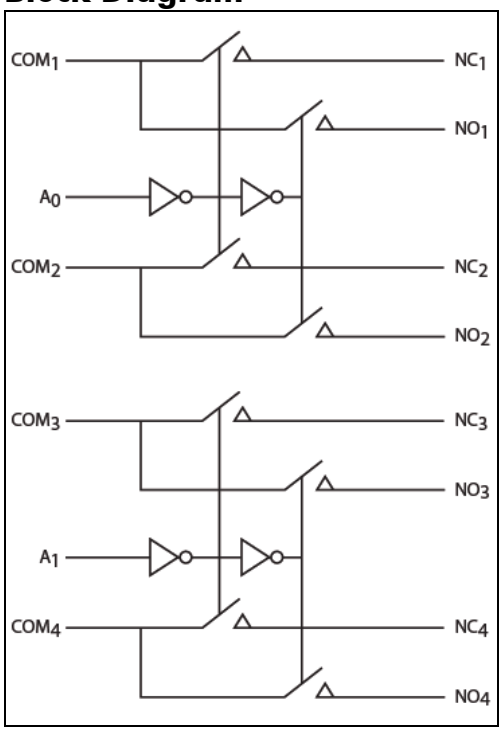
High Speed, Dual DPDT Analog Switch

Features

- CMOS Technology for Analog Applications
- Low On-Resistance: 2.0Ω
- Wide VCC Range: +1.65V to +4.3V
- ICC Maximum 1µA @ TA = +25°C
- Rail-to-Rail Switching Throughout Signal Range
- Fast Switching Speed: 10ns TYP. at 3.0V
- High Off Isolation: -67dB@1MHz
- Crosstalk Rejection: -100dB@1MHz
- Wide Bandwidth: 330MHz
- Interfaces with 1.8V Chipset
- High ESD performance : 8kV for I/O to GND
- Extended Industrial Temperature Range: -40°C to 85°C
- Packaging (Pb-free & Green): UQFN-16 1.8mmx2.6mm

Block Diagram



Function Truth Table

A_0	Function	A_1	Function
0	$NC_{1,2}$ Connected to $COM_{1,2}$	0	$NC_{3,4}$ Connected to $COM_{3,4}$
1	$NO_{1,2}$ Connected to $COM_{1,2}$	1	$NO_{3,4}$ Connected to $COM_{3,4}$

Description

The PI3A3899 is a dual double-pole double-throw (DPDT) CMOS switch. It can be used as low power audio and dual SIM card applications. Specified over a wide operating power supply voltage range, +1.65V to +4.3V, the switch has a low On-Resistance of 2.4Ω at 3.0V.

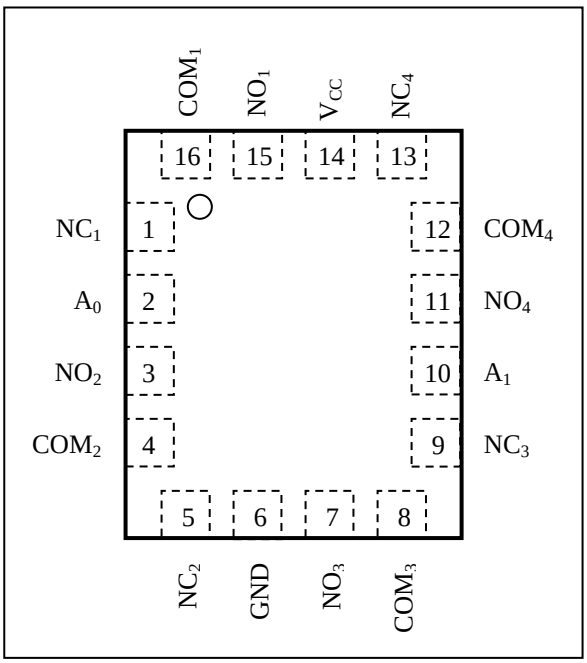
Control inputs, Ax, tolerate input drive signals up to 5V, independent of supply voltage.

