

UTC UNISONIC TECHNOLOGIES CO., LTD

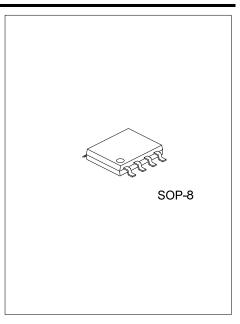
ULV8562

Advance

1.7V, 500nA, RAIL-TO-RAIL **INPUT/OUTPUT, NANOPOWER OPERATIONAL AMPLIFIER**

DESCRIPTION

The UTC ULV8562 ultra-low-power operational amplifier (op amps) is intended for cost-optimized sensing applications in wireless and low-power wired equipment. The UTC ULV8562 family of op amps minimizes power consumption in equipment such as motion detecting security systems where operational battery life is critical. It also has a carefully designed CMOS input stage, enabling very low, femto-ampere bias currents, thereby reducing I_{BIAS} and I_{OS} errors that would otherwise impact sensitive applications. Examples of these include transimpedance amplifier configurations with megaohm feedback resistors, and high source impedance sensing applications. Additionally, built-in EMI protection reduces sensitivity to unwanted RF signals from sources such as mobile phones, WiFi, radio transmitters and tab readers.



FEATURES

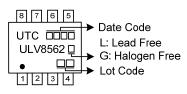
- * Wide Supply Range: 1.7V~3.6V
- * Nanopower Supply Current: 500nA per Channel
- * Rail-to-Rail Input and Output (RRIO)
- * Offset Voltage: 3.1mV (maximum)
- * Gain Bandwidth: 8kHz
- * Unity-Gain Stable
- * Low Input-Bias Current: 100pA

ORDERING INFORMATION

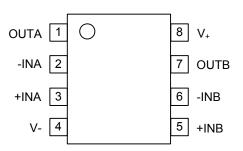
Ordering	Number	Dookogo	Packing	
Lead Free	Halogen Free	Package		
ULV8562L-S08-R	ULV8562G-S08-R	SOP-8	Tape Reel	

ULV8562G-S08-R T T T	
(1) Packing Type	(1) R: Tape Reel
(2) Package Type	(2) S08: SOP-8
(3) Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

MARKING



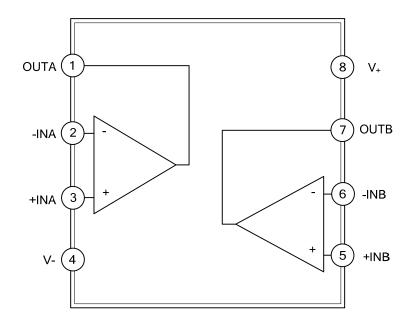
PIN CONFIGURATION



PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION		
1	OUTA	Output pin of A AMP		
2	-INA	Inverting input pin of A AMP		
3	+INA	Non-Inverting input of A AMP		
4	V-	Negative power supply		
5	+INB	Non-Inverting input of B AMP		
6	-INB	Inverting input pin of B AMP		
7	OUTB	Output pin of B AMP		
8	V+	Positive power supply		

BLOCK DIAGRAM





Advance

■ ABSOLUTE MAXIMUM RATING

[Over operating free-air temperature range (unless otherwise specified.) (Note 1, 2))

PARAMETER		SYMBOL	RATINGS	UNIT
Supply Voltage, Vs= (V+) - (V-)			-0.3 ~ 4	V
Input pins Voltage	Common Mode		(V-) - 0.3~ (V+) + 0.3	V
	Differential		(V-) - 0.3~ (V+) + 0.3	V
Input pins Current			-10 ~ 10	mA
Output Short Current (Note 3)			Continuous	
Operating Ambient Temperature			-40 ~ +125	°C
Junction Temperature		TJ	+150	°C
Storage Temperature Range		T _{STG}	-65 ~ +150	°C

Notes: 1. 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.

