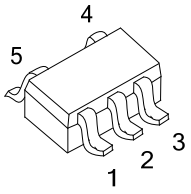
LMV331 **Preliminary** ***LINEAR INTEGRATED CIRCUIT***

SINGLE GENERAL PURPOSE, LOW VOLTAGE, SMALL PACK COMPARATORS



SOT-23-5
(SOT-25)

■ 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

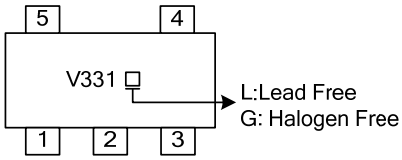
* Low operating voltage 2.7-5V.
* Industrial temperature range (−40˚C~+85˚C)
* Low supply current 60μA
* Input common mode voltage range includes ground
* Low output saturation voltage 0.2V

■ ORDERING INFORMATION

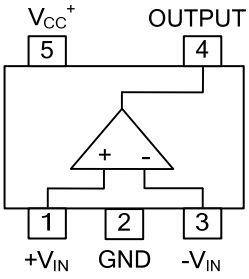
Ordering Number		Package	Packing
Lead Free Plating	Halogen Free		
LMV331L-AE5-R	LMV331G-AE5-R	SOT-23-5	Tape Reel

LMV331L-AE5-R (1)Packing Type (2)Package Type (3)Lead Free	(1) R: Tape Reel (2) AE5: SOT-23-5 (3) L: Lead Free, G: Halogen Free

■ MARKING



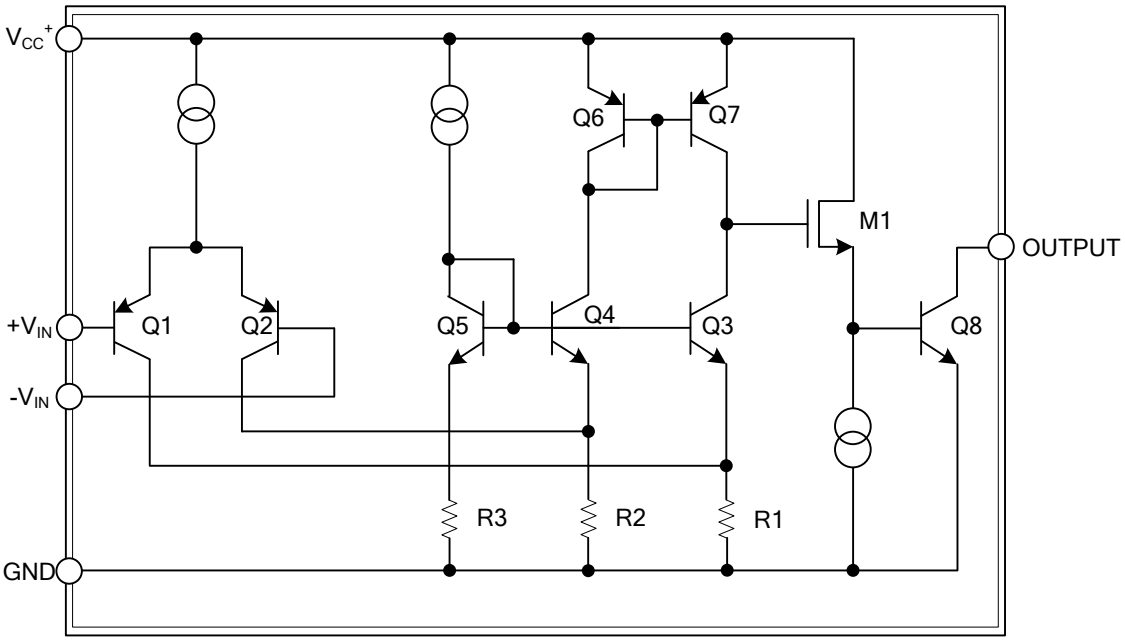
■ PIN CONFIGURATION



■ 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}	2.7~5.5	V
Differential Input Voltage		$V_{IN(DIFF)}$	$\pm V_{CC}$	V
Voltage on Any Pin (Referred to GND pin)			5.5	V
Soldering Information	Infrared or Convection (20 sec)		235	°C
Junction Temperature (Note 1)		T_J	150	°C
Operating Temperature		T_{OPR}	-40~+85	°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 (Note1)

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	265	°C/W

■ 2.7V DC ELECTRICAL CHARACTERISTICS

(All limits guaranteed for T_J=25°C, V+=2.7V, V−=0V, unless otherwise specified. Boldface limits apply at the temperature extremes.)

