Data Sheet | March 29, 2007 | FN6472.0

500MHz Rail-to-Rail Amplifiers

The 5962-0623501QPC, 5962-0623502QPC are fully DSCC SMD compliant parts and the SMD data sheets are available on the DSCC website (http://www.dscc.dla.mil/programs/specfind/default.asp). The 5962-0623501QPC is electrically equivalent to the EL8102 and the 5962-0623502QPC is electrically equivalent to the EL8103, reference these data sheets for additional information. These parts are single rail-to-rail amplifiers with a -3dB bandwidth of 500MHz and slew rate of 600V/µs. Running off a very low 11mA supply current, the 5962-0623501QPC, 5962-0623502QPC also feature inputs that go to 0.15V below the V_S- rail.

The 5962-0623501QPC includes a fast-acting disable/power-down circuit. With a 25ns disable and a 200ns enable, the 5962-0623501QPC is ideal for multiplexing applications.

The 5962-0623501QPC, 5962-0623502QPC are designed for a number of general purpose video, communication, instrumentation, and industrial applications. Both parts are available in 8 Ld SBDIP. All are specified for operation over the -55°C to +125°C temperature range.

Ordering Information

PART NUMBER	PART MARKING	TEMP. RANGE (°C)	PACKAGE	PKG. DWG. #
5962-0623501QPC	5962-0623 501QPC	-55 to +125	8 Ld SBDIP	D8.3
5962-0623502QPC	5962-0623 502QPC	-55 to +125	8 Ld SBDIP	D8.3

Features

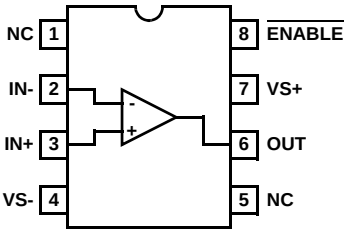
- 500MHz -3dB bandwidth
- 600V/µs slew rate
- Low supply current = 11mA
- Supplies from 3V to 5.0V
- Rail-to-rail output
- Input to 0.15V below V_S-
- Fast 25ns disable (5962-0623501QPC only)

Applications

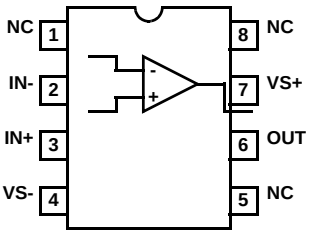
- Video amplifiers
- Portable/hand-held products
- Communications devices

Pinouts

5962-0623501QPC
(8 LD SBDIP)
TOP VIEW



5962-0623502QPC
(8 LD SBDIP)
TOP VIEW



Absolute Maximum Ratings (T_A = +25°C)

Supply Voltage from V_S+ to V_S- 5.5V
Input Voltage . . . . . V_S+ +0.3V to V_S- -0.3V
Differential Input Voltage 2V
Continuous Output Current 20mA

Thermal Information

Power Dissipation 60.5mW
Storage Temperature . . . . . .-65°C to +150°C
Ambient Operating Temperature . . . . . .-55°C to +125°C
Operating Junction Temperature . . . . . .+150°C

CAUTION: Stresses above those listed in "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress only rating and operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied.

IMPORTANT NOTE: All parameters having Min/Max specifications are guaranteed. Typ values are for information purposes only. Unless otherwise noted, all tests are at the specified temperature and are pulsed tests, therefore: $T_J = T_C = T_A$

Electrical Specifications

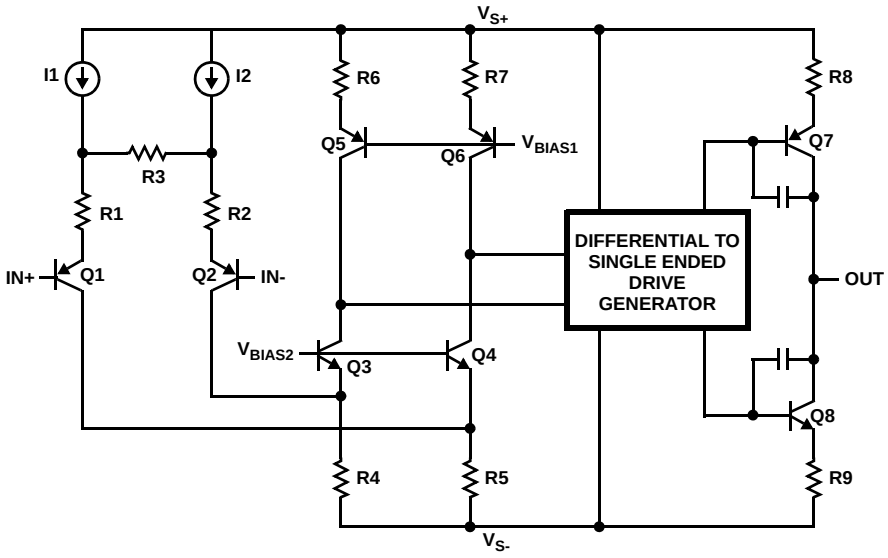
V_S+ = 5V, V_S- = GND, T_A = +25°C, V_{CM} = 2.5V, R_L to 2.5V, A_V = 1, Unless Otherwise Specified

