



## ULV3542

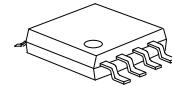
CMOS IC

### 160V/ $\mu$ s, RAIL-TO-RAIL I/O, CMOS OPERATIONAL AMPLIFIER

#### ■ DESCRIPTION

The UTC **ULV3542** is high-speed, voltage-feedback CMOS operational amplifiers. It is optimized for operation on single or dual supplies as low as 2.7V ( $\pm 1.35$ V) and up to 5.5V ( $\pm 2.75$ V). Input common mode range extends beyond the supplies. Quiescent current is only 4.5mA/Amplifier.

The UTC **ULV3542** is suitable for applications requiring high continuous output current. It is designed for video and other applications which require wide bandwidth. It is unity-gain stable and can provide large output current.



MSOP-8

#### ■ FEATURES

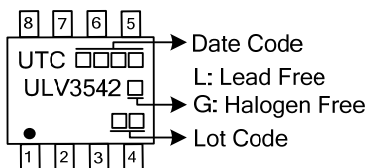
- \* Supply Voltage: 2.7V ~ 5.5V
- \* Supply Current/Amplifier: 7 mA (Max.)
- \* Input Offset Voltage: 10mV (Max.)
- \* Rail-to-Rail Input and Output
- \* Slew Rate: 160V/ $\mu$ s (Typ.)
- \* Thermal Shutdown

#### ■ ORDERING INFORMATION

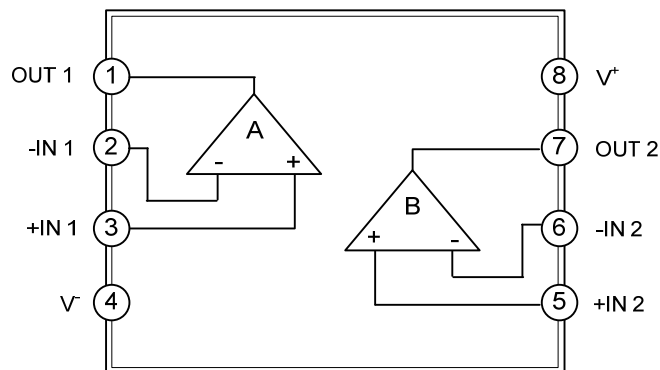
Ordering Number		Package	Packing
Lead Free	Halogen Free		
ULV3542L-SM1-R	ULV3542G-SM1-R	MSOP-8	Tape Reel

<p>ULV3542G-SM1-R</p> <ul style="list-style-type: none"><li>(1) Packing Type</li><li>(2) Package Type</li><li>(3) Green Package</li></ul>	<p>(1) R: Tape Reel (2) SM1: MSOP-8 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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#### ■ MARKING



