DESCRIPTION

A4733 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 A4733 is available in SOP16 and SSOP16 packages.

ORDERING INFORMATION

Package Type	Part Number	
SOP16	M16	A4733M16R
		A4733M16VR
SSOP16	MX16	A4733MX16R
		A4733MX16VR
Note	R: Tape & Reel V: Green Package	
AiT provides all Pb free products Suffix " V " means Green Package		

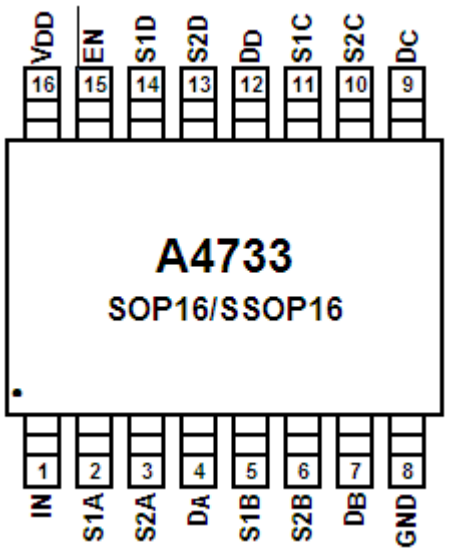
FEATURES

- 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

PIN DESCRIPTION



Top View

Pin #	Symbol	Function
1	IN	Select Input
2	S_1A	Analog Video 1 I/O
3	S_2A	Analog Video 2 I/O
4	D_A	Analog Video I/O
5	S_1B	Analog Video 1 I/O
6	S_2B	Analog Video 2 I/O
7	D_B	Analog Video I/O
8	GND	Ground
9	D_C	Analog Video I/O
10	S_2C	Analog Video 2 I/O
11	S_1C	Analog Video 1 I/O
12	D_D	Analog Video I/O
13	S_2D	Analog Video 2 I/O
14	S_1D	Analog Video 1 I/O
15	$\overline{EN}$	Enable
16	V_{DD}	Power

FUNCTION TABLE

ENN	S	ON SWITCH
0	1	S2 (S_2A, S_2B, S_2C, S_2D)
0	0	S1 (S_1A, S_1B, S_1C, S_1D)
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

V_{DD}, Supply Voltage	4.0V to 5.5V
V_{IS}, Analog Input Voltage (V_{S1}, V_{S2}, or V_D)	0V to 2V
V_S,V_{ENN}, Digital Select Input Voltage	0V to V_{DD}
T_A, Operation Temperature	-40℃ to 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	Ω
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

DYNAMIC CHARACTERISTICS @ +2.7V Supply

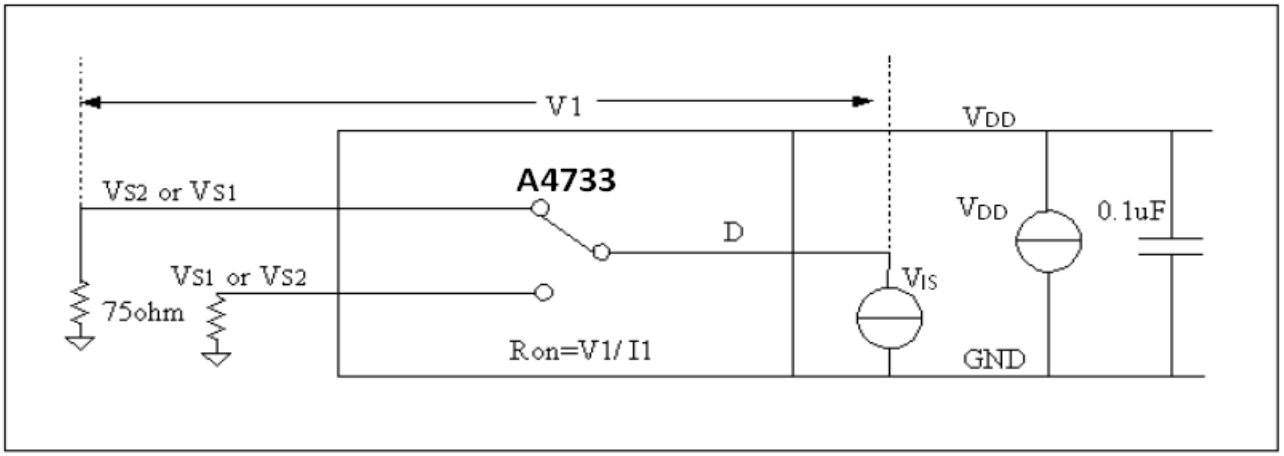
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
AC ELECTRICAL CHARACTERISTICS						
Turn-On time	T_{ON}	R_L = 70Ω, C_L = 20pF	-	8	15	ns
Turn-Off time	T_{OFF}	R_L = 70Ω, C_L = 20pF	-	4	8	ns
Cross talk	X_{TALK}	R_{IN} = 10Ω, R_L = 150Ω, f = 10MHz	-	-70	-	dB
Enable input capacitance	C_{IN}	V_{IN} = 0V, 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

