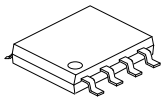
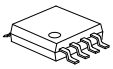
ULV662

CMOS IC

50 MHz, RAIL TO RAIL OUTPUT, CMOS DUAL OP AMPS


SOP-8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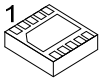


DFN3030-10

■ DESCRIPTION

The UTC **ULV662** of operational amplifiers features high gain bandwidth product (50MHz, typical) and high output short circuit current (90mA, typical). This amplifier is optimized for high speed, low noise and distortion, single-supply operation with rail-to-rail output and an input that includes the negative rail.

■ FEATURES

* Gain Bandwidth Product: 50MHz (typical)
* Short Circuit Current: 90mA (typical)
* Rail-to-Rail Output
* Slew Rate: 32V/μs (typical)
* Power Supply: 2.5V~5.5V
* Extended Temperature Range: -40°C~+125°C

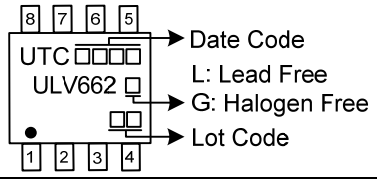
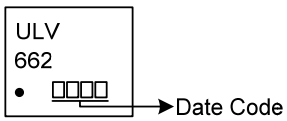
■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
ULV662L-S08-R	ULV662G-S08-R	SOP-8	Tape Reel
ULV662L-SM1-R	ULV662G-SM1-R	MSOP-8	Tape Reel
ULV662L-K10-3030-R	ULV662G-K10-3030-R	DFN3030-10	Tape Reel

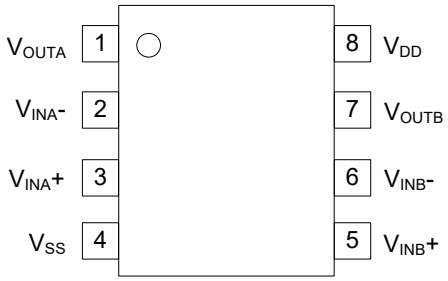
ULV662G-S08-R
(1)Packing Type
(2)Package Type
(3)Green Package

(1) R: Tape Reel
(2) S08: SOP-8, SM1: MSOP-8, K10-3030: DFN3030-10
(3) G: Halogen Free and Lead Free, L: Lead Free

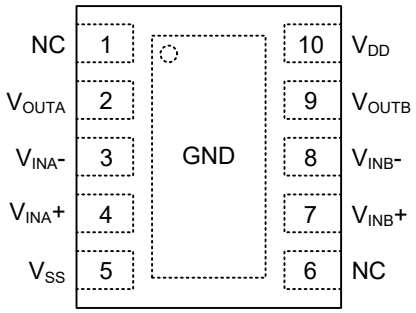
■ MARKING

SOP-8 / MSOP-8	DFN3030-10
	

■ PIN CONFIGURATION



SOP-8 / MSOP-8

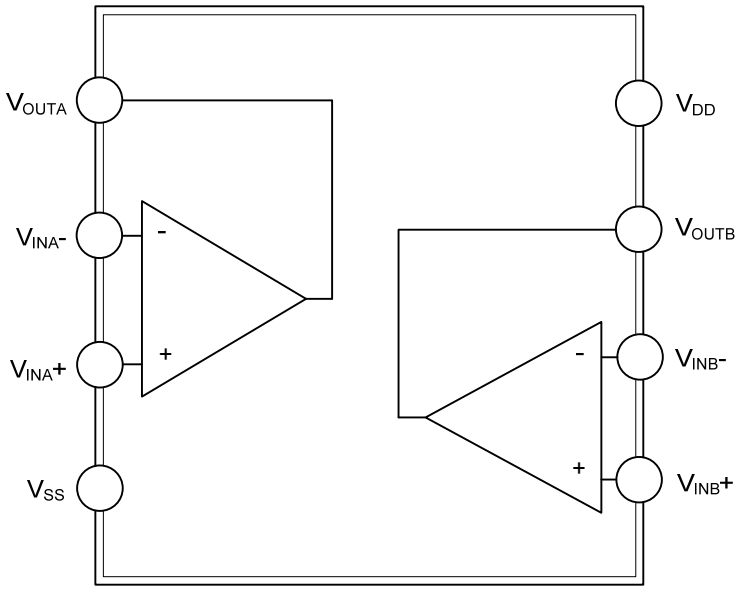


Top View
DFN3030-10

■ PIN DESCRIPTION

PIN NO.		PIN NAME	DESCRIPTION
SOP-8 MSOP-8	DFN3030-10		
1	2	V_{OUTA}	Output (op amp A.
2	3	V_{INA}-	Inverting Input (op amp A)
3	4	V_{INA}+	Non-inverting Input (op amp A)
4	5	V_{SS}	Negative Power Supply
5	7	V_{INB}+	Non-inverting Input (op amp B)
6	8	V_{INB}-	Inverting Input (op amp B)
7	9	V_{OUTB}	Output (op amp B)
8	10	V_{DD}	Positive Power Supply
-	1, 6	NC	No Connection
-	Exposed PAD	GND	Ground

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
V_{DD}-V_{SS}		6.5	V
Current at Input Pins		±2	mA
Analog Inputs (V_{IN}+ and V_{IN}-)		V_{SS} - 1.0 ~ V_{DD} +1.0	V
All other Inputs and Outputs		V_{SS} -0.3 ~ V_{DD} +0.3	V
Output Short Circuit Current		Continuous	
Current at Output and Supply Pins		±150	mA
Junction Temperature	T_J	+150	°C
Operating Temperature Range	T_{OPR}	-40 ~ +125	°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.

