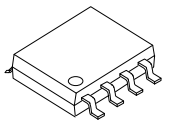
ZERO-DRIFT, SINGLE-SUPPLY, RAIL-TO-RAIL INPUT/OUTPUT CMOS OPERATIONAL AMPLIFIERS



SOP-8

■ DESCRIPTION

The UTC **ULV8551** has ultralow offset, drift, and bias current. The UTC **ULV8551** is single amplifiers featuring rail-to-rail input and output swings. Single supply as low as 2.7V and up to 5.5V may be used.

With an offset voltage of only 1μV. The UTC **ULV8551** is perfectly suited for applications in which error sources cannot be tolerated. Position and pressure sensors and strain gage amplifiers benefit greatly from nearly zero drift. The rail-to-rail input and output swings provided by the UTC **ULV8551** make both high-side and low-side sensing easy

■ FEATURES

* Single-supply operation: 2.7V ~ 5.5V
* Low Offset Voltage: 18μV (TYP) at +5V
* Rail-to-Rail Input and Output
* Slew Rate: 0.3V/μs

■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
ULV8551L-S08-R	ULV8551G-S08-R	SOP-8	Tape Reel

ULV8551G-S08-R

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

(1) R: Tape Reel
(2) S08: SOP-8
(3) G: Halogen Free and Lead Free, L: Lead Free

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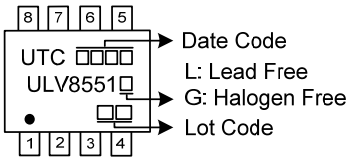
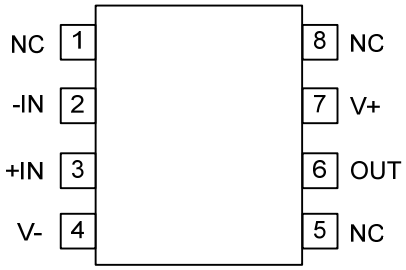
■ MARKING



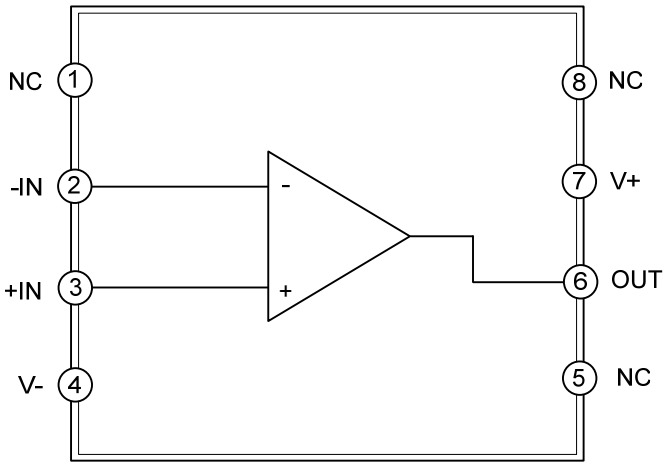
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1, 5, 8	NC	No connect
2	-IN	Inverting input pin of AMP
3	+IN	Non-inverting input of AMP
4	V-	Negative power supply
6	OUT	Output pin of A AMP
7	V+	Positive power supply

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage, V+ to V-	V_{CC}	6	V
Input Voltage	V_{IN}	(V-) - 0.1~ (V+) + 0.1	V
Differential Input Voltage	V_{ID}	±5.0	V
Junction Temperature	T_J	+150	°C
Operating Temperature Range	T_{OPR}	-40 ~ +125	°C
Storage Temperature Range	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.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	158	°C/W

■ ELECTRICAL CHARACTERISTICS

(T_A=25°C, Vs=5V, R_L=10kΩ connected to V_S/2, and V_{OUT}=V_S/2, unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
POWER SUPPLY						
Supply Current/Amplifier	I_Q	V_O=V_S/2		850	1000	μA
Power Supply Rejection Ratio	PSRR	V_S=2.7V~5V	100	110		dB
OFFSET VOLTAGE						
Offset Voltage	V_{OS}	V_{CM}=0V~5V		1	20	μV
Input Offset Voltage Drift	$\Delta V_{OS}/\Delta T$	-40°C ≤ T_A ≤ +125°C		10		nV/°C
INPUT CHARACTERISTICS						
Input Bias Current	I_B	V_{CM}=0V		10		pA
Input Offset Current	I_{OS}			20		pA
Common-Mode Voltage Range	V_{CM}		0		5	V
Common-Mode Rejection Ratio	CMRR	V_{CM}=0V~5V	100	120		dB
Large Signal Voltage Gain	A_V	R_L=10kΩ, V_O=0.3V~4.7V	80	100		dB
		-40°C ≤ T_A ≤ +125°C	75			dB
OUTPUT CHARACTERISTICS						
Output Voltage High	V_{OH}	R_L=100kΩ ~ V-	4.99	4.998		V
		R_L=10kΩ ~ V-	4.95	4.98		V
Output Voltage Low	V_{OL}	R_L=100kΩ ~ V+		1	10	mV
		R_L=10kΩ ~ V+		10	30	mV
Short-Circuit Current	I_{SC}		±25	±60		mA
DYNAMIC PERFORMANCE						
Slew Rate	SR	A_V =+1, R_L=10kΩ		0.3		V/μs
Gain Bandwidth Product	GBW	A_V =+100		1.2		MHz
NOISE PERFORMANCE						
Input Voltage Noise	$e_{n\ p-p}$	0Hz~10Hz		1.0		μV p-p
Input Voltage Noise Density	e_n	f=1kHz		42		nV/$\sqrt{Hz}$

■ ELECTRICAL CHARACTERISTICS

(T_A=25°C, Vs=2.7V, R_L=10kΩ connected to V_S/2, and V_{OUT}=V_S/2, unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
POWER SUPPLY						
Supply Current/Amplifier	I_Q	V_O=V_S/2		750	900	μA
Power Supply Rejection Ratio	PSRR	V_S=2.7V~5 V	100	110		dB
OFFSET VOLTAGE						
Offset Voltage	V_{OS}	V_{CM}=0V~2.7V		1	20	μV
Input Offset Voltage Drift	$\Delta V_{OS}/\Delta T$	-40°C ≤ T_A ≤ +125°C		10		nV/°C
INPUT CHARACTERISTICS						
Input Bias Current	I_B	V_{CM}=0V		10		pA
Input Offset Current	I_{OS}			10		pA
Common-Mode Voltage Range	V_{CM}		0		2.7	V
Common-Mode Rejection Ratio	CMRR	V_{CM}=0V~2.7V	100	120		dB
Large Signal Voltage Gain	A_V	R_L=10kΩ, V_O=0.3V~2.4V	70	90		dB
		-40°C ≤ T_A ≤ +125°C	65			dB
OUTPUT CHARACTERISTICS						
Output Voltage High	V_{OH}	R_L=100kΩ ~ V-	2.685	2.697		V
		R_L=10kΩ ~ V-	2.67	2.68		V
Output Voltage Low	V_{OL}	R_L=100kΩ ~ V+		1	10	mV
		R_L=10kΩ ~ V+		10	20	mV
Short-Circuit Current	I_{SC}		±10	±20		mA
DYNAMIC PERFORMANCE						
Slew Rate	SR	A_V =+1, R_L=10kΩ		0.4		V/μs
Gain Bandwidth Product	GBW	A_V =+100		1		MHz
NOISE PERFORMANCE						
Voltage Noise	$e_{n\ p-p}$	0Hz~10Hz		1.6		μV p-p
Voltage Noise Density	e_n	f=1kHz		75		nV/$\sqrt{Hz}$

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