

Features

- ultra-low On Resistance: 1.8 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

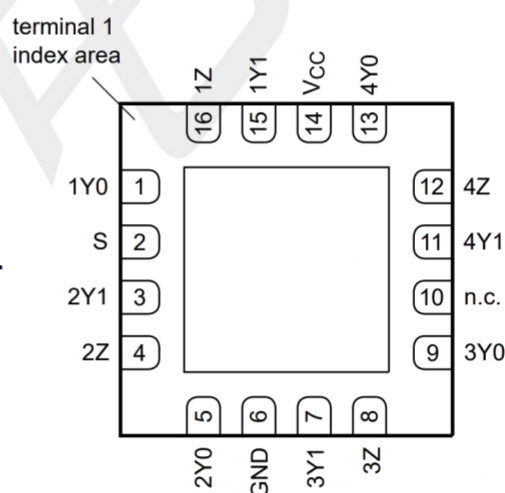
The is a high performance, quad, Single Pole Double Throw (SPDT) analog switch that features ultra-low Ron of 1.8 Ω (typical) at 3.0V VCC. The operates over a wide VCC range of 1.5V to 5.5V and is designed for break-before-make operation. The select input is TTL-level compatible.

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

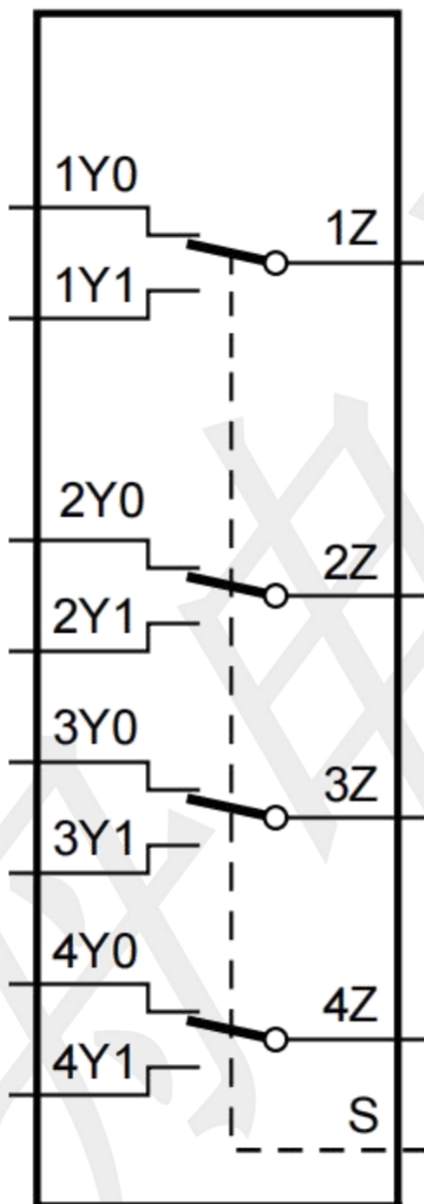
(TOP VIEW)
QFN3X3-16L



PIN DESCRIPTION

NO.	NAME	DESCRIPTION	NO.	NAME	DESCRIPTION
1	1Y0	Data Port (Normally closed)	9	3Y0	Data Port (Normally closed)
2	S	Logic Input Control	10	N.C.	No Internal Connection
3	2Y1	Data Port (Normally open)	11	4Y1	Data Port (Normally open)
4	2Z	Common Data Port	12	4Z	Common Data Port
5	2Y0	Data Port (Normally closed)	13	4Y0	Data Port (Normally closed)
6	GND	Ground	14	VCC	Supply voltage
7	3Y1	Data Port (Normally open)	15	1Y1	Data Port (Normally open)
8	3Z	Common Data Port	16	1Z	Common Data Port

BLOCK DIAGRAM



Function Table

S	Function
0	1Y0 Connected to 1Z, 2Y0 Connected to 2Z 3Y0 Connected to 3Z, 4Y0 Connected to 4Z
1	1Y1 Connected to 1Z, 2Y1 Connected to 2Z 3Y1 Connected to 3Z, 4Y1 Connected to 4Z

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 XY0_XY1_XZ		±100	mA
Peak Current XY0_XY1_XZ(pulsed at 1ms 50% duty cycle)		±200	mA
Peak Current XY0_XY1_XZ (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

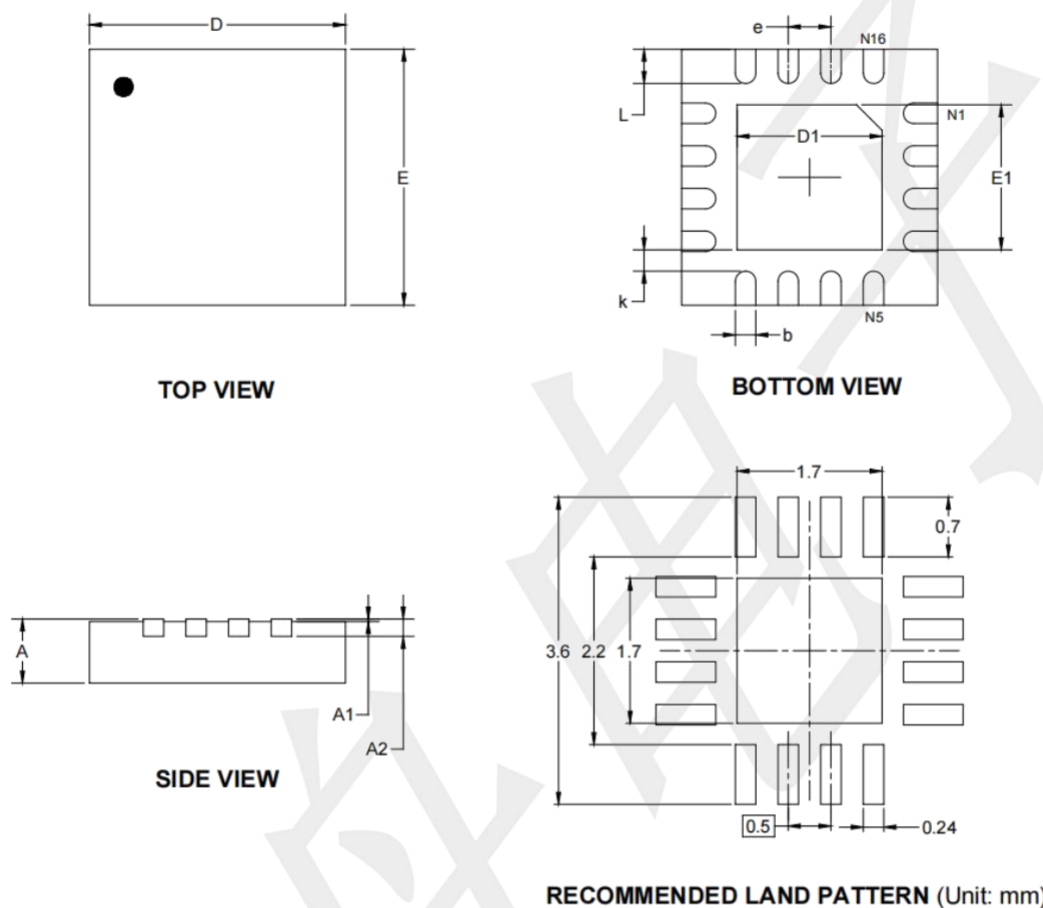
Capacitance

(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



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