



LMV393S

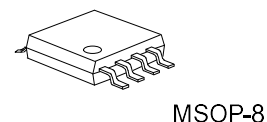
LINEAR INTEGRATED CIRCUIT

DUAL GENERAL PURPOSE, LOW VOLTAGE, COMPARATORS

■ DESCRIPTION

The UTC **LMV393S** is a low voltage (2.7V ~ 5V) version of the dual comparators. Its noise performance has been improved by using bipolar differential input and output stages. 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.

The UTC **LMV393S** is designed for applications in consumer automotive, mobile communications, notebooks and PDA's, battery powered electronics, general purpose portable device, general purpose low voltage applications.



■ FEATURES

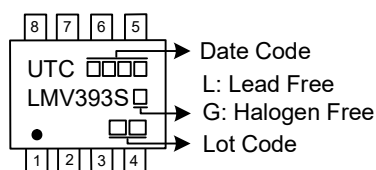
- * High Precision Comparator
- * Low Operating Voltage 2.7V ~ 5V
- * Low Supply Current 100 μ A/Channel (Typical.)
- * Low Input Bias Current 100nA (Typical.)
- * Low Input Offset Current 2nA (Typical.)
- * Input Common Mode Voltage Range Includes Ground
- * Low Output Saturation Voltage 0.2V (Typical.)

■ ORDERING INFORMATION

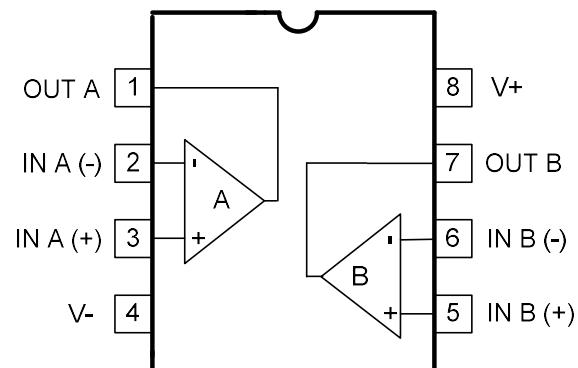
Ordering Number		Package	Packing
Lead Free	Halogen Free		
LMV393SL-SM1-R	LMV393SG-SM1-R	MSOP-8	Tape Reel

LMV393SG-SM1-R	(1)Packing Type (2)Package Type (3)Green Package	(1) R: Tape Reel (2) SM1: MSOP-8 (3) G: Halogen Free and Lead Free, L: Lead Free
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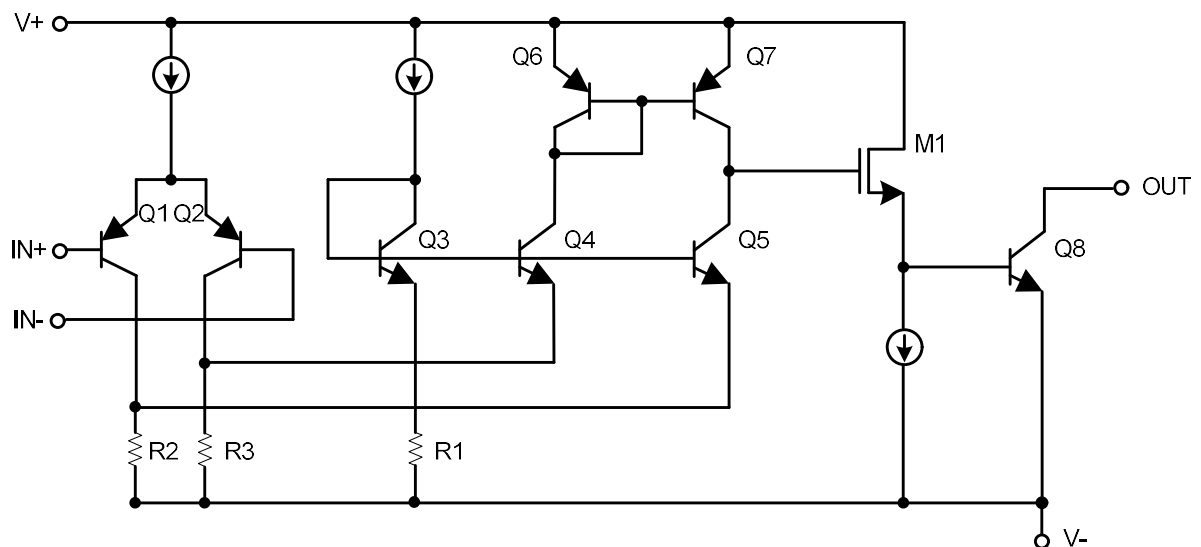
■ MARKING