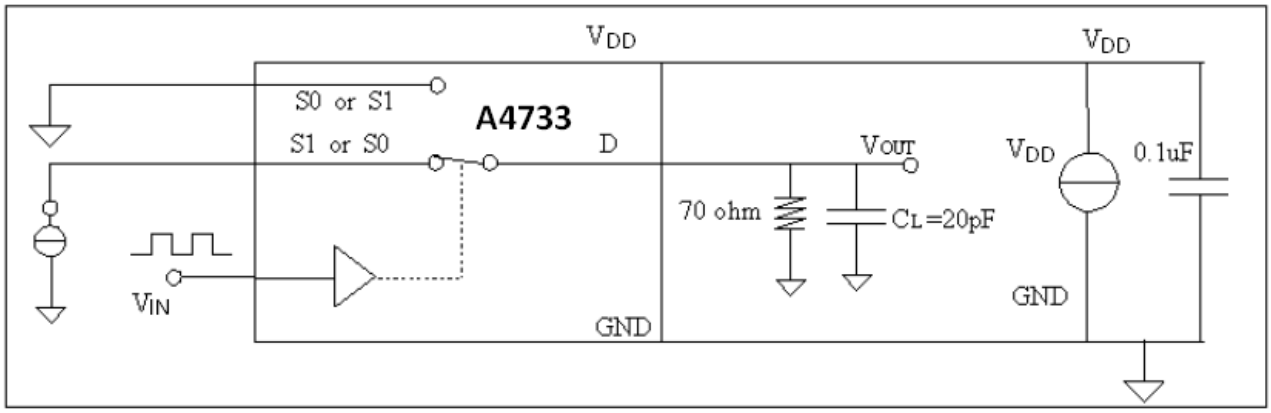
DC ELECTRICAL CHARACTERISTICS @ +5.0V Supply

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
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

