

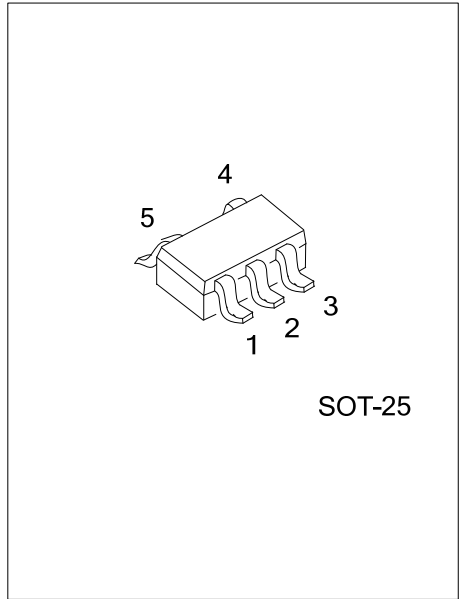


ULV7211

Preliminary

CMOS IC

CMOS COMPARATORS WITH RAIL-TO-RAIL INPUT AND PUSH-PULL OUTPUT



DESCRIPTION

The UTC **ULV7211** is micropower CMOS comparator available in the space-saving SOT-25 package.

The UTC **ULV7211** features an input offset voltage of 15mV.

The rail-to-rail input voltage makes the UTC **ULV7211** a good choice for sensor interfacing, such as light detector circuits, optical and magnetic sensors, and alarm and status circuits.

The main benefit of the SOT-25 package is most apparent in small portable electronic devices, such as mobile phones, pagers, notebook computers, personal digital assistants, and PCMCIA cards.

FEATURES

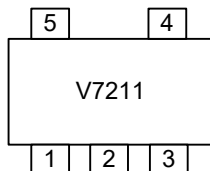
- * Supply Voltage: 2.7~15V
- * Supply Current/Amplifier: 25 μ A (Max.)
- * Input Offset Voltage: 15mV (Max.)
- * Rail-to-Rail Input

ORDERING INFORMATION

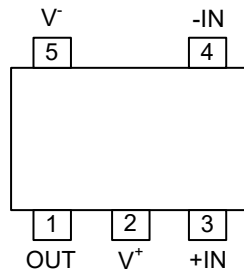
Ordering Number		Package	Packing
Lead Free	Halogen Free		
ULV7211L-AF5-R	ULV7211G-AF5-R	SOT-25	Tape Reel

<p>ULV7211G-AF5-R</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) R: Tape Reel (2) AF5: SOT-25 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING



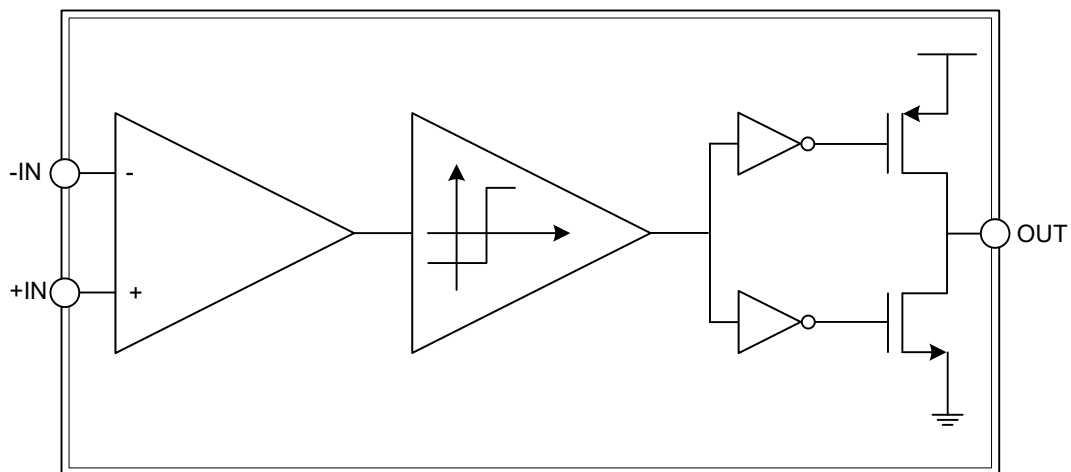
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	OUT	Output
2	V ⁺	Positive power supply
3	+IN	Non-inverting Input
4	-IN	Inverting Input
5	V ⁻	Negative power supply

