

AD7506/AD7507 — SPECIFICATIONS ($V_{DD} = +15V$, $V_{SS} = -15V$ unless otherwise noted.)

Parameter	Version ¹	Switch Condition	@ +25°C	Over Specified Temperature Range	Test Conditions
ANALOG SWITCH					
R _{ON}	K T	ON ON	300Ω typ, 450Ω max 400Ω max	550Ω max 500Ω max	V _S =−10V to +10V, I _S =1mA
R _{ON} vs. V _S	All	ON	15% typ		V _S =0V, I _S =1mA
R _{ON} vs. Temperature	All	ON	0.5%/°C typ		
ΔR _{ON} Between Switches	All	ON	4% typ		
R _{ON} vs. Temperature Between Switches	All	ON	0.05%/°C typ		
I _S (OFF)	K T	OFF OFF	0.05nA typ, 5nA max 0.05nA typ, 1nA max	50nA max 50nA max	V _S =−10V, V _{OUT} =+10V and
I _{OUT} (OFF)	AD7506 K T	OFF OFF	0.3nA typ, 20nA max 0.3nA typ, 10nA max	500nA max 500nA max	V _S =+10V, V _{OUT} =−10V “Enable” Low
	AD7507 K T	OFF OFF	0.3nA typ, 10nA max 0.3nA typ, 5nA max	250nA max 250nA max	
I _{OUT} −I _S (Any Switch ON)	AD7506 K T	ON ON	0.3nA typ, 20nA max 0.3nA typ, 10nA max	500nA max 500nA max	V _S =0V
	AD7507 K T	ON ON	0.3nA typ, 10nA max 0.3nA typ, 5nA max	250nA max 250nA max	
DIGITAL CONTROL					
V _{INL}	All			0.8V max	
V _{INH}	All			2.4V min	
I _{INL} or I _{INH}	All		10μA max	30μA max	
C _{IN}	All		3pF typ		
DYNAMIC CHARACTERISTICS ²					
t _{TRANSITION}	All		700ns typ, 1000ns max		V _{IN} : 0 to 3.0V
t _{OPEN}	All		100ns typ		
t _{ON} (En)	All		1.5μs max		V _{EN} : 0 to 3.0V
t _{OFF} (En)	All		1μs max		
“OFF” Isolation	All		70dB typ		V _{EN} =0, R _L =200Ω, C _L =3.0pF, V _S =3.0V rms, f=50kHz
C _S	All	OFF	5pF typ		
C _{OUT}	AD7506 All	OFF OFF	40pF typ 20pF typ		
	AD7507				
C _{S−OUT}	All	OFF	0.5pF typ		
C _{SS} Between Any Two Switches	All	OFF	0.5pF typ		
POWER SUPPLY					
I _{DD}	K T	OFF OFF	0.05mA typ, 1mA max 0.05mA typ, 1mA max	2mA max	All Digital Inputs Low
I _{SS}	K T	OFF OFF	0.05mA typ, 1mA max 0.05mA typ, 1mA max	2mA max	
I _{DD}	K T	ON ON	0.3mA typ, 1mA max 0.3mA typ, 1mA max	2mA max	All Digital Inputs High
I _{SS}	K T	ON ON	0.05mA typ, 1mA max 0.05mA typ, 1mA max	2mA max	

NOTES

¹KN Version specified for 0 to +70°C; KQ Version for -25°C to +85°C; and TQ, TE Versions for -55°C to +125°C.

²Sample tested to ensure compliance.

Specifications subject to change without notice.

CAUTION

ESD (electrostatic discharge) sensitive device. The digital control inputs are diode protected; however, permanent damage may occur on unconnected devices subject to high energy electrostatic fields. Unused devices must be stored in conductive foam or shunts. The protective foam should be discharged to the destination socket before devices are removed.

