

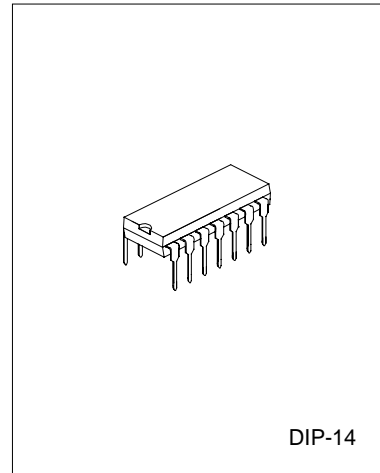
## QUAD DIFFERENTIAL COMPARATOR

### DESCRIPTION

The UTC339 consists of four independent voltage comparators designed specifically to operate from a single power supply over a wide voltage range.

### FEATURES

- \*Single or dual supply operation
- \*Wide operating supply range( $V_{CC}=2V\sim 36V$ )
- \*Input common-mode voltage includes ground
- \*Low supply current drain  $I_{CC}=0.8mA$ (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



### ABSOLUTE MAXIMUM RATINGS ( $T_a=25^\circ C$ )

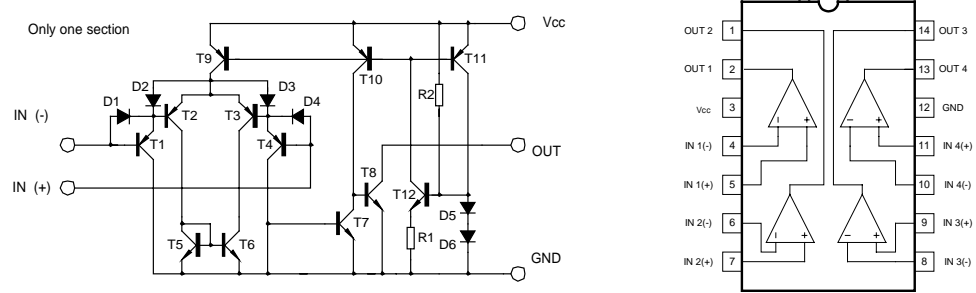
Characteristic	Symbol	Value	Unit
Supply Voltage	$V_{CC}$	$\pm 18$ OR 36	V
Differential input voltage	$V_{IDiff}$	36	V
Input Voltage	$V_I$	-0.3~36V	V
Power Dissipation	$P_d$	570	mW
Operating Temperature	$T_{opr}$	0 to +70	$^\circ C$
Storage Temperature	$T_{stg}$	-65 to 150	$^\circ C$

### ELECTRICAL CHARACTERISTICS

( $V_{CC}=5.0V$ ,  $T_a=25^\circ C$ , All voltage referenced to GND unless otherwise specified)

Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
Input offset voltage	$V_{io}$	$V_{CM}=0$ to $V_{CC}-1.5$ $V_{O(p)}=1.4V, R_s=0$		$\pm 1.5$	$\pm 5.0$	mV
Input offset current	$I_{io}$			$\pm 2.3$	$\pm 50$	nA
Input Bias current	$I_b$			57	250	nA
Input Common-mode voltage range	$V_{I(R)}$		0		$V_{CC}-1.5$	V
Supply Current	$I_{CC}$	$R_L=\infty$		1.1	2.0	mA
Large signal Voltage Gain	$G_v$	$V_{CC}=15V, R_L>15k\Omega$	50	200		V/mV
Large signal response time	$t_{res}$	$V_i=TTL$ logic wing $V_{ref}=1.4V, V_{RL}=5V, R_L=5.1k\Omega$		350		ns
Response time	$t_{res}$	$V_{RL}=5V, R_L=5.1k\Omega$		1400		ns
Output sink current	$I_{sink}$	$V_i(-)>1V, V_i(+)=0V, V_{O(p)}<1.5V$	6	18		mA
Output saturation voltage	$V_{sat}$	$V_i(-)>1V, V_i(+)=0V, I_{sink}=4mA$	140	400		mV
output leakage current	$I_{leakage}$	$V_i(+)=1V, V_i(-)=0$	20	40		mA
Differential input voltage	$V_{I(diff)}$				36	V

