AME

AME4621

1-Ohm Low Voltage Dual SPDT Analog Switch

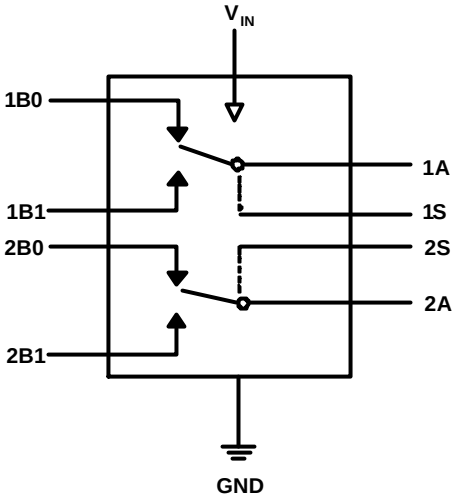
■ General Description

The AME4621 is Dual Single Pole Double Throw(SPDT) analog switches with wide operating single power supply voltage range, from 1.8V to 5.5V.

AME4621 has 1Ω max ON resistance when +5V power supply is used. These products also have fast switching speeds, t_{ON} = t_{OFF} = 50nS max.

AME4621 is available in DFN-10B.

■ Functional Block Diagram



Control Input(s)	Function
L	B0 connected to A
H	B1 connected to A

H: High Logic Level
L: Low Logic Level

■ Features

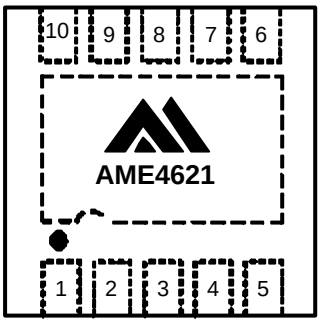
- Low R_{ON}
- Wide Operation Supply Voltage: 1.8V to 5.5V
- Fast Switching Time: t_{ON} = t_{OFF} = 50nS max.
- TTL-Logic Compatible
- Over Thermal Protection
- Space Saving in DFN-10B
- All AME's Lead Free Product Meet RoHS Standards

■ Applications

- Power Routing
- Battery-Operated Equipment
- Audio and Video Signal Routing
- Low-Voltage Data-Acquisition Systems
- Communications Circuits
- PCMCIA Cards
- PC Peripherals

■ Pin Configuration

DFN-10B
(3mmx3mmx0.75mm)
Top View



AME4621AEVB

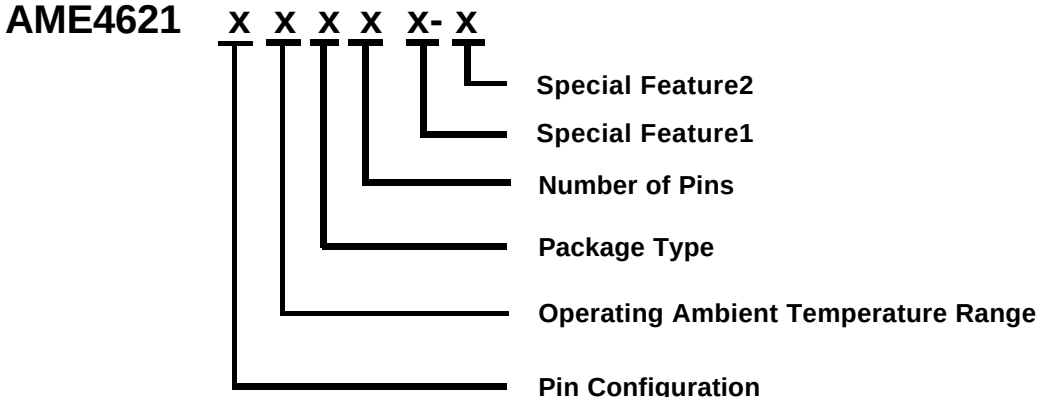
1. GND
2. 1B1
3. 1S
4. IN
5. 2S
6. 2A
7. 2B1
8. 2B0
9. 1A
10. 1B0

*** Die Attach:**
Conductive Epoxy

■ Pin Description

Pin Number	Pin Name	Pin Description
3, 5	1S, 2S	Digital Control Input
4	IN	Supply Voltage Input
1	GND	Ground
10, 8	1B0, 2B0	Data Port Function
9, 6	1A, 2A	Data Port Function
2, 7	1B1, 2B1	Data Port Function