■ PIN CONFIGURATION



■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{CC}	2.7 ~ 5	V
Differential Input Voltage	$V_{IN(DIFF)}$	$\pm V_{CC}$	V
Voltage on Any Pin (Referred to V- pin)		5.5	V
Junction Temperature	T_J	+150	°C
Operating Temperature	T_A	-40 ~ +85	°C
Storage Temperature	T_{STG}	-65 ~ +150	°C

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.
2. It is guarantee by design, the parameter is not production tested.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	210	°C/W

■ DC ELECTRICAL CHARACTERISTICS ($V^- = 0V$, $T_A = 25^\circ C$, unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Offset Voltage	$V_{I(OFF)}$			1.7	7	mV
Input Offset Voltage Average Drift	$I_{I(OFF)}$			5		$\mu V/^\circ C$
Input Bias Current	$I_{I(BIAS)}$			100	250	nA
Input Offset Current	$I_{I(OFF)}$			2	50	nA
Input Voltage Range	V_{IN}			-0.1 4.2		V
Supply Current	I_{CC}			140	200	μA
Voltage Gain	G_V		20	50		V/mV
Saturation Voltage	V_{SAT}	$I_{O(SINK)} \leq 4mA$		200	400	mV
Output Sink Current	$I_{O(SINK)}$	$V_{OUT} \leq 1.5V$	3 10			mA
Output Leakage Current	$I_{O(LEAK)}$				1	μA

■ AC ELECTRICAL CHARACTERISTICS ($R_L = 5.1k\Omega$, $V^- = 0V$, $T_A = 25^\circ C$, unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation Delay (High to Low)	t_{PHL}	Input Overdrive=10mV		1500		ns
				700		ns
		Input Overdrive=100mV		700		ns
				550		ns
Propagation Delay (Low to High)	t_{PLH}	Input Overdrive=10mV		500		ns
				450		ns
		Input Overdrive=100mV		400		ns
				300		ns

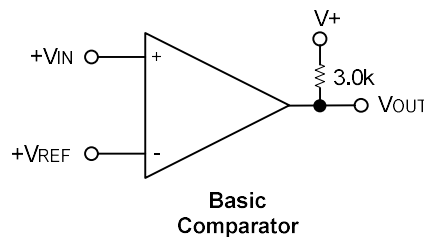
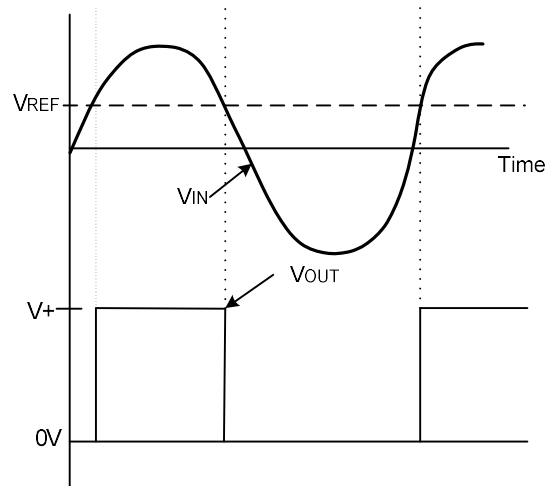
■ APPLICATION CIRCUITS