BLOCK DIAGRAM



## TYPICAL CHARACTERISTICS PERFORMANCE

Fig.1 supply current

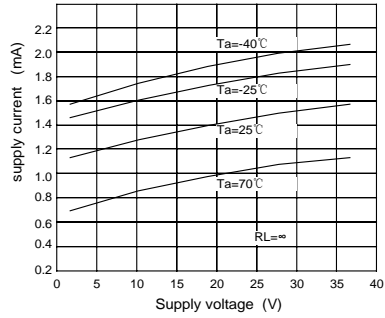


Fig.2 Input current

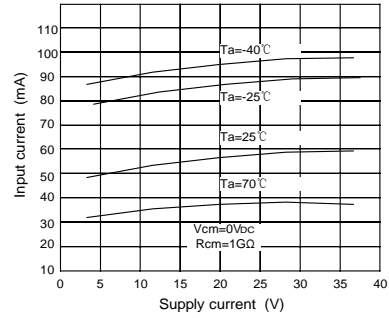


Fig.3 Output saturation voltage

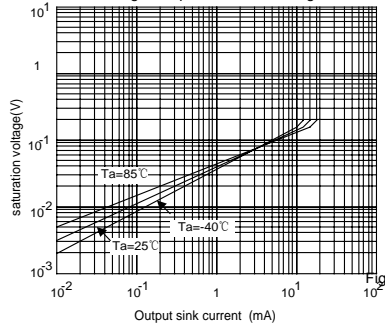


Fig.4 Reponse time for various input overdrive negative transition

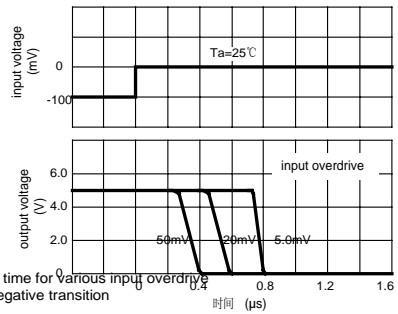


Fig.4 Reponse time for various input overdrive positive transition

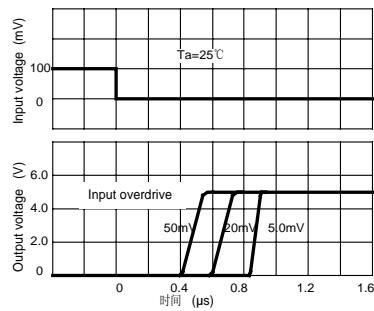


Fig.7

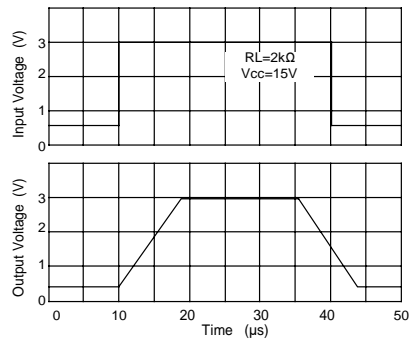


Fig.8 voltage Follower pulse response (small signal)

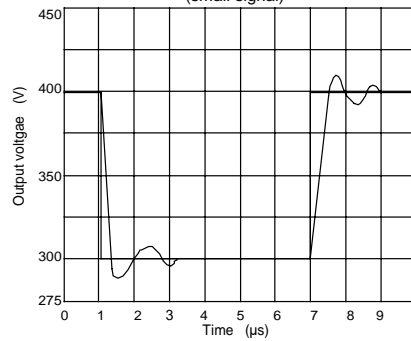


Fig.9 Large signal Frequency Response

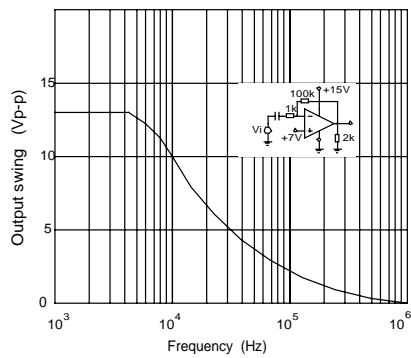


Fig.10 Output Characteristics current sourcing

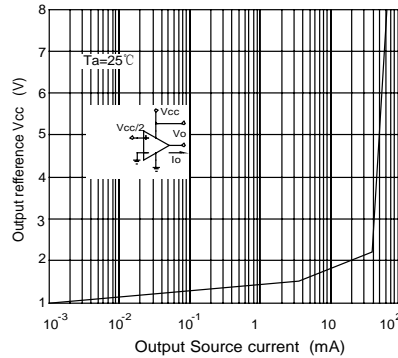


Fig.11 Output Characteristics Current sinking

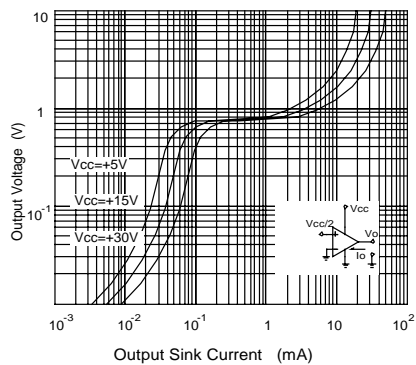


Fig.12 Current Limiting