■ Ordering Information



Pin Configuration	Operating Ambient Temperature Range	Package Type	Number of Pins	Special Feature1	Special Feature 2 (For DFN package only)
A: 1. GND (DFN-10B) 2. 1B1 3. 1S 4. IN 5. 2S 6. 2A 7. 2B1 8. 2B0 9. 1A 10. 1B0	E: -40^{O}C to +85^{O}C	V: DFN	B: 10	Z: Lead free	3: 3x3x0.75(mm) (LxWxH)

■ Ordering Information

Part Number	Marking*	Activity Mode	Package	Operating Ambient Temperature Range
AME4621AEVBZ-3	BFQ yyww	Break-Before-Make	DFN-10B	- 40^{o}C to +85^{o}C

Note: yyww represents the date code.
* A line on top of the first letter represents lead free plating such as $\overline{B}$FQww.
Pls consult AME sales office or authorized Rep./Distributor for the availability of package type.

■ Absolute Maximum Ratings

Parameter	Maximum	Unit
V_{IN} , 1S, 2S	6	V
1A, 2A, 1B0, 2B0, 1B1, 2B1	Note 1	V
Continuous Current 1A, 2A, 1B0, 2B0, 1B1, 2B1	300	mA
ESD Classification	B*	

Note1: Signals on 1A, 2A, 1B0, 2B0, 1B1, 2B1 can not exceed V_{IN}
Caution: Stress above the listed absolute maximum rating may cause permanent damage to the device.
* HBM B:2000V~3999V

■ Recommended Operating Conditions

Parameter	Symbol	Rating	Unit
Ambient Temperature Range	T_A	- 40 to +85	^oC
Junction Temperature Range	T_J	- 40 to +125	^oC
Storage Temperature Range	T_{STG}	- 65 to +150	^oC
1S, 2S	CMOS, TTL Logic		V
V_{IN}	1.8 to 5.5		V

■ Thermal Information

Parameter	Package	Die Attach	Symbol	Maximum	Unit
Thermal Resistance* (Junction to Case)	DFN-10B	Conductive Epoxy	θ_{JC}	17	^oC / W
Thermal Resistance (Junction to Ambient)			θ_{JA}	125	
Internal Power Dissipation			P_D	800	mW
Maximum Junction Temperature				150	^oC
Solder Iron (10 Sec)**				350	^oC

* Measure θ_{JC} on center of molding compound if IC has no tab.
** MIL-STD-202G 210F

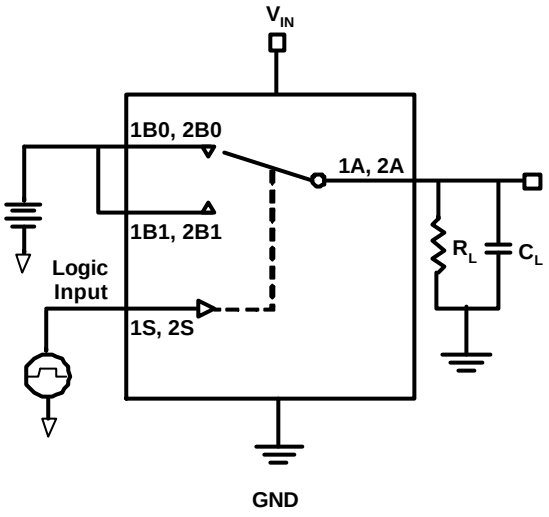
■ Electrical Specifications

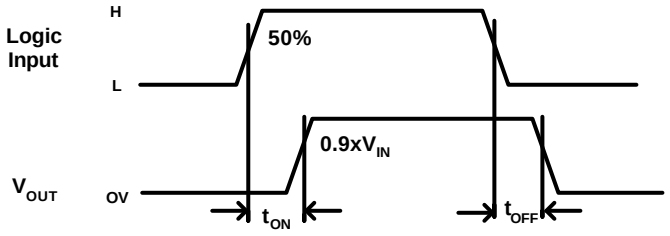
V_{IN} =+5V +/- 10%, GND = 0V, $1S_H = 2S_H$ = 2.4V, $1S_L = 2S_L$ = 0.8V, T_A = -40°C to +85°C, unless otherwise noted.
Typical values are at T_A = 25°C.

