CS59201

Winchester Servo Preamplifier with Low Current Drain

The CS59201 is a low noise servo preamplifier for use with ferrite heads. It is a differential input, differential output design with fixed gain of approximately 100. Features include low noise, wide bandwidth and low current drain.

Features

- 50 MHz Bandwidth
- Operates From Any of Three Standard Supply Voltages:
  - 8.3 V (IBM Compatible)
  - 10 V
  - 12 V
- Available in SO−8 Package

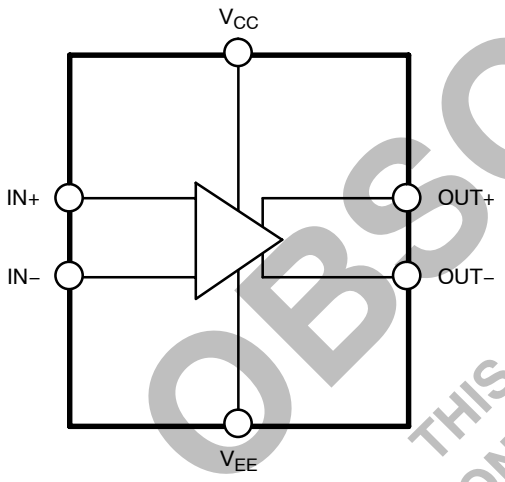

Figure 1. Block Diagram

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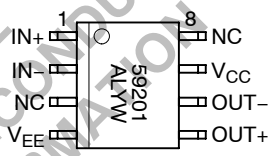
SO−8
D SUFFIX
CASE 751

PIN CONNECTION AND MARKING DIAGRAM



A = Assembly Location
WL, L = Wafer Lot
YY, Y = Year
WW, W = Work Week

ORDERING INFORMATION

Device	Package	Shipping
CS59201GD8	SO−8	95 Units/Rail
CS59201GDR8	SO−8	2500 Tape & Reel

MAXIMUM RATINGS*

Rating	Value	Unit
Power Supply Voltage (V_{CC} – V_{EE})	14	V
Differential Input Voltage	5.0	V
Storage Temperature Range	–65 to +150	°C
Operating Temperature Range	0 to 70	°C
Thermal Resistance, Junction–to–Case, $R_{\Theta JC}$	45	°C/W
Thermal Resistance, Junction–to–Ambient, $R_{\Theta JA}$	165	°C/W
ESD Susceptibility (Human Body Model)	1.4	kV

*The maximum package power dissipation must be observed.

ELECTRICAL CHARACTERISTICS (T_A = 25°C, (V_{CC} – V_{EE}) = 7.0 V to 13.2 V; unless otherwise specified.)

Characteristic	Test Conditions	Min	Typ	Max	Unit
General					
Gain (Differential)	–	80	100	120	V/V
Bandwidth (3.0 dB)	V_{IN} = 2.0 mV	30	50	–	MHz
Input Resistance	–	1040	1300	1560	Ω
Input Capacitance	–	–	20	30	pF
Input Dynamic Range	–	3.0	–	–	mV
Power Supply Current	(V_{CC} – V_{EE}) = 12 V	–	20	25	mA
Output Offset (Differential)	R_S = 0, R_L = 130 Ω	–	–	200	mV
Equivalent Input Noise	BW = 4.0 MHz, Note 1	–	0.7	1.0	nV/Hz
PSRR, Input Referred	R_S = 0, f ≤ 5.0 MHz, Note 1	55	60	–	dB
Gain Sensitivity (Supply)	(V_{CC} – V_{EE}) = ±10%	–	–	±0.5	%/V
Gain Sensitivity (Temp.)	T_A = 25°C to 70°C, R_L = 130 Ω	–	–0.1	–	%/°C
CMRR, Input Referred	f ≤ 5.0 MHz	60	70	–	dB
Recommended					
Supply Voltage (V_{CC} – V_{EE})	–	7.45 9.0 10.8	8.3 10 12	9.15 11 13.2	V V V
Input Signal, V_{IN}	–	–	2.0	–	mV_{PP}
Ambient Temperature, T_A	–	0	–	70	°C

1. 1.0 nV/root Hz and a bandwidth of 4.0 MHz equals 2.0 μVRMS.

