

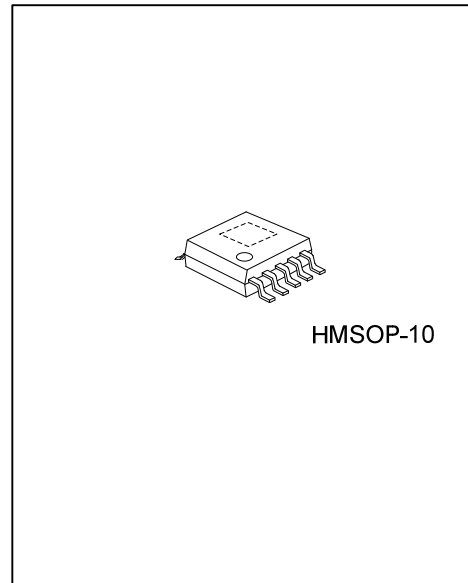


## ALDR605

Advance

CMOS IC

### CAPLESS 2Vrms AUDIO LINE DRIVER WITH ADJUSTABLE GAIN



#### DESCRIPTION

The UTC **ALDR605** is a 2Vrms pop/click-free stereo line driver designed to allow the removal of the output DC-blocking capacitors for reduced component count and cost. The device is ideal for single supply electronics where size and cost are critical design parameters.

The UTC **ALDR605** is capable of driving 2Vrms into a 2.5kΩ load with 3.3V supply voltage. The device has single input and uses external gain setting resistors that supports a gain range of ±1V/V to ±10V/V. The **ALDR605** has build-in shutdown control for pop/click-free on/off control.

#### FEATURES

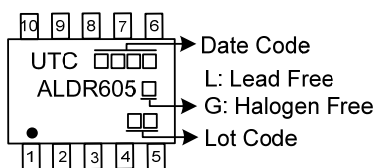
- \* Integrated Charge pump generates negative supply rail
- \* Provides flat frequency response from DC to 20kHz
- \* Pop-Free under-voltage protection
- \* Low noise and THD  
Typical THD+N = 0.001% (f = 1kHz)
- \* 2Vrms output voltage into 2.5kΩ load with 3.3V supply voltage
- \* -40°C to +85°C operating temperature range

#### ORDERING INFORMATION

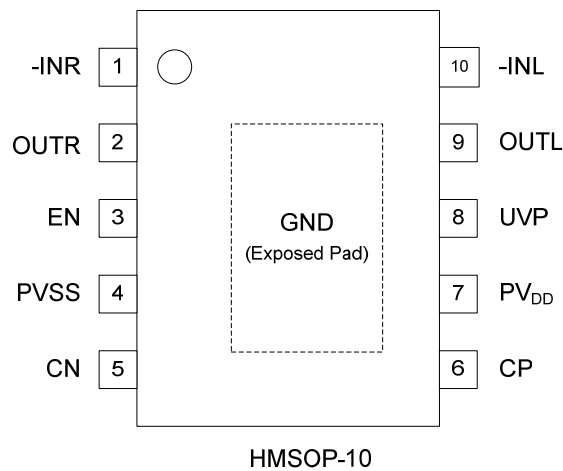
Ordering Number		Package	Packing
Lead Free	Halogen Free		
ALDR605L-HM2-R	ALDR605G-HM2-R	HMSOP-10	Tape Reel

<p>ALDR605G-HM2-R</p> <ul style="list-style-type: none"> <li>(1) Packing Type</li> <li>(2) Package Type</li> <li>(3) Green Package</li> </ul>	<ul style="list-style-type: none"> <li>(1) R: Tape Reel</li> <li>(2) HM2: HMSOP-10</li> <li>(3) G: Halogen Free and Lead Free, L: Lead Free</li> </ul>
---	--