Parameter	Symbol	Test Condition		Min	Typ	Max	Units
ANALOG SWITCH							
On-Resistance	R_{ON}	V_{IN} = 4.5V, $I_{1A, 2A}$ = 100mA	T_A = 25°C			1.0	Ω
			T_A = - 40°C to +85°C			1.2	
On-Resistance Match between channels	ΔRon	V_{IN} = 4.5V, $I_{1A, 2A}$ = 100mA, $V_{1B1, 2B1}$ or $V_{1B0, 2B0}$ = 3.5V	T_A = 25°C			0.12	Ω
			T_A = - 40°C to +85°C			0.15	
On-Resistance Match Flatness	R_{FLATE}	V_{IN} = 4.5V, $I_{1A, 2A}$ = 100mA	T_A = 25°C		0.15	0.2	Ω
		$V_{1B1, 2B1}$ = 0V, 1V, 2V; $V_{1B0, 2B0}$ = 0V, 1V, 2V	T_A = - 40°C to +85°C			0.2	
Switch Off-Leakage Current	$I_{1B1, 2B1(OFF)}$ $I_{1B0, 2B0(OFF)}$	V_{IN} = 5.5V, $V_{1A, 2A}$ = 1V, 4.5V	T_A = 25°C	-0.1	0.05	0.1	µA
		$V_{1B0, 2B0}$ = 4.5V or 1V; $V_{1B1, 2B1}$ = 4.5V or 1V	T_A = - 40°C to +85°C	-1.0		1.0	
DIGITAL I/O							
Input Logic High	$1S_H$, $2S_H$	V_{IN} = 5.5V		2.4			V
Input Logic Low	$1S_L$, $2S_L$					0.8	
Input Current Logic High or Low	I_{1S}, I_{2S}	$V_{1S} = V_{2S} = V_{IN}$ (0V)		-1.0		1.0	µA
SWITCH DYNAMIC CHARACTERISTICS							
Turn-On Time	t_{ON}	Figure 1	T_A = 25°C			50	ns
			T_A = - 40°C to +85°C			60	
Turn-Off Time	t_{OFF}	Figure 1	T_A = 25°C			50	ns
			T_A = - 40°C to +85°C			60	
Break-Before-Make Delay	t_{BBM}	Figure 2	T_A = 25°C	1	20		ns
			T_A = - 40°C to +85°C	1			
POWER SUPPLY							
Power Supply Range	V_{IN}		T_A = - 40°C to +85°C	1.8		5.5	V
V_{IN} Supply Current	I_{IN}	V_{IN} = 5.5V, 1S, 2S = 0V or V_{IN}	T_A = - 40°C to +85°C			10.0	µA

