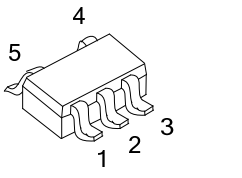
ULV3211

CMOS IC

RAIL TO RAIL I/O, HIGH-SLEW-RATE OP AMP



SOT-25

■ DESCRIPTION

The UTC **ULV3211** is an input/output rail-to-rail operational amplifier. This device can be operated on either a single supply varying from +3V to +5.5V or dual supply ranging from ±1.5V to ±2.75V.

The UTC **ULV3211** has a perfect AC performance with 6.5MHz bandwidth, 5.23V/μs slew rate.

The supply current for each amplifier of the UTC **ULV3211** is only 500μA that makes it suitable for low current consumption applications to control high current loads. Applications include audio amplification for computers, sound ports, sound cards and set-top boxes.

The UTC **ULV3211** is generally applied in portable equipment, headphone driver, multimedia audio, battery-powered equipment, ASIC input or output amplifier, sensor amplifier, and low power/low voltage device.

■ FEATURES

* Single-Supply Operation: +3V ~ +5.5V
* Input / Output Rail-to-Rail
* Low Quiescent Current: 500μA @ 5V
* With Low Input Current
* 5.23V/μs High Slew Rate
* High Output Driving Capacity
* 6.5MHz High Gain-Bandwidth Product
* 70dB High PSRR

■ ORDERING INFORMATION

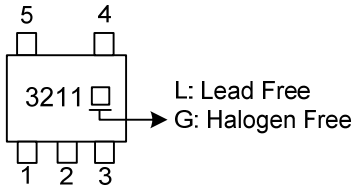
Ordering Number		Package	Packing
Lead Free	Halogen Free		
ULV3211L-AF5-R	ULV3211G-AF5-R	SOT-25	Tape Reel

ULV3211G-AF5-R

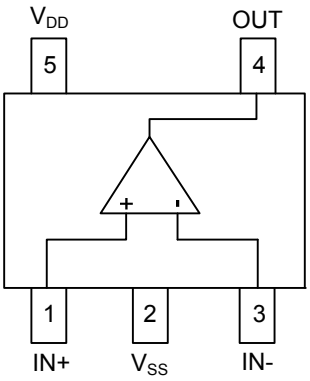
(1)Packing Type
(2)Package Type
(3)Green Package

(1) R: Tape Reel
(2) AF5: SOT-25
(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



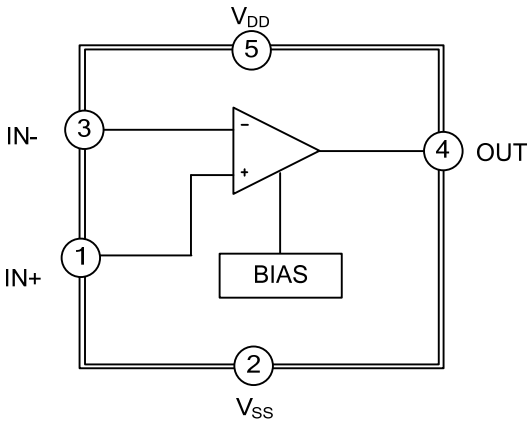
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	IN+	Positive differential input
2	V_{SS}	Ground
3	IN-	Negative differential input
4	OUT	Output
5	V_{DD}	Positive analog supply of the cell

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
All Other Pins		V_{SS}-0.3 ~ V_{DD}+0.3	V
Supply Voltage	V_{DD} ~ V_{SS}	6.5	V
Power Dissipation (T_A=25°C)	P_D	520	mW
Junction Temperature	T_J	+150	°C
Operating Temperature	T_{OPR}	-40 ~ +85	°C
Storage Temperature	T_{STG}	-65 ~ +160	°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 DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	240	°C/W

■ ELECTRICAL CHARACTERISTICS

(V_{DD}=5V, V_{SS}=0V, T_A=25°C, C_L=10pF, R_L=1kΩ~V_{DD}/2, unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supplies						
Supply Voltage Range (Note)	V_{DD}		3.0		5.5	V
Supply Current	I_{DD}	No load		0.5	0.7	mA
Total Power Dissipation	P_{TOT}	No load		0.25	0.35	mW
DC Characteristics						
Input Offset Voltage	$V_{I(OS)}$			±1.5	±10	mV
Common Mode Voltage	V_{CM}	Inferred from CMRR test	0		5	V
Input Bias Current	I_B			±1.5	±20	nA
Input Bias Current Offset	I_{OS}			±1.5	±20	nA
Input Resistance	R_{IN}			1000		MΩ
Open Loop Gain	A_V		68	78		dB
Maximum Output Current	I_O	V_{OUT}=±V_{IN}x 90%	55	±66		mA
Output Voltage Swing High	V_{OH}	R_L=2kΩ	4.96	4.99		V
Output Voltage Swing Low	V_{OL}	R_L=2kΩ		0.012	0.04	V
Power Supply Rejection Ratio	PSRR	3V≤V_{DD}≤5.5V	45	70		dB
Common-Mode Rejection Ratio	CMRR	V_{SS}≤V_{CM}≤V_{DD}	45	65		dB
AC Characteristics						
Gain-Bandwidth Product	GBWP	Open-loop, No load		6.5		MH_Z
Slew-Rate	SR	Measured from 10%~90% of 4V_{P-P} step, R_L=1kΩ, C_L=10pF		5.23		V/μs
Phase Margin	PM			60		deg
Maximum Output Power	I_O	THD<0.1%, R_L=16Ω		100		mA

Note: Guaranteed by the Power-Supply Rejection Ratio (PSRR) test.

■ TYPICAL APPLICATION CIRCUIT