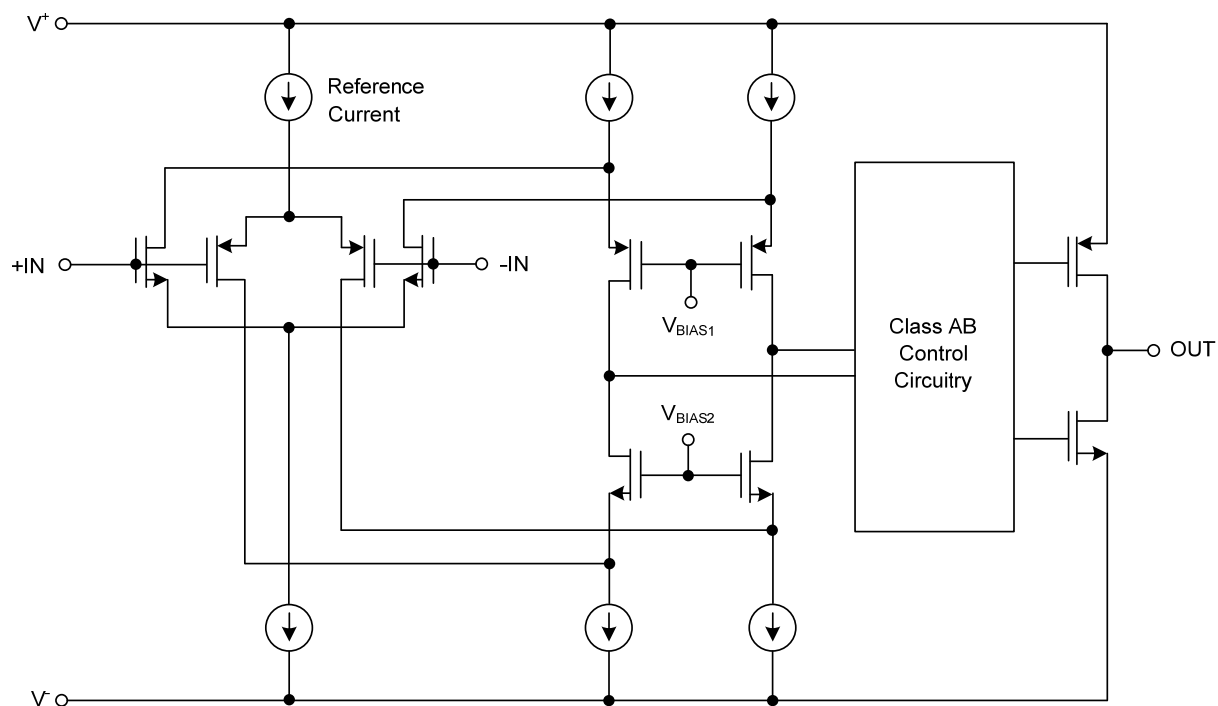
## PIN CONFIGURATION



## PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	OUT 1	Output of 1 AMP
2	-IN 1	Inverting input of 1 AMP
3	+IN 1	Non-inverting input of 1 AMP
4	V <sup>-</sup>	Negative power supply
5	+IN 2	Non-inverting input of 2 AMP
6	-IN 2	Inverting input of 2 AMP
7	OUT 2	Output of 2 AMP
8	V <sup>+</sup>	Positive power supply

## BLOCK DIAGRAM



## ■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$(V^+ - V^-)$	6	V
Input Common Mode Voltage Range	$V_{CM}$	$V^- - 0.1 \sim V^+ + 0.1$	V
Junction Temperature (Note 3)	$T_J$	+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

