

PC Card (PCMCIA) Dual Interface Switch

FEATURES

- Single SO-16 Package
- CMOS Logic Compatible Inputs
- Smart Switching
- Slow V_{CC} Ramp Times
- Extremely Low R_{ON}
- Supports Dual PC Card Slots
- Reverse Blocking Switches
- Low Power Consumption
- Safe Power-Up

DESCRIPTION

The Si9707 offers an integrated solution for dual PC Card power interfaces that require only V_{CC} switching. This part is ideal for systems that operate at 5 V and provide V_{PP} from the main supply, or from a dedicated Flash RAM 12-V supply.

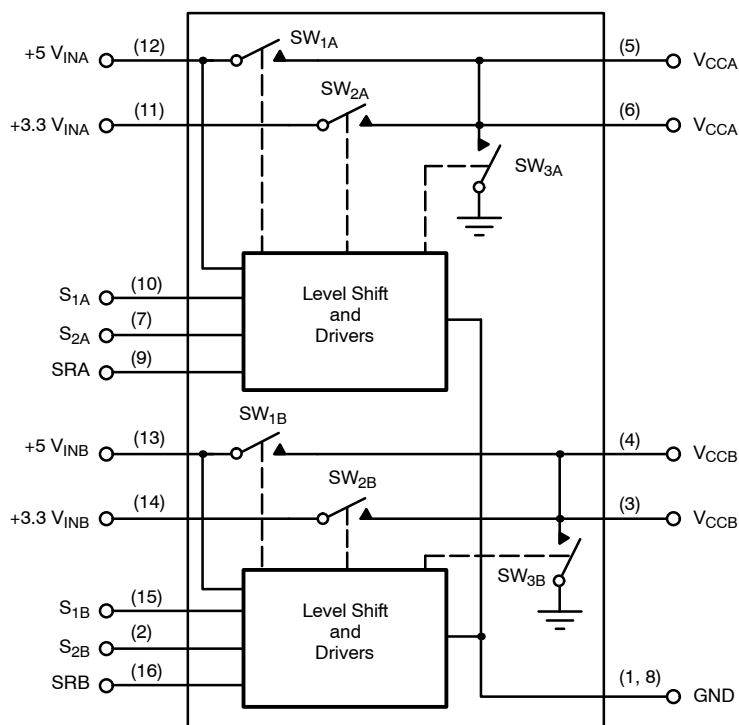
The Si9707 operates off the 5-V supply with built-in level shifting. The V_{CC} outputs function independently and internal logic protects each slot against a control logic error that would short 5 V to the 3.3-V supply. This protection logic also allows the Si9707 to be configured for positive or negative control

logic for compatibility with a variety of PC Card controllers. These control inputs are CMOS logic compatible and can be driven to 3.3 V or 5 V.

The PC Card Dual Interface Switch is available in a SO-16 narrow-body package and is rated over the industrial temperature range of -40 to 85°C .

The Si9707 is available in both standard and lead (Pb)-free packages.

FUNCTIONAL BLOCK DIAGRAM



Vishay Siliconix

ABSOLUTE MAXIMUM RATINGS

Voltages Referenced to Ground

+5 V _{INA} , +5 V _{INB}	7 V
+3.3 V _{INA} , +3.3 V _{INB}	7 V
S _{1A} and S _{2A} , S _{1B} , S _{2B} (CMOS Inputs)	7 V
All Pins	-0.5 V
I _{OUT} V _{CCA} ^a , I _{OUT} V _{CCB} ^b	4 A

PD Max ^c : (T _A = 25°C)	1.65 W
(T _A = 85°C)	0.65 W

Junction Temperature

125°C

Thermal Ratings: R_{θJA}^c

60 °C/W

Notes

a. Pins 5, 6 connected together externally.

b. Pins 3, 4 connected together externally.

c. Mounted on 1-IN², FR4 PC Board.

