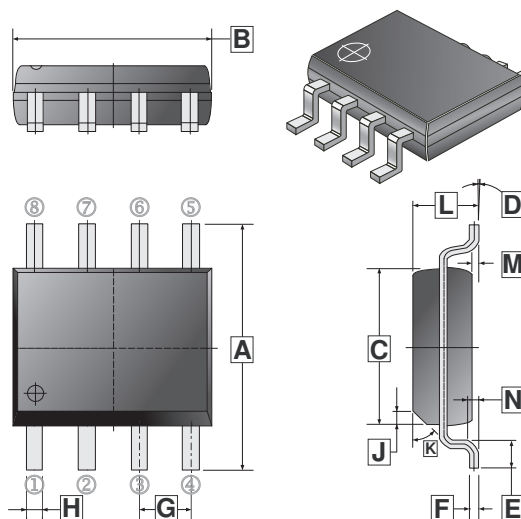
The SSCLM393J-C of two independent precision voltage comparators with an offset voltage specification as low as 2mV. It can operate from a single supply or dual supply, and its current is not affected by the magnitude of the supply voltage.

These comparators also have a unique characteristic in that the input common-mode voltage range includes ground even though operated from a single power supply voltage.

FEATURES

- Wide Supply Voltage Range
 - Single Supply: 2V to 36V
 - Dual Supplies: $\pm 1V$ to $\pm 18V$
- Low Input Bias Current: 25nA (Typical)
- Low Input Offset Current: $\pm 5nA$ (Typical)
- Low Input Offset Voltage: $\pm 5mV$ (Typical)
- Differential input voltage range equal to the supply voltage
- Output compatible with TTL, DTL, ECL, MOS, CMOS

SOP-8

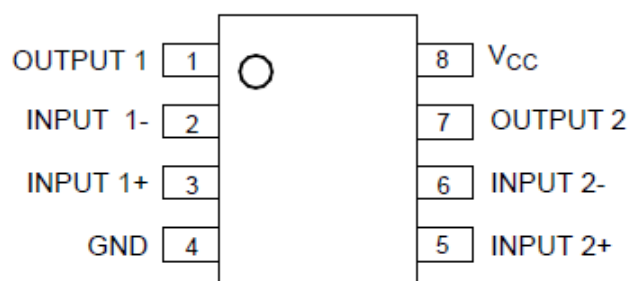


PACKAGE INFORMATION

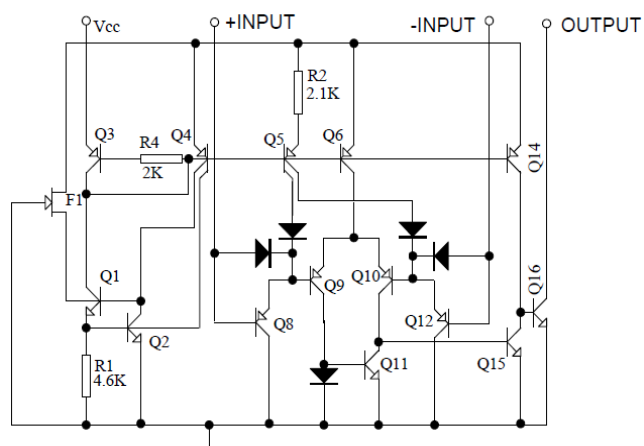
| Package | MPQ | Leader Size |
|---------|-----|-------------|
| SOP-8 | 4K | 13 inch |

| REF. | Millimeter | | REF. | Millimeter | |
|------|------------|------|------|------------|-------|
| | Min. | Max. | | Min. | Max. |
| A | 5.79 | 6.20 | H | 0.33 | 0.51 |
| B | 4.70 | 5.11 | J | 0.375 REF. | |
| C | 3.80 | 4.00 | K | 45° REF. | |
| D | 0° | 8° | L | 1.3 | 1.752 |
| E | 0.40 | 1.27 | M | 0 | 0.25 |
| F | 0.10 | 0.25 | N | 0.25 REF. | |
| G | 1.27 TYP. | | | | |