■ Timing Diagrams

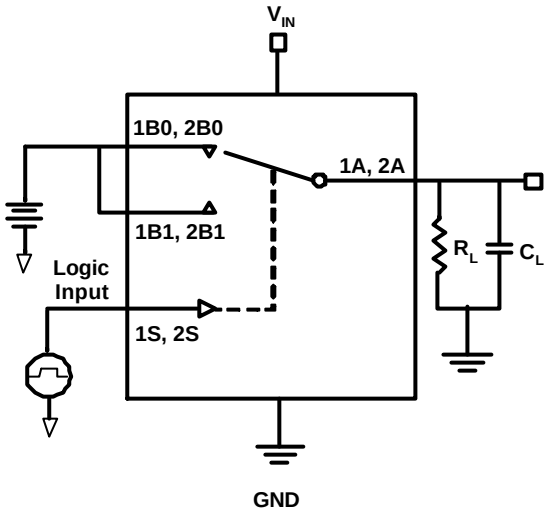
Figure 1
Switching Time

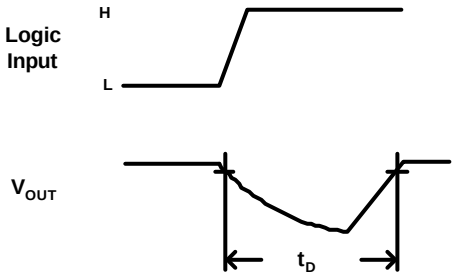




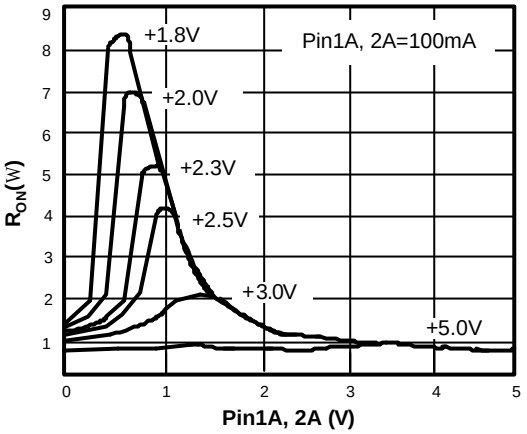
■ Timing Diagrams

Figure 2
Break-Before-Make Interval

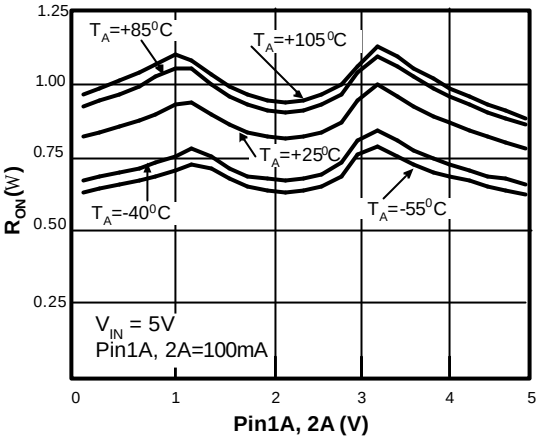




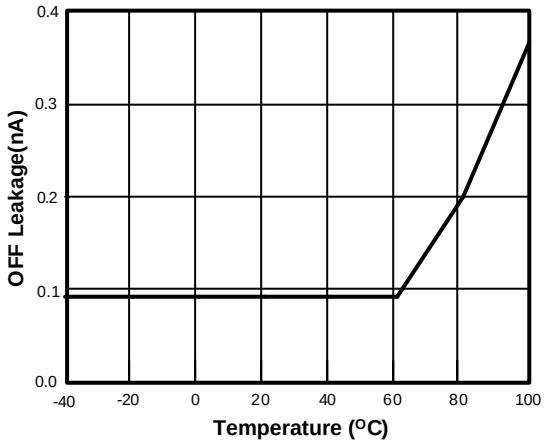
Ron vs. Pin1A, 2A Voltage over Supply Voltage



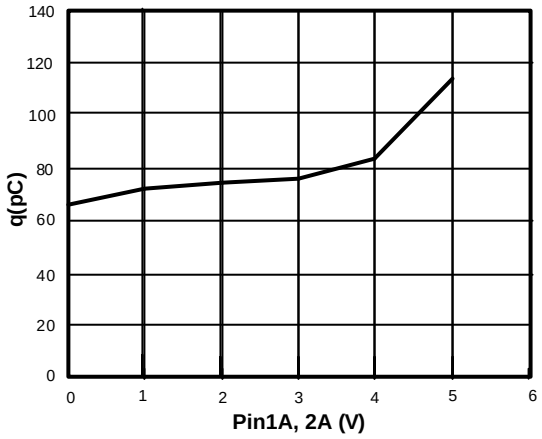
Ron vs. Pin1A, 2A Voltage over Temperature



