DESCRIPTION

A4757 is a quad single pole/double throw high-speed CMOS TTL-compatible bus switch. The low on resistance of the switch allows inputs to be connected to outputs without adding propagation delay or generating additional ground bounce noise. Also this device has exceptionally high current capability, which is far greater than most analog switches offered today. A single 5V supply is all that is required for operation.

The A4757 is available in SOP16 and SSOP16 packages.

FEATURES

- V_{CC}: 4.0V-5.5V
- Low On-Resistance: 5Ω
- Fast switching: 10.0ns (V_{DD} = 5V)
- Low crosstalk: -70dB (V_{DD} = 5V)
- ESD: >4000V HBM
- Available in SOP16 and SSOP16 Packages

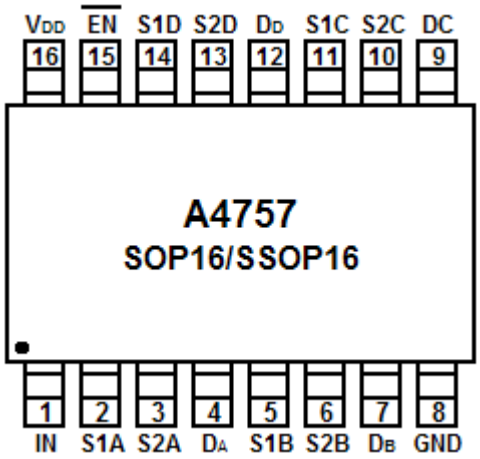
APPLICATION

- Set Top Boxes
- Flat Panel Displays
- CRT Displays
- DVD - RW

ORDERING INFORMATION

Package Type	Part Number	
SOP16	M16	A4757M16R
		A4757M16VR
		A4757M16U
		A4757M16VU
SSOP16	MX16	A4757MX16R
		A4757MX16VR
		A4757MX16U
		A4757MX16VU
Note	R: Tape & Reel, U: Tube V: Green Package	
AiT provides all Pb free products Suffix " V " means Green Package		

PIN DESCRIPTION



Top View

Pin #	Symbol	Function
1	IN	Select Input
2	S1A	Analog Video 1 I/O
3	S2A	Analog Video 2 I/O
4	D_A	Analog Video I/O
5	S1B	Analog Video 1 I/O
6	S2B	Analog Video 2 I/O
7	D_B	Analog Video I/O
8	GND	Ground
9	D_C	Analog Video I/O
10	S2C	Analog Video 2 I/O
11	S1C	Analog Video 1 I/O
12	D_D	Analog Video I/O
13	S2D	Analog Video 2 I/O
14	S1D	Analog Video 1 I/O
15	/EN	Enable
16	V_{DD}	Power

FUNCTION TABLE

ENN	S	ON SWITCH
0	1	S2 (S2A, S2B, S2C, S2D)
0	0	S1 (S1A, S1B, S1C, S1D)
1	X	Disabled

ABSOLUTE MAXIMUM RATINGS

V_{DD}, Supply Voltage	-0.5 to +6.0V
V_{IS}, Analog Input Voltage (V_{S1}, V_{S2}, or V_D)	-0.5 to +6.0V
V_S, V_{ENN}, Digital Select Input Voltage	-0.5 to +6.0V
I_{anll}, Continuous DC Current from D to S1/S2	±200mA

Stress beyond above listed “Absolute Maximum Ratings” may lead permanent damage to the device. These are stress ratings only and operations of the device at these or any other conditions beyond those indicated in the operational sections of the specifications are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