PIN CONFIGURATIONS



BLOCK DIAGRAMS



ABSOLUTE MAXIMUM RATINGS

| Parameter | | Symbol | Value | Units |
|--|------------------------|----------------|--------------|------------------|
| Supply Voltage | Single power | V_{CC} | ± 18 | V |
| | Dual power | | 36 | |
| Differential Input Voltage | | V_{IDR} | 36 | V |
| Input Voltage | | V_{ICR} | -0.3~36 | V |
| Output short circuit current to ground | | I_{OG} | 20 | mA |
| Power Dissipation | $T_A=25^\circ\text{C}$ | P_D | 570 | mW |
| Operating Temperature Range | | T_A | 0~70 | $^\circ\text{C}$ |
| Operating Junction & Storage Temperature | | T_J, T_{STG} | 125, -65~150 | $^\circ\text{C}$ |

ELECTRICAL CHARACTERISTICS ($V_{CC}=5\text{V}$, $T_A=25^\circ\text{C}$, unless otherwise specified.)

| Characteristics | Symbol | Min. | Typ. | Max. | Units | Test Conditions |
|---------------------------------|------------|------|---------|--------------|---------------|---|
| Input Offset Voltage | V_{IO} | - | ± 1 | ± 5 | mV | $T_A=25^\circ\text{C}$ |
| | | - | - | ± 5 | | $0^\circ\text{C} \leq T_A \leq 70^\circ\text{C}$ |
| Input Offset Current | I_{IO} | - | ± 5 | ± 50 | nA | $T_A=25^\circ\text{C}$ |
| | | - | - | ± 150 | | $0^\circ\text{C} \leq T_A \leq 70^\circ\text{C}$ |
| Input Bias Current | I_{BIAS} | - | 25 | 250 | nA | $T_A=25^\circ\text{C}$ |
| | | - | - | 400 | | $0^\circ\text{C} \leq T_A \leq 70^\circ\text{C}$ |
| Input Common Mode Voltage Range | V_{ICR} | 0 | - | $V_{CC}-1.5$ | V | $T_A=25^\circ\text{C}$ |
| | | 0 | - | $V_{CC}-2$ | | $0^\circ\text{C} \leq T_A \leq 70^\circ\text{C}$ |
| Supply Current | I_{CC} | - | 0.4 | 1 | mA | $R_L=\infty$, $V_{CC}=5\text{V}$ |
| | | - | - | 2.5 | | $R_L=\infty$, $V_{CC}=30\text{V}$ |
| Voltage Gain | G_V | 50 | 200 | - | V/mV | $V_{CC}=15\text{V}$, $R_L \geq 15\text{k}\Omega$ |
| Large Signal Response Time | T_{res} | - | 300 | - | ns | $V_{IN(-)} = \text{TTL logic swing}$ $V_{REF}=1.4\text{V}$, $V_{RL}=5\text{V}$, $R_L=5.1\text{k}\Omega$ |
| Response Time | t_{TLH} | - | 1.3 | - | μs | $V_{RL}=5\text{V}$, $R_L=5.1\text{k}\Omega$ |
| Differential Input Voltage | V_{IDR} | - | - | V_{CC} | V | |
| Output Sink Current | I_{SINK} | 6 | 16 | - | mA | $V_{IN(-)} \geq 1\text{V}$, $V_{IN(+)} = 0\text{V}$, $V_O \leq 1.5\text{V}$ |
| Saturation Voltage | V_{OL} | - | 150 | 400 | mV | $V_{IN(-)} \geq 1\text{V}$, $V_{IN(+)} = 0\text{V}$, $I_{SINK} \leq 4\text{mA}$ |
| | | - | - | 700 | | $V_{IN(-)} \geq 1\text{V}$, $V_{IN(+)} = 0\text{V}$, $I_{SINK} \leq 4\text{mA}$ $0^\circ\text{C} \leq T_A \leq 70^\circ\text{C}$ |
| Output Leakage Current | I_{OL} | - | 0.1 | - | nA | $V_{IN(-)} \geq 0\text{V}$, $V_{IN(+)} = 1\text{V}$, $V_O = 5\text{V}$ |
| | | - | - | 1000 | | $V_{IN(-)} \geq 0\text{V}$, $V_{IN(+)} = 1\text{V}$, $V_O = 5\text{V}$ $0^\circ\text{C} \leq T_A \leq 70^\circ\text{C}$ |

