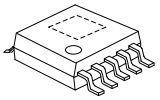
CAPLESS 2Vrms AUDIO LINE DRIVER WITH ADJUSTABLE GAIN



HMSOP-10

■ 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

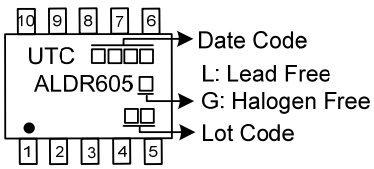
* Integrated Charge pump generates negative supply rail
* Provides flat frequency response from DC to 20kHz
* Pop-Free under-voltage protection
* Low noise and THD
  Typical THD+N = 0.001% (f =1kHz)
* 2Vrms output voltage into 2.5kΩ load with 3.3V supply voltage
* -40°C to +85°C operating temperature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

■ ORDERING INFORMATION

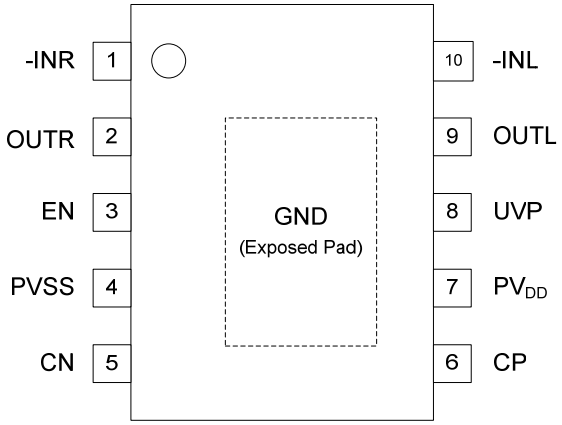
Ordering Number		Package	Packing
Lead Free	Halogen Free		
ALDR605L-HM2-R	ALDR605G-HM2-R	HMSOP-10	Tape Reel

ALDR605G-HM2-R (1) Packing Type (2) Package Type (3) Green Package	(1) R: Tape Reel (2) HM2: HMSOP-10 (3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



■ PIN CONFIGURATION



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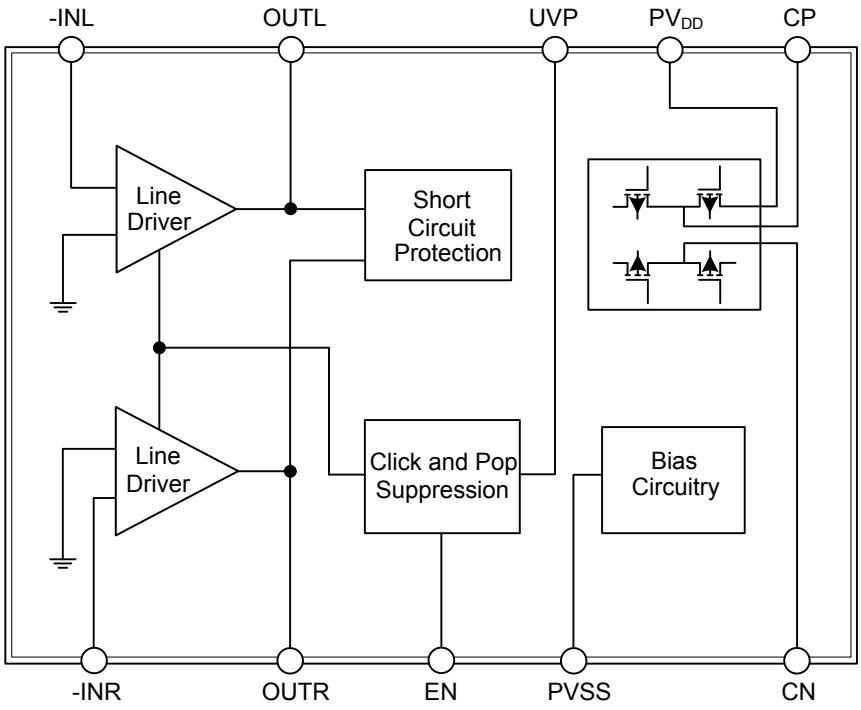
■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	-INR	Right Channel OPAMP Negative Input.
2	OUTR	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_{DD}	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°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage		-0.3 ~ 5.5	V
Input Voltage		V_{SS} - 0.3 ~ V_{DD} + 0.3	V
Minimum Load Impedance	R_L	600	Ω
EN to GND		-0.3 ~ V_{DD} + 0.3	V
Junction Temperature	T_J	+150	°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.

