

Rail-to-Rail Output Low Voltage, High Slew Rate, Wide Bandwidth Dual Operational Amplifiers

FEATURES

- CMOS rail to rail output
- 2.7 to 5.5V single supply operation
- Gain-Bandwidth Product : 12MHz
- High slew rate : 6V/μs
- No crossover distortion
- Space saving package (SOP8)
- Cost efficient
- Pin assignments is the same as the general-purpose dual operational amplifiers

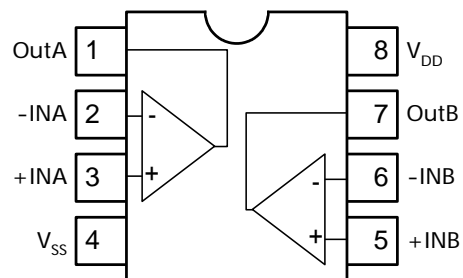
APPLICATIONS

- Active filters
- Servo amplifier
- Multimedia system
- Digital to Analog Converter buffers
- Laptop 、 Set-Top BOX
- Microphone preamplifier
- Cross-reference to low voltage application :
NJM2100, BA4510
TLV2632, TLV2772
TS462

DESCRIPTION

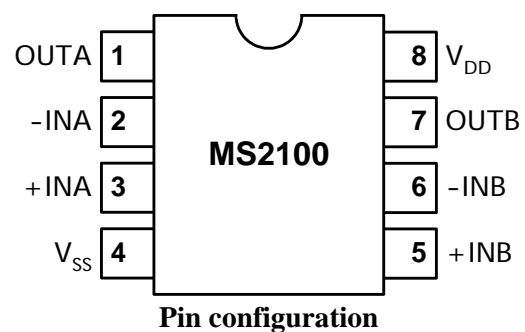
The MS2100 is high slew rate CMOS operation amplifier optimize for low voltage, single supply operation. It designed to be used for general purpose amplifier of general electronic equipment for consumer appliances.

BLOCK DIAGRAM



PINNING

Symbol	Pin	Description
OutA	1	output A
-INA	2	inverting input A
+INA	3	non-inverting input A
V _{SS}	4	negative supply
+INB	5	non-inverting input B
-INB	6	inverting input B
OutB	7	output B
V _{DD}	8	positive supply



ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Min	Typ	Max	Unit
V _{DD}	Single power supply voltage	2.7	5	5.5	V
T _{opr}	Operating temperature	-20	-	85	°C
T _{stg}	Storage temperature	-40	-	125	°C
V _{ESD}	Electrostatic handling	-2000	-	2000	V

5V DC ELECTRICAL CHARACTERISTICS

(T_a=25°C, V_{DD}=5V, V_{SS}=0V, V_{CM}=V_O= V_{DD}/2)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V _{OS}	Input offset voltage		-	1	5	mV
CMRR	Common mode rejection ratio	0 ≤ V _{CM} ≤ 4V	70	80	-	dB
+PSRR	Positive Power supply rejection ratio	Ripple = 400mV , 100Hz	-	69	-	dB
-PSRR	Negative Power supply rejection ratio	Ripple = 400mV , 100Hz	-	67	-	dB
V _{CM}	Common mode voltage	CMRR ≥ 50dB	0.2	-	4	V
V _O	Output voltage swing	R _L ≥ 2.5kΩ	-	V _{DD} -25	V _{DD} -15	mV
I _S	Supply current	Dual Amplifiers	-	2.2	-	mA

5V AC ELECTRICAL CHARACTERISTICS

(T_a=25°C, V_{DD}=5V, V_{SS}=0V, V_{CM}=V_O= V_{DD}/2)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
SR	Slew rate		-	6	-	V/μs
GBWP	Gain bandwidth product		-	12	-	MHz
(THD+N) /S	Total harmonic distortion plus noise	f = 1kHz, A _v = -1 R _L > 10k, V _{in} = 4V _{pp}	-	-77	-70	dB

2.7V DC ELECTRICAL CHARACTERISTICS

(T_a=25°C, V_{DD}=2.7V, V_{SS}=0V, V_{CM}=V_O= V_{DD}/2)

