

**Description**

The S393 consists of two independent voltage comparators designed to operate from a single power supply over a wide voltage range.

**Features**

- Single Supply Operation: 2V to 36V.
- Dual Supply Operation:  $\pm 1V$  to  $\pm 18V$ .
- Allow Comparison of Voltages Near Ground Potential.
- Low Current Drain 800uA Typ.
- Compatible with all Forms of Logic.
- Low Input Bias Current: 25nA Typ.
- Low Input Offset Current:  $\pm 5nA$  Typ.
- Low Offset Voltage:  $\pm 1mV$  Typ.

**Applications**

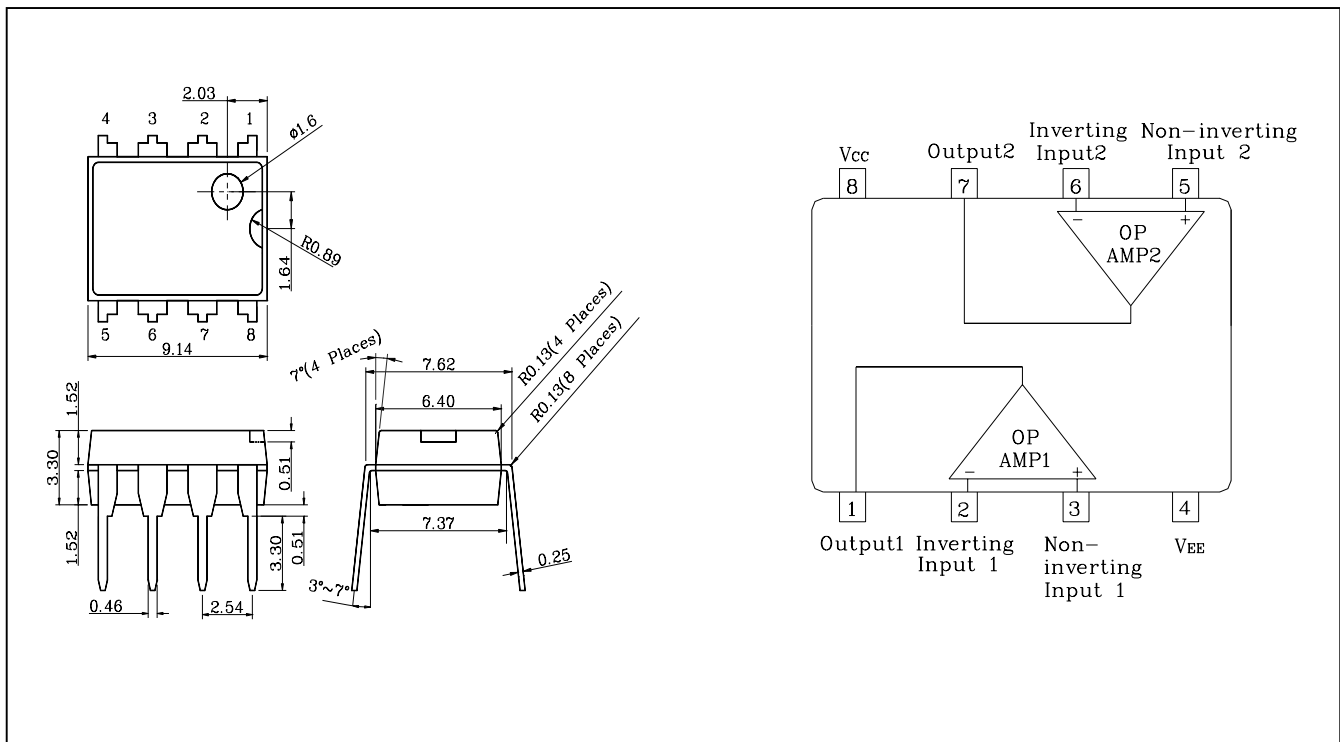
- Transducer amplifier
- DC gain blocks
- Conventional operational amplifiers