PACKAGE PIN DESCRIPTION

Pin Number SO−8	Pin Symbol	Function
1	IN+	Positive input to preamplifier.
2	IN−	Negative input to preamplifier.
3, 8	NC	No connection.
4	V_{EE}	Negative supply voltage.
5	OUT+	One of the amplifier outputs.
6	OUT−	One of the amplifier outputs.
7	V_{CC}	Positive supply voltage.

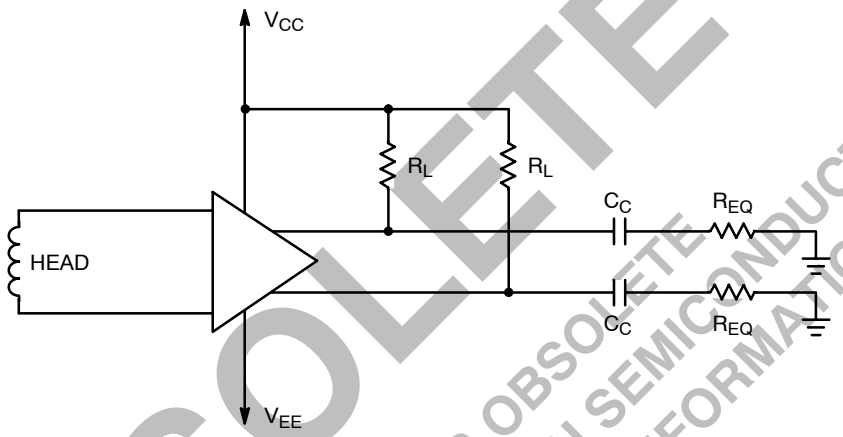


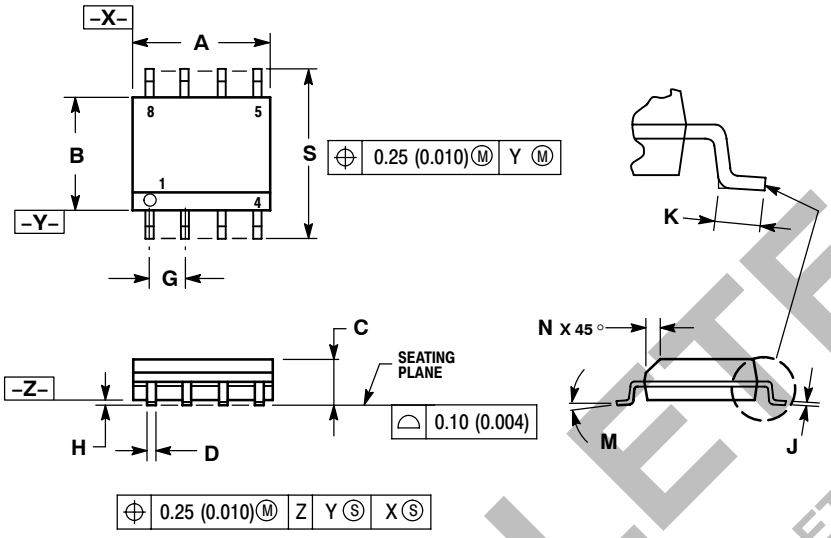
Figure 2. Applications Diagram

Recommended Load Conditions

1. Input must be AC coupled.
2. C_C's are AC coupling capacitors.
3. R_L's are DC bias and termination resistors, (recommended 130 Ω).
4. R_{EQ} represents equivalent load resistance.
5. For gain calculations $R_P = (R_L \times R_{EQ})/(R_L + R_{EQ})$.
6. Differential gain = 0.72 R_P (±18%)(R_P in Ω).
7. Ceramic capacitors (0.1 μF) are recommended for good power supply noise filtering.

PACKAGE DIMENSIONS

SO−8
D SUFFIX
CASE 751−07
ISSUE W



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION.
4. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.
5. DIMENSION D DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.127 (0.005) TOTAL IN EXCESS OF THE D DIMENSION AT MAXIMUM MATERIAL CONDITION.

	MILLIMETERS		INCHES	
DIM	MIN	MAX	MIN	MAX
A	4.80	5.00	0.189	0.197
B	3.80	4.00	0.150	0.157
C	1.35	1.75	0.053	0.069
D	0.33	0.51	0.013	0.020
G	1.27 BSC		0.050 BSC	
H	0.10	0.25	0.004	0.010
J	0.19	0.25	0.007	0.010
K	0.40	1.27	0.016	0.050
M	0 °	8 °	0 °	8 °
N	0.25	0.50	0.010	0.020
S	5.80	6.20	0.228	0.244

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
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