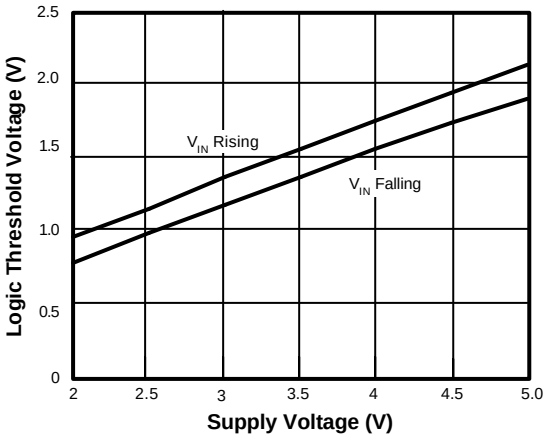
OFF Leakage vs. Temperature



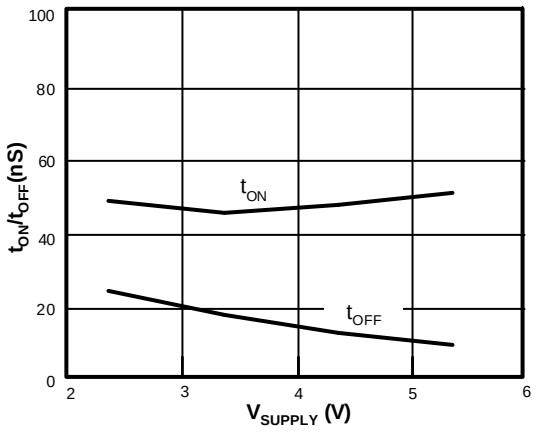
Charge Injection vs. Pin1A, 2A Voltage



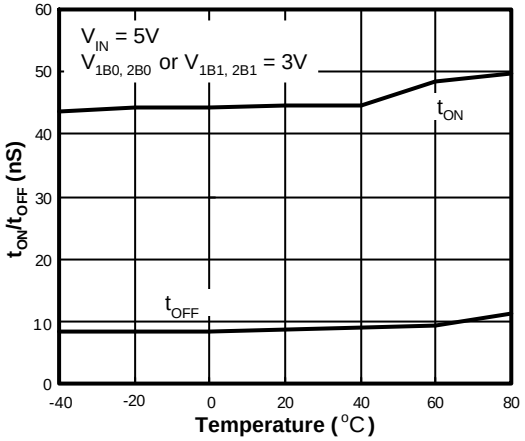
Logic Threshold Voltage vs. Supply Voltage



TURN-ON/OFF Times vs. Supply Voltage

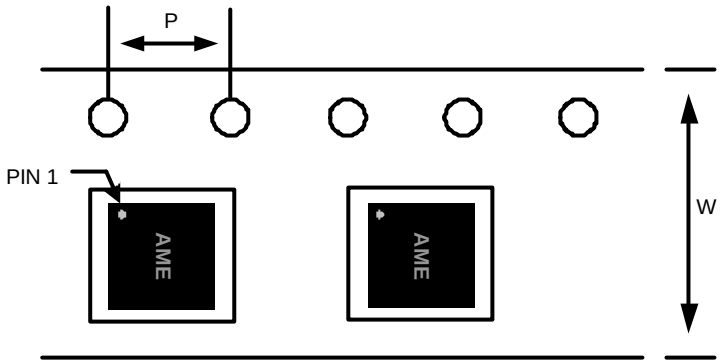


TURN-ON/OFF Times vs. Temperature



■ Taping & Reel Dimension

DFN-10B
(3mmx3mmx0.75mm)

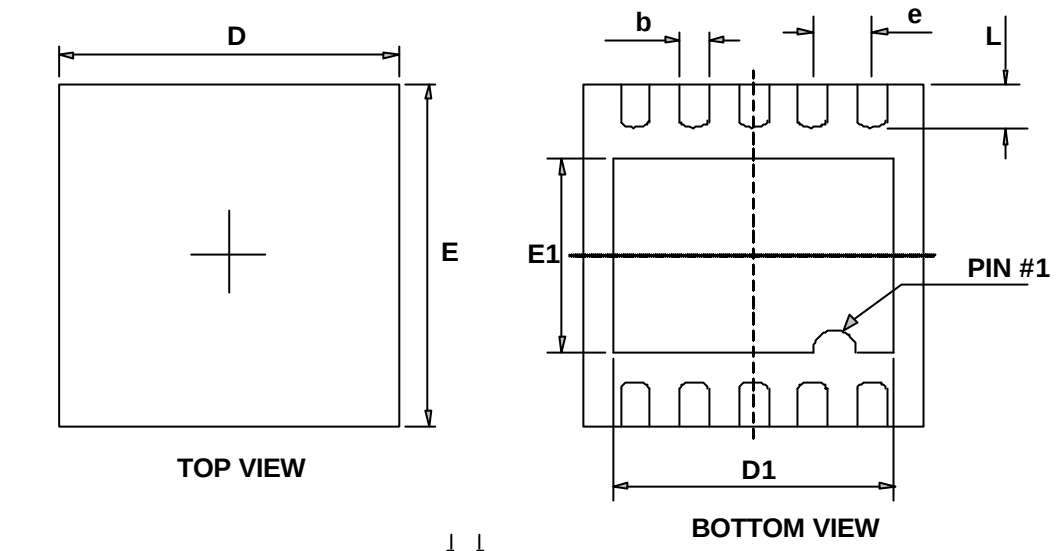


Carrier Tape, Number of Components Per Reel and Reel Size

Package	Carrier Width (W)	Pitch (P)	Part Per Full Reel	Reel Size
DFN-10B (3x3x0.75mm)	12.0±0.1 mm	4.0±0.1 mm	3000pcs	330±1 mm

■ Package Dimension

DFN-10B (3mmx3mmx0.75mm)



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.700	0.800	0.028	0.031
D	2.900	3.100	0.114	0.122
E	2.900	3.100	0.114	0.122
e	0.450	0.550	0.018	0.022
D1	2.350	2.450	0.093	0.096
E1	1.650	1.750	0.065	0.069
b	0.200	0.300	0.008	0.012
L	0.300	0.500	0.012	0.020
G	0.153	0.253	0.006	0.010
G1	0.000	0.050	0.000	0.002

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