

Dual Differential Input Operational Amplifiers And Voltage Reference

The PJ2108 is a monolithic IC that includes one independent op-amp and another op-amp for which the non inverting input is wired to a 2.5V fixed Voltage Reference. This device is offering space and cost saving in many applications like power supply management or data acquisition systems

FEATURES

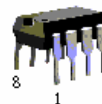
OPERATIONAL AMPLIFIER

- Low input offset voltage : 0.5mV typ. For PJ2108
- Low supply current : 350 μ A/op. (@ $V_{CC}=5V$)
- Medium bandwidth (unity gain) : 0.9MHz
- Large output voltage swing : 0V to ($V_{CC}-1.5V$)
- Input common mode voltage range includes ground
- Wide power supply range : 3 to 32V , ± 1.5 to ± 16

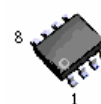
VOLTAGE REFERENCE

- Fixed output voltage reference 2.5V
- 0.4% and 1% voltage precision
- Sink current capability : 1 to 100mA
- Typical output impedance : 0.2 Ω

DIP-8



SOP-8



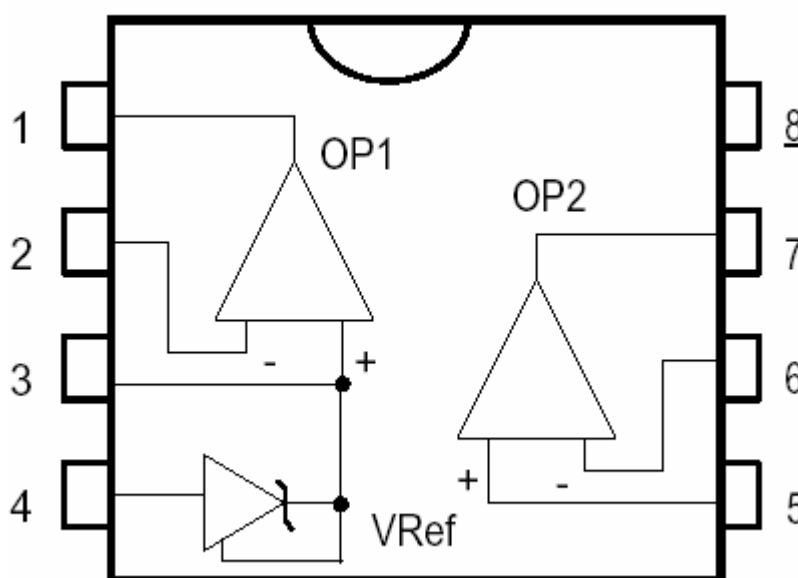
Pin : 1. Output A
2. Inverting Input A
3. Non-Inverting Input A
4. V_{CC-}

5. Non-Inverting Input B
6. Inverting Input B
7. Output B
8. V_{CC+}

ORDERING INFORMATION

Device	Operating Temperature (Ambient)	Package
PJ2108CD	-20°C to +85°C	DIP-8
PJ2108CS		SOP-8

BLOCK DIAGRAM



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ABSOLUTE MAXIMUM RATINGS

Rating	Symbol	PJ358	Unit
Power Supply Voltage Single Supply	V_{CC}	32	Vdc
Split Supplies	V_{CC}, V_{EE}	± 16	
Input Differential Voltage Range (1)	V_{IDR}	± 32	Vdc
Input Common Mode Voltage Range (2)	V_{ICR}	-0.3 to 32	Vdc
Input forward current (3) (V_I --0.3V)	I_{IF}	50	mA
Output Short Circuit Duration	t_s	Continuous	
Junction Temperature Plastic Packages	T_J	150	$^{\circ}\text{C}$
Storage Temperature Range Plastic Packages	T_{stg}	-55 to +125	$^{\circ}\text{C}$

ELECTRICAL CHARACTERISTICS($T_A=25, ^{\circ}\text{C}$ $V_{CC} = 5\text{V}$ unless otherwise noted).