RECOMMENDED OPERATING CONDITIONS

+5 V _{INA} , +5 V _{INB} (must be present)	5 V ± 10%
+3.3 V _{INA} , +3.3 V _{INB}	3.3 V ± 10%
C _{SR} A, C _{SR} B	33 nF
I _{OUT} V _{CCA} ^a , I _{OUT} V _{CCB} ^b	2 A

V_{CC} Load Capacitance

150 μF Max

Notes

a. Pins 5, 6 connected together externally.

b. Pins 3, 4 connected together externally.

SPECIFICATIONS

Parameter	Symbol	Test Conditions Unless Otherwise Specified C _{SR} = 33 nF, +5 V _{IN} = 5 V +3.3 V _{IN} = 3.3 V, Low ≤ 0.8 V, High ≥ 2.2 V		Limits -40 to 85°C			Unit
				Min ^a	Typ	Max ^a	
Switch SW_{1A}, SW_{1B}							
On-Resistance	R _{ON}	I = 500 mA, S ₁ = High S ₂ = Low	T _A = 25°C	58	70	mΩ	
			T _A = 85°C	73	90		
Off Current (V _{CC})	I _{OFF}	+5 V _{IN} = 5.5 V, V _{CC} = 0 V S ₁ = S ₂ = Low	T _A = 25°C	1	μA		
			T _A = 85°C	10			
Rise Time	t _{S1(on)}	S ₂ = Low, See Figure 1	0.2	1.7	5	ms	
Fall Time	t _{S1(off)}		10	30	50		
Switch SW_{2A}, SW_{2B}							
On-Resistance	R _{ON}	I = 500 mA, S ₂ = High S ₁ = Low	T _A = 25°C	44	55	mΩ	
			T _A = 85°C	55	70		
Off Current (+3.3 V _{IN})	I _{OFF}	+3.3 V _{IN} = 3.6 V, V _{CC} = 0 V S ₁ = S ₂ = Low	T _A = 25°C	1	μA		
			T _A = 85°C	10			
Rise Time	t _{S2(on)}	S ₁ = Low, See Figure 1	0.1	0.9	5	ms	
Fall Time	t _{S2(off)}		5	20	40		
Switch SW_{3A}, SW_{3B}							
On-Resistance	R _{ON}	I = 2 mA, S ₁ = S ₂ = Low	T _A = 25°C	140	400	Ω	
			T _A = 85°C	200	500		
Power Supply							
+5 V _{IN} Current Input (on)	I _{+5VIN(1)}	S ₁ = 0 V, S ₂ = 3 V	20	50	μA		
	I _{+5VIN(2)}	S ₁ = 3 V, S ₂ = 0 V	20	50			
+5 V _{IN} Current Input (off)	I _{+5VIN(3)}	S ₁ = S ₂ = 0 V	< 1	10			
Switch Control Inputs S_{1X}, S_{2X}							
Input Voltage High	V _{I(H)}	+5 V _{INX} = 5.5 V	2.2	1.8	V		
		+5 V _{INX} = 4.5 V	2.2	1.6			
Input Voltage Low	V _{I(L)}	+5 V _{INX} = 5.5 V	1.6	0.8	V		
		+5 V _{INX} = 4.5 V	1.4	0.8			
Input Current High	I _{I(H)}	S _{1X} , S _{2X} = 5 V		1.0	μA		
Input Current Low	I _{I(L)}	S _{1X} , S _{2X} = GND	-1.0				

Notes

a. The algebraic convention whereby the most negative value is a minimum and the most positive a maximum.

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TIMING WAVEFORMAS

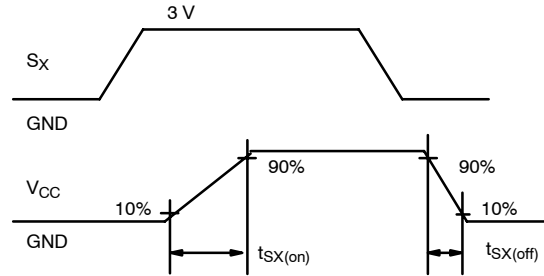
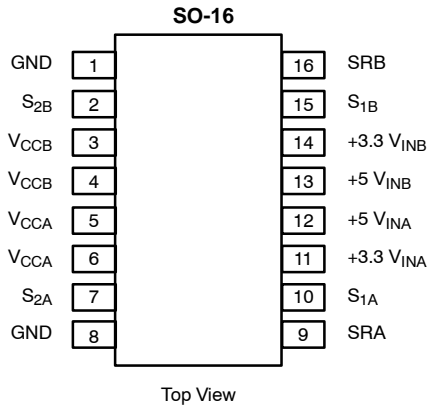


