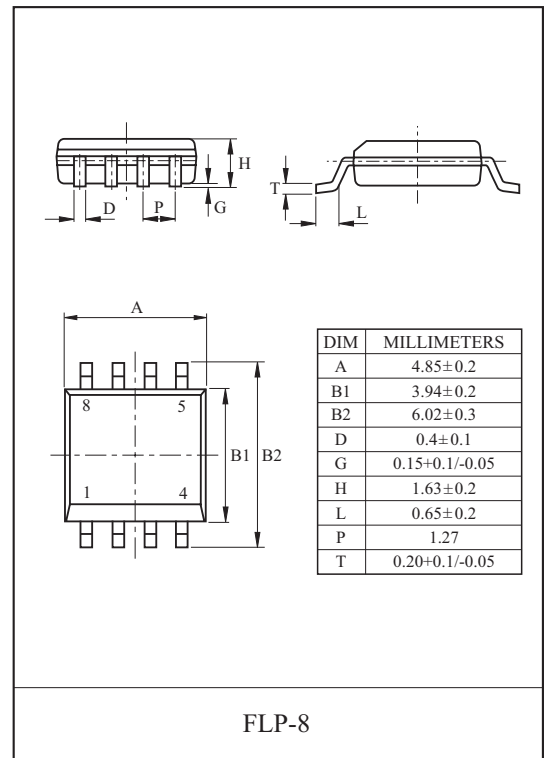


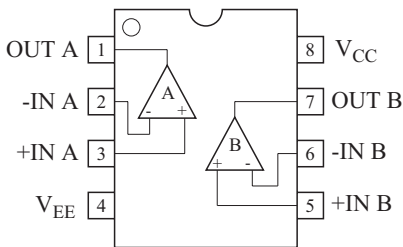
## DUAL COMPARATOR

### FEATURES

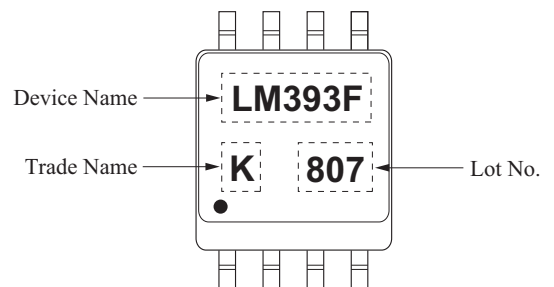
- Be Possible to Operate at the Wide Range Single or Two Supply Voltage
- Low Supply Current :  $I_{CC}=0.8\text{mA(Typ.)}$
- Low Input Bias Current  $I_{IB}=25\text{nA(Typ.)}$
- Low Input Offset Voltage :  $V_{IO}=1\text{mV(Typ.)}$
- Wide Common Mode Input Voltage :  $0V_{DC}$  to  $V_{CC}-1.5V_{DC}$
- Output is Compatible with TTL, DTL, MOS and C-MOS
- Output is Open Collector and Wired-OR Possible
- Wide Operating Supply Range  
( $V_{CC}=2\text{V}\sim 36\text{V}$  or  $\pm 1 \sim \pm 18\text{V}$ )



### PIN CONNECTION (TOP VIEW)



### MARKING

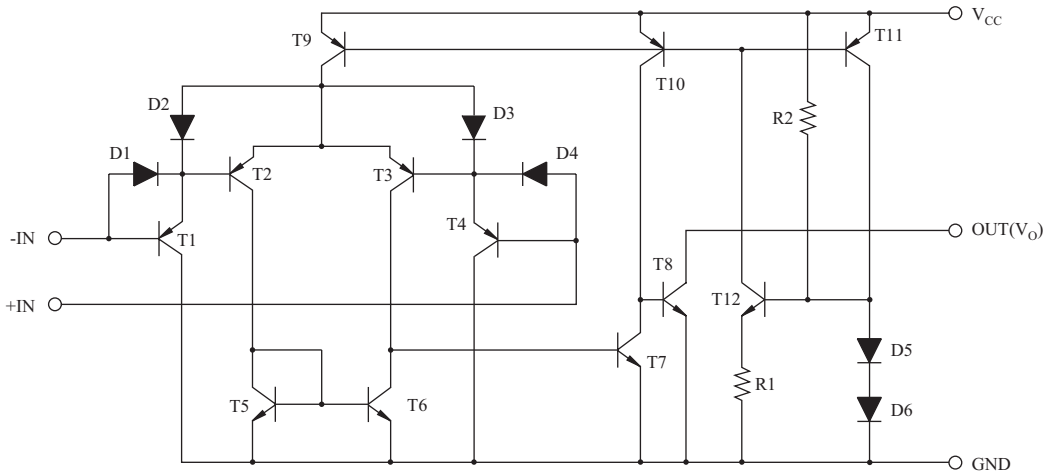


### MAXIMUM RATINGS (Ta=25 °C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	$V_{CC}$	$\pm 18, 36$	V
Differential Input Voltage	$V_{I(DIFF)}$	$\pm 18, 36$	V
Input Voltage	$V_I$	-0.3 36	V
Power Dissipation	$P_D$	240	mW
Operating Temperature	$T_{OPR}$	0~70	
Storage Temperature	$T_{STG}$	-65 150	

