

Features

- ultra-low On Resistance: 1.5 Ω
- Supply voltage: 1.5V ~ 5.5V
- -3dB Bandwidth: 700MHz
- Rail-to-Rail Signal Range
- Break-Before-Make Switching
- Low quiescent current over an Expanded Control Input Range

Applications

- Audio and Video Signal Routing
- Other electronics equipment
- LCD Monitor, TV and Set-Top Box
- Cell phones, PDA, Digital Camera and Notebook

General Description

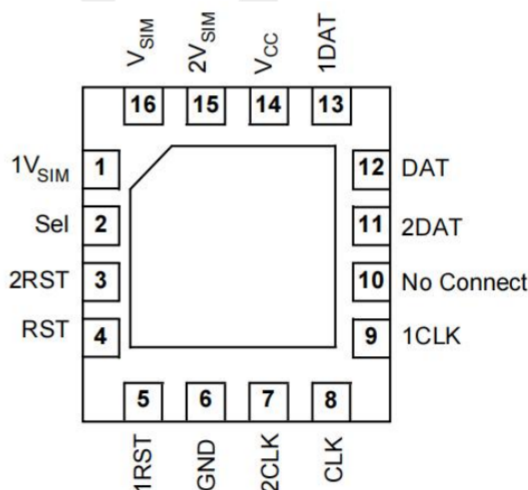
The is a high performance, quad, Single Pole Double Throw (SPDT) analog switch that features ultra-low Ron of 1.5 Ω (typical) at 4.5V VCC. The operates over a wide VCC range of 1.5V to 5.5V and is designed for break-before-make operation. The select input is TTL-level compatible.

The is also featured with smart circuitry to minimize VCC leakage current even when the control voltage is lower than VCC supply voltage. This feature suits mobile handset applications by allowing direct interface with baseband processor general-purpose IO with minimal battery consumption. In other word, there is no need of additional device to shift control level to be the same as that of VCC in real application.

The is available in QFN 3x3-16L package. Standard Products are Pb-free and halogen-free.