Basic Comparator

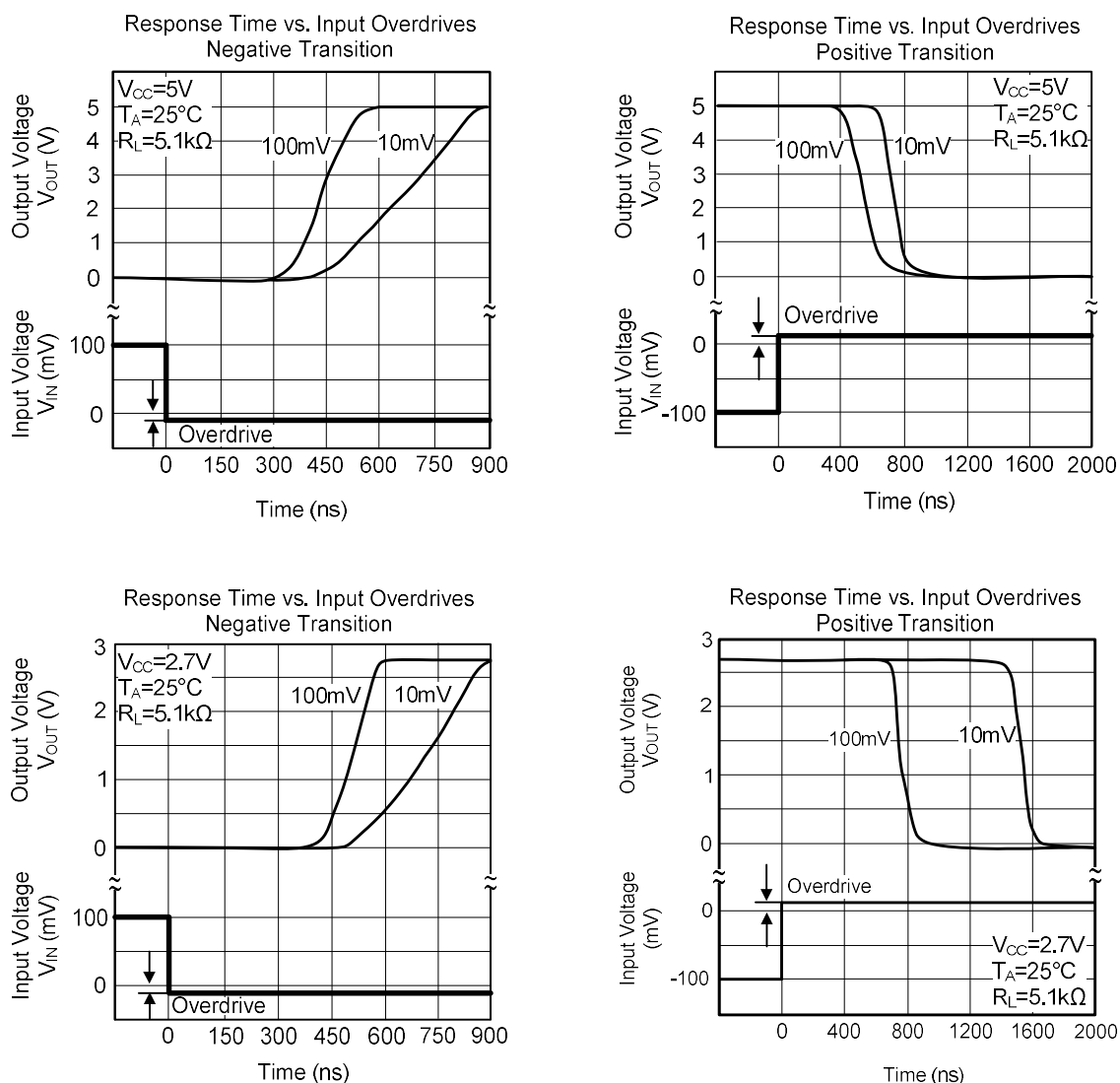
A basic comparator circuit can convert analog signals to a digital output. The UTC **LMV393S** needs a pull-up resistor connected to the positive supply voltage which can make output switch properly. So that when the internal output transistor is off, the output voltage will be pulled up to the external positive voltage.

The resistor should be chosen properly. The higher resistor can reduce the power dissipation. the lower resistor can improve the capacity of loading output. The range of resistor should between 1k to 10kΩ.

The Output voltage of the comparator will be high if the input voltage at the non-inverting pin is greater than the reference voltage at the inverting pin. On the other hand it will be low.



TYPICAL CHARACTERISTICS



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. UTC reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.