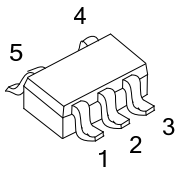
LOW-POWER TINY SINGLE CMOS OPERATIONAL AMPLIFIER



SOT-25

■ DESCRIPTION

The UTC **ULV7013** is single CMOS operational amplifiers operated on a single-power-supply, low voltage and low operating current. Operation is fully specified from 1V to 5.5V single supply. The minimum operating voltage is 1V and the output stage permits output signal to swing between both of the supply rails.

■ FEATURES

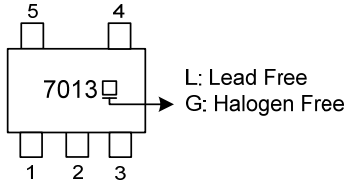
* CMOS Technology
* Wide Operating Voltage (V_{DD}=1~5.5V)
* Wide Output Swing Range (V_{OM}=2.9V min. @ 3.0V)
* Low Operating Current
* Slew Rate (2.5V/μs typ.)
* Unity Gain Bandwidth (1.8MHz typ.)
* Internal Compensation Capacitor

■ ORDERING INFORMATION

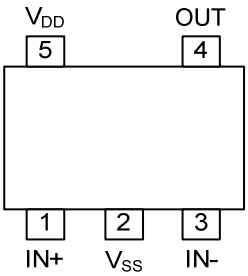
Ordering Number		Package	Packing
Lead Free	Halogen Free		
ULV7013L-AF5-R	ULV7013G-AF5-R	SOT-25	Tape Reel

ULV7013G-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



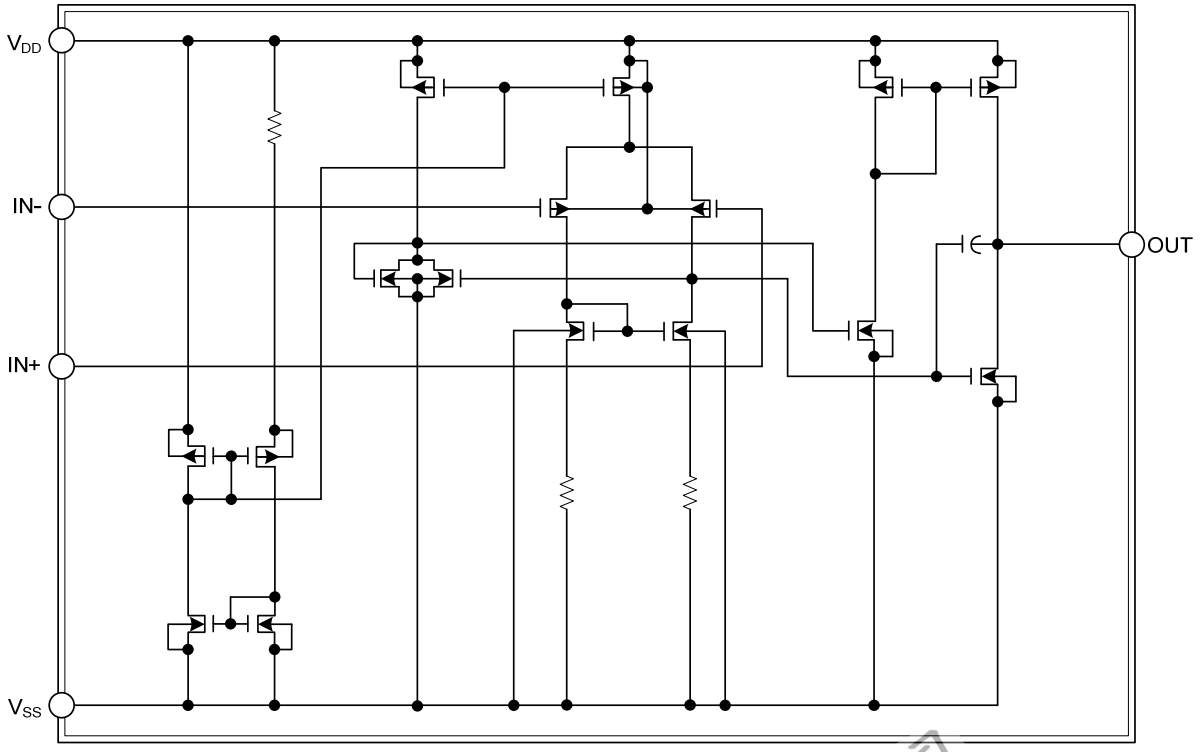
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	IN+	Non-inverting input
2	V_{SS}	Ground
3	IN-	Inverting input
4	OUT	Output
5	V_{DD}	Positive Power supply

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{DD}	6.5	V
Differential Input Voltage	V_{ID}	±6.5 (Note 2)	V
Common Mode Input Voltage	V_{IC}	-0.3 ~ 6.5	V
Power Dissipation	P_D	200	mW
Operating Temperature Range	T_{OPR}	-40 ~ +85	°C
Storage Temperature Range	T_{STG}	-55 ~ +125	°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. If the supply voltage (V_{DD}) is less than 6.5V, the input voltage must not over the V_{DD} level though 6.5V is limit specified.
3. Decoupling capacitor should be connected between V_{DD} and V_{SS} due to the stabilized operation for the circuit.

■ ELECTRICAL CHARACTERISTICS (V_{DD}=3.0V, R_L=∞, T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Offset Voltage	V_{IO}	V_{IN}=1/2V_{DD}			10	mV
Input Offset Current	I_{IO}			1		pA
Input Bias Current	I_{IB}			1		pA
Input Impedance	R_{IN}			1		TΩ
Large Signal Voltage Gain	A_{VD}		60	70		dB
Input Common Mode Voltage Range	V_{ICM}		0~2.5			V
Maximum Output Swing Voltage	V_{OM1}	R_L=50kΩ	V_{DD}-0.1			V
	V_{OM2}	R_L=50kΩ			V_{SS}+0.1	
Common Mode Rejection Ratio	CMR	V_{IN}=1/2V_{DD}	55	65		dB
Supply Voltage Rejection Ratio	SVR	V_{DD}=1.5~5.5V	60	70		dB
Operating Current	I_{DD}			200	400	μA
Slew Rate	SR			2.5		V/μs
Unity Gain Bandwidth	F_t	A_V=40dB, C_L=10pF		1.8		MHz

Note: The source current is less than 58μA (at V_{OM}/R_L=2.9V/50kΩ).