PIN CONFIGURATIONS

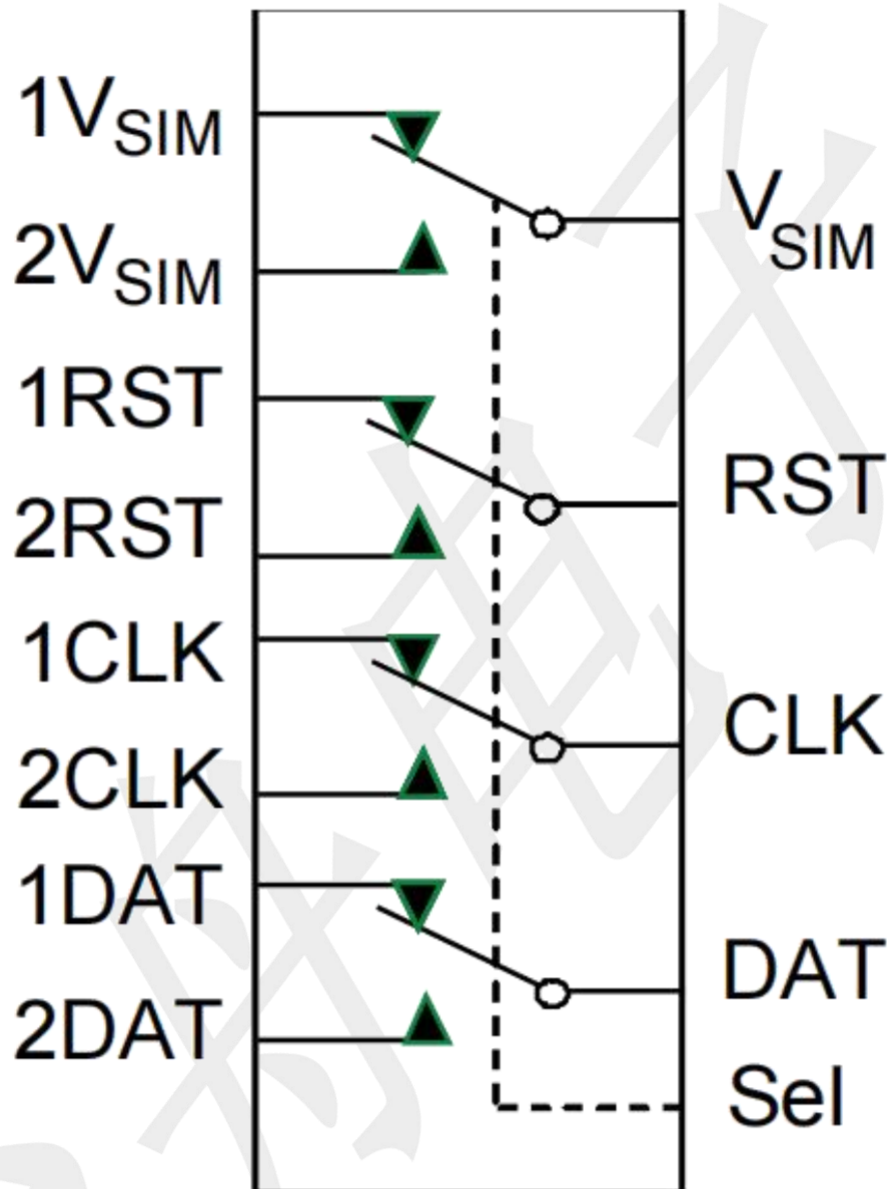
(TOP VIEW)
QFN3X3-16L



PIN DESCRIPTION

NO.	NAME	DESCRIPTION	NO.	NAME	DESCRIPTION
1	1VSIM	Data Port (Normally closed)	9	1CLK	Data Port (Normally closed)
2	Sel	Logic Input Control	10	N.C.	No Internal Connection
3	2RST	Data Port (Normally open)	11	2DATA	Data Port (Normally open)
4	RST	Common Data Port	12	DATA	Common Data Port
5	1RST	Data Port (Normally closed)	13	1DATA	Data Port (Normally closed)
6	GND	Ground	14	VCC	Supply voltage
7	2CLK	Data Port (Normally open)	15	2VSIM	Data Port (Normally open)
8	CLK	Common Data Port	16	VSIM	Common Data Port

BLOCK DIAGRAM



Function Table

SEL	Function
0	1RST Connected to RST, 1CLK Connected to CLK 1DATA Connected to DATA, 1VSIM Connected to VSIM
1	2RST Connected to RST, 2CLK Connected to CLK 2DATA Connected to DATA, 2VSIM Connected to VSIM

Absolute Maximum Ratings

(Unless otherwise specified)

Parameter	Symbol	Value	Unit
Supply Voltage	V_{CC}	-0.3 ~ 6.5	V
Control Input Voltage	V_{IN}	-0.3 ~ 6.5	V
DC Input Voltage	V_{INPUT}	-0.3 ~ 6.5	V
Continuous Current RST_CLK_DATA_SIM		±100	mA
Peak Current RST_CLK_DATA_SIM(pulsed at 1ms 50% duty cycle)		±200	mA
Peak Current RST_CLK_DATA_SIM (pulsed at 1ms 10% duty cycle)		±200	mA
Storage Temperature Range	T_{STG}	-65 ~ 150	°C
Junction Temperature under Bias	T_J	150	°C
Lead Temperature (Soldering, 10 seconds)	T_L	260	°C
Power Dissipation	P_D	250	mW

Note: Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress only rating and operation of the device at these or any other conditions beyond those indicated in the operational sections of this specification is not implied.

Recommend operating ratings

(Unless otherwise specified)

Parameter	Symbol	Value	Unit
Supply Voltage Operating	V_{CC}	1.5 ~ 5.5	V
Control Input Voltage	V_{IN}	0.0 ~ V_{CC}	V
Input Signal Voltage	V_{IS}	0.0 ~ V_{CC}	V
Operating Temperature	T_A	-40 ~ 85	°C
Input Raise and Fall Time(Control Input V_{CC} =2.3~3.6V)	t_r, t_f	0 ~ 10	ns/V
Thermal Resistance	$R_{\theta JA}$	350	°C/W

Note:Control input must be held high or Low, it must not float.