Applications

- Cell Phones
- PDAs
- Portable Instrumentation Battery Powered
- Computer Peripherals
- Dual SIM Card Switching

Pin Configuration

UQFN16 1.8mmx2.6mm Package (Top View)



Pin Description

Pin#	Name	Description
4, 8, 12, 16	COM_X	Common Output / Data Port
1, 5, 9, 13	NC_X	Data Port (normally connect)
3, 7, 11, 15	NO_X	Data Port (normally open)
2, 10	A_0, A_1	Logic Input Control
6	GND	Ground
14	VCC	Positive Power Supply

Notes: X = 1, 2, 3, or 4

Maximum Ratings

Storage Temperature	-65℃ to +150℃
Ambient Temperature	-40℃ to +85℃
ESD(HBM)	4kV for All Pins 8kV for I/O to GND
Supply Voltage V_{CC}	-0.5V to +4.6V
Control Input Voltage (V_{INX})	0 to +5.0V
DC Input Voltage (V_{INPUT})	-0.5V to +4.6V
Continuous Current NO/NC/COM	±400mA
Peak Current NO/NC/COM (Pulse at 1ms 10% duty cycle)	±500mA

Note:
Stresses greater than those listed under MAXIMUM RATINGS may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect reliability.

Recommended Operating Conditions

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{CC}	Supply Voltage	-	1.65	-	4.3	V
V_{INX}	Control Input Voltage	-	0	-	4.3	V
V_{INPUT}	Switch Input Voltage	-	-0.3	-	V_{CC}	V
T_A	Operating Temperature	-	-40	25	85	℃
t_r, t_f	Input Rise and Fall Time	Control Input pins V_{CC} = 2.3V to 3.6V	0	-	10	ns/V

Note: Control input must be held HIGH or LOW; it must not float.

DC Electrical Characteristics

(V_{CC} = 1.65 to 4.3V, GND=0V, V_{IH}=+1.6V, V_{IL}=+0.4V, T_A = –40℃ to 85℃, unless otherwise noted. Typical values are at 3V and +25℃.)

Parameter	Symbol	Test Conditions		Min.	Typ.	Max.	Units
Analog Signal Range	V_{NO}, V_{NC}, V_{COM}	-		0	-	V_{CC}	V
On-Resistance	R_{ON}	I_{COM} = 100mA, V_{NO} or V_{NC} =1V, Test Circuit 1	V_{CC} = 2.7V,	-	2.2	3.6	Ω
			V_{CC} = 3.0V,	-	2.0	3	
			V_{CC} = 4.3V	-	1.6	2.4	
On-Resistance Match Between Channels	ΔR_{ON}	I_{COM} = 100mA, V_{NO} or V_{NC} =1V, Test Circuit 1	V_{CC} = 3.0V	-	0.2	-	Ω
			V_{CC} = 4.3V	-	0.2	-	
On-Resistance Flatness	R_{ONF}	I_{COM} = 100mA, V_{NO} or V_{NC} = 0~ V_{CC}, Test Circuit 1	V_{CC} = 3.0V	-	0.6		Ω
			V_{CC} = 4.3V	-	0.5		
Source Off Leakage Current	$I_{OFF\ (NO)}$ or $I_{OFF\ (NC)}$	V_{CC}=4.3V, V_{NO} or V_{NC} = 4.3V/0V, V_{COM} = 0V/4.3V		-	-	1	µA
Channel On Leakage Current	$I_{NC(ON)}$, $I_{NO(ON)}$, $I_{COM\ (ON)}$	V_{CC}=4.3V, V_{NO} or V_{NC} = 4.3V/0V, V_{COM} = 0V/4.3V or floating		-	-	1	
Input Logic High	V_{IH}	V_{CC} = 3.0V		1.2	-	-	V
		V_{CC} = 4.3V		1.3	-	-	
Input Logic Low	V_{IL}	V_{CC} = 3.0V		-	-	0.5	
		V_{CC} = 4.3V		-	-	0.6	
IN Input Leakage Current	I_{IN}	V_{CC} = 4.3V, V_{IN}=0~4.3V		-	-	+/-1	µA
Turn-On Time	t_{ON}	R_L=50Ω, C_L=35pF, T_A=25℃, See Test Circuit Figure 2		-	8	-	ns
Turn-Off Time	t_{OFF}			-	12	-	ns
Break-Before-Make Delay	t_D	T_A=25℃, See Test Circuit Figure 3		-	9	-	ns
NC-NO and COM-NC/NO Off-Isolation	O_{ISO}	V_{BIAS} = 1.5V, V_{IN}=0dBm, T_A=25℃, See Test Circuit Figure 4	1MHz	-	-67	-	dB
Channel-to-Channel Crosstalk	X_{TALK}	V_{BIAS} = 1.5V, V_{IN}=0dBm, T_A=25℃, See Test Circuit Figure 5	1MHz	-	-100	-	dB
3dB Bandwidth	f_{3dB}	C_L=5pF, See Test Circuit Figure 6		-	330	-	MHz
Total Harmonic Distortion	THD	V_{CC}=3.0V, f=20 Hz to 20 kHz, RL =32Ω, V_{IN}= 1.0 VPP		-	0.03	-	%
Charge Injection Select Input to Common I/O	Q	V_{IN} = GND, R_S = 0, C_L = 1nF, T_A=25℃, See Test Circuit Figure 7		-	13	-	pC
Off Capacitance	$C_{NC(OFF)}$ $C_{NO(OFF)}$	f=1MHz, TA=25℃, See Test Circuit Figure 8		-	7	-	pF
				-	7	-	
On Capacitance	C_{ON}	f=1MHz, TA=25℃, See Test Circuit Figure 9		-	15	-	
Power Supply Current	I_{CC}	V_{CC} =4.3V,V_{IN}=0V or V_{CC}		-	-	1	µA