**Ordering Information**

Type NO.	Marking	Package Code
S393P	S393P	DIP-8

**Outline Dimensions**

unit : mm



**Absolute maximum ratings**

Characteristic	Symbol	Ratings	Unit
Supply voltage	$V_{CC}$	36 or $\pm 18$	V
Differential input voltage	$V_{IND}$	36	V
Input voltage	$V_{IN}$	-0.3 ~ +36	V
Power Dissipation	$P_D$	570	mW
Operating temperature	$T_{opr}$	-40 ~ +85	$^{\circ}\text{C}$
Storage temperature	$T_{stg}$	-55 ~ 150	$^{\circ}\text{C}$

**Electrical Characteristics**

(Unless otherwise specified.  $V_{CC} = 5\text{V}$  and  $-40\text{ }^{\circ}\text{C} \leq T_a \leq +85\text{ }^{\circ}\text{C}$ )

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Input Offset Voltage	$V_{IOS}$	$V_O = 1.4\text{V}$ $R_S = 0\Omega$	-	$\pm 1$	$\pm 5$	mV
Input Offset Current	$I_{IOS}$	-	-	$\pm 5$	$\pm 50$	nA
Input Bias Current	$I_{IB}$	-	-	25	250	nA
Input Common Mode Voltage Range	$V_{ICR}$	-	0	-	$V_{CC}$ -1.5	V
Supply Current	$I_{CC}$	$V_{CC} = 30\text{V}$ , $R_L = \infty$ , All Channel	-	-	2.5	mA
Large Signal Voltage Gain	$A_V$	$V_{CC} = 15\text{V}$ $R_L = 15\text{K}\Omega$	50	200	-	V/mV
Output Voltage ('L' Level)	$V_{SAT}$	$V_{IN+} = 0\text{V}$ , $V_{IN-} = 1\text{V}$ $I_{SINK} \leq 4\text{mA}$	-	150	400	mV
Response Time	$t_{RES}$	$R_L = 5.1\text{K}\Omega$ , $C_L = 15\text{pF}$	-	1.3	-	$\mu\text{s}$
Output Sink Current	$I_{SINK}$	$V_O \leq 1.5\text{V}$ $V_{IN+} = 0\text{V}$ , $V_{IN-} = 1\text{V}$	6	16	-	mA
Output Leakage Current	$I_{Leak}$	$V_O = 5\text{V}$ $V_{IN+} = 1\text{V}$ , $V_{IN-} = 0\text{V}$	-	0.1	-	nA