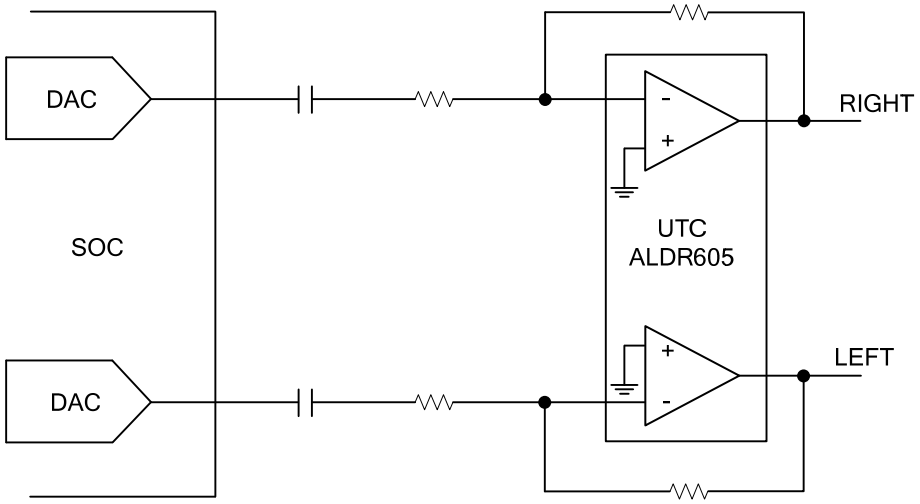
■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage		3 ~ 3.6	V
Operating Temperature		-40 ~ +85	°C

■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
ELECTRICAL CHARACTERISTICS						
DC Supply Voltage	V_{DD}		3		3.6	V
Output Offset Voltage	$\|V_{OS}\|$	V_{DD}=3.3V		1	5.5	mV
Power Supply Rejection Ratio	PSRR	V_{DD}=3.3V		97		dB
High-Level Output Voltage	V_{OH}	V_{DD}=3.3V, R_L=2.5kΩ	3.1			V
Low-Level Output Voltage	V_{OL}	V_{DD}=3.3V, R_L=2.5kΩ			-3.0	V
High-Level Input Current (EN)	$\|I_{IH}\|$	V_{DD}=3.3V, V_I=V_{DD}			1	μA
Low-Level Input Current (EN)	$\|I_{IL}\|$	V_{DD}=3.3V, V_I=0V			1	μA
Supply Current	I_{DD}	V_{DD}=3.3V, Noload, EN=V_{DD}		10.8	14.5	mA
		Shutdownmode, V_{DD}=3V to 5V		0.13	0.25	mA
OPERATING CHARACTERISTICS (V_{DD}=3.3V, R_L=2.5kΩ, C_{PUMP}=C_{PVSS}=1μF, C_{IN}=10μF, R_{IN}=10kΩ, R_{FB}=20kΩ.)						
Output Voltage (Outputs In Phase)	V_O	THD=1%, V_{DD}=3.3V, f=1kHz	2.05			Vrms
Total Harmonic Distortion Plus Noise	THD+N	V_O=2Vrms, f=1kHz		0.001		%
Crosstalk		V_O=2Vrms, f=1kHz		103		dB
Output Current Limit	I_O	V_{DD}=3.3V		20		mA
Input Resistor Range	R_{IN}			10		kΩ
Feedback Resistor Range	R_{FB}			20		kΩ
Slew Rate				10		V/μs
Maximum Capacitive Load				220		pF
Noise Output Voltage	V_N	A-weighted, BW=20kHz		5.4		μVrms
Signal to Noise Ratio	SNR	A-weighted, V_O=2Vrms, BW=20kHz		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		μA
EN PIN						
Input High Voltage	V_{INH}	EN	1.2			V
Input Low Voltage	V_{INL}	EN			0.3	V

■ TYPICAL OPERATION CIRCUIT



■ TYPICAL APPLICATION CIRCUIT