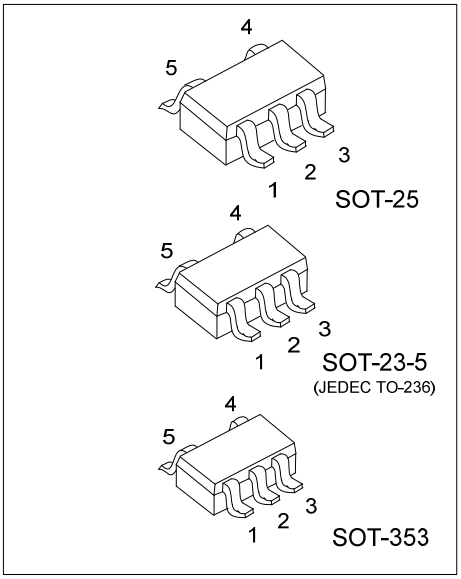
LMV331

LINEAR INTEGRATED CIRCUIT

SINGLE GENERAL PURPOSE, LOW VOLTAGE, SMALL PACK COMPARATORS



■ DESCRIPTION

The UTC **LMV331** is the single version, which is available in space saving SOT23-5 packages. The UTC **LMV331** is the most cost-effective solution where space, low voltage, low power and price are the primary specification in circuit design for portable consumer products. The UTC **LMV331** have bipolar input and output stages for improved noise performance.

■ FEATURES

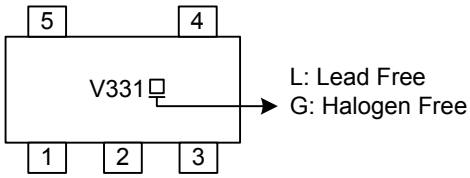
* Low operating voltage 2.7-5V.
* Low supply current 60μA
* Input common mode voltage range includes ground
* Low output saturation voltage 0.2V

■ ORDERING INFORMATION

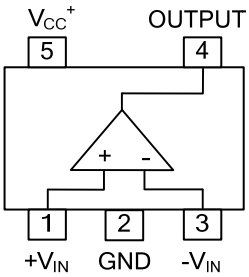
Ordering Number		Package	Packing
LMV331L-AE5-R	LMV331G-AE5-R	SOT-23-5	Tape Reel
LMV331L-AF5-R	LMV331G-AF5-R	SOT-25	Tape Reel
LMV331L-AL5-R	LMV331G-AL5-R	SOT-353	Tape Reel

LMV331G-AE5-R (1)Packing Type (2)Package Type (3)Green Package	(1) R: Tape Reel (2) AE5: SOT-23-5, AF5: SOT-25, AL5: SOT-353 (3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



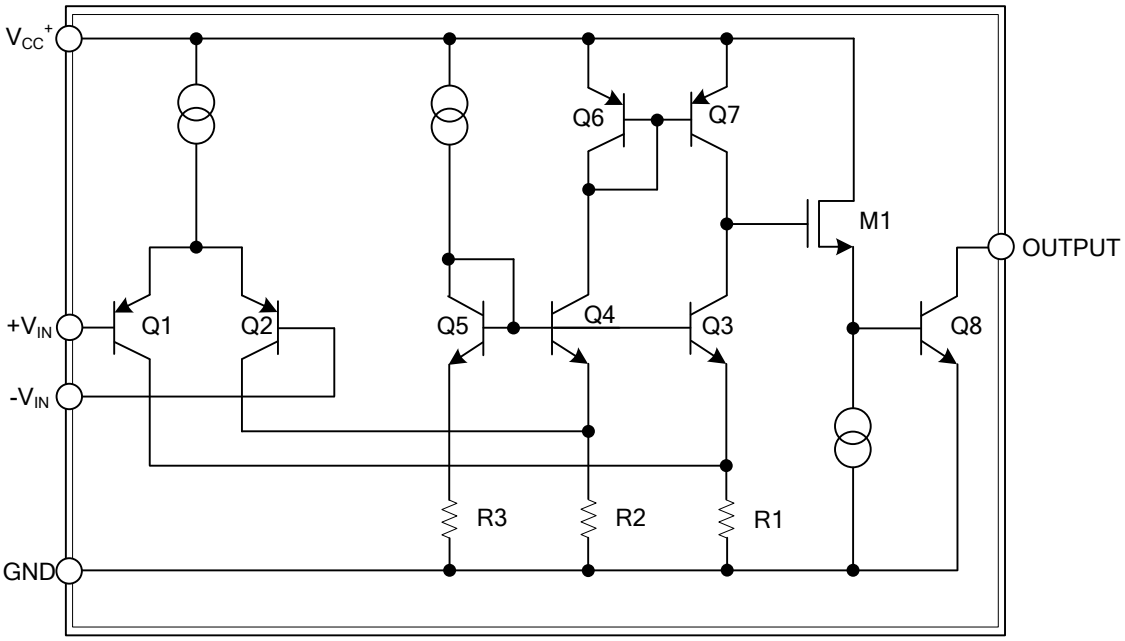
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	$+V_{IN}$	Non-inverting input
2	GND	Ground
3	$-V_{IN}$	inverting input
4	OUTPUT	Output
5	V_{CC}^+	Power supply

