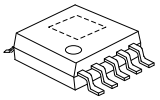
CAPLESS 2 V_{RMS} TO 3 V_{RMS} LINE DRIVER WITH ADJUSTABLE GAIN



HMSOP-10

■ DESCRIPTION

The UTC **ALDR8905** is a $2V_{RMS}$ to $3V_{RMS}$ 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 **ALDR8905** is capable of driving $2V_{RMS}$ 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 **ALDR8905** has build-in shutdown control for pop/click-free on/off control.

■ FEATURES

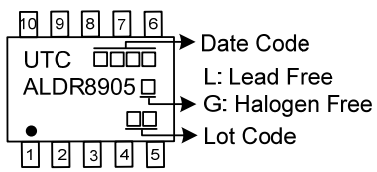
* Integrated Charge pump generates negative supply rail
* Provides flat frequency response from DC to 20kHz
* Pop-Free under-voltage protection
* Low noise and THD
  Typical THD+N = 0.001% (f =1kHz)
* $2V_{RMS}$ output voltage into 2.5kΩ load with 3.3V supply voltage
* $3V_{RMS}$ output voltage into 2.5kΩ load with 5V supply voltage

■ ORDERING INFORMATION

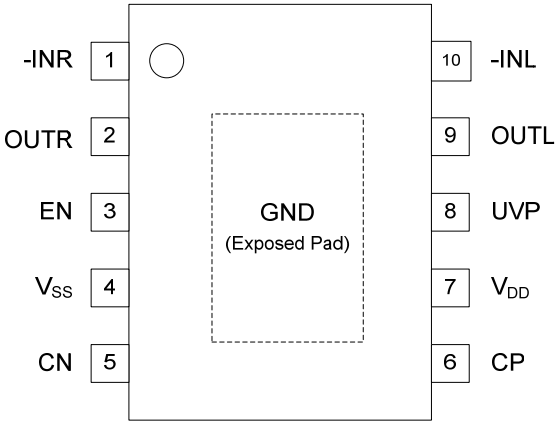
Ordering Number		Package	Packing
Lead Free	Halogen Free		
ALDR8905L-HM2-R	ALDR8905G-HM2-R	HMSOP-10	Tape Reel