2. Input terminals are diode-clamped to the power-supply rails. Input signals that can swing more than 0.3V beyond the supply rails must be current-limited to 10mA or less.

3. Short-circuit to ground.

RECOMMENDED OPERATING CONDITIONS

[Over operating free-air temperature range (unless otherwise specified.)]

PARAMETER	SYMBOL	RATINGS	UNIT
Specified Voltage (V+ - V-)		1.7~ 3.6	V
Specified Ambient Temperature		-40 ~ +125	°C

THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	141.6	°C/W
Junction to Case	θ _{JC}	85.7	°C/W



■ ELECTRICAL CHARACTERISTICS

 $(V_s=1.8V~3.3V, V_{CM}=V_{OUT}=V_s/2)$, and R_L≥ 10MΩ to V_S / 2, T_A=25°C, unless otherwise specified.)

$(v_{S} - 1.0v_{2} - 3.5v, v_{CM} - v_{OU}) - v_{S}$		101012 to $v_S/2$, $1_A=25$ C, unless other	wise spe	1	r	r
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFFSET VOLTAGE						
Input Offset Voltage	V _{OS}	$V_{CM} = V_{-}, V_{S} = 1.8V \text{ and } 3.3V$	-3.1		3.1	mV
		$V_{CM} = V_{+}, V_{S} = 1.8V$ and 3.3V	-3.4		3.4	mV
Input Offset Drift	dV _{OS} /dT	V _{CM} = V-, T _A = -40°C~125°C		0.8		µV/°C
Power-Supply Rejection Ratio	PSRR	V_{CM} = V- , V_{S} = 1.8V and 3.3V	66	90		dB
INPUT VOLTAGE RANGE					•	•
Common-Mode Voltage Range	V_{CM}	V _S = 3.3V	0		3.3	V
Common-Mode Rejection Ratio	CMRR	$(V-) \le V_{CM} \le (V+), V_S=3.3V$ $(V-) \le V_{CM} \le (V+) - 1.2V$	60	80 90		dB dB
INPUT BIAS CURRENT						•
Input Bias Current	Ι _Β			1		pА
Input Offset Current	l _{os}			1		pА
INPUT IMPEDANCE		·				•
Differential				2		pF
Common Mode				4		pF
Noise				-		
Input Voltage Noise	En	f = 0.1Hz~10Hz		8.6		μV _{P-P}
Input Voltage Noise Density	en	f = 1kHz		264		nV/√Hz
OPEN-LOOP GAIN		•				
Open-Loop Voltage Gain	A _{OL}	$(V-) + 0.3 V \le V_0 \le (V+) - 0.3 V,$ R _L =100k Ω to V ⁺ /2		100		dB
OUTPUT		·				•
Voltage Output Swing from Positive Rail	V _{OH}	R _L =100kΩ to V [*] /2, V _S = 3.3V			12	mV
Voltage Output Swing from Negative Rail	V _{OL}	R _L =100kΩ to V [*] /2, V _S = 3.3 V			12	mV
Short-Circuit Current	I _{SC}	Sourcing, V _O to V-, V _{IN(diff)} = 100mV, V _S = $3.3V$		15		mA
		Sinking, V _O to V+, V _{IN(diff)} = -100mV, V _S = $3.3V$		30		mA
Open Loop Output Impedance	Zo	f =1kHz, I _O = 0mA		8		kΩ
FREQUENCY RESPONSE		· · · · · · · · · · · · · · · · · · ·				
Gain-Bandwidth Product	GBP	$C_{L} = 20 pF, R_{L} = 10 M\Omega$		8		kHz
Slew Rate (10% to 90%)	SR	G =1, Rising Edge, C_L = 20pF G =1, Falling Edge, C_L = 20pF		3.5 4.5		V/ms V/ms
POWER SUPPLY			I	J .J	1	v/115
Quiescent Current, Per Channel	lq	V _{CM} = V-, I _O = 0mA, V _S = 3.3V		550	640	nA
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