Test Circuits and Timing Diagrams

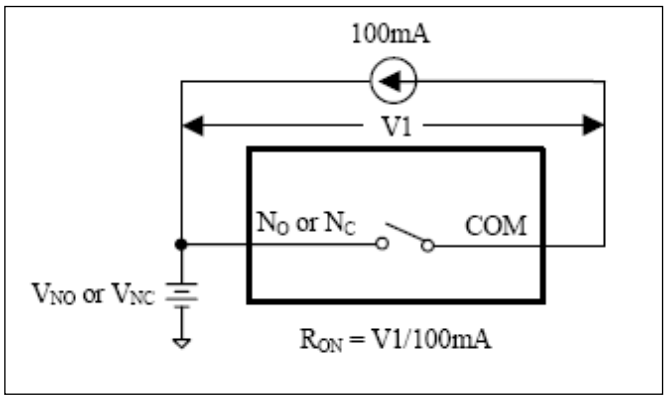


Figure 1. On Resistance

Notes: Unused input (NC or NO) must be grounded.

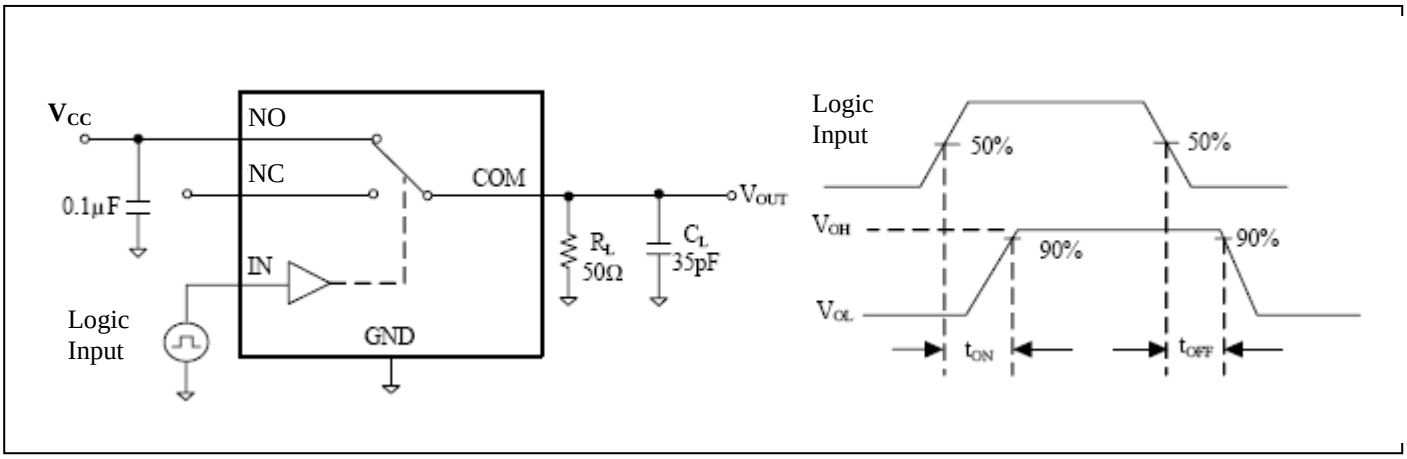


