MICRO POWER SYSTEMS

MP7502

T-51-11

CMOS 4-CHANNEL ANALOG MULTIPLEXERS

FEATURES

- DTL/TTL/CMOS Direct Interface
- Power Dissipation: 30μW
- R_{ON}: 170Ω
- Output "Enable" Control

GENERAL DESCRIPTION

The MP7502 is a monolithic CMOS dual 4-channel analog multiplexer. Depending on the state of 2 binary address inputs and an "enable", it switches two output busses to two of 8 inputs.

The MP7502 is an excellent example of a high breakdown CMOS process combined with a double layer interconnect for high density. Silicon nitride passivation ensures long term stability and reliability.

ABSOLUTE MAXIMUM RATINGS
(T_A=+25°C unless otherwise noted.)

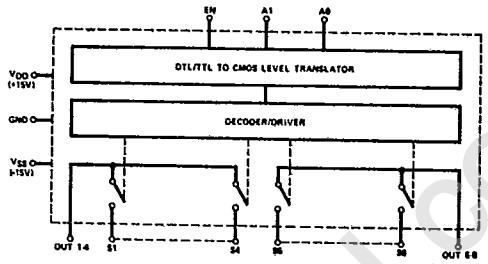
V_{DD} to GND	+17V
V_{SS} to GND	-17V
V Between Any Switch Terminals	25V
Switch Current (I_S, Continuous)	35mA
Switch Current (I_S, Surge)	
1mS duration, 10% duty cycle	50mA
Digital Input Voltage Range	V_{DD} to GND
Power Dissipation (Package)*	
16 Pin Ceramic DIP**	900mW
16 Pin Plastic DIP***	470mW
Operating Temperature	
Plastic	0°C to +70°C
Ceramic (J, K versions)	-25°C to +85°C
Ceramic (S version)	-55°C to +125°C
Storage Temperature	-65°C to +150°C

* Device mounted with all leads soldered or welded to PC board
** Derate 12mW/°C above +75°C
*** Derate 6.5mW/°C above +25°C

CAUTION:

1. Do not apply voltages higher than V_{DD} and V_{SS} to any other terminal, especially when $V_{SS} = V_{DD} = 0V$ all other pins should be set at 0V.
2. The digital control inputs are zener protected; however, permanent damage may occur on unconnected units under high energy electrostatic fields. Keep unused units in conductive foam at all times.

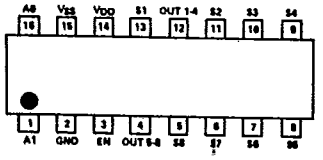
FUNCTIONAL DIAGRAM



TRUTH TABLE

MP7502			
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)



See Section 7 for Ordering Information

MP7502

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

PARAMETER Note 1	VERSION Note 2	SWITCH CONDITION	25°C TYP.	Over Specified Temp. Range MIN	Over Specified Temp. Range MAX	UNITS	TEST CONDITIONS
ANALOG SWITCH							
R_{ON}	All	ON	300		375	Ω	−10 V ≤ V_S ≤ +10 V
R_{ON} vs. V_S	All	ON	20			%	I_S = 1.0 mA
R_{ON} vs. Temperature	All	ON	0.5			%/°C	
ΔR_{ON} Between Switches	All	ON	4			%	V_S = 0 V, I_S = 1.0 mA
R_{ON} vs. Temperature Between Switches	All	ON	±0.01			%/°C	
I_S	J, K	OFF	2		50	nA	V_S = −10 V, V_{OUT} = +10 V and
	S	OFF	0.5		50	nA	V_S = +10 V, V_{OUT} = −10 V
I_{OUT}	J, K	OFF	5		125	nA	V_S = −10 V, V_{OUT} = +10 V and
	S	OFF	3		125	nA	V_S = +10 V, V_{OUT} = −10 V
							Enable LOW
$\|I_{OUT} - I_S\|$	J, K	ON	7		175	nA	V_S = 0
	S	ON	3.5		175	nA	
DIGITAL CONTROL							
V_{INL}	All				0.8	V	
V_{INH}	J			3.0		V	Note 3
	K, S			2.4		V	
I_{INL} or I_{INH}	All		10			nA	
C_{IN}	All		3			pF	
DYNAMIC CHARACTERISTICS							
t_{ON}	All		0.8			μs	V_{IN} = 0 to +5.0 V
t_{OFF}	All		0.8			μs	(See Test Circuit 2, Page 19)
C_S	All	OFF	5			pF	
C_{OUT}	All	OFF	15			pF	
$C_{S\text{-}OUT}$	All	OFF	0.5			pF	
C_{SS} Between Any Two Switches	All	OFF	0.5			pF	
POWER SUPPLY							
I_{DD}	J, K		100			μA	
I_{SS}	J, K		100			μA	All Digital Inputs Low
I_{DD}	S		500		500	μA	
I_{SS}	S		500		500	μA	
I_{DD}	J, K		500			μA	
I_{SS}	J, K		100			μA	All Digital Inputs High
I_{DD}	S		800		800	μA	
I_{SS}	S		800		800	μA	

NOTES:
1. Specifications subject to change without notice.
2. JN, KN versions specified for 0°C to +70°C; JD, KD versions for −25°C to +85°C; and SD versions for −55°C to +125°C.
3. A pullup resistor, typically 1-2 kΩ is required to make the MP7502J compatible with TTL/DTL levels. The maximum value is determined by the output leakage current of the driver gate when in the high state.