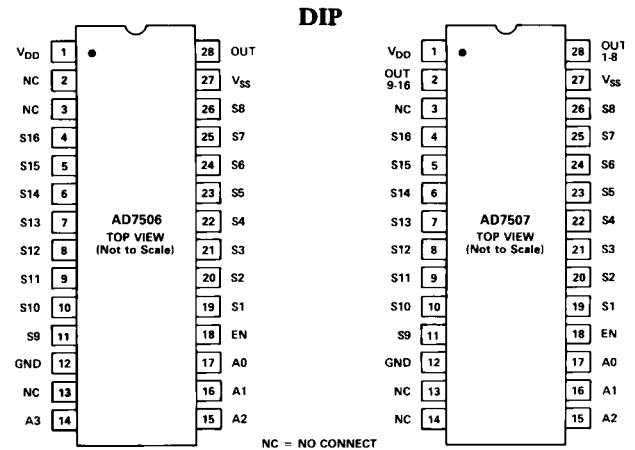


TRUTH TABLES

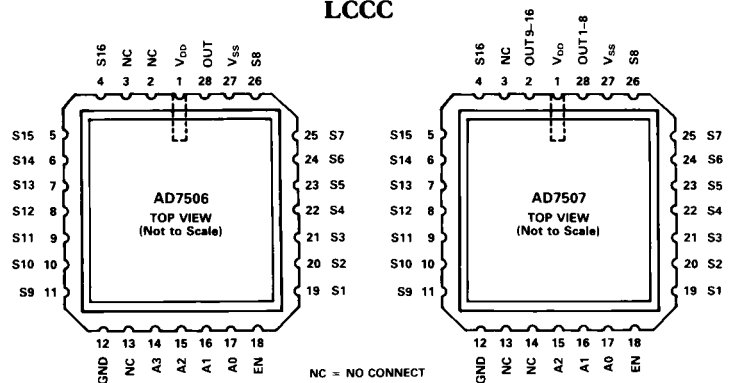
AD7506					
A ₃	A ₂	A ₁	A ₀	E _N	"ON"
0	0	0	0	1	1
0	0	0	1	1	2
0	0	1	0	1	3
0	0	1	1	1	4
0	1	0	0	1	5
0	1	0	1	1	6
0	1	1	0	1	7
0	1	1	1	1	8
1	0	0	0	1	9
1	0	0	1	1	10
1	0	1	0	1	11
1	0	1	1	1	12
1	1	0	0	1	13
1	1	0	1	1	14
1	1	1	0	1	15
1	1	1	1	1	16
X	X	X	X	0	None

AD7507				
A ₂	A ₁	A ₀	E _N	"ON"
0	0	0	1	1 & 9
0	0	1	1	2 & 10
0	1	0	1	3 & 11
0	1	1	1	4 & 12
1	0	0	1	5 & 13
1	0	1	1	6 & 14
1	1	0	1	7 & 15
1	1	1	1	8 & 16
X	X	X	0	None