#### MARKING



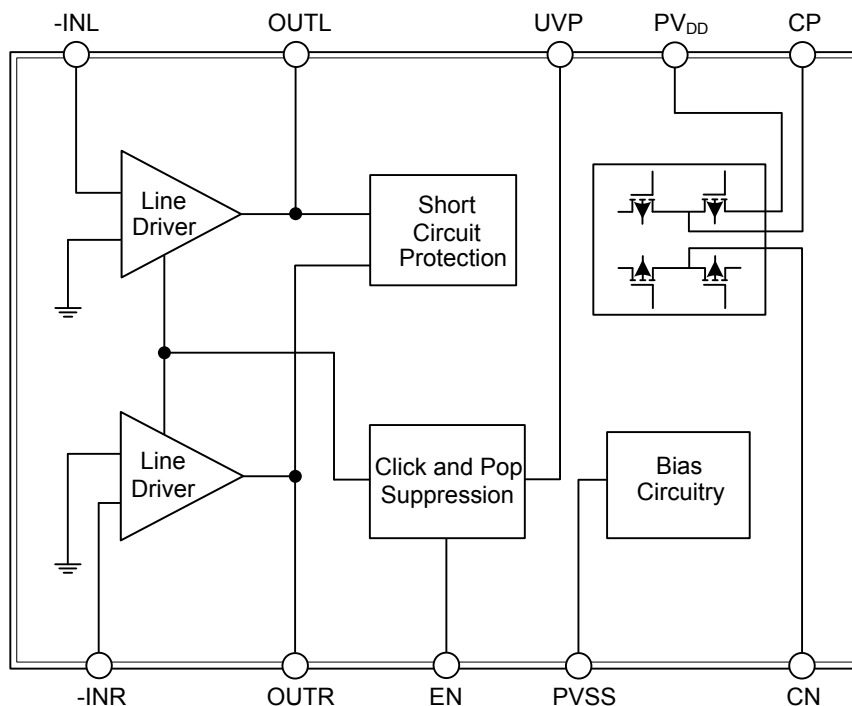
### ■ PIN CONFIGURATION



### ■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	-INR	Right Channel OPAMP Negative Input.
2	OTR	Right Channel OPAMP Output.
3	EN	Enable Input. Active high.
4	PVSS	Negative Supply Voltage Output.
5	CN	Charge Pump Flying Capacitor Negative Terminal.
6	CP	Charge Pump Flying Capacitor Positive Terminal.
7	PV <sub>DD</sub>	Positive Supply.
8	UVP	Under-Voltage Protection Input.
9	OUTL	Left Channel OPAMP Output.
10	-INL	Left Channel OPAMP Negative Input.
Exposed Pad	GND	Exposed Paddle. Can only be connected to GND.

### ■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING ( $T_A=25^{\circ}\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage		-0.3 ~ 5.5	V
Input Voltage		$V_{SS} - 0.3 \sim V_{DD} + 0.3$	V
Minimum Load Impedance	$R_L$	600	$\Omega$
EN to GND		-0.3 ~ $V_{DD} + 0.3$	V
Junction Temperature	$T_J$	+150	$^{\circ}\text{C}$
Storage Temperature	$T_{STG}$	-65 ~ +150	$^{\circ}\text{C}$

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.

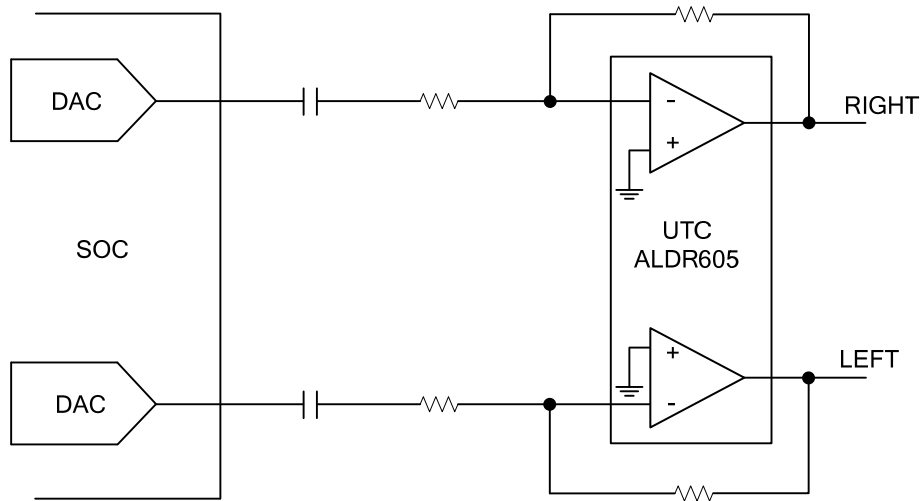
■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage		3 ~ 3.6	V
Operating Temperature		-40 ~ +85	$^{\circ}\text{C}$