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{CC}	5.5	V
Differential Input Voltage	$V_{IN(DIFF)}$	$\pm V_{CC}$	V
Voltage on Any Pin (Referred to GND pin)		5.5	V
Junction Temperature	T_J	+150	°C
Operating Temperature	T_{OPR}	-40 ~ +125	°C
Storage Temperature	T_{STG}	-65 ~ +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.

■ THERMAL CHARACTERISTICS

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	SOT-23-5	θ_{JA}	265	°C/W
	SOT-25		230	°C/W
	SOT-353		350	°C/W

■ 2.7V DC ELECTRICAL CHARACTERISTICS

(All limits guaranteed for T_J=25°C, V_{CC}=2.7V, unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP (Note 2)	MAX (Note 3)	UNIT
Input Offset Voltage	V_{OS}			1.7	7	mV
Input Offset Voltage Average Drift	TCV_{OS}			5		μV/°C
Input Bias Current	I_B			10	250	nA
Input Offset Current	I_{OS}			5	50	nA
Input Voltage Range	V_{CM}			-0.1		V
				2.0		V
Saturation Voltage	V_{SAT}	I_{sink}≤1mA		200		mV
Output Sink Current	I_O	V_O≤1.5V	5	23		mA
Supply Current	I_S			40	100	μA
Output Leakage Current				0.003	1	μA

■ 2.7V AC ELECTRICAL CHARACTERISTICS (T_J=25°C, V_{CC}=2.7V, R_L=5.1kΩ)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP (Note 2)	MAX	UNIT
Propagation Delay (High to Low)	t_{PHL}	Input Overdrive=10mV		15		μs
		Input Overdrive=100mV		3.5		μs
Propagation Delay (Low to High)	t_{PLH}	Input Overdrive=10mV		1		μs
		Input Overdrive=100mV		0.5		μs

■ 5V DC ELECTRICAL CHARACTERISTICS

(All limits guaranteed for T_J=25°C, V_{CC}=5V, unless otherwise specified.)

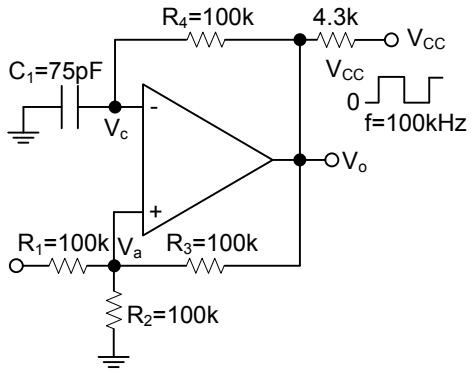
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP (Note 2)	MAX (Note 3)	UNIT
Input Offset Voltage	V_{OS}			1.7	7	mV
Input Offset Voltage Average Drift	TCV_{OS}			5		μV/°C
Input Bias Current	I_B			25	250	nA
Input Offset Current	I_{OS}			2	50	nA
Input Voltage Range	V_{CM}			-0.1		V
				4.2		V
Voltage Gain	A_V		20	50		V/mV
Saturation Voltage	V_{SAT}	I_{sink}≤4mA		200	400	mV
Output Sink Current	I_O	V_O≤1.5V	10	84		mA
Supply Current	I_S			60	120	μA
Output Leakage Current				0.003	1	μA