DC Electrical Characteristics

($T_A = 25^\circ\text{C}$, $V_C = +4.5\text{V}$, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Input logic high level	V_{IH}	$V_{CC}: 3.0 \sim 4.5$	1.6	--	--	V
		$V_{CC}: 2.3 \sim 3.0$	1.4	--	--	V
Input logic low level	V_{IL}	$V_{CC}: 3.0 \sim 4.5$	--	--	0.6	V
		$V_{CC}: 2.3 \sim 3.0$	--	--	0.4	V
Supply quiescent current	I_{CC}	$I_{OUT}=0$, $V_{IN}=0$ or $V_{IN}=V_{CC}$	--	--	1.0	μA
Increase in I_{CC} per input	I_{CCT}	$I_{OUT}=0$, $V_{CC}=4.5$ $V_{IN}>1.8$ or $V_{IN}<0.5$	--	--	2.0	μA
Input leakage current	I_{IN}	$V_{SEL}=V_{CC}$	--	--	± 1.0	μA
Off state switch leakage current	I_{OFF}		--	--	± 1.0	μA
On state switch leakage current	I_{ON}		--	--	± 1.0	μA
On-Resistance	R_{ON}	$V_{CC}=4.5\text{V}$, $V_{IS}=0\sim 4.5\text{V}$, $I_{ON}=100\text{mA}$,	--	1.5	--	Ω
		$V_{CC}=3.0\text{V}$, $V_{IS}=0\sim 3.0\text{V}$, $I_{OUT}=100\text{mA}$,	--	1.8	--	Ω
On-Resistance Matching Between Channels	ΔR_{ON}	$V_{CC}=4.5\text{V}$, $V_{IS}=0.8\text{V}$, $I_{OUT}=100\text{mA}$,	--	0.1	--	Ω
		$V_{CC}=3.0\text{V}$, $V_{IS}=0.8\text{V}$, $I_{OUT}=100\text{mA}$,	--	0.14	--	Ω
On-Resistance Flatness	$R_{FLAT(ON)}$	$V_{CC}=4.5\text{V}$, $V_{IS}=0\sim 4.5\text{V}$, $I_{OUT}=100\text{mA}$,	--	--	0.5	Ω
		$V_{CC}=3.0\text{V}$, $V_{IS}=0\sim 3.0\text{V}$, $I_{OUT}=100\text{mA}$,	--	--	0.8	Ω

AC Electronics Characteristics

(Ta=25°C, VCC=+4.5V, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Turn-On Time	T _{ON}	VCC=4.5V, V _{IS} =1.5V, C _L =35pF, R _L =50Ω	--	200	--	ns
Turn-Off Time	T _{OFF}	VCC=4.5V, V _{IS} =1.5V, C _L =35pF, R _L =50Ω	--	200	--	ns
Break-Before-Make time	T _{BBM}	Generate by design	--	100	--	ns
-3dB Bandwidth	BW	R _L =50Ω, C _L =0pF	--	700	--	MHz
Off isolation (Per Channel)	OIRR	F=100KHz, R _L =50Ω	--	-50	--	dB
Crosstalk (Channel to Channel)	Xtalk	F=100KHz, R _L =50Ω	--	-50	--	dB
Total Harmonic Distortion	THD	F=20Hz to 20KHz R _L =32Ω, V _{IS} =0.5Vp-p	--	-80	--	dB

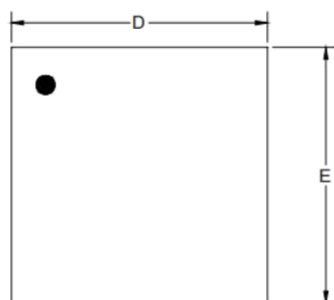
Capacitance

(Ta=25°C, unless otherwise noted)

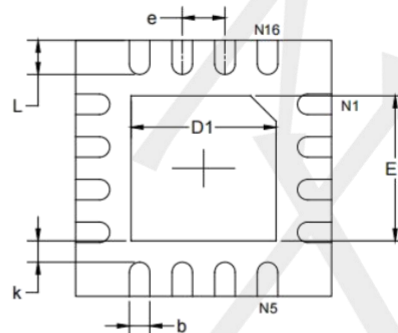
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off capacitance	C _{OFF}	F=1MHz, VCC=3.3V	--	5	--	pF
On capacitance	C _{ON}	F=1MHz, VCC=3.3V	--	8	--	pF

Package information

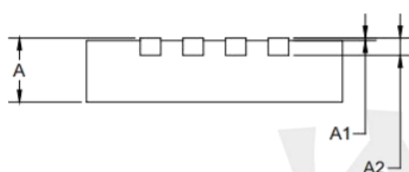
QFN3X3-16L



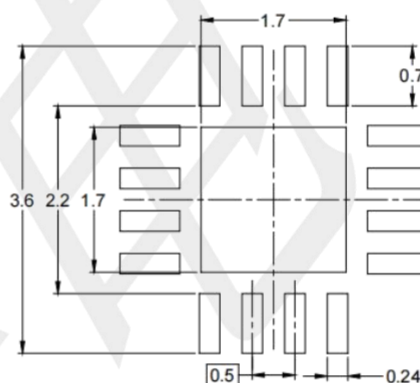
TOP VIEW



BOTTOM VIEW



SIDE VIEW



RECOMMENDED LAND PATTERN (Unit: mm)

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A2	0.203 REF		0.008 REF	
D	2.900	3.100	0.114	0.122
D1	1.600	1.800	0.063	0.071
E	2.900	3.100	0.114	0.122
E1	1.600	1.800	0.063	0.071
k	0.200 MIN		0.008 MIN	
b	0.180	0.300	0.007	0.012
e	0.500 TYP		0.020 TYP	
L	0.300	0.500	0.012	0.020