



ULC3491

Advance

CMOS IC

1.8V, NANOPOWER, CMOS INPUT, PUSH-PULL OUTPUT COMPARATOR

DESCRIPTION

The UTC **ULC3491** is a push-pull output comparators with <math><1.2\mu\text{A}</math> (maximum) nanopower capability and fast ULC3491 an ideal choice for low-voltage applications.

Micro-sized packages provide options for portable and space-restricted applications.

FEATURES

- * Very Low Supply Current: $0.85\mu\text{A}$ (Typical)
- * Supply Voltage: 1.8V~5.5V
- * Rail-to-Rail Input
- * Input Common-Mode Range: 200-mV Beyond Supply Rails
- * High Speed: $6\mu\text{s}$
- * Push-Pull CMOS Output Stage

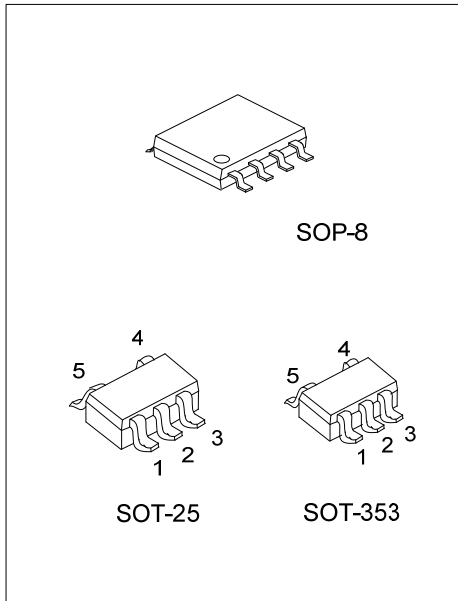
ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
ULC3491L-AF5-R	ULC3491G-AF5-R	SOT-25	Tape Reel
ULC3491L-AL5-R	ULC3491G-AL5-R	SOT-353	Tape Reel
ULC3491L-S08-R	ULC3491G-S08-R	SOP-8	Tape Reel

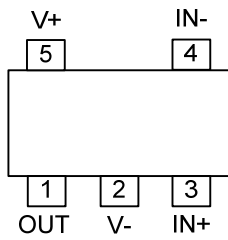
<p>ULC3491G-AF5-R</p> <pre> (1)Packing Type (2)Package Type (3)Green Package </pre>	<p>(1) R: Tape Reel (2) AF5: SOT-25, AL5: SOT-353, S08: SOP-8 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING

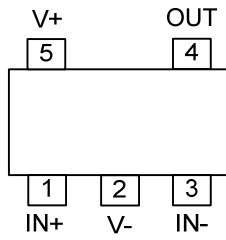
SOT-25 / SOT-353	SOP-8



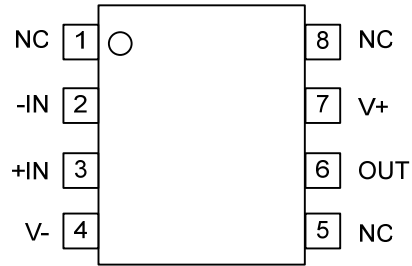
■ PIN CONFIGURATION



SOT-25



SOT-353

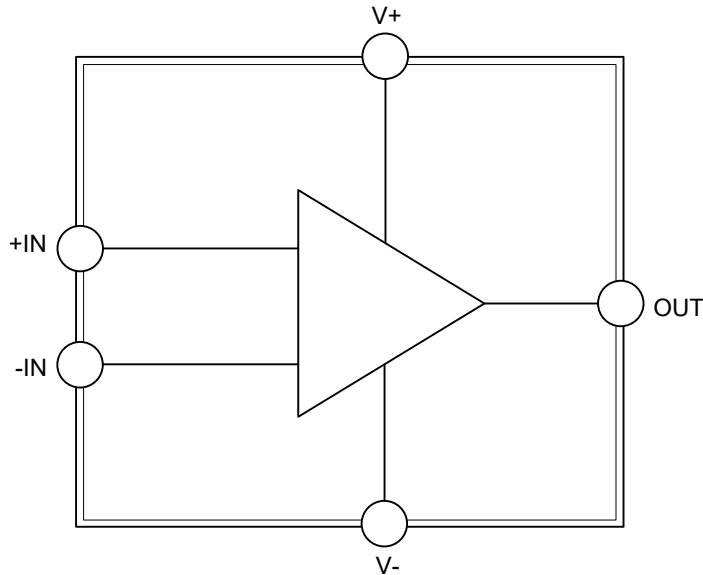


SOP-8

■ PIN DESCRIPTION

PIN NO.			PIN NAME	DESCRIPTION
SOT-25	SOT-353	SOP-8		
1	4	6	OUT	Output
2	2	4	V-	Negative (lowest) power supply
3	1	3	+IN	Noninverting input
4	3	2	-IN	Inverting input
5	5	7	V+	Positive (highest) power supply
-	-	1, 5, 8	NC	No internal connection (can be left floating)

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

(over operating free-air temperature range, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{CC}	5.5	V
Signal Input Pin Voltage	V_{IN}	(V-) - 0.5 ~ (V+) + 0.5	V
Signal Input Pin Current	I_{IN}	-10 ~ 10	mA
Output Short Circuit Current		Continuous	
Junction Temperature	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

(over operating free-air temperature range, unless otherwise specified)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}	1.8		5.5	V
Specified Temperature	T_A	-40		+125	°C

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	SOT-25	250	°C/W
	SOT-353	300	°C/W
	SOP-8	202	°C/W

■ ELECTRICAL CHARACTERISTICS

($V_S=1.8V\sim 5.5V$, $T_A=25^\circ C$, unless otherwise specified)

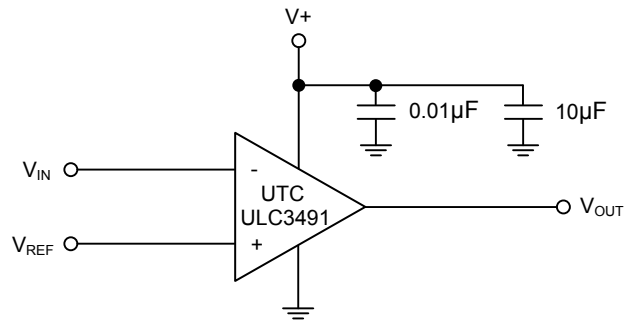
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFFSET VOLTAGE						
Input Offset Voltage	V_{OS}	$T_A=25^\circ C$, $V_{CM}=0V$, $I_O=0V$		±3	±15	mV
Input Offset Voltage Versus Temperature	dV_{OS}/dT	$T_A=-40^\circ C\sim 125^\circ C$		±12		$\mu V/^\circ C$
Input Offset Voltage Versus Power Supply	PSRR	$V_S=1.8V\sim 5.5V$		350	1000	$\mu V/V$
INPUT BIAS CURRENT						
Input Bias Current	I_B	$V_{CM}=V_{CC}/2$		±1	±10	pA
Input Offset Current	I_{OS}	$V_{CM}=V_{CC}/2$		±1	±10	pA
INPUT VOLTAGE						
Common-Mode Voltage	V_{CM}		(V-) - 0.2V		(V+) + 0.2V	V
Common-Mode Rejection Ratio	CMRR	$V_{CM}=-0.2V\sim (V+) - 1.5V$	60	74		dB
		$V_{CM}=-0.2V\sim (V+) + 0.2V$	54	62		dB
INPUT CAPACITANCE						
Common-Mode				2		pF
Differential				4		pF
OUTPUT ($V_S=5V$)						
Voltage Output High from Rail	V_{OH}	$I_{OUT}=5mA$		90	200	mV
Voltage Output Low from Rail	V_{OL}	$I_{OUT}=5mA$		160	200	mV
POWER SUPPLY						
Operating Voltage			1.8		5.5	V
Quiescent Current	I_Q	$V_O=5V$, $V_O=high$		0.85	1.2	μA

■ SWITCHING CHARACTERISTICS

(f =10kHz, V_{STEP}=1V, V_S=1.8V~5.5V, T_A=25°C, unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation Delay Time, Low-to-High	t _(PLH)	Input Overdrive =10mV		12		μs
		Input Overdrive =100mV		6		μs
Propagation Delay Time, High-to-Low	t _(PLH)	Input Overdrive =10mV		13.5		μs
		Input Overdrive =100mV		6.5		μs
Rise Time	t _R	C _L =10pF		100		ns
Fall Time	t _F	C _L =10pF		100		ns

■ TYPICAL APPLICATION CIRCUIT



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