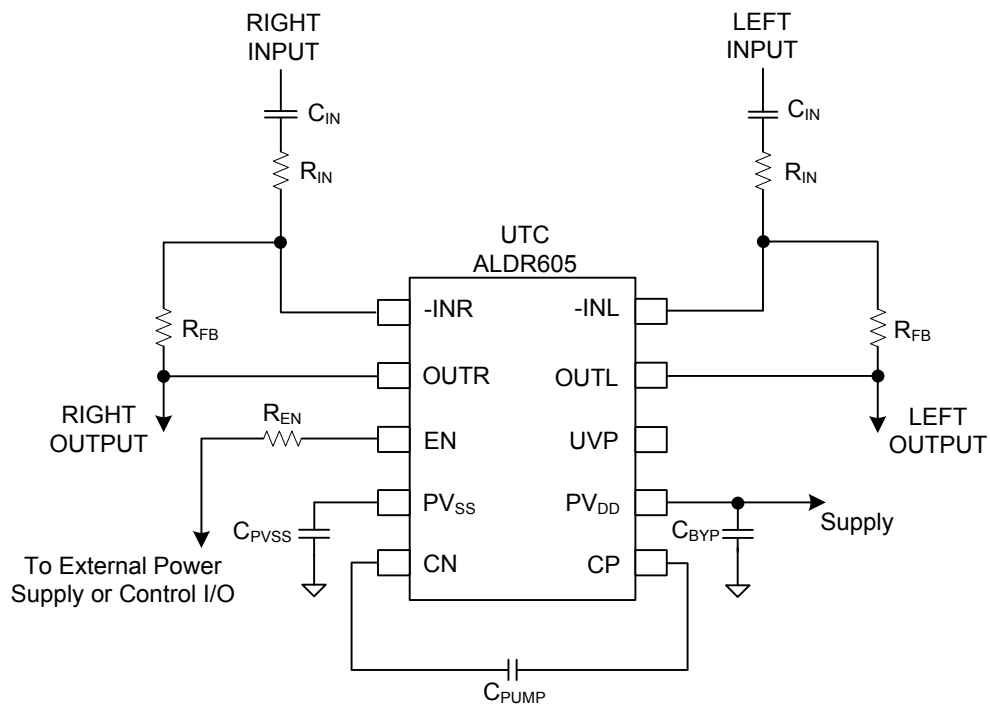
■ ELECTRICAL CHARACTERISTICS ( $T_A=25^{\circ}\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>ELECTRICAL CHARACTERISTICS</b>						
DC Supply Voltage	$V_{DD}$		3		3.6	V
Output Offset Voltage	$ V_{OS} $	$V_{DD}=3.3\text{V}$		1	5.5	mV
Power Supply Rejection Ratio	PSRR	$V_{DD}=3.3\text{V}$		97		dB
High-Level Output Voltage	$V_{OH}$	$V_{DD}=3.3\text{V}, R_L=2.5\text{k}\Omega$	3.1			V
Low-Level Output Voltage	$V_{OL}$	$V_{DD}=3.3\text{V}, R_L=2.5\text{k}\Omega$			-3.0	V
High-Level Input Current (EN)	$ I_{IH} $	$V_{DD}=3.3\text{V}, V_I=V_{DD}$			1	$\mu\text{A}$
Low-Level Input Current (EN)	$ I_{IL} $	$V_{DD}=3.3\text{V}, V_I=0\text{V}$			1	$\mu\text{A}$
Supply Current	$I_{DD}$	$V_{DD}=3.3\text{V}, \text{Noload}, \text{EN}=V_{DD}$		10.8	14.5	mA
		Shutdownmode, $V_{DD}=3\text{V to }5\text{V}$		0.13	0.25	mA
<b>OPERATING CHARACTERISTICS</b> ( $V_{DD}=3.3\text{V}, R_L=2.5\text{k}\Omega, C_{PUMP}=C_{PVSS}=1\mu\text{F}, C_{IN}=10\mu\text{F}, R_{IN}=10\text{k}\Omega, R_{FB}=20\text{k}\Omega$ .)						
Output Voltage (Outputs In Phase)	$V_O$	THD=1%, $V_{DD}=3.3\text{V}, f=1\text{kHz}$	2.05			Vrms
Total Harmonic Distortion Plus Noise	THD+N	$V_O=2\text{Vrms}, f=1\text{kHz}$		0.001		%
Crosstalk		$V_O=2\text{Vrms}, f=1\text{kHz}$		103		dB
Output Current Limit	$I_O$	$V_{DD}=3.3\text{V}$		20		mA
Input Resistor Range	$R_{IN}$			10		k $\Omega$
Feedback Resistor Range	$R_{FB}$			20		k $\Omega$
Slew Rate				10		V/ $\mu\text{s}$
Maximum Capacitive Load				220		pF
Noise Output Voltage	$V_N$	A-weighted, BW=20kHz		5.4		$\mu\text{Vrms}$
Signal to Noise Ratio	SNR	A-weighted, $V_O=2\text{Vrms}, \text{BW}=20\text{kHz}$		108		dB
Unity Gain Bandwidth	$G_{BW}$			8		MHz
Open-Loop Voltage Gain	$A_{VO}$			100		dB
Charge Pump Frequency	$F_{CP}$		310	450	580	kHz
External Under-Voltage Detection	$V_{UVP}$		1.00	1.13	1.25	V
External Under-Voltage Detection Hysteresis Current	$I_{Hys}$			4.8		$\mu\text{A}$
<b>EN PIN</b>						
Input High Voltage	$V_{INH}$	EN	1.2			V
Input Low Voltage	$V_{INL}$	EN			0.3	V

■ TYPICAL OPERATION CIRCUIT



■ TYPICAL APPLICATION CIRCUIT



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. UTC reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.