RECOMMENDED OPERATING CONDITIONS

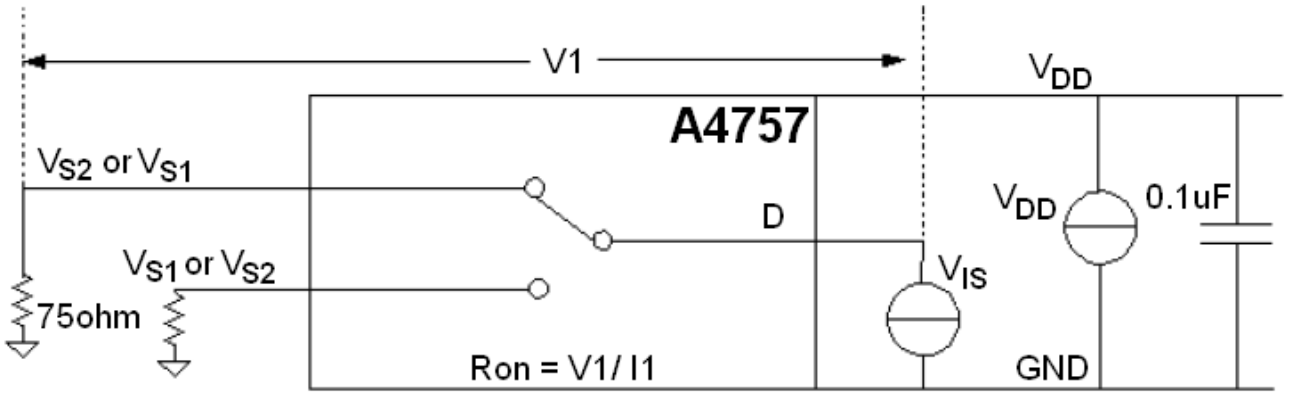
Parameter	Symbol	MIN	MAX	Units
Supply Voltage	V_{DD}	4.0	5.5	V
Analog Input Voltage (V_{S1}, V_{S2}, or V_D)	V_{IS}	0	2	V
Digital Select Input Voltage	V_S, V_{ENN}	0	V_{DD}	V
Operation Temperature	T_A	-40	85	℃

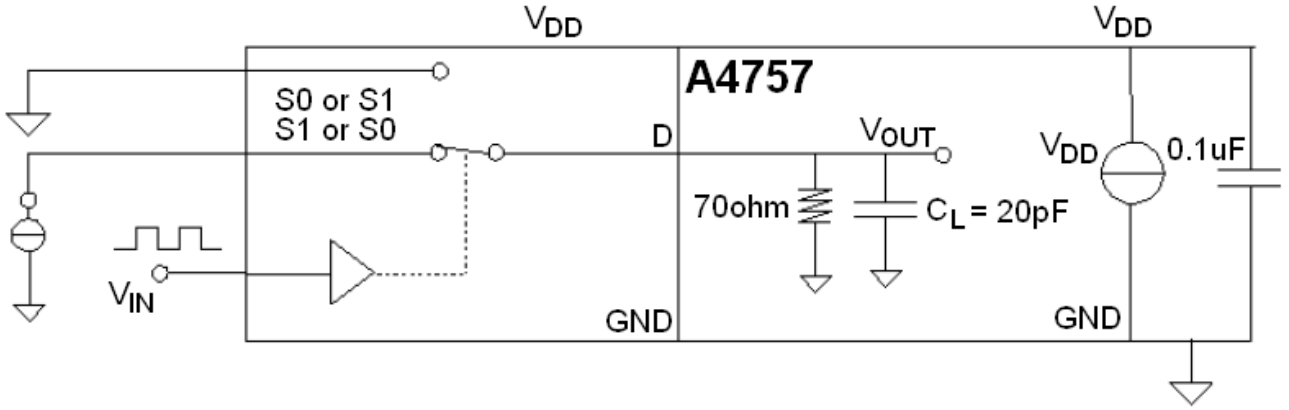
ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
DC ELECTRICAL CHARACTERISTICS						
Switch On Resistance	R_{ON}	V_{DD} = 4.5V, V_{IS} = 1.0V, R_L = 75Ω, I_{IS} = 13mA	-	5	7	Ω
		V_{DD} = 4.5V, V_{IS} = 2.0V, R_L = 75Ω, I_{IS} = 26mA	-	7.5	10	
HIGH Level Input Voltage	V_{IH}	Guaranteed Logic HIGH Level	2.0	-	-	V
LOW Level Input Voltage	V_{IL}	Guaranteed Logic LOW Level	-0.5	-	0.8	V
Input high current	I_{IH}	V_{DD} = 5.5V, V_{IN} = V_{DD}	-	-	±1	μA
Input low current	I_{IL}	V_{DD} = S.5V, V_{IN} = GND	-	-	±1	μA
Switch output leakage current	I_o	0 ≤ S1, S2, or D ≤ V_{DD}, Switch OFF	-	-	±1	μA
Switch short circuit current	I_{os}		-	230	-	mA
Clamping diode voltage	V_{IK}	V_{DD} = 4.5V, I_{IN}= -18mA	-	-0.9	-	V
Input hysteresis	V_H		-	200	-	mV
AC ELECTRICAL CHARACTERISTICS						
Turn-On time	T_{ON}	R_L = 70Ω, C_L = 20pF	-	8	15	ns
Turn-Off time	T_{OFF}	R_L = 70Ω, C_L = 20pF	-	4	8	ns
Cross talk	X_{TALK}	R_{IN} = 10Ω, R_L = 150Ω, f = 10MHz	-	-70	-	dB
Enable input capacitance	C_{IN}	V_{IN} = 0V, f = 1MHz	-	5	-	pF
Off state input capacitance	C_{OFF}	V_{IN} = 0V, f = 1MHz	-	10	-	pF
On state input capacitance	C_{ON}	V_{IN} = 0V, f = 1MHz		15		pF
POWER SUPPLY CHARACTERISTICS						
Quiescent supply current	I_{DD}	V_{DD} = +5.5V, IN = GND or 5V	-	0.1	10.0	μA
Supply current change when changing input	ΔI_{DD}	V_{DD} = +5.5V, IN = 3.4V	-	-	300	μA
Supply current when toggle input	I_{DDD}	V_{DD} = +5.5V, S1, S2 and D Pins Open ENN = GND Control Input Toggling 50% Duty Cycle	-	-	0.1	mA/MHz