FIGURE 1. Switch Ramp Time

PIN CONFIGURATION, DESCRIPTION AND ORDERING INFORMATION



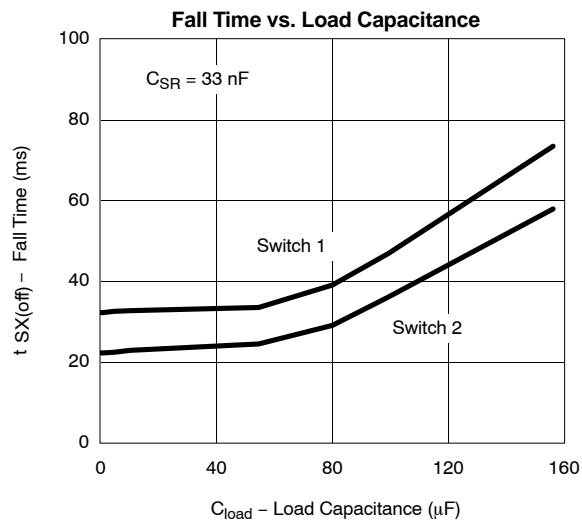
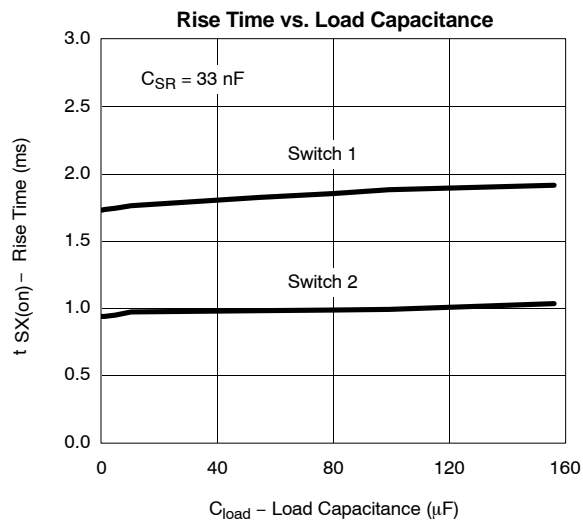
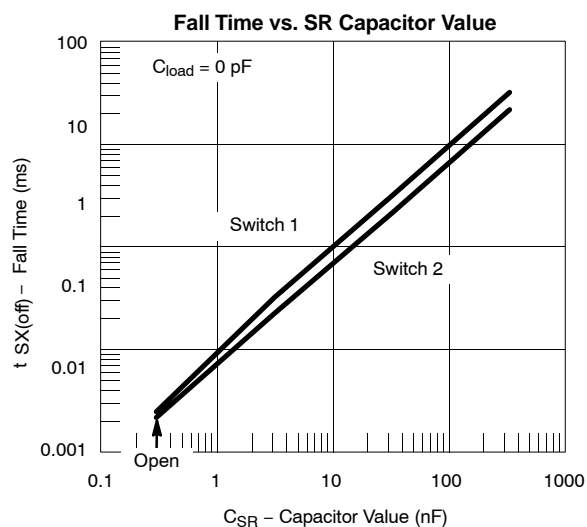
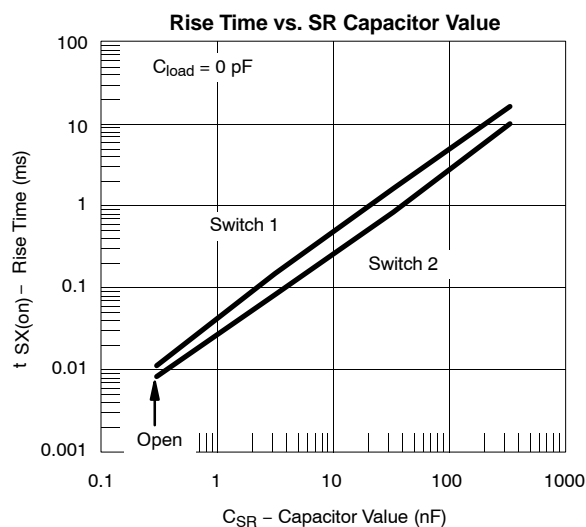
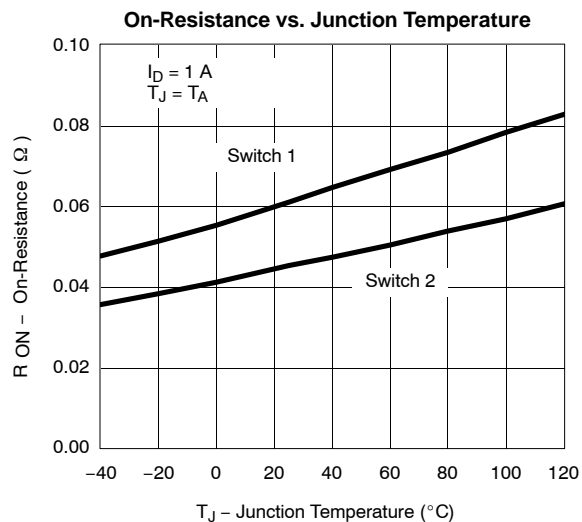
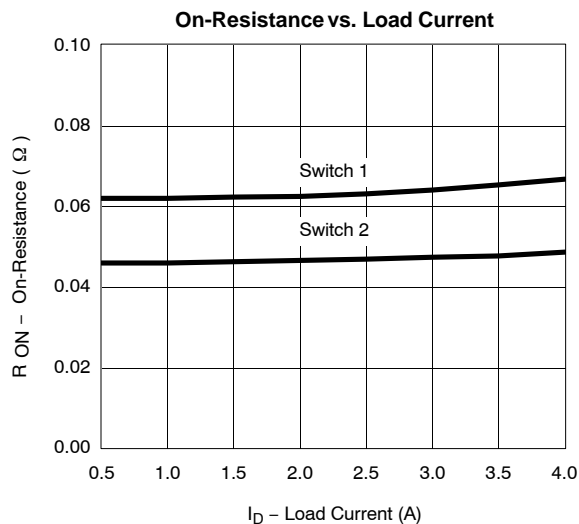
Function	Pin Number	Description
S _{1A}	10	Control input for selecting +5 V _{INA} to V _{CCA} .
S _{1B}	15	Control input for selecting +5 V _{INB} to V _{CCB} .
S _{2A}	7	Control input for selecting +3.3 V _{INA} to V _{CCA} .
S _{2B}	2	Control input for selecting +3.3 V _{INB} to V _{CCB} .
GND	1, 8	Ground connection.
V _{CCA}	5, 6	Supply voltage to slot.
V _{CCB}	3, 4	Supply voltage to slot.
+3.3 V _{INA}	11	+3.3-V supply.
+3.3 V _{INB}	14	+3.3-V supply.
+5 V _{INA}	12	+5-V supply.
+5 V _{INB}	13	+5-V supply.
SRA	9	Slew rate control pin.
SRB	16	Slew rate control pin.

ORDERING INFORMATION		
Part Number	Temperature Range	Package
Si9707DY	-40 to 85°C	SOIC-16
Si9707DY-T1		
Si9707DY-T1-E3		

TRUTH TABLE				
S _{1X}	S _{2X}	Switch 1X	Switch 2X	Switch 3X
0	0	Off	Off	On
0	1	Off	On	Off
1	0	On	Off	Off
1	1	Off	Off	On

Notes
a. The smart switching of the Si9707 avoids potential host damage by defaulting to off during error conditions.

TYPICAL CHARACTERISTICS (25 °C UNLESS OTHERWISE NOTED)





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