Symbol	Parameter	Test conditions	Min	Typ	Max	Unit
V _{OS}	Input offset voltage		-	1	5	mV
CMRR	Common mode rejection ratio	0 ≤ V _{CM} ≤ 1.7V	65	75	-	dB
+PSRR	Positive Power supply rejection ratio	Ripple = 200mV , 100Hz	-	55	-	dB
-PSRR	Negative Power supply rejection ratio	Ripple = 200mV , 100Hz	-	54	-	dB
V _{CM}	Common mode voltage	CMRR ≥ 50dB	0.2	-	1.7	V
V _O	Output voltage swing	R _L ≥ 2.5kΩ	-	V _{DD} -70	V _{DD} -60	mV
I _S	Supply current	Dual Amplifiers	-	1.9	-	mA

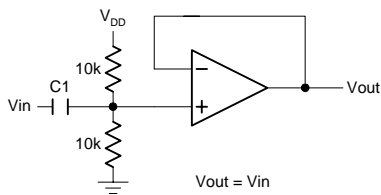
2.7V AC ELECTRICAL CHARACTERISTICS

($T_a=25^\circ\text{C}$, $V_{DD}=2.7\text{V}$, $V_{SS}=0\text{V}$, $V_{CM}=V_O=V_{DD}/2$)

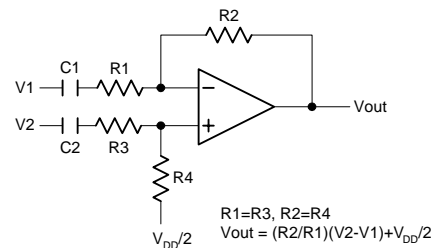
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
SR	Slew rate		-	5	-	V/ μs
GBWP	Gain bandwidth product		-	11	-	MHz
(THD+N) /S	Total harmonic distortion plus noise	$f = 1\text{kHz}$, $A_v = -1$ $R_L > 10\text{k}$, $V_{in} = 2V_{pp}$	-	-72	-65	dB

APPLICATION INFORMATION (Single Supply)

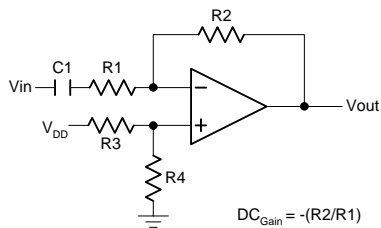
Voltage Follower



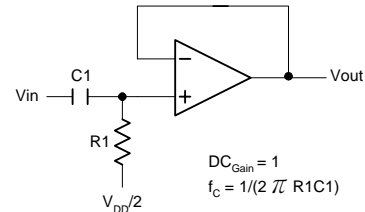
Difference Amplifier



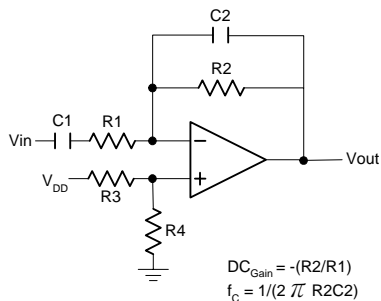
Inverting Amplifier



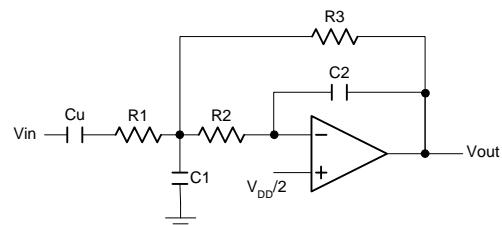
Simple High-Pass Filter



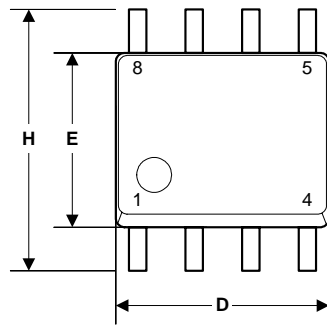
Simple Low-Pass Filter



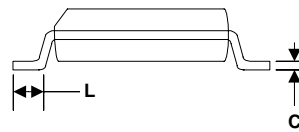
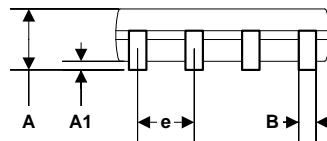
2nd Order Multiple Feedback Low-Pass Filter



