

**MP7509DI**

T-51-11

CMOS 4-CHANNEL DIFFERENTIAL ANALOG MULTIPLEXERS**FEATURES**

- Latch-Proof
- Overvoltage Protected
- DTL/TTL/CMOS Direct Interface
- Power Dissipation: 30 μ W
- Silicon-Nitride Passivated
- Output "Enable" Control
- Low Power
- Replaces DG509 and HI509A

GENERAL DESCRIPTION

The MP7509 is a monolithic, CMOS dual 4-channel analog multiplexer. Depending on the state of two binary address lines and an "enable" input, it switches two output busses to two of 8 inputs.

Very low power dissipation, overvoltage protection and TTL/CMOS direct interfacing are achieved by combining a unique circuit design and a CMOS process. Silicon nitride passivation ensures long term stability while monolithic construction provides reliability.

ABSOLUTE MAXIMUM RATINGS

($T_A = +25^\circ\text{C}$ unless otherwise noted.)

V_{DD} to GND +17V

V_{SS} to GND -17V

Overvoltage at V_O (V_S)

1 second surge $V_{DD}+25\text{ V}$ or ($V_{SS}-25\text{ V}$)

Continuous $V_{DD}+20\text{ V}$ or ($V_{SS}-20\text{ V}$)

Switch Current (I_S , Continuous) 35 mA

Switch Current (I_S , Surge)

1mS duration, 10% duty cycle 50 mA

Power Dissipation (Package)*

16 Pin Ceramic DIP** 900 mW

16 Pin Plastic DIP*** 470 mW

* Device mounted with all leads soldered or welded to PC board

** Derate 12 mW/ $^\circ\text{C}$ above $+75^\circ\text{C}$

*** Derate 6.5 mW/ $^\circ\text{C}$ above $+25^\circ\text{C}$

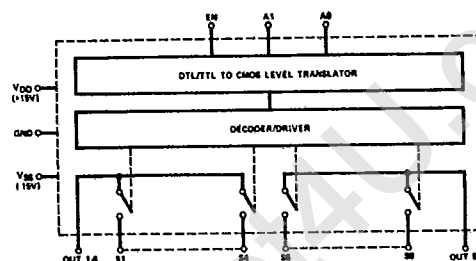
Operating Temperature

Plastic (KN) 0°C to $+70^\circ\text{C}$

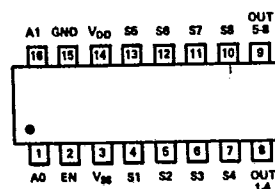
Ceramic (KD) -25°C to $+85^\circ\text{C}$

Ceramic (SD) -55°C to $+125^\circ\text{C}$

Storage Temperature -65°C to $+150^\circ\text{C}$

FUNCTIONAL DIAGRAM**TRUTH TABLE**

MP7509			
A_1	A_0	E_N	"ON"
0	0	1	1 & 5
0	1	1	2 & 6
1	0	1	3 & 7
1	1	1	4 & 8
X	X	0	None

PIN CONFIGURATION (Top View)

MICRO POWER SYSTEMS INC

MP7508DI, MP7509DI

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SPECIFICATIONS $V_{DD} = +15V$, $V_{SS} = -15V$, unless otherwise noted.

PARAMETER	TEST CONDITION	SWITCH CONDITION	Over Specified 25° C Temp. Range			UNITS
			TYP	MIN	MAX	
ANALOG SWITCH						
R _{ON}	V _S = −10V to +10V I _S = 100μA	ON	400		1000	Ω
ΔR _{ON} Between Switches		ON	4			%
I _S (Input Leakage)	V _S = −10V, V _{OUT} = +10V and V _S = +10V, V _{OUT} = −10V "Enable" Low	OFF	.1		±50	nA
I _{OUT} (OFF Channel Leakage)		OFF	1.0		±250	nA
I _{OUT} (ON Channel Leakage)	V _S = −10V to +10V	ON	.1		±250	nA
DIGITAL CONTROL						
V _{INL} V _{INH}			0.8 2.4		0.8	
I _{INL} or I _{INH}			1.0	2.4	1.0	V μA
DYNAMIC CHARACTERISTICS						
t _A (Access Time); (Note 1)			500		1000	ns
t _{ON(EN)} t _{OFF(EN)}	V _{IN} : 0 to 5.0V, V _{EN} : 0 to 5.0V		530 600		1500 1000	ns ns
"OFF" Isolation	V _{EN} = 0.8V, R _L = 1 KΩ C _L = 7pf, V _S = 3V RMS f = 500K Hz		65			dB
C _S (Input Capacitance)		OFF	5			pf
C _{OUT} (Output Capacitance)	Per Channel	OFF	2.5			pf
C _{OS} (Input to Output Capacitance)		OFF	0.1			pf
POWER SUPPLY						
I _{DD}	All Digital Inputs Low	OFF	5		400	μA
I _{SS}	All Digital Inputs Low	OFF	1		400	μA
I _{DD}	All Digital Inputs High	ON	270		2000	μA
I _{SS}	All Digital Inputs High	ON	1		400	μA

NOTES:

1. AC parameters are sample tested to insure conformance to specifications.
2. KN versions specified for $0^\circ C$ to $+70^\circ C$; KD versions for $-25^\circ C$ to $+85^\circ C$; and SD versions for $-55^\circ C$ to $+125^\circ C$.