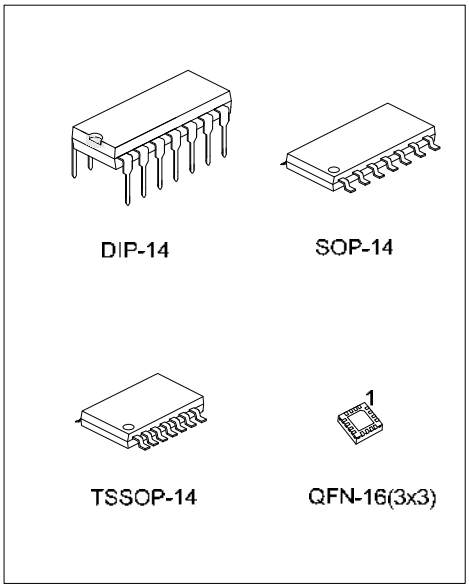
LM339

LINEAR INTEGRATED CIRCUIT

QUAD DIFFERENTIAL COMPARATOR



■ 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 (V_{CC}=2V~36V)
* Input Common-Mode Voltage Includes Ground.
* Low Supply Current I_{CC}=1.1mA (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

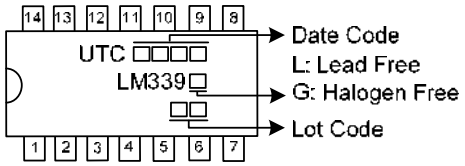
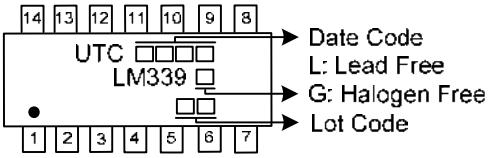
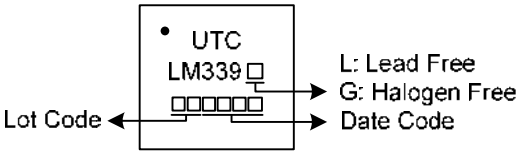
■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen-Free		
LM339L-D14-T	LM339G-D14-T	DIP-14	Tube
LM339L-S14-R	LM339G-S14-R	SOP-14	Tape Reel
LM339L-P14-R	LM339G-P14-R	TSSOP-14	Tape Reel
LM339L-Q16-3030-R	LM339G-Q16-3030-R	QFN-16(3×3)	Tape Reel

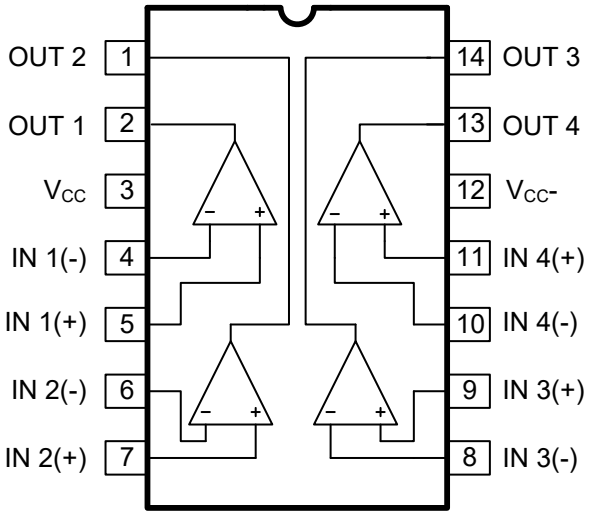
LM339G-D14-T
(1)Packing Type
(2)Package Type
(3)Green Package

(1) T: Tube, R: Tape Reel
(2) DIP: DIP-14, S14: SOP-14, P14: TSSOP-14
Q16-3030: QFN-16(3×3)
(3) G: Halogen Free and Lead Free, L: Lead Free