PARAMETER	DESCRIPTION	CONDITIONS	MIN	TYP	MAX	UNIT
INPUT CHARACTERISTICS						
R_{IN}	Input Resistance	Common Mode		3.5		MΩ
C_{IN}	Input Capacitance			0.5		pF
OUTPUT CHARACTERISTICS						
R_{OUT}	Output Resistance	A_V = +1		30		mΩ
ENABLE (5962-0623501QPC ONLY)						
t_{EN}	Enable Time			200		ns
t_{DS}	Disable Time			25		ns
AC PERFORMANCE						
BW	-3dB Bandwidth	A_V = +1, R_F = 0Ω, C_L = 5pF		500		MHz
		A_V = -1, R_F = 1kΩ, C_L = 5pF		140		MHz
		A_V = +2, R_F = 1kΩ, C_L = 5pF		165		MHz
		A_V = +10, R_F = 1kΩ, C_L = 5pF		18		MHz
BW	±0.1dB Bandwidth	A_V = +1, R_F = 0Ω, C_L = 5pF		35		MHz
Peak	Peaking	A_V = +1, R_L = 1kΩ, C_L = 5pF		1		dB
GBWP	Gain Bandwidth Product			200		MHz
PM	Phase Margin	R_L = 1kΩ, C_L = 5pF		55		°
SR	Slew Rate	A_V = 2, R_L = 100Ω, V_{OUT} = 0.5V to 4.5V		600		V/µs
t_R	Rise Time	$2.5V_{STEP}$, 20% to 80%		4		ns
t_F	Fall Time	$2.5V_{STEP}$, 20% to 80%		2		ns
OS	Overshoot	200mV step		10		%
t_{PD}	Propagation Delay	200mV step		1		ns
t_S	0.1% Settling Time	200mV step		15		ns
dG	Differential Gain	A_V = +2, R_F = 1kΩ, R_L = 150Ω		0.01		%
dP	Differential Phase	A_V = +2, R_F = 1kΩ, R_L = 150Ω		0.01		°
e_N	Input Noise Voltage	f = 10kHz		12		nV/√Hz
i_N+	Positive Input Noise Current	f = 10kHz		1.7		pA/√Hz
i_N-	Negative Input Noise Current	f = 10kHz		1.3		pA/√Hz

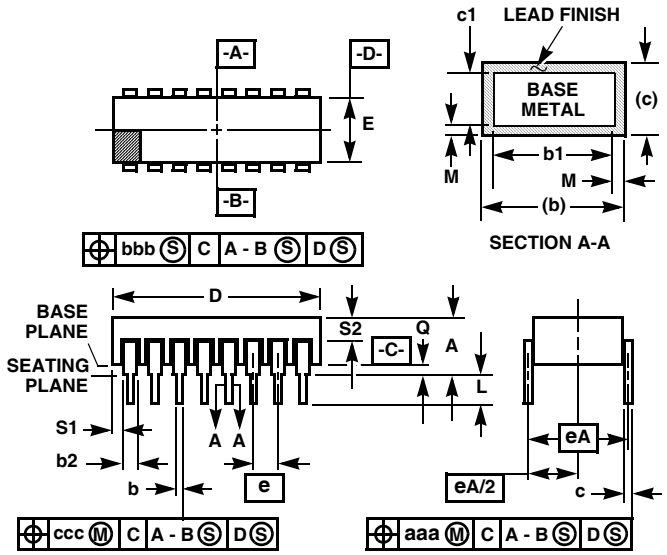
Pin Descriptions

PART		PIN NAME	FUNCTION
5962-0623501QPC	5962-0623502QPC		
1, 5	1, 5, 8	NC	Not connected
2	2	IN-	Inverting input
3	3	IN+	Non-inverting input
4	4	VS-	Negative power supply
6	6	OUT	Amplifier output
7	7	VS+	Positive power supply
8		$\overline{\text{ENABLE}}$	Enable and disable input

Simplified Schematic Diagram



Ceramic Dual-In-Line Metal Seal Packages (SBDIP)



D8.3 MIL-STD-1835 CDIP2-T8 (D-4, CONFIGURATION C)
8 LEAD CERAMIC DUAL-IN-LINE METAL SEAL PACKAGE

SYMBOL	INCHES		MILLIMETERS		NOTES
	MIN	MAX	MIN	MAX	
A	-	0.200	-	5.08	-
b	0.014	0.026	0.36	0.66	2
b1	0.014	0.023	0.36	0.58	3
b2	0.045	0.065	1.14	1.65	-
b3	0.023	0.045	0.58	1.14	4
c	0.008	0.018	0.20	0.46	2
c1	0.008	0.015	0.20	0.38	3
D	-	0.405	-	10.29	-
E	0.220	0.310	5.59	7.87	-
e	0.100 BSC		2.54 BSC		-
eA	0.300 BSC		7.62 BSC		-
eA/2	0.150 BSC		3.81 BSC		-
L	0.125	0.200	3.18	5.08	-
Q	0.015	0.060	0.38	1.52	5
S1	0.005	-	0.13	-	6
S2	0.005	-	0.13	-	7
α	90^o	105^o	90^o	105^o	-
aaa	-	0.015	-	0.38	-
bbb	-	0.030	-	0.76	-
ccc	-	0.010	-	0.25	-
M	-	0.0015	-	0.038	2
N	8		8		8

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NOTES:

1. Index area: A notch or a pin one identification mark shall be located adjacent to pin one and shall be located within the shaded area shown. The manufacturer's identification shall not be used as a pin one identification mark.
2. The maximum limits of lead dimensions b and c or M shall be measured at the centroid of the finished lead surfaces, when solder dip or tin plate lead finish is applied.
3. Dimensions b1 and c1 apply to lead base metal only. Dimension M applies to lead plating and finish thickness.
4. Corner leads (1, N, N/2, and N/2+1) may be configured with a partial lead paddle. For this configuration dimension b3 replaces dimension b2.
5. Dimension Q shall be measured from the seating plane to the base plane.
6. Measure dimension S1 at all four corners.
7. Measure dimension S2 from the top of the ceramic body to the nearest metallization or lead.
8. N is the maximum number of terminal positions.
9. Braze fillets shall be concave.
10. Dimensioning and tolerancing per ANSI Y14.5M - 1982.
11. Controlling dimension: INCH.