

AD7510DI/AD7511DI
1.1 Scope.

This specification covers the detail requirements for two monolithic dielectrically isolated CMOS switches featuring overvoltage protection up to $\pm 25V$ above the power supplies. Both parts consist of four independent single pole single-throw analog switches differing only in that the digital control logic is inverted on the AD7511DI.

1.2 Part Number.

The complete part number per Table 1 of this specification is as follows:

Device	Part Number ¹
– 1	AD7511DIS(X)/883B
– 2	AD7510DIS(X)/883B
– 3	AD7511DIT(X)/883B

NOTE

¹See paragraph 1.2.3 for package identifier.

1.2.3 Case Outline.

See Appendix 1 of General Specification ADI-M-1000: package outline:

(X)	Package	Description
D	D-16	16-Pin Side-Brazed Ceramic
Q	Q-16	16-Pin Cerdip
E	E-20A	20-Contact LCC

1.3 Absolute Maximum Ratings. ($T_A = 25^\circ\text{C}$ unless otherwise noted)

V_{DD} to DGND	+17V
V_{SS} to GND	–17V
Overvoltage at V_D (V_S)	
(1 second surge)	$V_{DD} + 25V$ or $V_{SS} - 25V$
(Continuous)	$V_{DD} + 20V$ or $V_{SS} - 20V$
Switch Current (I_{DS} , Continuous)	50mA
1ms Duration, 10% Duty Cycle	150mA
Digital Input Voltage Range	–0.3V to $V_{DD} + 0.3V$
Power Dissipation	
Up to $+75^\circ\text{C}$	450mW
Derates above $+75^\circ\text{C}$	6mW/ $^\circ\text{C}$
Operating Temperature Range	–55 $^\circ\text{C}$ to $+125^\circ\text{C}$
Storage Temperature Range	–65 $^\circ\text{C}$ to $+150^\circ\text{C}$
Lead Temperature (Soldering 10sec)	$+300^\circ\text{C}$

1.5 Thermal Characteristics.

Thermal Resistance $\theta_{JC} = 35^\circ\text{C/W}$
 $\theta_{JA} = 120^\circ\text{C/W}$

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Table 1.

Test	Symbol	Device	Design Limit $T_{min}-T_{max}$	Sub Group 1	Sub Group 2, 3	Sub Group 4	Test Condition ¹	Units
Switch "ON" Resistance	R_{ON}	- 1, 2	175	100	175		$-10V \leq V_D \leq +10V, I_{DS} = 1mA$	Ω max
Leakage Current, Switch Open	I_{DOFF}	- 1, 2	200		200	3	$V_D = -10V, V_S = +10V$ and $V_D = +10V, V_S = -10V$	$\pm nA$ max
Output Current	I_{DON}	- 1, 2	400		400	10	$V_D = V_S = +10V$ and $V_D = V_S = -10V$	$\pm nA$ max
Digital Input Low Voltage	V_{IL}	- 1, 2	0.8	0.8	0.8			V max
Digital Input High Voltage	V_{IH}	- 1	3.0	3.0	3.0			V min
		- 2	2.4	2.4	2.4			
Input Leakage Current ²	I_{IN}	- 1, 2	10	10			$V_{IN} = 0V$ or V_{DD}	$\pm nA$ max
Enable to Switch "ON" ²	t_{ON}	- 1, 2	1.0				$V_{IN} = 0$ to $+3V$ and $+3V$ to $0V$	μs max
Enable to Switch "OFF" ²	t_{OFF}	- 1, 2	1.0					μs max
Supply Current from V_{DD}	I_{DD}	- 1, 2	800	800	800		All Digital Inputs = V_{IH}	μA max
			500	500	500		All Digital Inputs = V_{IL}	μA max
Supply Current from V_{SS}	I_{SS}	- 1, 2	800	800	800		All Digital Inputs = V_{IH}	μA max
			500	500	500		All Digital Inputs = V_{IL}	μA max

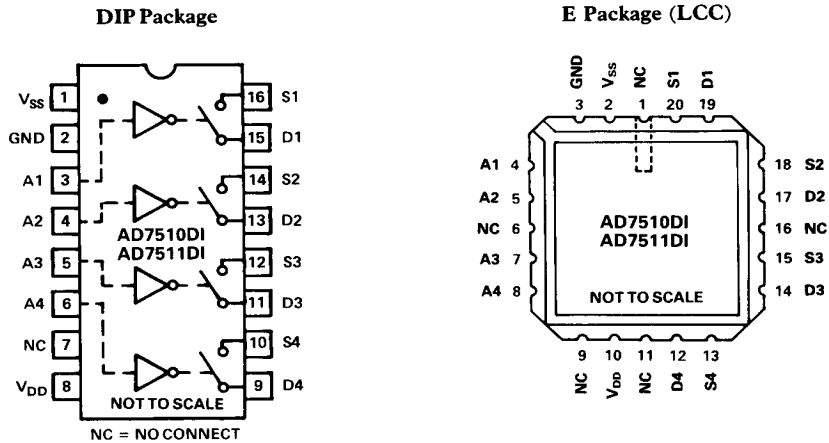
NOTES

¹ $V_{DD} = +15V; V_{SS} = -15V$ unless otherwise stated.

²These design limits are at $+25^\circ C$ only.

3.2.1 Functional Block Diagram and Terminal Assignments.

Top View

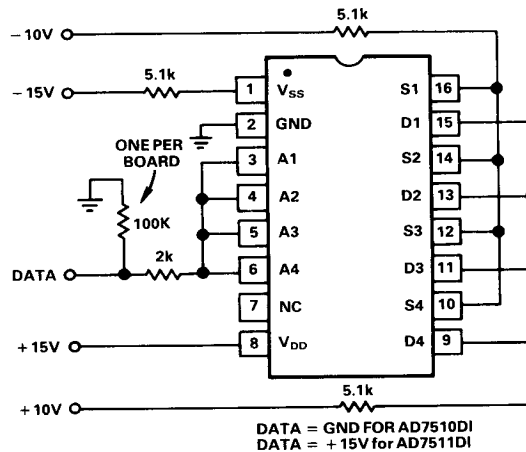


3.2.4 Microcircuit Technology Group.

This microcircuit is covered by technology group (82).

4.2.1 Life Test/Burn-In Circuit.

Steady state life test is per MIL-STD-883 Method 1005. Burn-in is per MIL-STD-883 Method 1015 test condition (B).



AD7510DI: SWITCH "ON" FOR ADDRESS "HIGH"
 AD7511DI: SWITCH "ON" FOR ADDRESS "LOW"