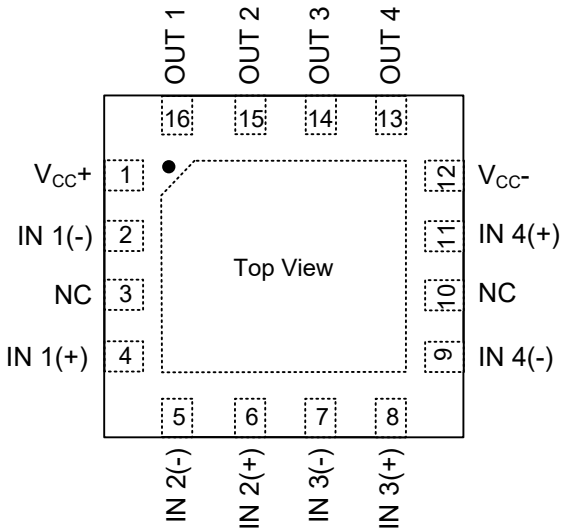
■ MARKING

PACKAGE	MARKING
DIP-14	
SOP-14 TSSOP-14	
QFN-16(3×3)	

■ PIN CONFIGURATION

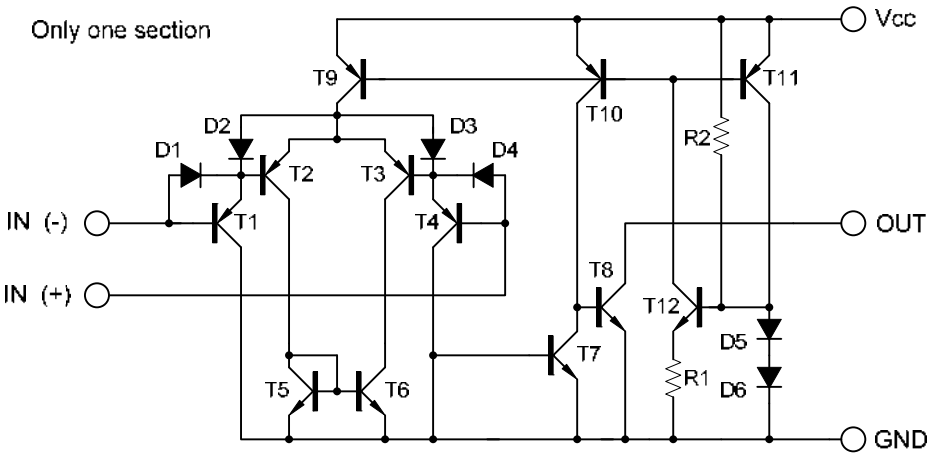


DIP-14/SOP-14/TSSOP-14



QFN-16(3×3)

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Supply Voltage		V_{CC}	±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
	QFN-16(3×3)		1300	mW
Junction Temperature		T_J	+150	°C
Operating Temperature		T_{OPR}	-20 ~ +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, not 100% be tested.

■ ELECTRICAL CHARACTERISTICS

(V_{CC}=5.0V,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~V_{CC}-1.5, $V_{OUT(P)}$=1.4V, R_S=0	T_A=25°C		±1.5	±3.0	mV
			T_A=-20~+85°C			±9.0	mV
Input Offset Current	$I_{I(OFF)}$	T_A=25°C			±2.3	±50	nA
		T_A=-20~+85°C				±150	nA
Input Bias Current	I_{BIAS}	T_A=25°C			25	250	nA
		T_A=-20~+85°C				400	nA
Input Common Mode Voltage	$V_{I(CM)}$	T_A=25°C		0		V_{CC}-1.5	V
		T_A=-20~+85°C		0		V_{CC}-2.0	V
Supply Current	I_{CC}	R_L=∞	T_A=25°C		1.7	2.0	mA
			T_A=-20~+85°C			3.0	mA
Large Signal Voltage Gain	G_V	V_{CC}=15V, R_L>15kΩ, T_A=25°C		50	200		V/mV
Large Signal Response Time	t_{RES}	V_{IN}=TTL logic wing V_{REF}=1.4V, V_{RL}=5V, R_L=5.1kΩ, T_A=25°C			350		ns
Response Time	t_{RES}	V_{RL}=5V, R_L=5.1kΩ, T_A=25°C			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	T_A=25°C		140	400	mV
			T_A=-20~+85°C			700	mV
Output Leakage Current	I_{LEAK}	$V_{IN(+)}$=1V, $V_{IN(-)}$=0V, T_A=25°C	$V_{OUT(P)}$= 5V		0.1		μA
			$V_{OUT(P)}$=30V			1	μA
Differential Input Voltage	$V_{IN(DIFF)}$	T_A=-20~+85°C				V_{CC}	V