Figure 2. Switching Times

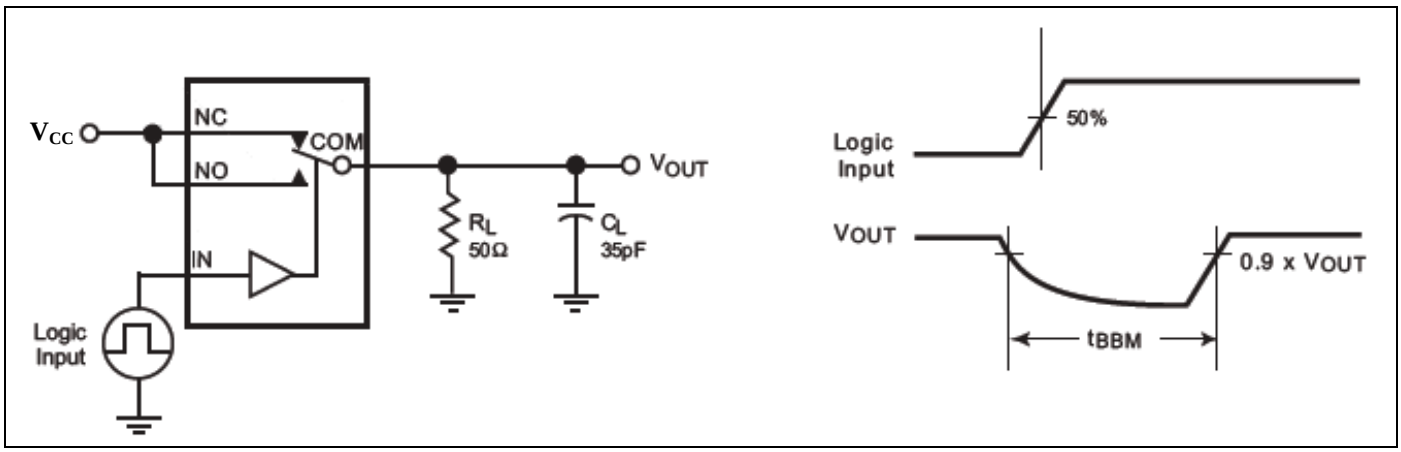


Figure 3. Break Before Make Interval Timing

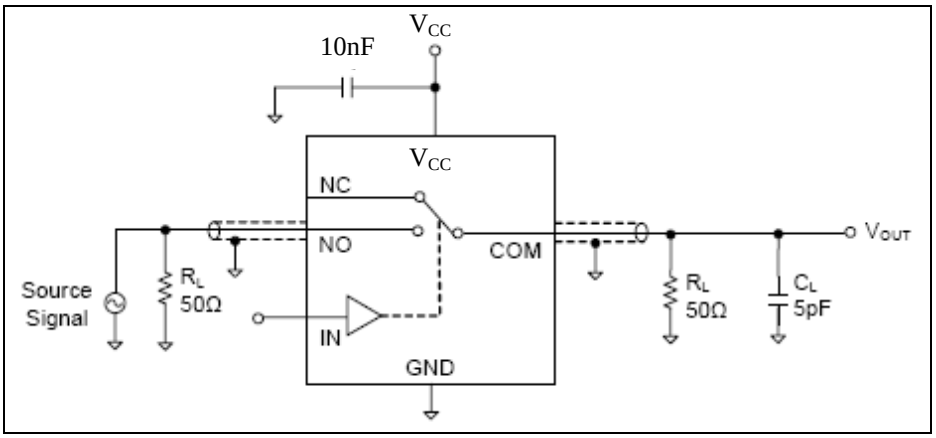


Figure 4. Off Isolation Test

