



ULV8551XK

Preliminary

CMOS IC

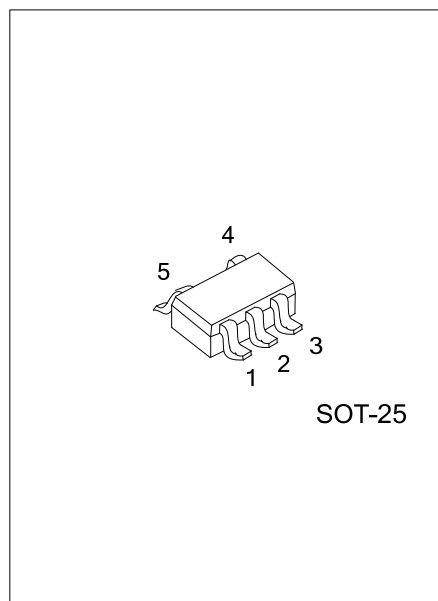
ZERO-DRIFT, SINGLE-SUPPLY, RAIL-TO-RAIL INPUT/OUTPUT CMOS OPERATIONAL AMPLIFIERS

■ DESCRIPTION

The UTC **ULV8551XK** has ultralow offset, drift, and bias current. The UTC **ULV8551XK** 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.

The combination of characteristics makes the UTC **ULV8551XK** good choices for temperature, position and pressure sensors, medical equipment and strain gauge amplifiers, or any other 2.7V to 5.5V application requiring precision and long term stability.

The UTC **ULV8551XK** is specified for the extended industrial and automotive temperature range (-40°C to +125°C).



■ FEATURES

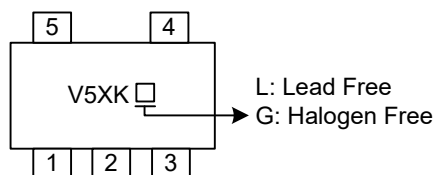
- * Single-supply operation: 2.7V ~ 5.5V
- * Low Offset Voltage: 18μV (TYP) at +5V
- * Rail-to-Rail Input and Output
- * Slew Rate: 2.0V/μs

■ ORDERING INFORMATION

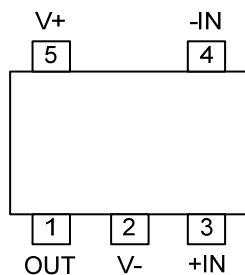
Ordering Number		Package	Packing
Lead Free	Halogen Free		
ULV8551XKL-AF5-R	ULV8551XKG-AF5-R	SOT-25	Tape Reel

ULV8551XKG-AF5-R	(1)Packing Type (2)Package Type (3)Green Package	(1) R: Tape Reel (2) AF5: SOT-25 (3) G: Halogen Free and Lead Free, L: Lead Free
------------------	--	--

MARKING



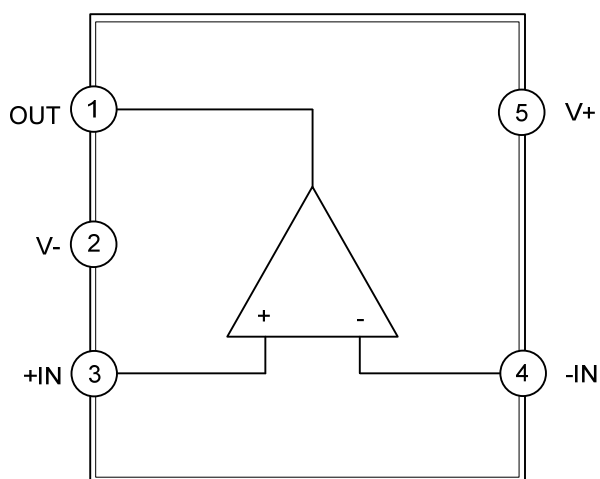
PIN CONFIGURATION



PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	OUT	Output pin of AMP
2	V-	Negative power supply
3	+IN	Non-inverting input of AMP
4	-IN	Inverting input pin of AMP
5	V+	Positive power supply

BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage, V+ to V-	V_{CC}	6.0	V
Input Voltage	V_{IN}	$(V_-) - 0.1 \sim (V_+) + 0.1$	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}	230	°C/W

■ ELECTRICAL CHARACTERISTICS

($T_A=25^\circ\text{C}$, $V_S=5\text{V}$, $R_L=10\text{k}\Omega$ connected to $V_S/2$, and $V_{OUT}=V_S/2$, unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
POWER SUOOLY						
Quiescent Current / Amplifier	I _Q	V _O =V _S /2		640	870	μA
Power Supply Rejection Ratio	PSRR	V _S =2.7V~5V	90	110		dB
OFFSET VOLTAGE						
Input Offset Voltage	V _{OS}	V _{CM} =0V~5V		18	45	μV
Input Offset Voltage Drift	ΔV _{OS} /ΔT	-40℃ ≤ T _A ≤ +125℃		10		nV/℃
INPUT CHARACTERISTICS						
Input Bias Current	I _B	V _{CM} =0V		50		pA
Input Offset Current	I _{OS}			15		pA
Common-Mode Voltage Range	V _{CM}		0		5	V
Common-Mode Rejection Ratio	CMRR	V _{CM} =0V~5V	90	105		dB
Large Signal Voltage Gain	A _V	R _L =10KΩ, V _O =0.3V~4.7V	90	130		dB
		-40℃ ≤ T _A ≤ +125℃	88			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}		30	48		mA
DYNAMIC PERFORMANCE						
Slew Rate	SR	A _V =+1, R _L =10kΩ		2.0		V/μs
Gain-Bandwidth Product	GBW	A _V =+100		3.2		MHz
NOISE PERFORMANCE						
Input Voltage Noise	e _n p-p	f=0.01Hz~10Hz		0.8		μVpp
Input Voltage Noise Density	e _n	f=1KHz		38		nV/√Hz

■ ELECTRICAL CHARACTERISTICS

($T_A=25^{\circ}\text{C}$, $V_S=2.7\text{V}$, $R_L=10\text{k}\Omega$ connected to $V_S/2$, and $V_{OUT}=V_S/2$, unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
POWER SUPPLY						
Quiescent Current	I _Q	V _O =V _S /2		590	850	μA
Power Supply Rejection Ratio	PSRR	V _S =2.7V ~ 5V	90	110		dB
OFFSET VOLTAGE						
Input Offset Voltage	V _{OS}	V _{CM} =0V~2.7V		15	45	μV
Input Offset Voltage Drift	ΔV _{OS} /ΔT	-40°C ≤ T _A ≤ +125°C		10		nV/°C
INPUT CHARACTERISTICS						
Input Bias Current	I _B	V _{CM} = 0V		40		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	90	105		dB
Large Signal Voltage Gain	A _V	R _L =10kΩ, V _O =0.3V ~ 2.4V	90	125		dB
		-40°C ≤ T _A ≤ +125°C	85			dB
OUTPUT CHARACTERISTICS						
Output Voltage High	V _{OH}	R _L =100kΩ ~ V-	2.69	2.699		V
		R _L =10kΩ ~ V-	2.685	2.698		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}		20	28		mA
DYNAMIC PERFORMANCE						
Slew Rate	SR	A _V =+1, R _L =10kΩ		2.1		V/μs
Gain-Bandwidth Product	GBW	A _V =+100		3.3		MHz
NOISE PERFORMANCE						
Voltage Noise	e _n p-p	0.1Hz ~ 10Hz		0.9		μV _{P-P}
Voltage Noise Density	e _n	f =1kHz		42		nV/√ Hz

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.