■ TYPICAL CHARACTERISTICS

Fig.1 Supply Current

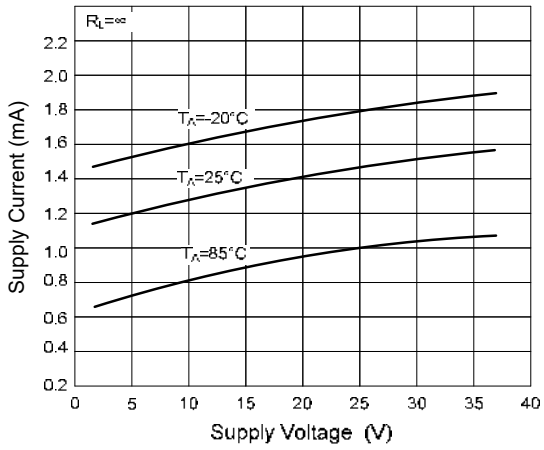


Fig.2 Input Current

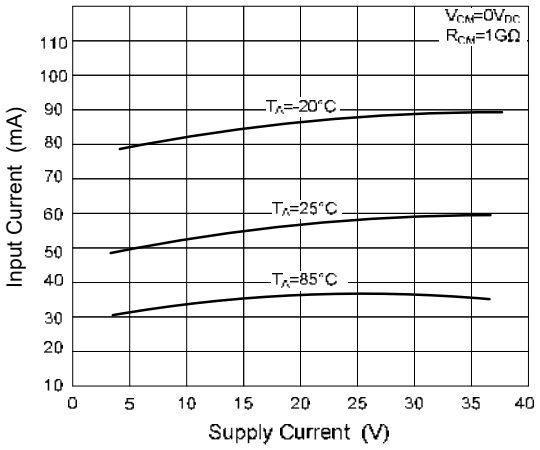


Fig.3 Output Saturation Voltage

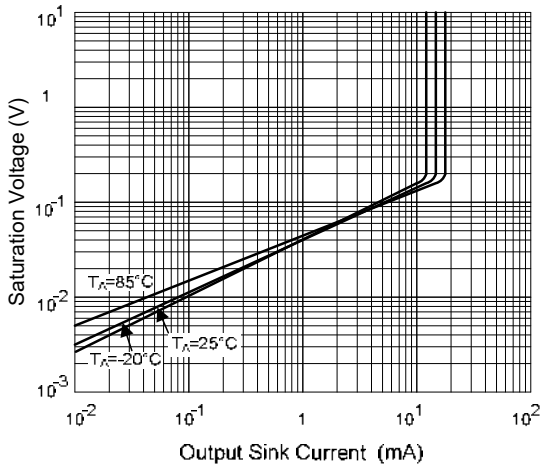


Fig.4 Reponse Time For Various Input Overdrive Negative Transition

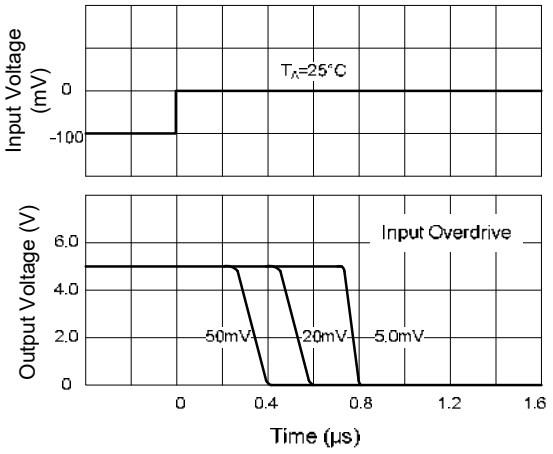


Fig.5 Reponse Time For Various Input Overdrive Positive Transition