EXTERNAL DIMENSIONS

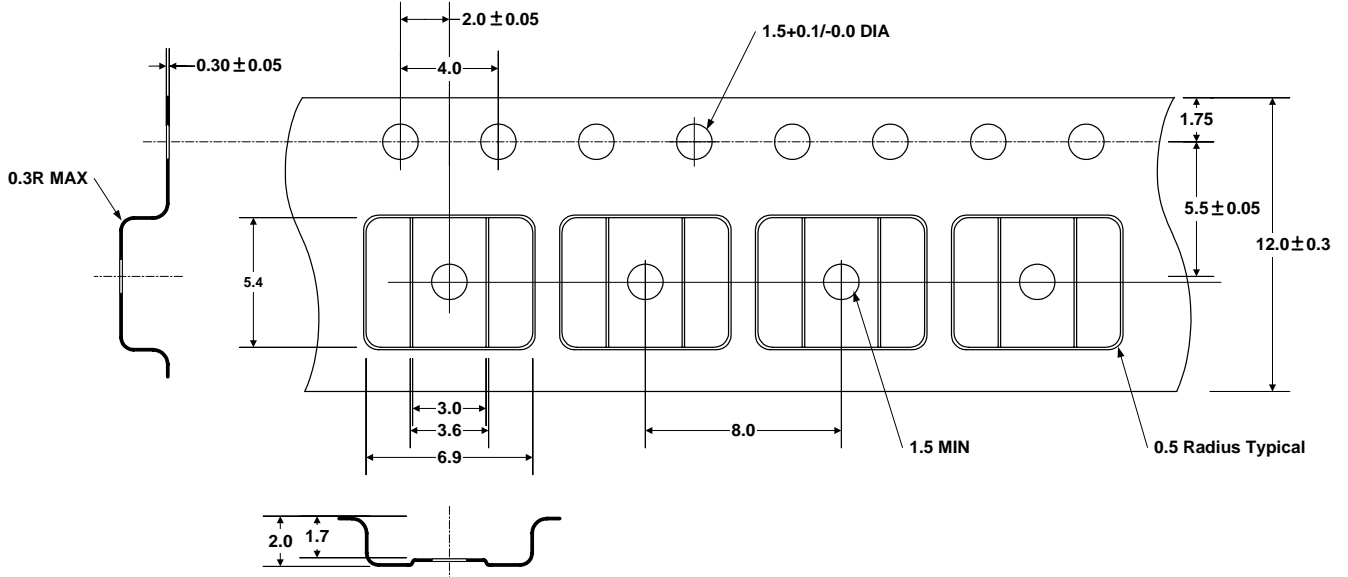


Symbol	Dimension in mm		Dimension in inch	
	Min	Max	Min	Max
A	1.35	1.75	0.0532	0.0688
A1	0.10	0.25	0.0040	0.0098
B	0.33	0.51	0.013	0.020
C	0.19	0.25	0.0075	0.0098
D	4.80	5.00	0.1890	0.1968
H	5.80	6.20	0.2284	0.2440
E	3.80	4.00	0.1497	0.1574
e	1.27 BSC		0.050 BSC	
L	0.40	1.27	0.016	0.050



SOP8

TAPE AND REEL (Unit : mm)



ORDERING INFORMATION

Package	Part number	Packaging Marking	Transport Media
8-Pin SOP	MS2100TR	MS2100	2.5k Units Tape and Reel
8-Pin SOP	MS2100U	MS2100	100 Units Tube
8-Pin SOP (lead free)	MS2100GTR	MS2100G	2.5k Units Tape and Reel
8-Pin SOP (lead free)	MS2100GU	MS2100G	100 Units Tube