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING (Unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage ($V^+ - V^-$)		16	V
Differential Input Voltage (Note 3)	V_{ID}	Supply Voltage	V
Input Voltage Range (Any Input)	V_I	$V^- - 0.3 \sim V^+ + 0.3$	V
Output Voltage Range	V_O	$V^- - 0.3 \sim V^+ + 0.3$	V
Supply Current	I_{CC}	40	mA
Input Current	I_I	± 5	mA
Output Current Range	I_O	± 30	mA
Junction Temperature	T_J	+150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-65 ~ +150	$^{\circ}\text{C}$

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. All voltage values (except differential voltages and V_{CC} specified for the measurement of I_{OS}) are with respect to the network GND

3. Differential voltages are at $IN+$ with respect to $IN-$.

■ RECOMMENDED OPERATING CONDITIONS ($T_A=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Supply Voltage	$V^+ - V^-$	2.7		15	V
Operating Free-Air Temperature	T_{OPR}	-40		+85	$^{\circ}\text{C}$

■ ELECTRICAL CHARACTERISTICS

($V^+=2.7\sim 15\text{V}$, $V^-=\text{GND}$, $V_{CM}=V_O=V^+/2$ and $R_L > 1\text{M}\Omega$, $T_A=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT		
Supply Current/Amplifier	I_Q	$V_{OUT}=\text{Low}$		17	25	μA		
		$V_{OUT}=\text{High-Idle}$		13	22	μA		
Power-Supply Rejection Ratio	PSRR	$5\text{V} \leq V^+ \leq 10\text{V}$		80		dB		
Input Offset Voltage	V_{OS}			3	15	mV		
Input Current	I_B			0.04		pA		
Input Offset Current	I_{OS}			0.02		pA		
Common-Mode Voltage Range	V_{CM}	CMRR>55dB	-0.2		$V^+ + 0.2$	V		
Common-Mode Rejection Ratio	CMRR			75		dB		
Voltage Gain	A_V			90		dB		
Output Voltage	V_O	$V^+=2.7\text{V}$, $I_{LOAD}=2.5\text{mA}$	V_{OH}	2.4	2.5		V	
			V_{OL}		0.2	0.3		V
		$V^+=5\text{V}$, 15V , $I_{LOAD}=5\text{mA}$	V_{OH}	$V^+ - 0.4$	$V^+ - 0.2$			V
			V_{OL}		0.2	0.4		V
Short-Circuit Current	I_{SC}	$V^+=5\text{V}$, 15V , Sourcing, $V_O=V^-$		30			mA	
		$V^+=5\text{V}$, 15V , Sinking, $V_O < 12\text{V}$ (Note)		45			mA	

Note: Do not short circuit the output to V^+ if V^+ is $> 12\text{V}$

■ SWITCHING CHARACTERISTICS

($V^+=5V$, $V^-=GND$, $V_{CM}=V_O=V^+/2$ and $R_L > 1M\Omega$, $T_A=25^\circ C$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Rise Time	t_{rise}	$f=10kHz$, $C_L=50pF$ (Note 1), Overdrive=10mV		0.3		μs
Fall Time	t_{fall}	$f=10kHz$, $C_L=50pF$ (Note 1), Overdrive=10mV		0.3		μs
Propagation Delay Time, High to Low (Note 2)	t_{PHL}	$f=10kHz$, $C_L=50pF$ (Note 1)	10mV	10		μs
			100mV	4		μs
		$V^+=2.7V$, $f=10kHz$, $C_L=50pF$ (Note 1)	10mV	10		μs
			100mV	4		μs
Propagation Delay Time, Low to High (Note 2)	t_{PLH}	$f=10kHz$, $C_L=50pF$ (Note 1)	10mV	6		μs
			100mV	4		μs
		$V^+=2.7V$, $f=10kHz$, $C_L=50pF$ (Note 1)	10mV	7		μs
			100mV	4		μs

Notes: 1. C_L includes probe and jig capacitance.

2. Input step voltage for propagation delay measurement is 2V.

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