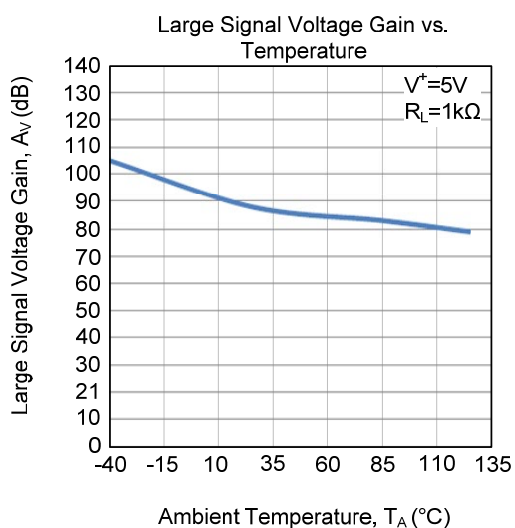
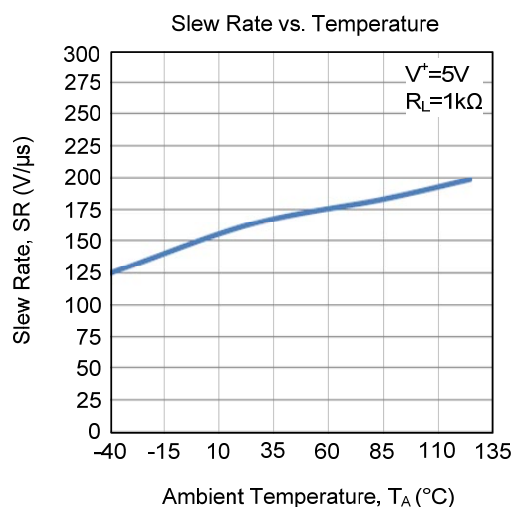
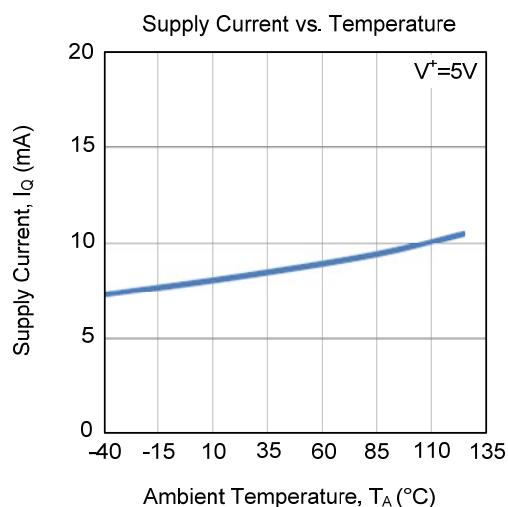
PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage Range	$V^+ - V^-$	2.7 ~ 5.5	V
Operating Temperature Range	$T_{OPR}$	-40 ~ +125	°C

## ■ ELECTRICAL CHARACTERISTICS

( $T_A = 25^\circ\text{C}$ ,  $V^+ = 2.7 \sim 5.5\text{V}$ ,  $V^- = 0\text{V}$ ,  $V_{IC} = V^+/2\text{V}$ ,  $V_O = V^+/2\text{V}$  and  $R_L = 1\text{k}\Omega$  connected to GND.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Current/Amplifier	$I_Q$			4.3	7	mA
Power Supply Rejection Ratio	PSRR	$2.7\text{V} \leq V^+ \leq 5.5\text{V}$ , $V_{IC} = 0\text{V}$	70	100		dB
Input Offset Voltage	$V_{OS}$			-2	$\pm 10$	mV
Input Bias Current	$I_B$			5		pA
Input Offset Current	$I_{OS}$			0.8		pA
Common-Mode Voltage Range	$V_{CM}$		$V^- - 0.1$		$V^+ + 0.1$	V
Common Mode Rejection Ratio	CMRR	$V^- - 0.1 \leq V_{IC} \leq V^+ + 0.1$	60	90		dB
Large Signal Voltage Gain	$A_V$	$R_L = 1\text{k}\Omega$ , $V_O = V^+ + 0.3\text{V} \sim V^+ - 0.3\text{V}$	70	85		dB
Output Voltage	$V_O$	$R_L = 1\text{k}\Omega$	$V_{OH}$	$V^+ - 0.09$	$V^+ - 0.07$	V
			$V_{OL}$	0.005	0.06	V
Short-Circuit Current	$I_{SC}$	Sourcing, $V^+ = 3\text{V}$ , $V_O = 0\text{V}$		90		mA
		Sinking, $V^+ = 3\text{V}$ , $V_O = V^+$		90		mA
Slew Rate	SR	$V^+ = 5\text{V}$ , $V_O = 2V_{PP}$		160		V/ $\mu\text{s}$
Gain-Bandwidth Product	GBW	$G = +10$ , $V_O = 100\text{mV}_{PP}$		100		MHz
Input-Referred Voltage Noise	$e_n$	$f = 1\text{MHz}$		10		nV/ $\sqrt{\text{Hz}}$
Input-Referred Current Noise	$i_n$	$f = 1\text{MHz}$		20		fA/ $\sqrt{\text{Hz}}$
Thermal Shutdown				150		°C

## ■ TYPICAL CHARACTERISTICS



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