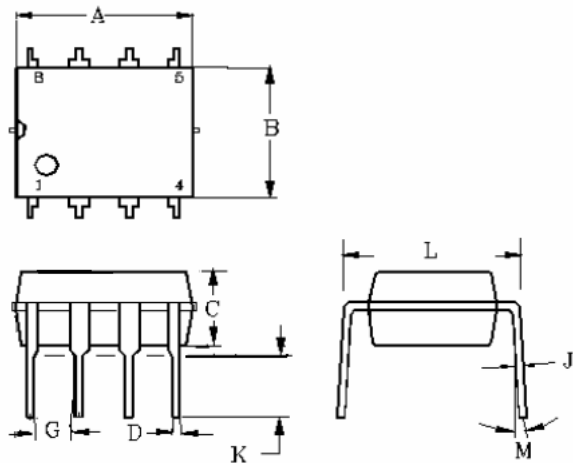
TOTAL SUPPLY VOLTAGE SECTION						
Characteristics	Symbol	Conditions	Min	Typ	Max	Unit
Total Supply Current		$V_{CC}=0\text{V}$, No Load				
Operational Amplifiers						
Input Offset Voltage	V_{IO}		--	1	4.5	mA
Input Bias Current	I_{IB}		--	50	150	nA
Input Common-Mode Voltage Range	V_{ICM}	$V_{CC} = 30\text{V}$ $V_{CC} = 30\text{V}$, ($T_A=85^{\circ}\text{C}$ to -10°C)	0.4	--	$V_{OC}-1.2\text{V}$	V
Slew Rate	SR	$V_i=10\text{V}$, $V_{CC}=12\text{V}$ $R_{load}=10\text{K}$, $C_{load}=100\text{pF}$	--	0.75	--	$\text{V}/\mu\text{s}$
Large Signal Voltage Gain	A_{vd}	$R_L = 2.0\text{K}$, $V_{CC}=15\text{V}$, For Large V_O Swing, $T_A=85^{\circ}\text{C}$ to -20°C	60	100	--	dB
Common Mode Rejection Ratio	CMRR	$V_{CC}=15\text{V}$	70	90	--	dB
Power Supply Rejection Ratio	SVRR	$V_{CC}=5\text{V}$ to 15V	65	100	--	dB
Output Source Current	I_{source}	$V_O=2.5\text{V}$, $V_{id}=+1\text{V}$	3	6	--	mA
Output Voltage -- High	V_{OH}	$V_{CC}=15\text{V}$, $R_{load}=10\text{K}$	12	13	--	V
Output Voltage -- Low	V_{OL}	$R_{load}=10\text{K}$	--	100	250	mV
Gain Bandwidth	GB	$R_{load}=10\text{K}$, $C_{load}=100\text{pF}$, $f=100\text{KHz}$	--	1.5	--	MHz
Phase Margin	PM	$R_{load}=10\text{K}$, $C_{load}=100\text{pF}$	--	55	55	Degree
Total Harmonic Distortion	THD		--	0.05	--	%
Output Sink Current	I_{sink}	$V_O=2.5\text{V}$, $V_{id}=-1\text{V}$	3	6	--	mA

ELECTRICAL CHARACTERISTICS($T_A=25, ^{\circ}\text{C}$ $V_{CC} = 5\text{V}$ unless otherwise noted).

ADJUSTABLE SHUNT REGULATOR						
Characteristics	Symbol	Conditions	Min	Typ	Max	Unit
Recommended Cathod Current	I_k		0.5	--	100	mA
Reference Input Voltage	V_{ref}	PJ2108	2.475	2.5	2.525	V
Reference Input Voltage Deviation	dV_{ref}	$V_{ka}=V_{ref}$, $I_k=10\text{mA}$ $-40^{\circ}\text{C} < T_A < 105^{\circ}\text{C}$	--	7	30	mV
Load Regulation	R_{load}	$I_k=1\text{mA} - 10\text{mA}$	--	3	10	mV
Minimum Cathod Current for Regulation	I_{min}		--	0.2	0.5	mA

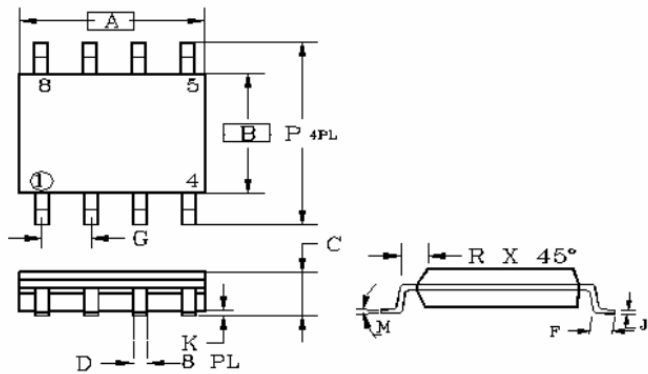
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DIP-8



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	9.07	9.32	0.357	0.367
B	6.22	6.48	0.245	0.255
C	3.18	4.43	0.125	0.135
D	0.35	0.55	0.019	0.020
G	2.54BSC		0.10BSC	
J	0.29	0.31	0.011	0.012
K	3.25	3.35	0.128	0.132
L	7.75	8.00	0.305	0.315
M	-	10°	-	10°

SOP-8



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.80	5.00	0.189	0.196
B	3.80	4.00	0.150	0.157
C	1.35	1.75	0.054	0.068
D	0.35	0.49	0.014	0.019
F	0.40	1.25	0.016	0.049
G	1.27BSC		0.05BSC	
K	0.10	0.25	0.004	0.009
M	0°	7°	0°	7°
P	5.80	6.20	0.229	0.244
R	0.25	0.50	0.010	0.019