## Electrical Characteristic Curves

Fig. 1  $V_{CC}-I_{CC}$

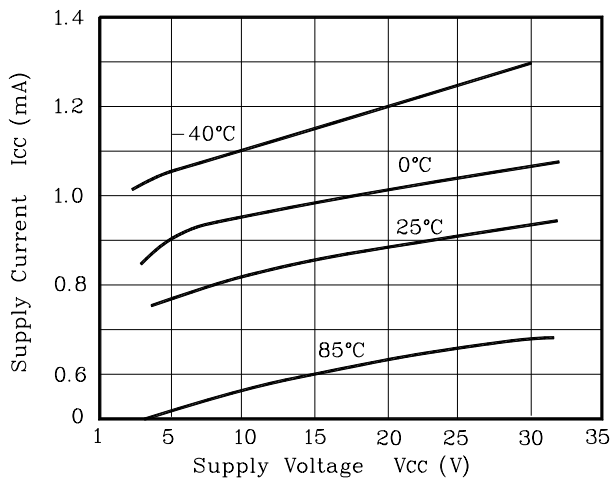


Fig. 2  $V_{CC}-I_{IB}$

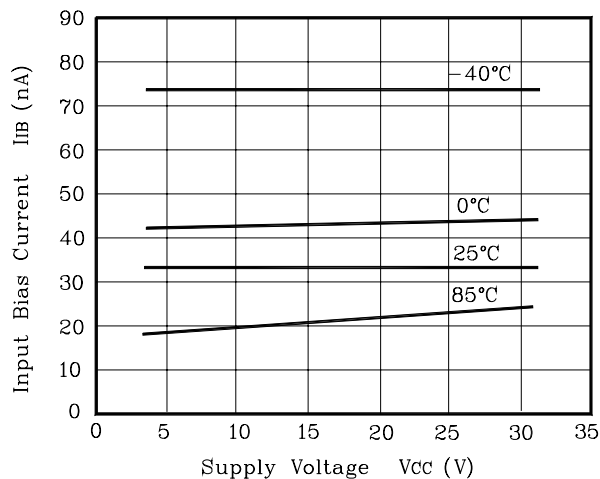


Fig. 3  $V_{OL}-I_{SINK}$

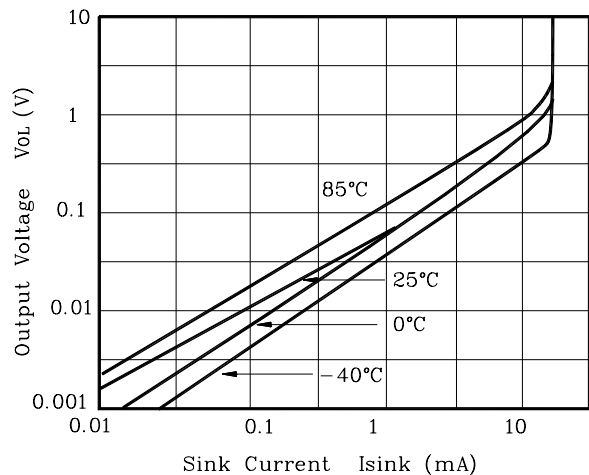


Fig. 4  $P_D-T_a$

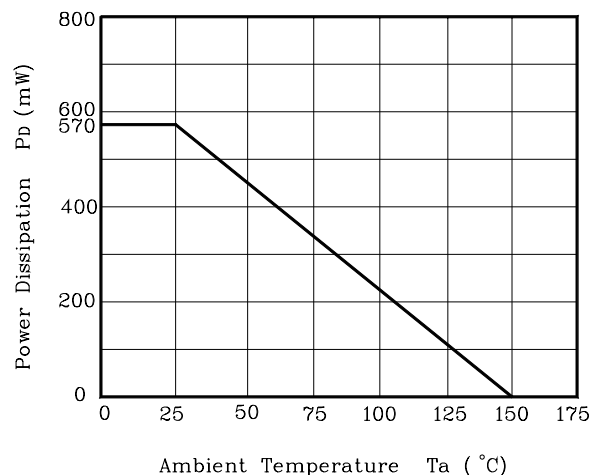


Fig. 5  $V_{IN}, V_{OUT}-t_{rsp}$

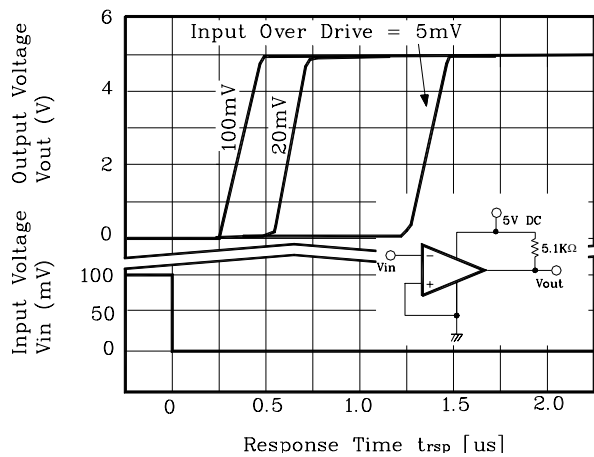


Fig. 6  $V_{IN}, V_{OUT}-t_{rsp}$