■ 5V AC ELECTRICAL CHARACTERISTICS (T_J=25°C, V_{CC}=5V, R_L=5.1kΩ, V−=0V.)

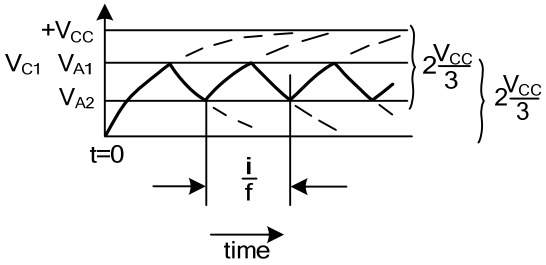
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP (Note 2)	MAX	UNIT
Propagation Delay (High to Low)	t_{PHL}	Input Overdrive=10mV		12		μs
		Input Overdrive=100mV		3		μs
Propagation Delay (Low to High)	t_{PLH}	Input Overdrive=10mV		1		μs
		Input Overdrive=100mV		0.5		μs

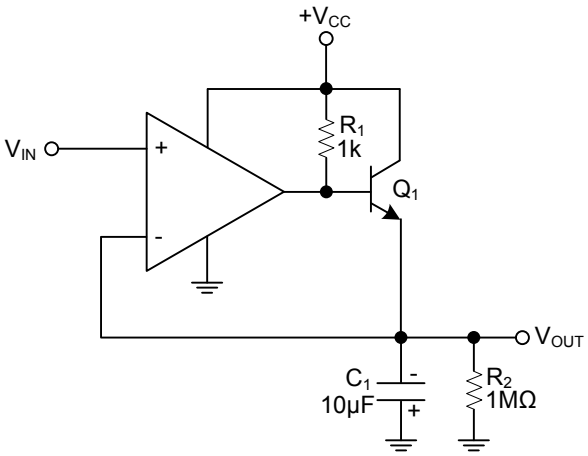
Notes: 1. Typical Values represent the most likely parametric norm.
2. All limits are guaranteed by testing or statistical analysis.

■ TYPICAL APPLICATION CIRCUIT



Squarewave Oscillator



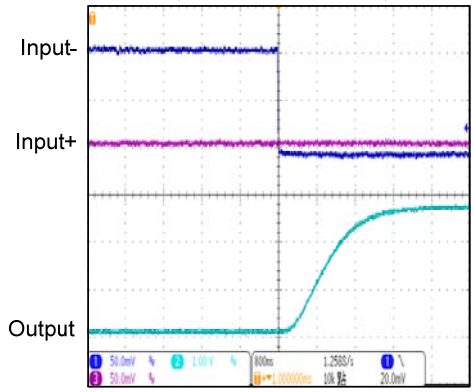


Positive Peak Detector

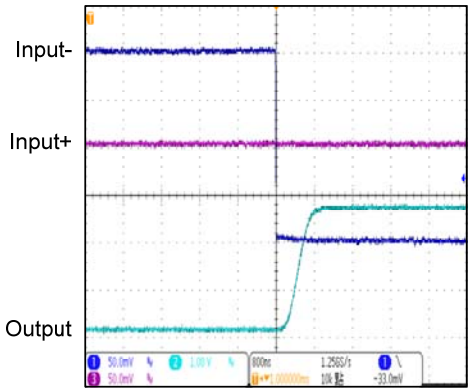
■ TYPICAL CHARACTERISTICS

t_{PLH}

Input Overdrive=10mV
(V_{CC}=2.7V, R_L=5.1KΩ)

