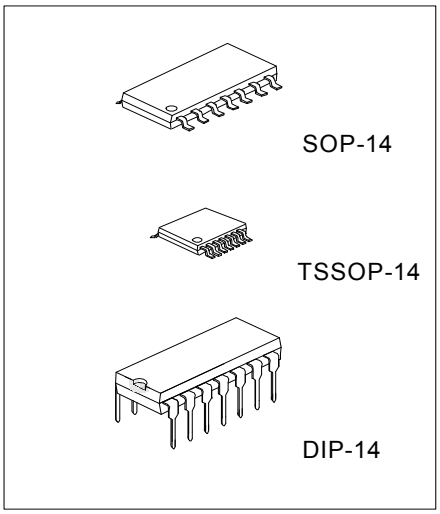
QUAD DIFFERENTIAL COMPARATOR



Lead-free: LM339L
Halogen-free: LM339G

■ DESCRIPTION

The UTC **LM339** consists of four independent voltage comparators, designed specifically to operate from a single power supply over a wide voltage range.

■ FEATURES

*Signal or dual supply operation.
*Wide operating supply range (Vcc=2V~36V).
*Input common-mode voltage includes ground.
*Low supply current drain I_F=0.8mA (Typical).
*Open collector outputs for wired and connection.
*Low input bias current I_{BIAS}=25nA (Typical).
*Low output saturation voltage.
*Output compatible with TTL, DTL, and CMOS logic system.

■ ORDERING INFORMATION

Ordering Number			Package	Packing
Normal	Lead Free Plating	Halogen-Free		
LM339-S14-R	LM339L-S14-R	LM339G-S14-R	SOP-14	Tape Reel
LM339-P14-R	LM339L-P14-R	LM339G-P14-R	TSSOP-14	Tape Reel
LM339-D14-T	LM339L-D14-T	LM339G-D14-T	DIP-14	Tube

LM339L-S14-R
(1)Packing Type
(2)Package Type
(3)Lead Plating

(1) R: Tape Reel, T: Tube
(2) S14: SOP-14, P14: TSSOP-14, D14: DIP-14
(3) G: Halogen Free, L: Lead Free Plating,Blank: Pb/Sn

■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER		SYMBOL	RATINGS	UNIT
Supply Voltage		Vcc	+- 18 or 36	V
Differential input Voltage		$V_{I(DIFF)}$	36	V
Input Voltage		V_{IN}	-0.3~36	V
Power Dissipation	DIP-14	P_D	760	mW
	SOP-14		560	mW
	TSSOP-14		440	mW
Junction Temperature		T_J	125	°C
Operating Temperature		T_{OPR}	-20 ~ +85	°C
Storage Temperature		T_{STG}	-40 ~ 150	°C

Note: 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.

■ ELECTRICAL CHARACTERISTICS

(Vcc=5.0V, Ta=25°C, All voltage referenced to GND unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP.	MAX	UNIT
Input Offset Voltage	$V_{I(OFF)}$	V_{CM}=0 ~ Vcc-1.5 V_{OUT}(p)=1.4V, Rs=0		+-1.5	+-5.0	mV
Input Offset Current	$I_{I(OFF)}$			+-2.3	+-50	nA
Input Bias Current	I_{BIAS}			57	250	nA
Input Common-Mode Voltage Range	$V_{IN(R)}$		0		Vcc-1.5	V
Supply Current	Icc	R_L=∞		1.1	2.0	mA
Large Signal Voltage Gain	G_V	Vcc=15V, R_L>15kΩ	50	200		V/mV
Large Signal Response Time	tres	V_{IN}=TTL logic wing V_{REF}=1.4V, V_{RL}=5V, R_L=5.1kΩ		350		ns
Response Time	tres	V_{RL}=5V, R_L=5.1kΩ		1400		ns
Output Sink Current	I_{SINK}	V_{IN} (-)>1V, V_{IN} (+)=0V, V_{OUT}(p)<1.5V	6	18		mA
Output Saturation Voltage	V_{SAT}	V_{IN} (-)>1V, V_{IN} (+)=0V, I_{SINK}=4mA		140	400	mV
Output Leakage Current	I_{LEAK}	V_{IN} (+)=1V,V_{IN} (-)=0 V_{OUT}(p)= 5V V_{OUT} (p)=30V		0.1	 1.0	 nA μA
Differential Input Voltage	$V_{IN(DIFF)}$				36	V