TYPICAL APPLICATION

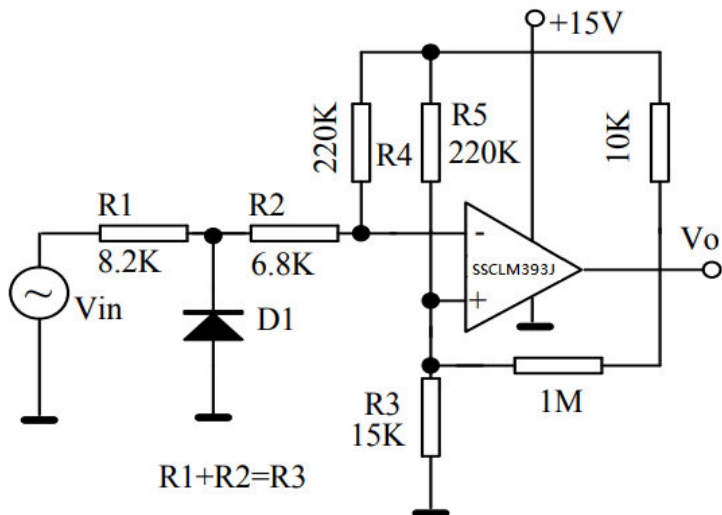


Figure 1. Zero crossing detector (single power supply)

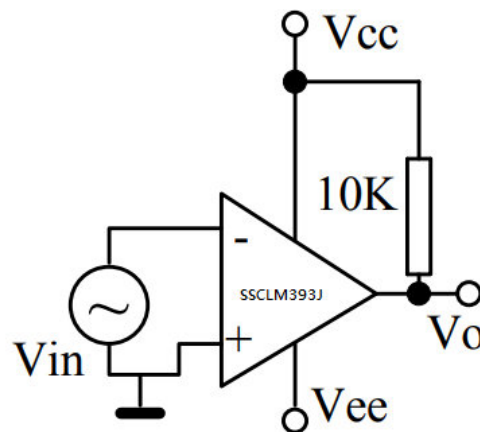


Figure 2. Zero crossing detector (dual power supply)

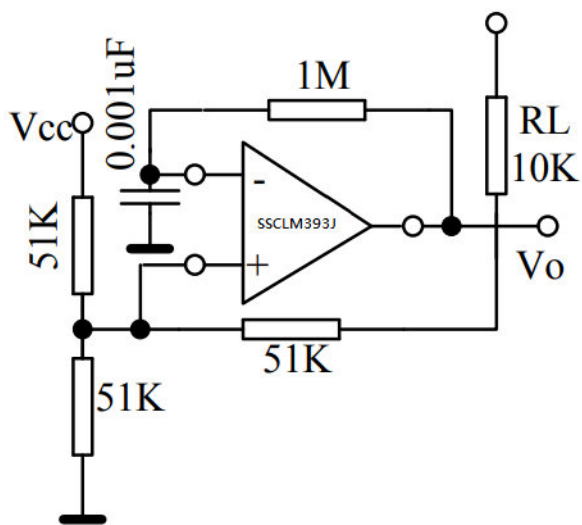


Figure 3 . Squarewave oscillator

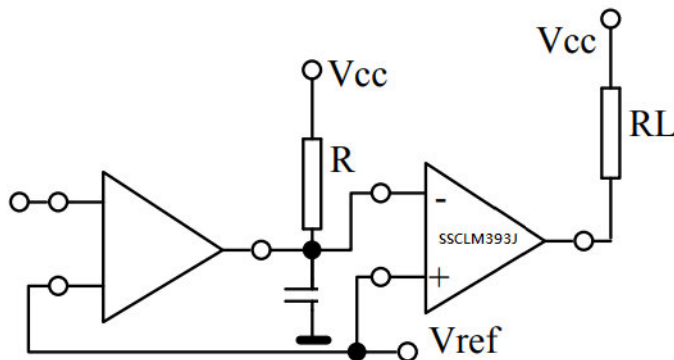


Figure 4 . Delay generator