ALDR8905G-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



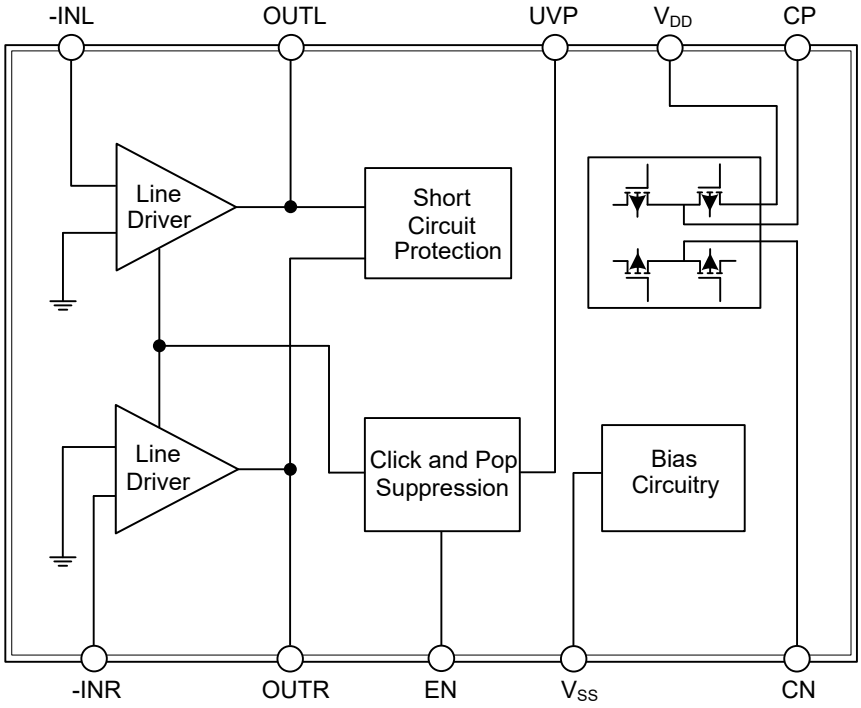
■ PIN CONFIGURATION



■ 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	V_{SS}	Negative Supply Voltage
5	CN	Charge Pump Flying Capacitor Negative Terminal
6	CP	Charge Pump Flying Capacitor Positive Terminal
7	V_{DD}	Positive Supply Voltage
8	UVP	Under-Voltage Protection Input
9	OUTL	Left Channel OPAMP Output
10	-INL	Left Channel OPAMP Negative Input
Exposed Pad	GND	Exposed Pad. Can only be connected to GND

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{DD}	-0.3 ~ 6	V
Input Voltage	V_{IN}	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
Lead Temperature (Soldering, 10s)		+260	°C
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.

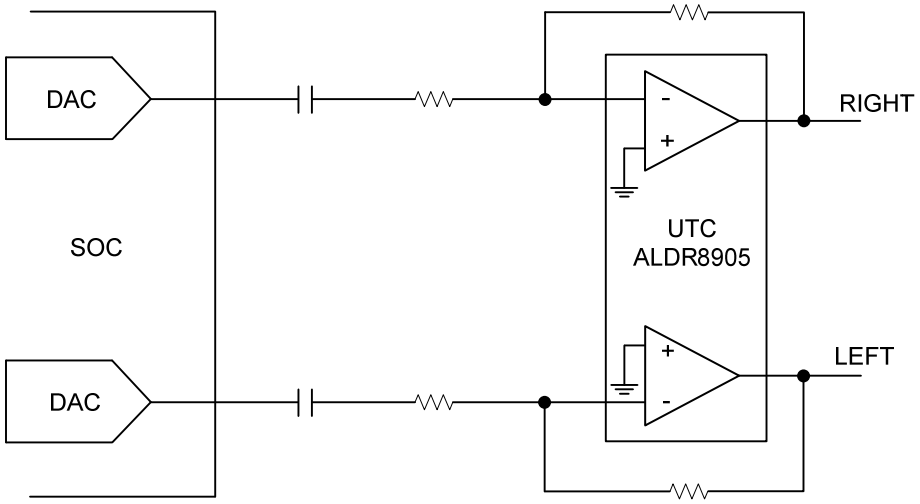
■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{DD}	3 ~ 5.5	V
Operating Temperature	T_A	-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		5.5	V
Output Offset Voltage	$\|V_{OS}\|$	V_{DD}=3~5V	-5.5		5.5	mV
Power Supply Rejection Ratio	PSRR	V_{DD}=3~5V		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			-3.05	V
High-Level Input Current (EN)	$\|I_{IH}\|$	V_{DD}=5V, V_I=V_{DD}			1	μA
Low-Level Input Current (EN)	$\|I_{IL}\|$	V_{DD}=5V, V_I=0V			1	μA
Supply Current	I_{DD}	V_{DD}=3.3V, Noload, EN=V_{DD}		7	14.5	mA
		V_{DD}=5V, Noload, EN=V_{DD}		9.5	15.5	mA
		Shutdown mode, V_{DD}=3V to 5V		0.15	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			V_{RMS}
		THD=1%, V_{DD}=5V, f=1kHz	3.05			V_{RMS}
Total Harmonic Distortion Plus Noise	THD+N	V_O=2V_{RMS}, f=1kHz		0.001		%
Crosstalk	X_{TALK}	V_O=2V_{RMS}, 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	SR			10		V/μs
Maximum Capacitive Load	C_L			220		pF
Noise Output Voltage	V_N	A-weighted, BW=20kHz		5.4		$μV_{RMS}$
Signal to Noise Ratio	SNR	A-weighted, V_O=2V_{RMS}, BW=20kHz		108		dB
Unity Gain Bandwidth	G_{BW}			8		MHz
Open-Loop Voltage Gain	A_{VO}			100		dB
Charge Pump Frequency	F_{CP}		300		600	kHz
External Under-Voltage Detection	V_{UVP}		1	1.15	1.3	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