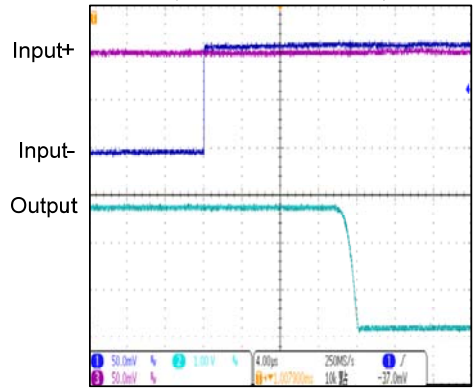


Input Overdrive=100mV
(V_{CC}=2.7V, R_L=5.1KΩ)

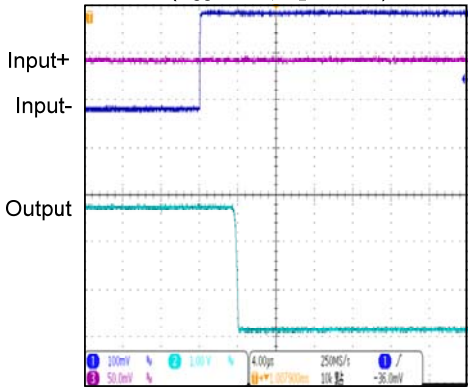


t_{PHL}

Input Overdrive=10mV
(V_{CC}=2.7V, R_L=5.1KΩ)



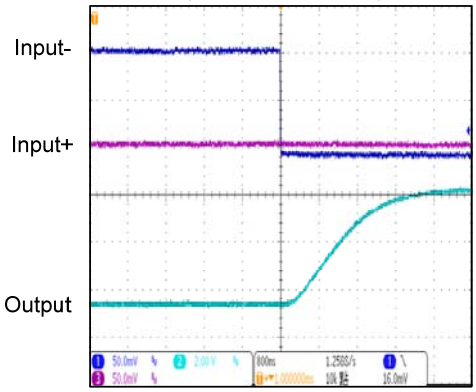
Input Overdrive=100mV
(V_{CC}=2.7V, R_L=5.1KΩ)



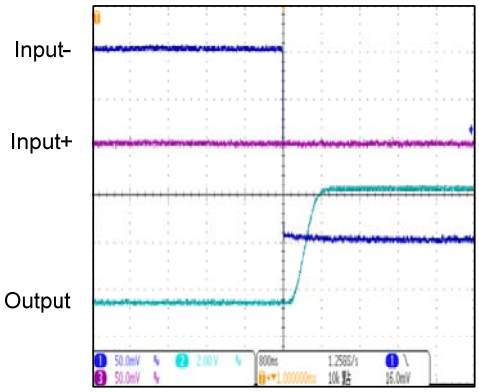
■ TYPICAL CHARACTERISTICS (Cont.)

t_{PLH}

Input Overdrive=10mV
(V_{CC}=5V, R_L=5.1KΩ)

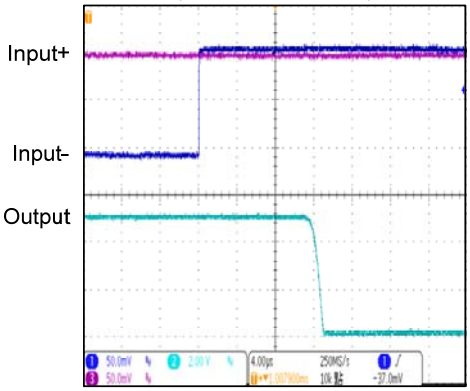


Input Overdrive=100mV
(V_{CC}=5V, R_L=5.1KΩ)



t_{PHL}

Input Overdrive=10mV
(V_{CC}=5V, R_L=5.1KΩ)



Input Overdrive=100mV
(V_{CC}=5V, R_L=5.1KΩ)