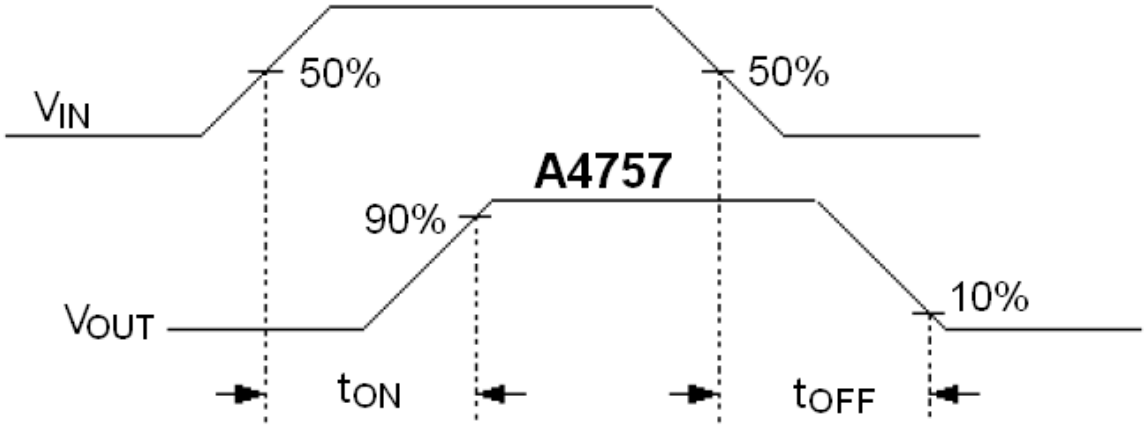
TEST CIRCUIT

1. Test Circuit for On Resister

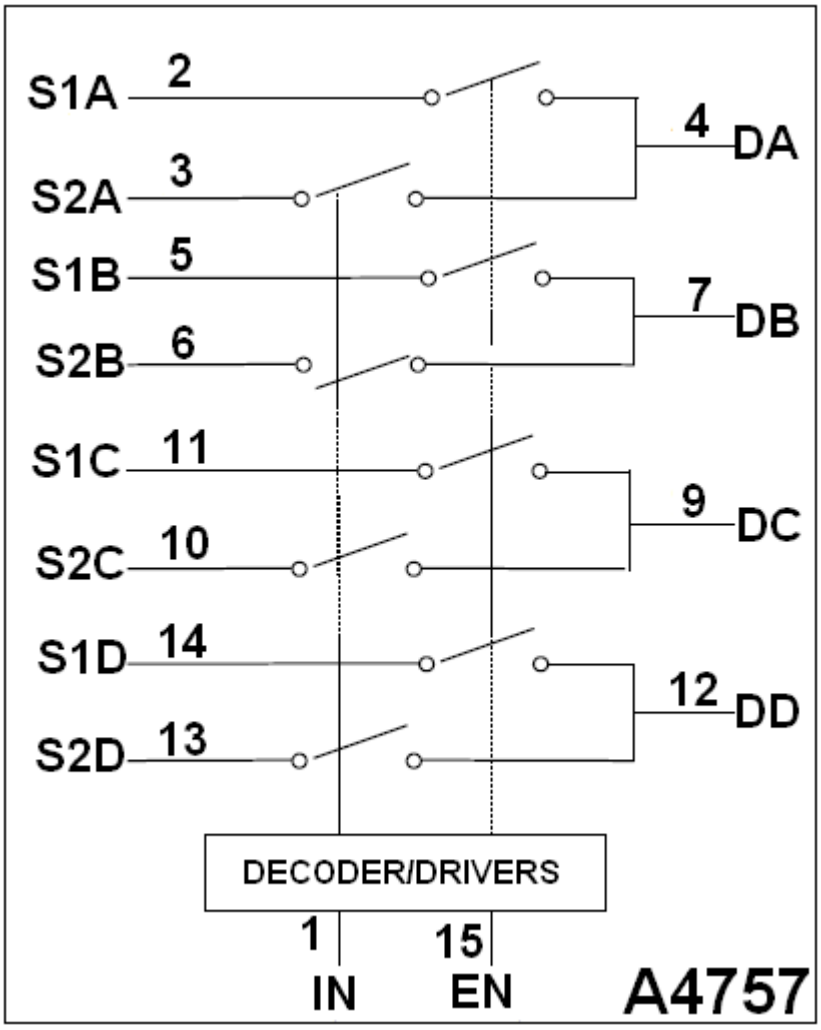




2. Test Circuit for Bandwidth

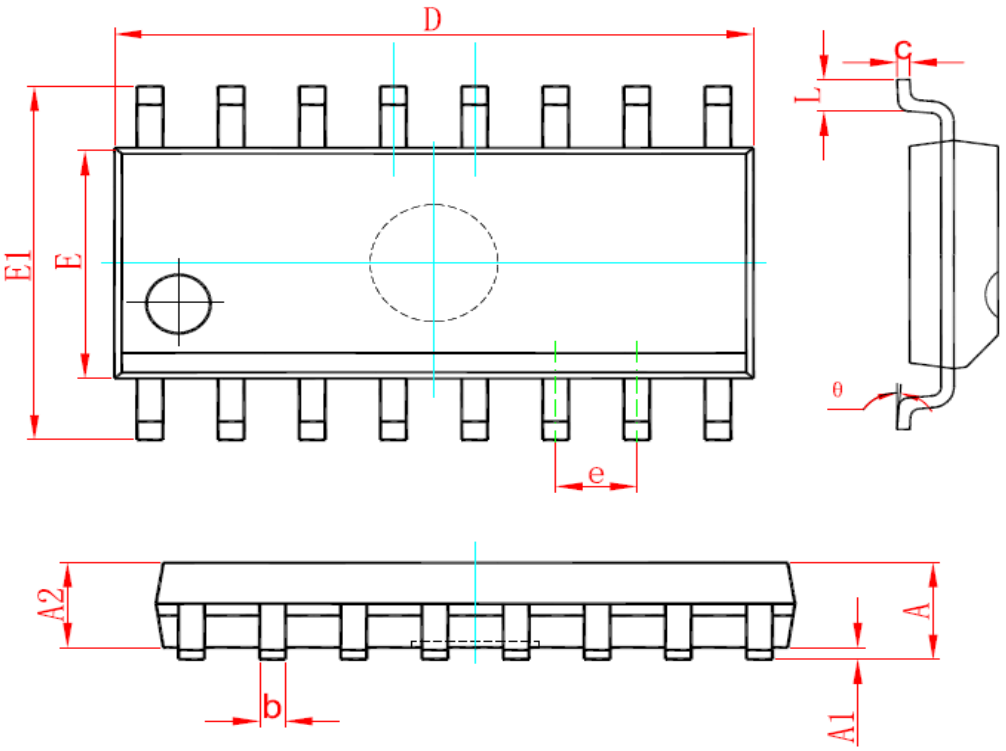


BLOCK DIAGRAM



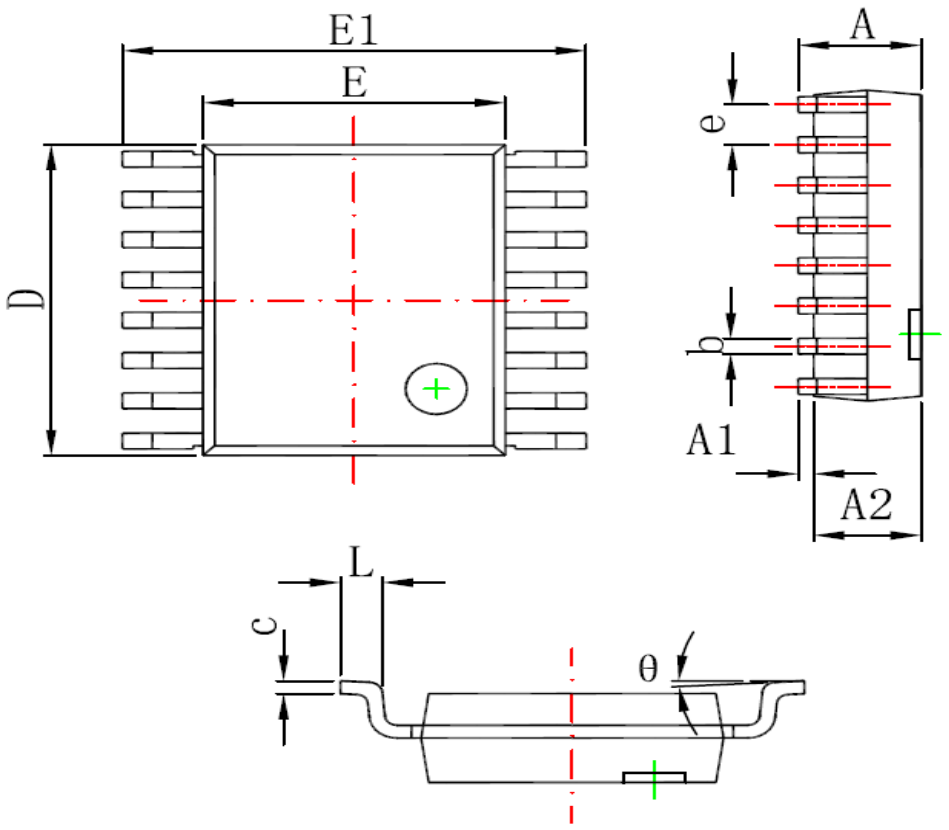
PACKAGE INFORMATION

Dimension in SOP16 (Unit: mm)



Symbol	Min	Max
A	1.350	1.750
A1	0.100	0.250
A2	1.350	1.550
b	0.330	0.510
c	0.170	0.250
D	9.800	10.200
E	3.800	4.000
E1	5.800	6.200
e	1.270(BSC)	
L	0.400	1.270
θ	0°	8°

Dimension in SSOP16 (Unit: mm)



Symbol	Min	Max
A	1.350	1.750
A1	0.100	0.250
A2	1.350	1.550
b	0.200	0.300
c	0.170	0.250
D	4.700	5.100
E	3.800	4.000
E1	5.800	6.200
e	0.635 (BSC)	
L	0.400	1.270
θ	0°	8°

IMPORTANT NOTICE

AiT Semiconductor Inc. (AiT) reserves the right to make changes to any its product, specifications, to discontinue any integrated circuit product or service without notice, and advises its customers to obtain the latest version of relevant information to verify, before placing orders, that the information being relied on is current.

AiT Semiconductor Inc.'s integrated circuit products are not designed, intended, authorized, or warranted to be suitable for use in life support applications, devices or systems or other critical applications. Use of AiT products in such applications is understood to be fully at the risk of the customer. As used herein may involve potential risks of death, personal injury, or servere property, or environmental damage. In order to minimize risks associated with the customer's applications, the customer should provide adequate design and operating safeguards.

AiT Semiconductor Inc. assumes to no liability to customer product design or application support. AiT warrants the performance of its products of the specifications applicable at the time of sale.