■ DC ELECTRICAL CHARACTERISTICS

(V_{DD}=+2.5V~+5.5V, V_{SS}=GND, V_{CM}=V_{DD}/3, V_{OUT}≈ V_{DD}/2, V_L=V_{DD}/2, R_L=1kΩ~ V_L, T_A=25°C unless otherwise indicated)

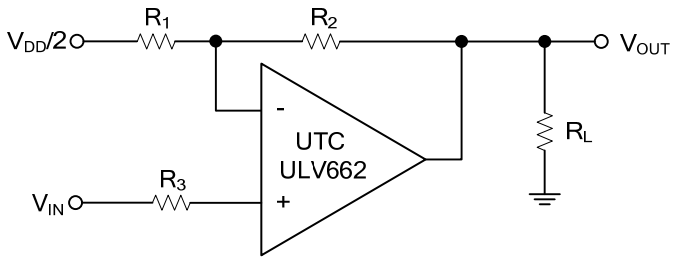
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
INPUT OFFSET						
Input Offset Voltage	V_{OS}		-1.5		+1.5	mV
Power Supply Rejection Ratio	PSRR		61	80		dB
INPUT CURRENT AND IMPEDANCE						
Input Bias Current	I_B			6		pA
Input Offset Current	I_{OS}			±10		pA
Common Mode Input Impedance	Z_{CM}			10^{13}||9		Ω||pF
Differential Input Impedance	Z_{DIFF}			10^{13}||2		Ω||pF
COMMON MODE						
Common-Mode Input Voltage Range	V_{CMR}		V_{SS} - 0.3		V_{DD} - 1.3	V
Common-Mode Rejection Ratio	CMRR	V_{DD}=2.5V, V_{CM}=-0.3~1.2V	64	79		dB
		V_{DD}=5.5V, V_{CM}=-0.3~4.2V	66	81		dB
OPEN LOOP GAIN						
DC Open Loop Gain (Large Signal)	A_{OL}	V_{DD}=2.5V, V_{OUT}=0.3V~2.2V	88	117		dB
		V_{DD}=5.5V, V_{OUT}=0.3V~ 5.2V	94	126		dB
OUTPUT						
Maximum Output Voltage Swing	V_{OL}, V_{OH}	V_{DD}=2.5V, G=+2, 0.5V Input Overdrive	V_{SS}+100		V_{DD}-100	mV
		V_{DD}=5.5V, G=+2, 0.5V Input Overdrive	V_{SS}+100		V_{DD}-100	mV
Output Short Circuit Current	I_{SC}	V_{DD}=2.5V	±45	±90		mA
		V_{DD}=5.5V	±40	±80		mA
POWER SUPPLY						
Supply Voltage	V_{DD}		2.5		5.5	V
Quiescent Current per Amplifier	I_Q	No Load Current		6.5	9.0	mA
POR DYNAMIC SPECIFICATIONS						
V_{DD} Low to Amplifier Off Time (Output Goes High Z)	t_{POFF}	G=+1V/V, V_L=V_{SS}, V_{DD}=2.5V to 0V Step to V_{OUT}=0.1 (2.5V)		200		ns
V_{DD} High to Amplifier On Time (Including Calibration Z)	t_{PON}	G=+1V/V, V_L=V_{SS}, V_{DD}=0V to 2.5V Step to V_{OUT}=0.9 (2.5V)		100	300	ms

■ AC ELECTRICAL CHARACTERISTICS

(V_{DD}=+2.5V~+5.5V, V_{SS}=GND, V_{CM}=V_{DD}/2, V_{OUT}≈ V_{DD}/2, V_L=V_{DD}/2, R_L=1kΩ~ V_L, C_L=20pF, T_A=25°C, Unless otherwise indicated)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
AC Response						
Gain Bandwidth Product	GBWP			50		MHz
Phase Margin	PM	G=+1		70		°
Open Loop Output Impedance	R_{OUT}			10		Ω
AC Distortion						
Total Harmonic Distortion plus Noise	THD+N	G=+1, V_{OUT}=2V_{P-P}, f=1kHz, V_{DD}=5.5V, BW=80kHz		0.003		%
Step Response						
Rise Time, 10% to 90%	t_r	G =+1, V_{OUT}=100mV_{P-P}		5		ns
Slew Rate	SR	G =+1		32		V/μs

■ TYPICAL APPLICATION CIRCUIT



Power Driver with High Gain