# LM393F

## EQUIVALENT CIRCUIT



## ELECTRICAL CHARACTERISTICS ( $V_{CC}=5V$ , $V_{EE}=GND$ , $T_a=25$ , unless otherwise specified)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Input Offset Voltage	$V_{IO}$	$V_{CM}=0V$ to $V_{CC}-1.5V$ $V_{O(p)}=1.4V$ , $R_S=0$	-	1	5	mV	
Output Saturation Voltage	$V_{SAT}$	$V_{I(-)}>1V$ , $V_{I(+)}=0V$ , $I_{SINK}=4mA$	-	160	400	mV	
Input Offset Current	$I_{IO}$	-	-	5	50	nA	
Input Bias Current	$I_{IB}$	-	-	25	250	nA	
Common Mode Input Voltage	$V_{I(CM)}$	$V_{CC}=30V$	0	-	$V_{CC}-1.5$	V	
Large Signal Voltage Gain	$G_V$	$V_{CC}=15V$ , $R_L=15k$	50	200	-	V/mV	
Supply Current	$I_{CC}$	$R_L=$ , $V_{CC}=30V$	-	0.8	2.5	mA	
		$R_L=$	-	0.6	1.0	mA	
Output Sink Current	$I_{SINK}$	$V_{I(-)}>1V$ , $V_{I(+)}=0V$ , $V_{O(p)}<1.5V$	6	18	-	mA	
Output Leakage Current	$I_{LEAK}$	$V_{I(+)}>1V$ , $V_{I(-)}=0V$	$V_{O(p)}=5V$	-	0.1	-	nA
			$V_{O(p)}=30V$	-	-	1.0	$\mu A$
Large Signal Response Time	$t_{RSP}$	$V_{IN}=TTL$ Logic Wing $V_{REF}=1.4V$ , $V_{RL}=5V$ , $R_L=5.1k$	-	350	-	ns	
Response Time	$t_{rsp}$	$V_{RL}=5V$ , $R_L=5.1k$	-	1400	-	ns	

# LM393F

Fig. 1 Supply Current vs Supply Voltage

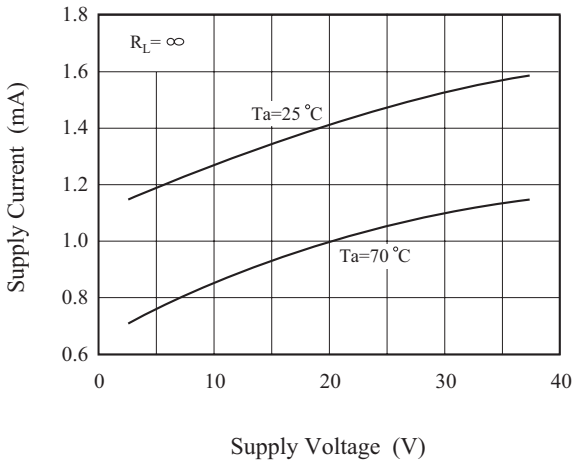


Fig. 2 Input Current vs Supply Voltage

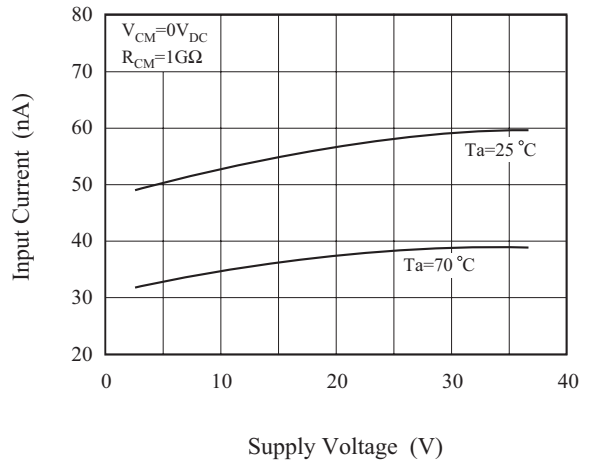


Fig. 3 Output Saturation Voltage vs Output Sink Current

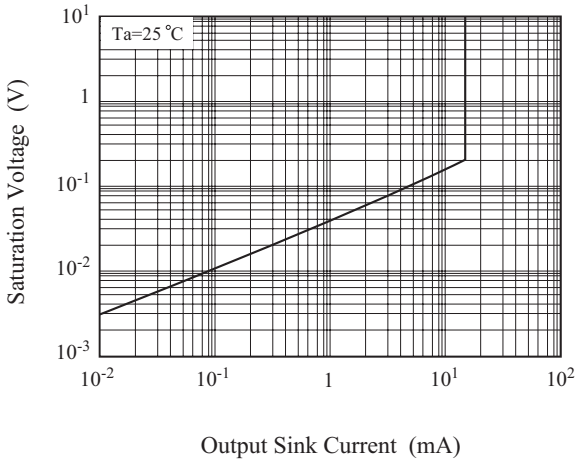


Fig. 4 Reponse Time for Various Input Overdrive Negative Transition

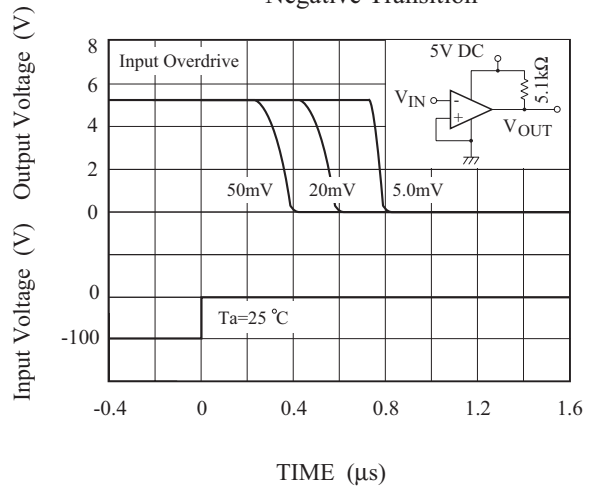


Fig. 5 Reponse Time for Various Input Overdrive Positive Transition