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+=2.7V, 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		1000		ns
		Input Overdrive=100mV		350		ns
Propagation Delay (Low to High)	t_{PLH}	Input Overdrive=10mV		500		ns
		Input Overdrive=100mV		400		ns

■ 5V DC ELECTRICAL CHARACTERISTICS

(All limits guaranteed for T_J=25°C, V+=5V, V−=0V, Unless otherwise specified. Boldface limits apply at the temperature extremes.)

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

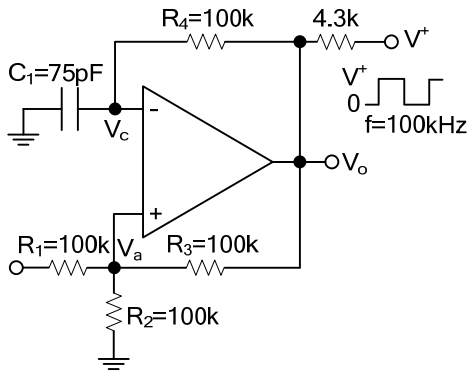
■ 5V AC ELECTRICAL CHARACTERISTICS (T_J=25°C, V+=5V, R_L=5.1kΩ, V−=0V.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP (Note 2)	MAX	UNIT
Propagation Delay (High to Low)	t_{PHL}	Input Overdrive=10mV		600		ns
		Input Overdrive=100mV		200		ns
Propagation Delay (Low to High)	t_{PLH}	Input Overdrive=10mV		450		ns
		Input Overdrive=100mV		300		ns

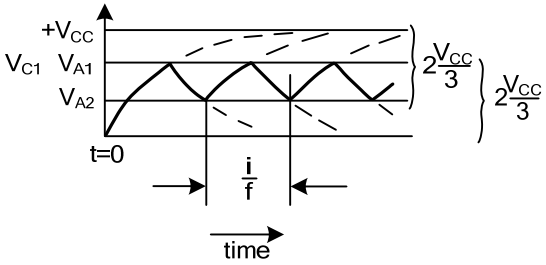
Notes: 1. The maximum power dissipation is a function of $T_{J(max)}$, θ_{JA}, and T_A. The maximum allowable power dissipation at any ambient temperature is $P_D=(T_{J(max)}-T_A)/\theta_{JA}$. All numbers apply for packages soldered directly into a PC board.

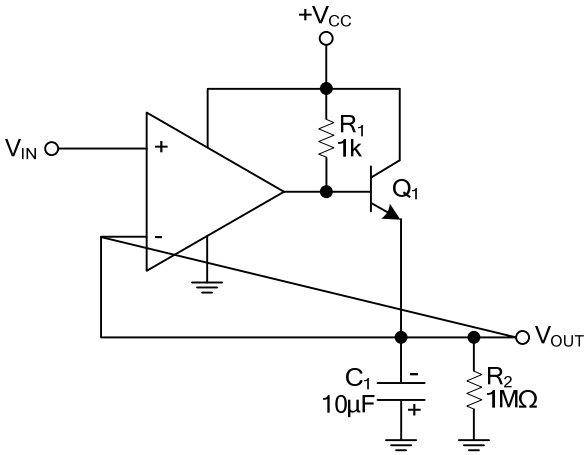
2. Typical Values represent the most likely parametric norm.
3. All limits are guaranteed by testing or statistical analysis.

■ TYPICAL APPLICATION CIRCUIT



Squarewave Oscillator





Positive Peak Detector