■ TYPICAL CHARACTERISTICS

Fig.1 Supply Current

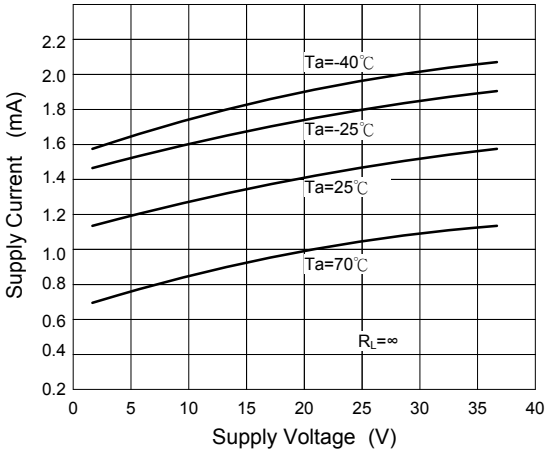


Fig.2 Input Current

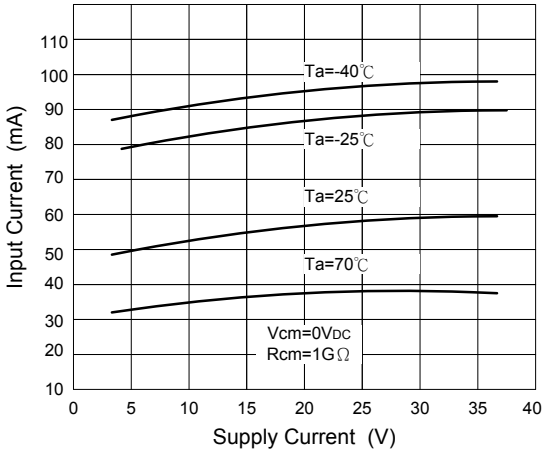


Fig.3 Output Saturation Voltage

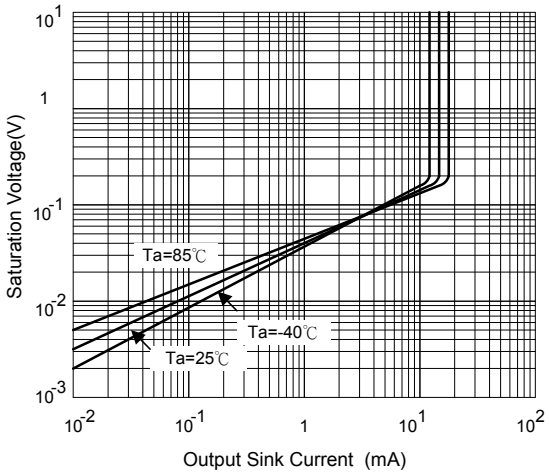


Fig.4 Reponse Time For Various Input Overdrive Negative Transition

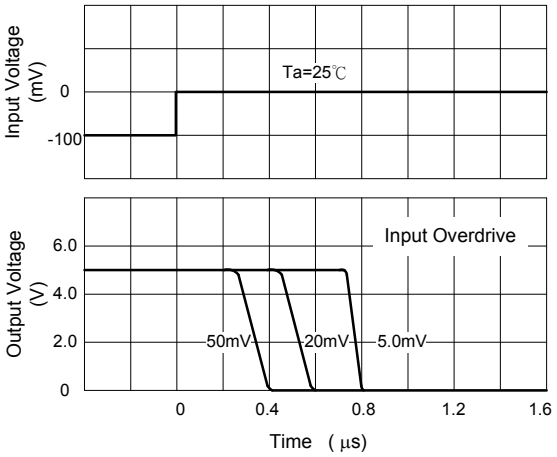
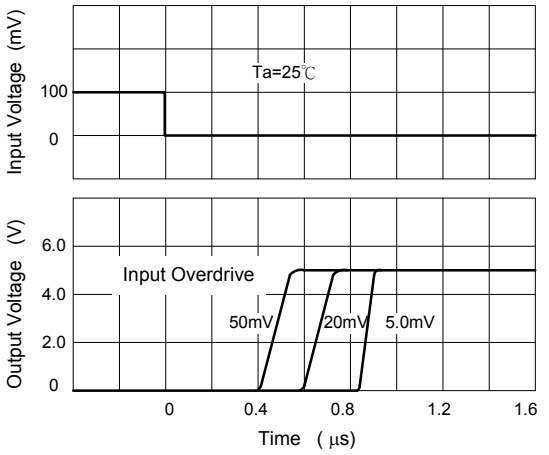


Fig.5 Reponse Time For Various Input Overdrive Positive Transition



■ TYPICAL CHARACTERISTICS(cont.)

