

DP2580/ μ A2580 Winchester Disk Servo Preamplifier

General Description

The DP2580 provides termination, gain, and impedance buffering for the thin film servo read head in Winchester disk drives. It is a differential output design with fixed gain of approximately 250. The bandwidth is guaranteed greater than 30 MHz.

The internal design of the DP2580 is optimized for low input noise voltage to allow its use in low input signal level applications. It is offered in 8-lead ceramic DIP, 10-lead Flatpak, and an SO-8 package suitable for surface mounting.

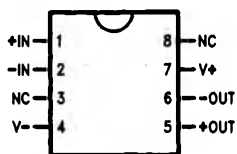
Features

- Low input noise voltage
- Wide power supply range
- Internal damping resistors

Typ. 0.5 nV/ $\sqrt{\text{Hz}}$
8V to 13V
1 k Ω

Connection Diagrams

8-Lead DIP and SO-8 Package

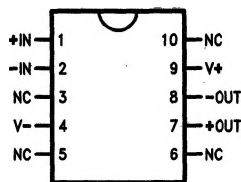


Top View

TL/F/9409-1

- †Order Number μ A2580DC
- ††See NS Package Number N08E
- †Order Number μ A2580SC
- ††See NS Package Number M08A

10-Lead Ceramic Flatpak



Top View

TL/F/9409-2

- †Order Number μ A2580FC
- ††See NS Package Number F10B

Pin Description

Name	Function
+ IN	Positive Differential Input
- IN	Negative Differential Input
NC	No Connection
V-	Negative Differential Supply with Respect to V_{CC}
+ OUT	Positive Differential Output
- OUT	Negative Differential Output
V+	Positive Differential Supply with Respect to V_{CC}
NC	No Connection

†For most current order information, contact your local sales office.
††For most current package information, contact product marketing.

Absolute Maximum Ratings

If Military/Aerospace specified devices are required, please contact the National Semiconductor Sales Office/Distributors for availability and specifications.

Storage Temperature Range	
Ceramic DIP and Flatpak	-65°C to +175°C
SO-8	-65°C to +150°C
Operating Temperature Range	0°C to +70°C
Lead Temperature	
Ceramic DIP and Flatpak	
(Soldering, 60 seconds)	300°C
SO-8	
(Soldering, 10 seconds)	265°C

Internal Power Dissipation (Notes 1 and 2)

8L—Ceramic DIP	1.3W
10L—Flatpak	0.79W
SO-8	15V
Supply Voltage	15V
Output Voltage	15V
Differential Input Voltage	±1V

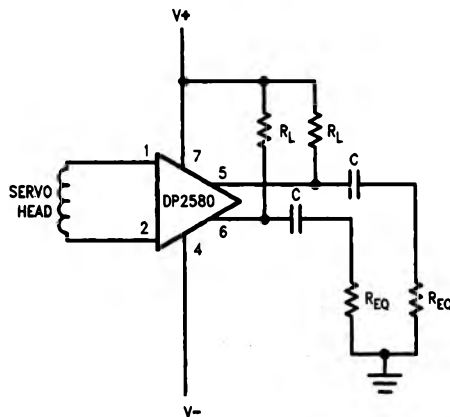
Note 1: T_J Max = 150°C for the SO-8, and 175°C for the Ceramic DIP and Flatpak.

Note 2: Ratings apply to ambient temperature at 25°C. Above this temperature, derate the 8L—Ceramic DIP at 8.7 mW/°C, the 10L—Flatpak at 5.3 mW/°C, and the SO-8 at 6.5 mW/°C.

Electrical Characteristics $T_A = 25^\circ\text{C}$, $V_+ - V_- = 8\text{V}$ to 13.2V , unless otherwise specified

Symbol	Parameter	Conditions	Min	Typ	Max	Units
G	Gain (Differential)	$R_P = 100\Omega$, $(V_+) - (V_-) = 12\text{V}$		250		
BW	Bandwidth (3 dB)	$V_I = 0.5 \text{ mV}_{p-p}$	30	65		MHz
R_I	Input Resistance			300		Ω
C_I	Input Capacitance			35		pF
V_I	Input Dynamic Range (Differential)	$R_P = 100\Omega$, $(V_+) - (V_-) = 12\text{V}$			1	mV _{pp}
I_S	Supply Current	$(V_+) - (V_-) = 12\text{V}$		28	40	mA
ΔV_O	Output Offset (Differential)	$R_S = 0\Omega$, $R_P = 100\Omega$	600		600	mV
V_n	Equivalent Input Noise	$BW = 4 \text{ MHz}$		0.6		nV/ $\sqrt{\text{Hz}}$
PSRR	Power Supply Rejection Ratio	$R_S = 0\Omega$, $f = 5 \text{ MHz}$	50	65	0.90	dB
$\Delta G/V$	Gain Sensitivity (Supply)	$\Delta(V_+) - (V_-) \pm 10\%$, $R_P = 100\Omega$			0.5	%/V
$\Delta G/T$	Gain Sensitivity (Temp.)	$T_A = 25^\circ\text{C}$ to 70°C , $R_P = 100\Omega$		0.16		%/°C
CMR	Common Mode Rejection (Input)	$f = 5 \text{ MHz}$	60	70		dB

Typical Applications (Notes 1-4)



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Note 1: Leads shown for 8-lead DIP.

Note 2: R_{EO} is equivalent load resistance.

Note 3: $R_P = \frac{R_L \cdot R_{EO}}{R_L + R_{EO}}$

Note 4: $G = 2.5 R_P$
Where $R_P =$ value Note 3 (above) in Ω .