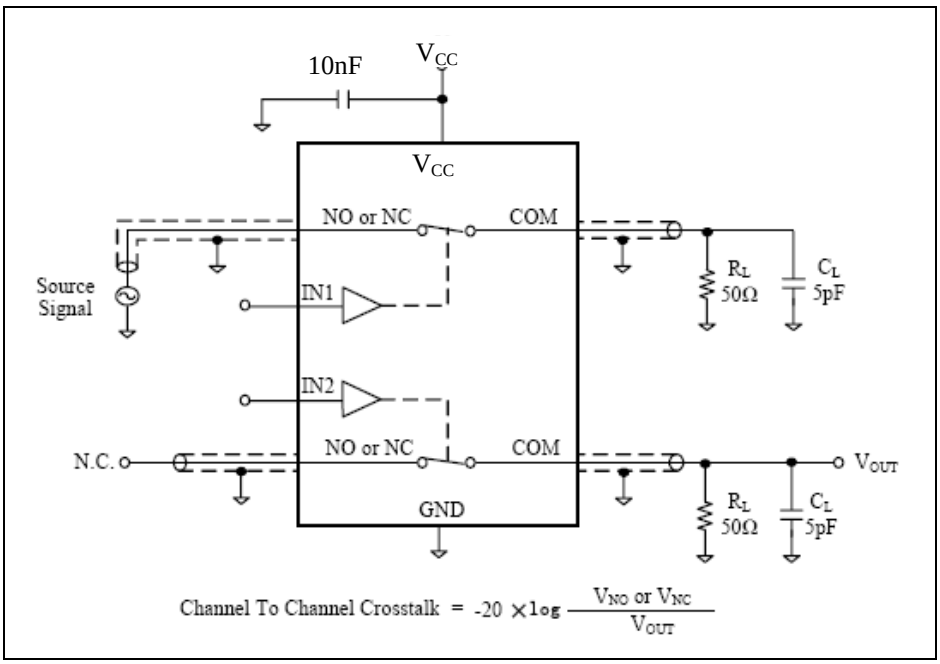


Figure 5. Channel-to-Channel Cross Talk

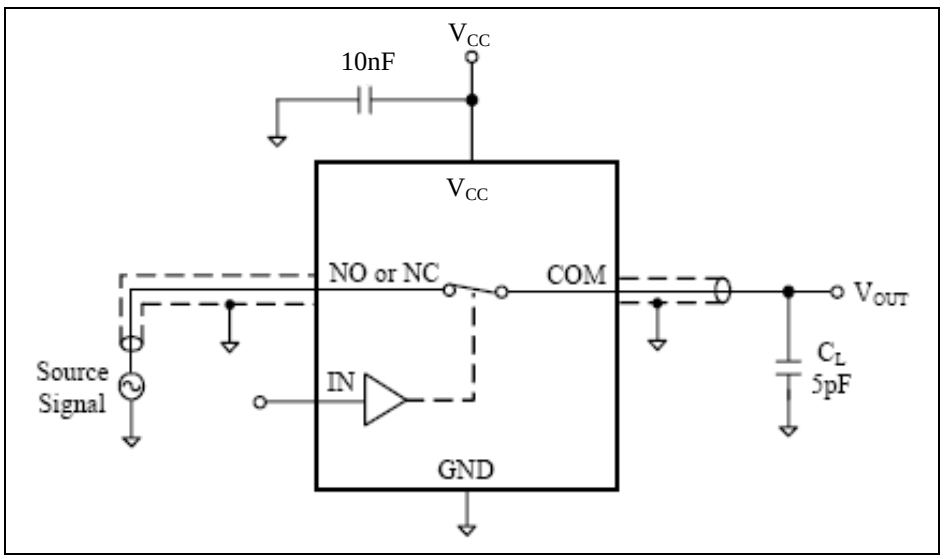


Figure 6. Bandwidth

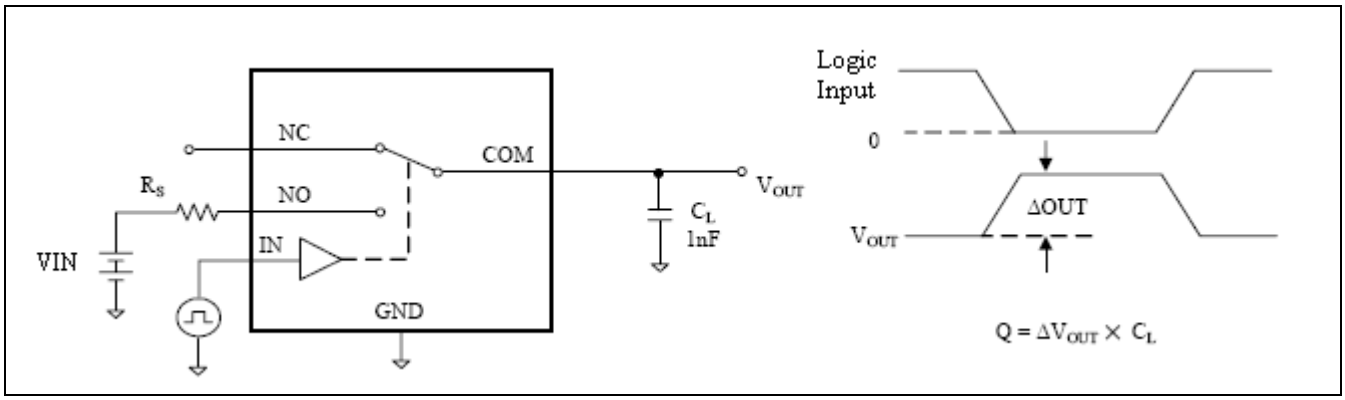


Figure 7. Charge Injection (Q)