PIN CONFIGURATIONS

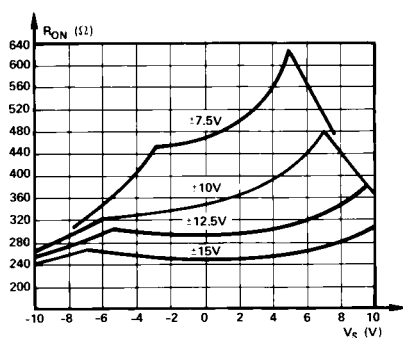


LCCC

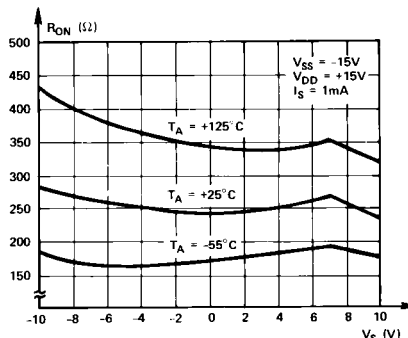


Typical Performance Characteristics

1. R_{ON} vs. V_S

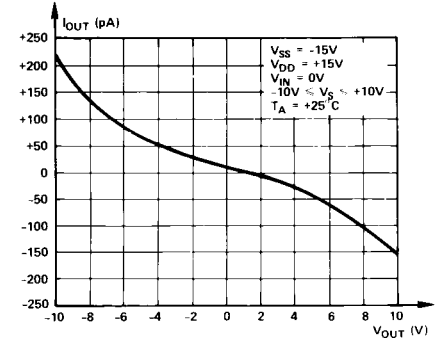


At Different Power Supplies

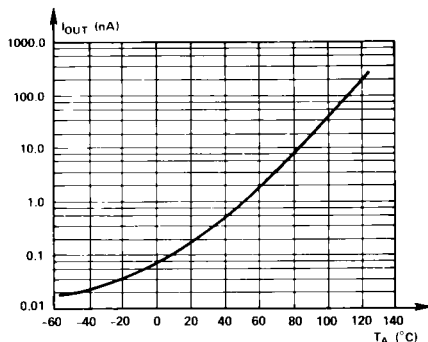


At Different Temperatures

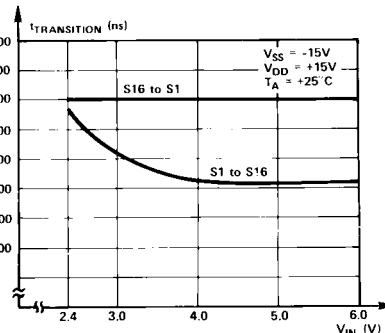
2. I_{OUT} vs. V_{OUT}



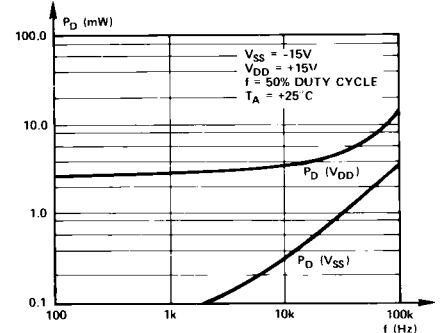
3. I_{OUT} vs. T_A



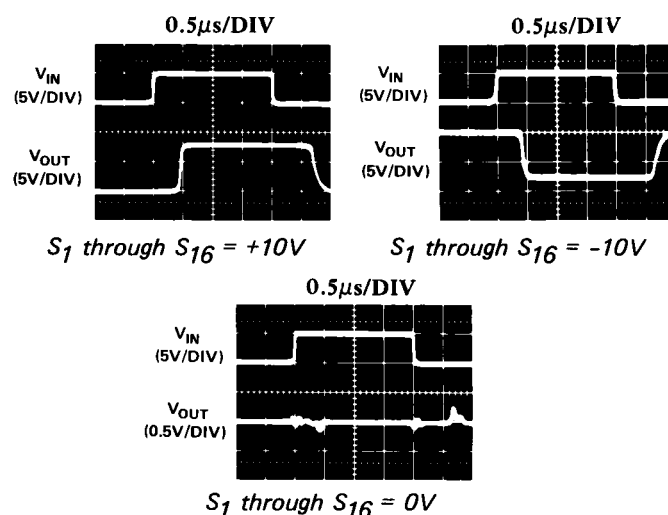
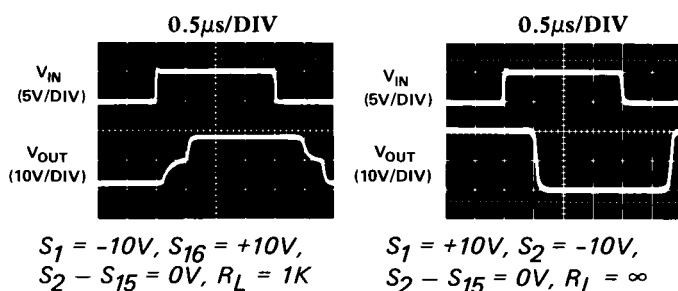
4. t_{TRANSITION} vs. V_{IN}



5. P_D vs. Logic Frequency



TEST CIRCUIT 1



Dimensions shown in inches and (mm).

Figure 1: Dimensions of the 16-Lead Pin Grid Array (PGA) package. The diagram shows a top view and a side view of the package. The top view shows a rectangular package with 16 pins on each long side. Dimensions include overall length (1.45 inches / 36.83 mm), pin pitch (0.085 inches / 2.16 mm), and pin width (0.045 inches / 1.15 mm). The side view shows the package height (0.55 inches / 13.97 mm), pin height (0.175 inches / 4.45 mm), and pin diameter (0.012 inches / 0.305 mm).

1. LEAD NO. 1 IDENTIFIED BY DOT OR NOTCH
2. CERDIP LEADS WILL BE EITHER TIN PLATED OR SOLDER DIPPED IN ACCORDANCE WITH MIL-M-38510 REQUIREMENTS

Figure 1: Dimensions of the 16-pin DIP package. The diagram shows a side view and a bottom view of the package. The side view shows a height of 0.100 (2.54) inches and a width of 0.064 (1.63) inches. The bottom view shows a square footprint with side lengths of 0.055 (1.40) inches and 0.045 (1.14) inches. The pin pitch is 0.075 (1.91) inches. The pin diameter is 0.028 (0.71) inches. The pin length is 0.022 (0.56) inches. The package is labeled 'BOTTOM VIEW' and 'NO. 1 PIN INDEX'. The dimensions are given in inches and millimeters.

PRINTED IN U.S.A.