Fig.6

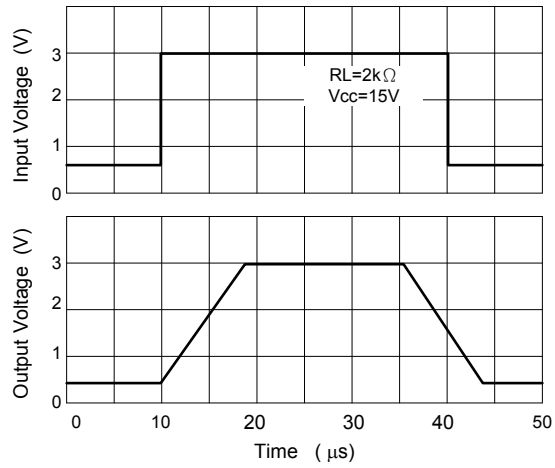


Fig.7 Voltage Follower Pulse Response
(Small Signal)

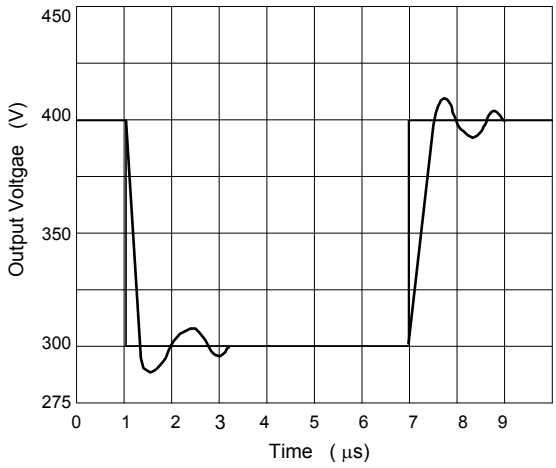


Fig.8 Large Signal Frequency Response

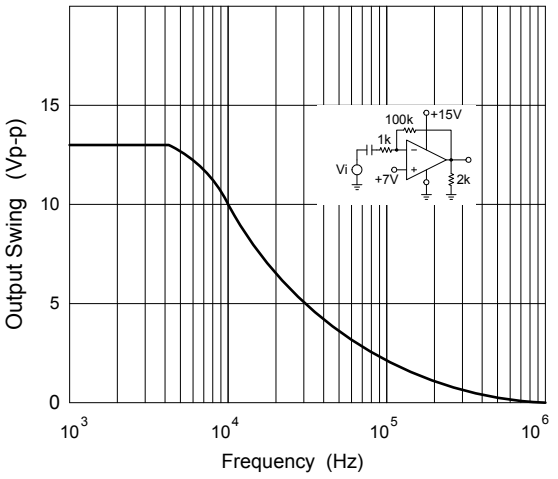


Fig.9 Output Characteristics
Current Sourcing

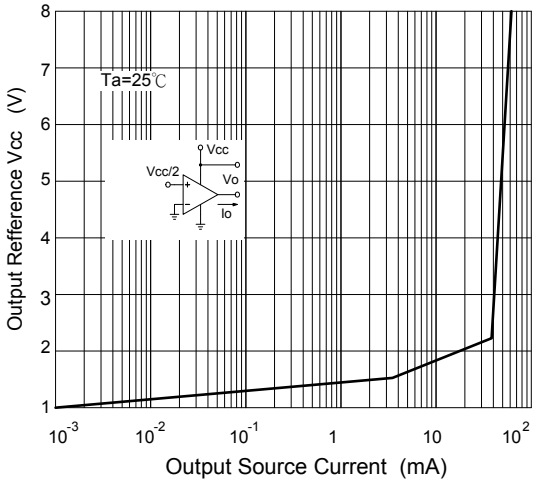


Fig.10 Output Characteristics Current Sinking

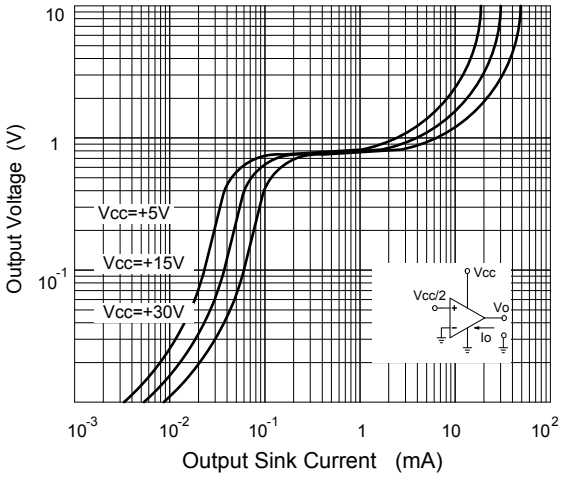
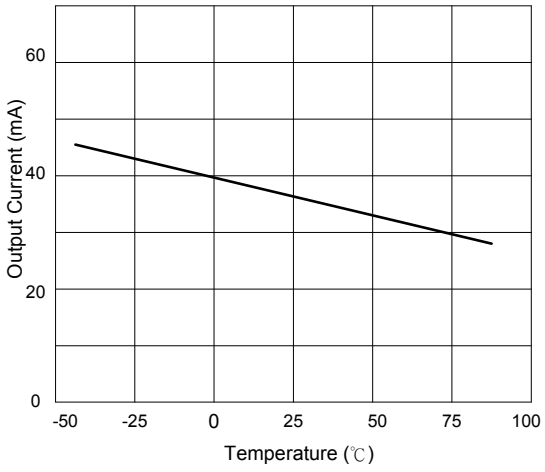



Fig.11 Current Limiting