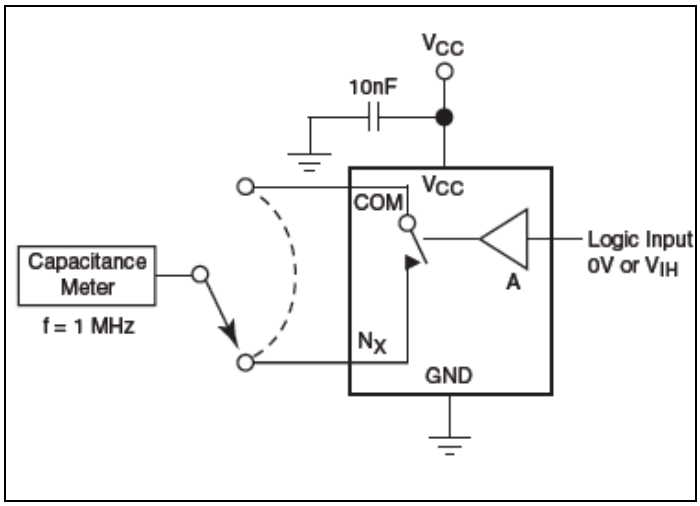


Figure 8. Channel Off Capacitance

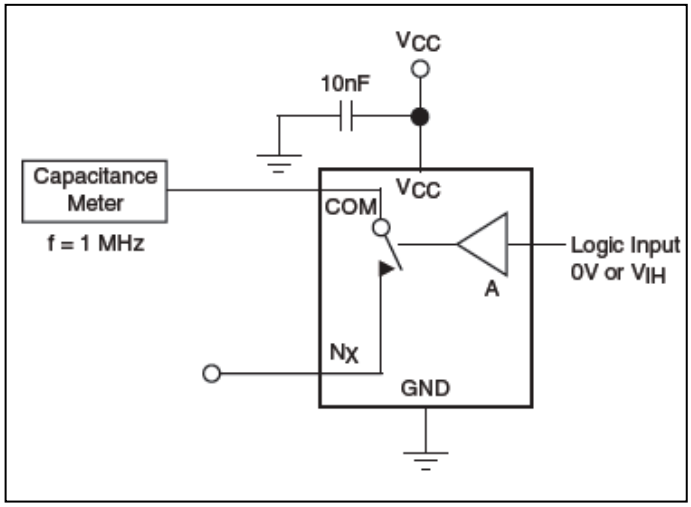


Figure 9. Channel On Capacitance

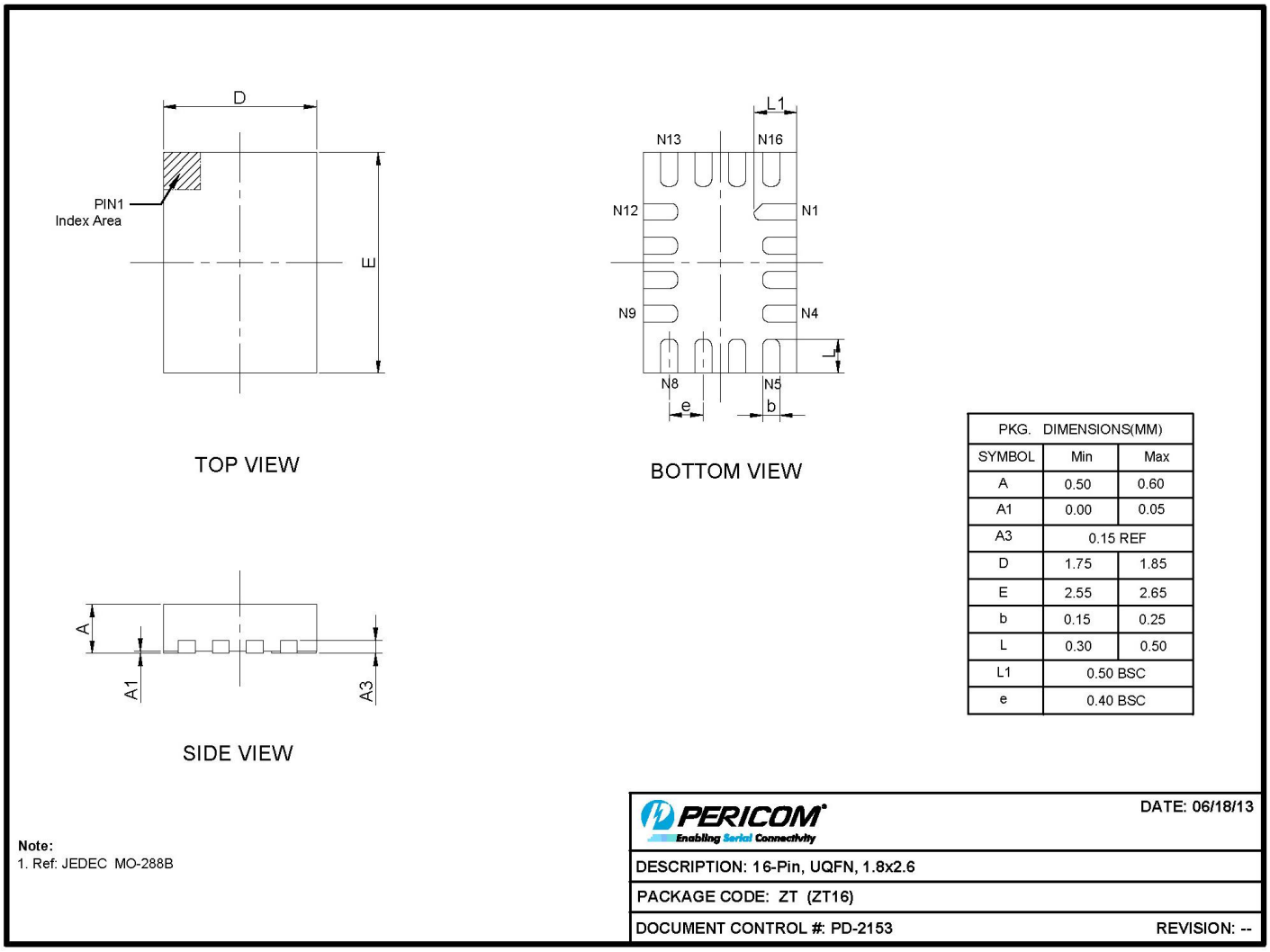
Part Marking

ZT Package

YW: Year and Workweek

Package Mechanical

UQFN-16 (ZT)



PKG. DIMENSIONS(MM)		
SYMBOL	Min	Max
A	0.50	0.60
A1	0.00	0.05
A3	0.15 REF	
D	1.75	1.85
E	2.55	2.65
b	0.15	0.25
L	0.30	0.50
L1	0.50 BSC	
e	0.40 BSC	

Note:
1. Ref: JEDEC MO-288B

PERICOM Enabling Serial Connectivity — DATE: 06/18/13

DESCRIPTION: 16-Pin, UQFN, 1.8x2.6

PACKAGE CODE: ZT (ZT16)

DOCUMENT CONTROL #: PD-2153 REVISION: --

13-0192

For latest package info.

please check: http://www.diodes.com/design/support/packaging/pericom-packaging/packaging-mechanicals-and-thermal-characteristics/

Ordering Information

Part Number	Package Code	Package Description
PI3A3899ZTEX	ZT	16-Pin, 1.8x2.6 (UQFN)

Notes:

- EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
- See http://www.diodes.com/quality/lead-free/ for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
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- X suffix = Tape/Reel

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