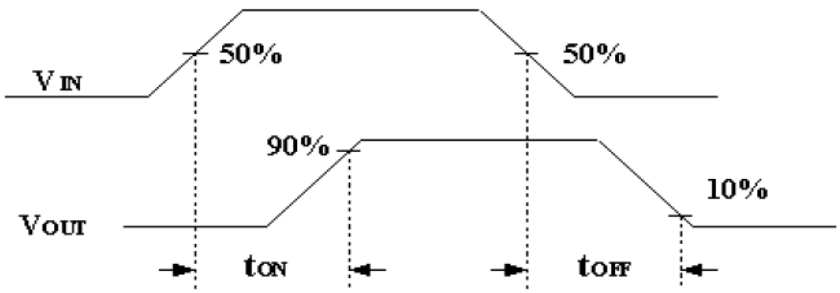
TEST CIRCUIT

1. Test Circuit for On Resister

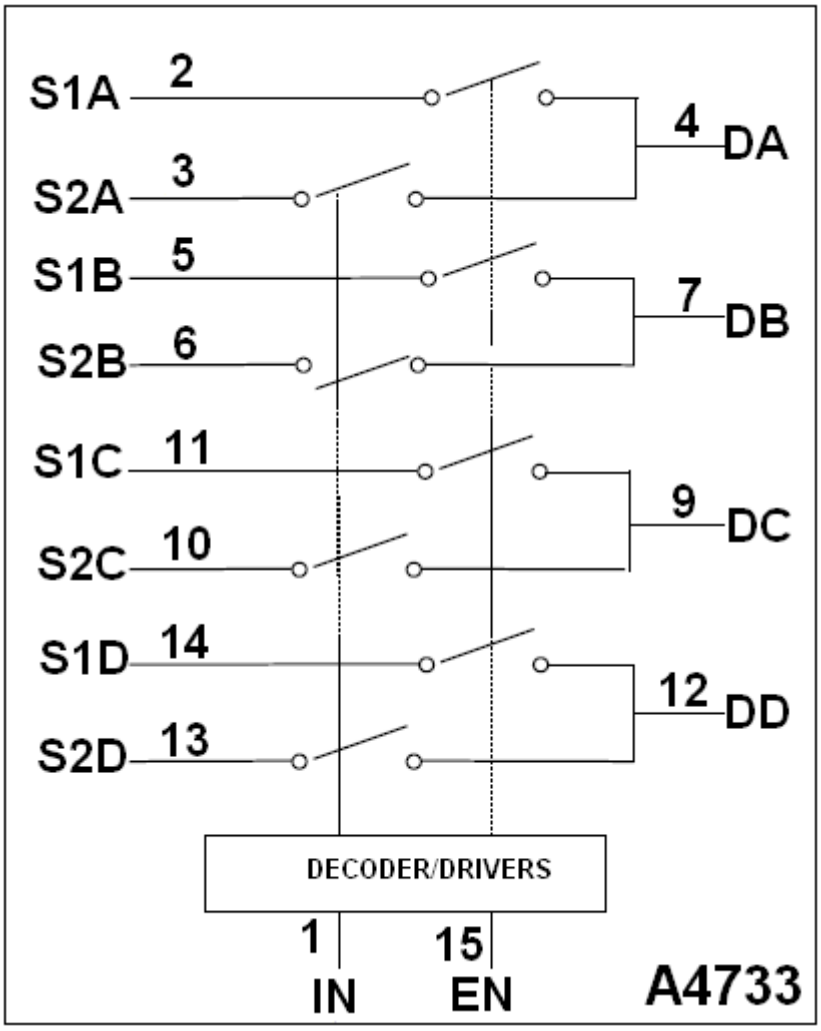




2. Test Circuit for Bandwidth

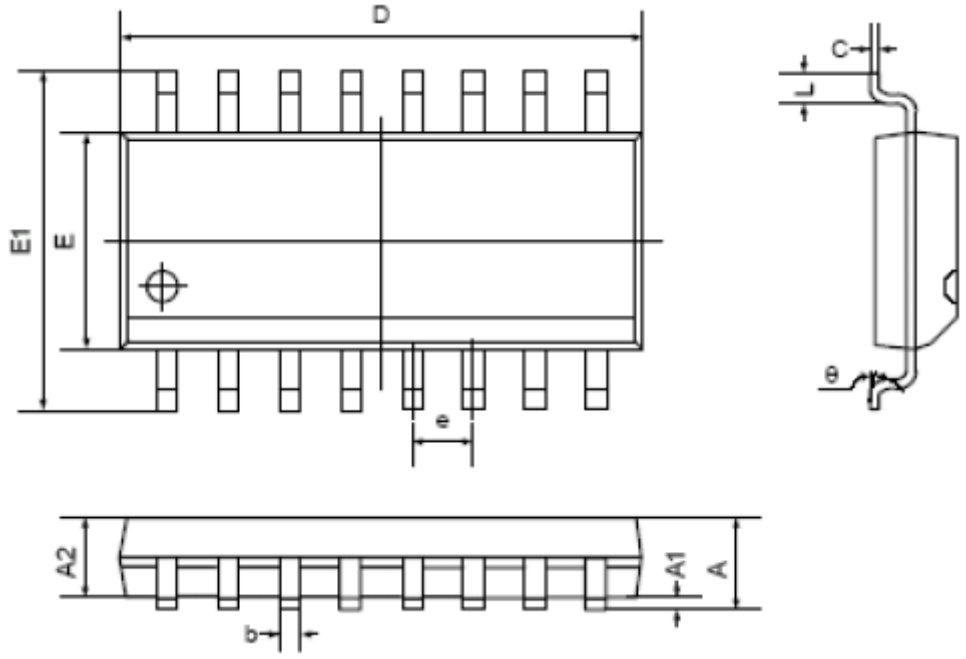


BLOCK DIAGRAM



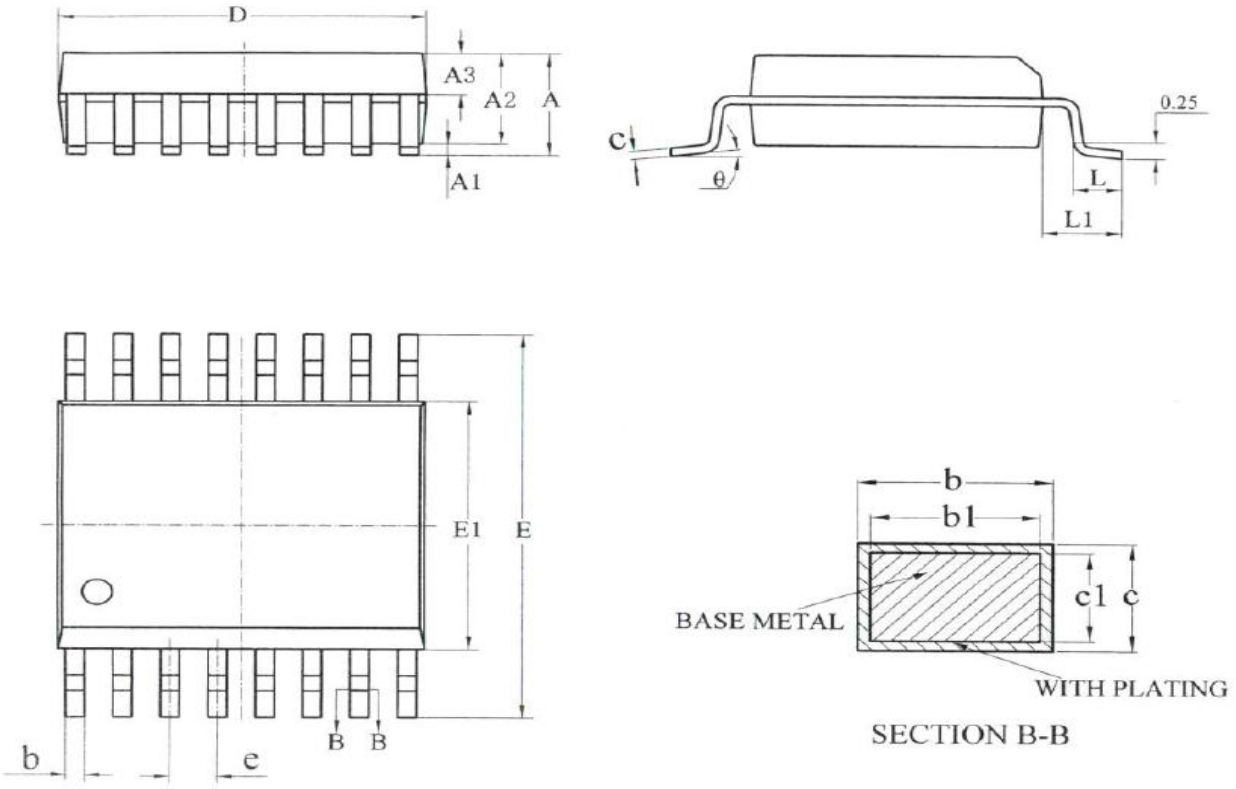
PACKAGE INFORMATION

Dimension in SOP-16 Package (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	10.20
E	3.800	4.000
E1	5.800	6.200
e	1.270 (BSC)	
L	0.400	1.270
θ	0°	8°

Dimension in SSOP-16 Package (Unit: mm)



Symbol	Min	Nom	Max
A	-	-	1.75
A1	0.100	0.180	0.250
A2	1.350	1.400	1.450
A3	0.500	0.600	0.700
b	0.240	-	0.300
b1	0.230	0.254	0.280
c	0.200	-	0.250
c1	0.190	0.200	0.210
D	4.800	4.900	5.000
E	5.800	6.000	6.200
E1	3.800	-	4.000
e	0.635 BSC		
L	0.500	0.650	0.800
L1	1.050 BSC		
θ	0°	-	8°
L/F mil	93*92 100*160		

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