

FUDAN MICROELECTRONICS



复旦微电子

***FM7843***

***Touch Screen Controller***

**Specification**

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**Oct. 2007**

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# Product Overview

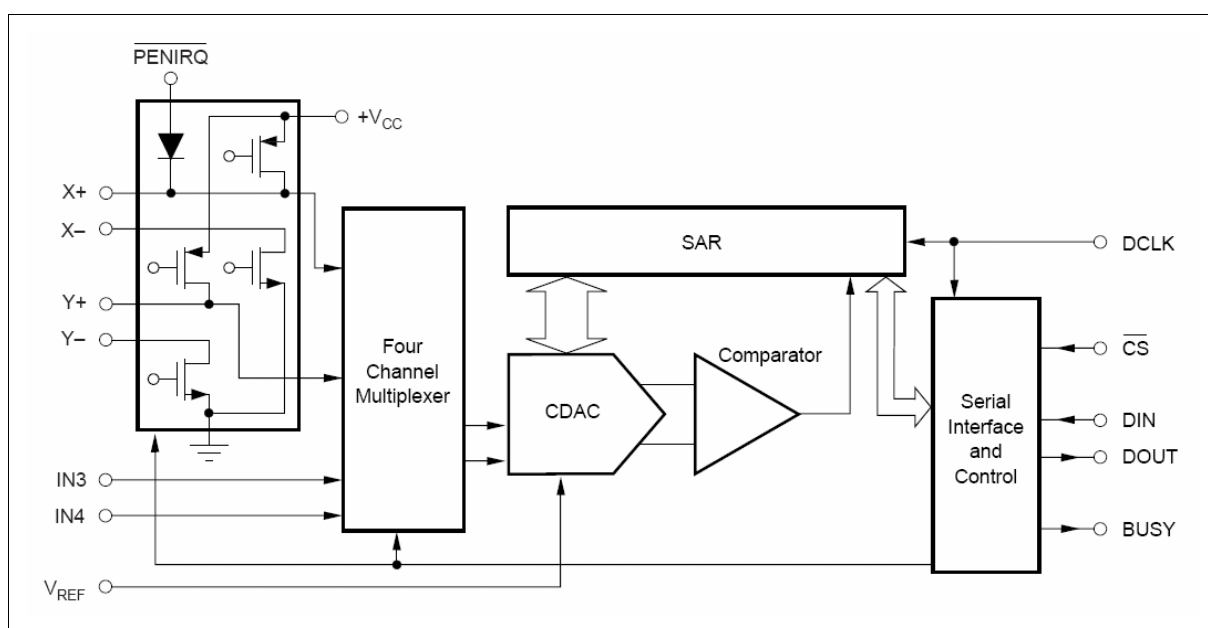
## Instruction

FM7843 is a 4-wire resistive touch screen input controller integrated circuit. The device is a 12-bit analog-to-digital converter with a synchronous serial interface and touch screen driving circuit. It has a shutdown mode, in which the power dissipation of the device is as low as  $0.5\mu\text{W}$ . Fully compatible with Burr-Brown' ADS7843, this device is ideal to be used in personal digital assistant (PDA) and portable instruments applications.

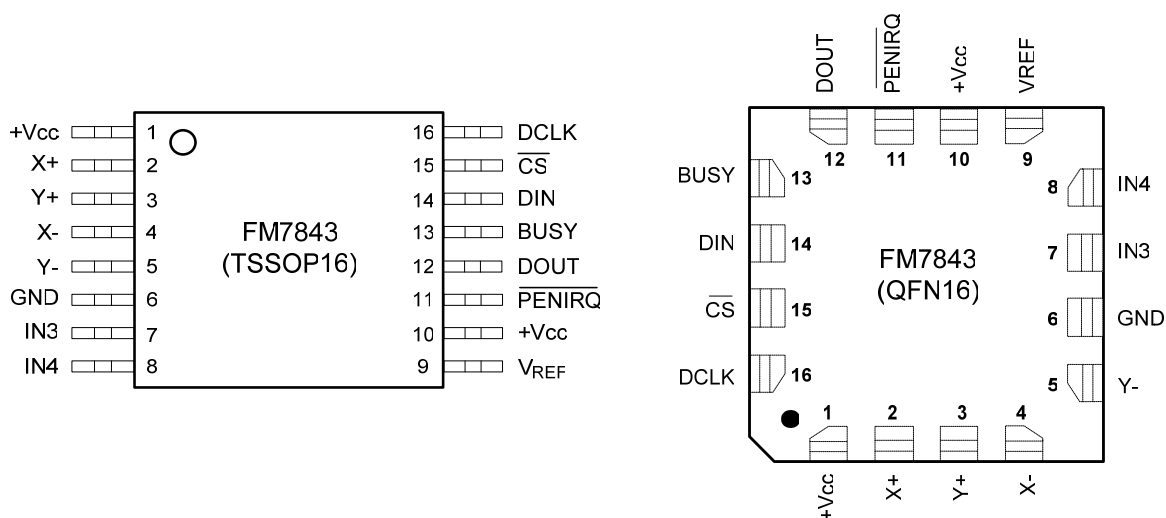
## Features

- ◆ Realizing the driver selection of touch screen
- ◆ Analog-to-digital conversion on input voltage or auxiliary voltage
- ◆ Synchronous serial interface
- ◆ Up to 125kHz conversion rate
- ◆ Programmable 8-bit or 12-bit resolution
- ◆ Single supply: 2.7V to 5V
- ◆ 2 auxiliary analog inputs

## Block Diagram



## Pin Assignment



## Pin Description

Symbol	Pin	Function
Vcc	1	Power supply 2.7v to 5v
X+	2	X+ Position input. ADC input Channel 1
Y+	3	Y+ Position input. ADC input Channel 2
X-	4	X- Position input
Y-	5	Y- Position input
GND	6	Ground
IN3	7	Auxiliary input 1. ADC input Channel 3
IN4	8	Auxiliary input 2. ADC input Channel 4
Vref	9	Voltage Reference input
Vcc	10	Power supply, 2.7v to 5v
PENIRQ	11	Pen interrupt. Open anode output (requires 10kΩ pull-up resistor externally).
DOUT	12	Serial Data Output. Data is shifted on the falling edge of, CS DCLK. This output is high impedance when CS is HIGH
BUSY	13	Busy Output. This output is high impedance when CS is HIGH
DIN	14	Serial Data input. If CS is LOW, data is latched on rising edge of DCLK.
CS	15	Chip Select Input, Conversion timing and enables the serial input/output register.
DCLK	16	External Clock Input. This clock runs the SAR conversion process and synchronizes serial data I/O.

# Characteristics

## Absolute Maximum Ratings

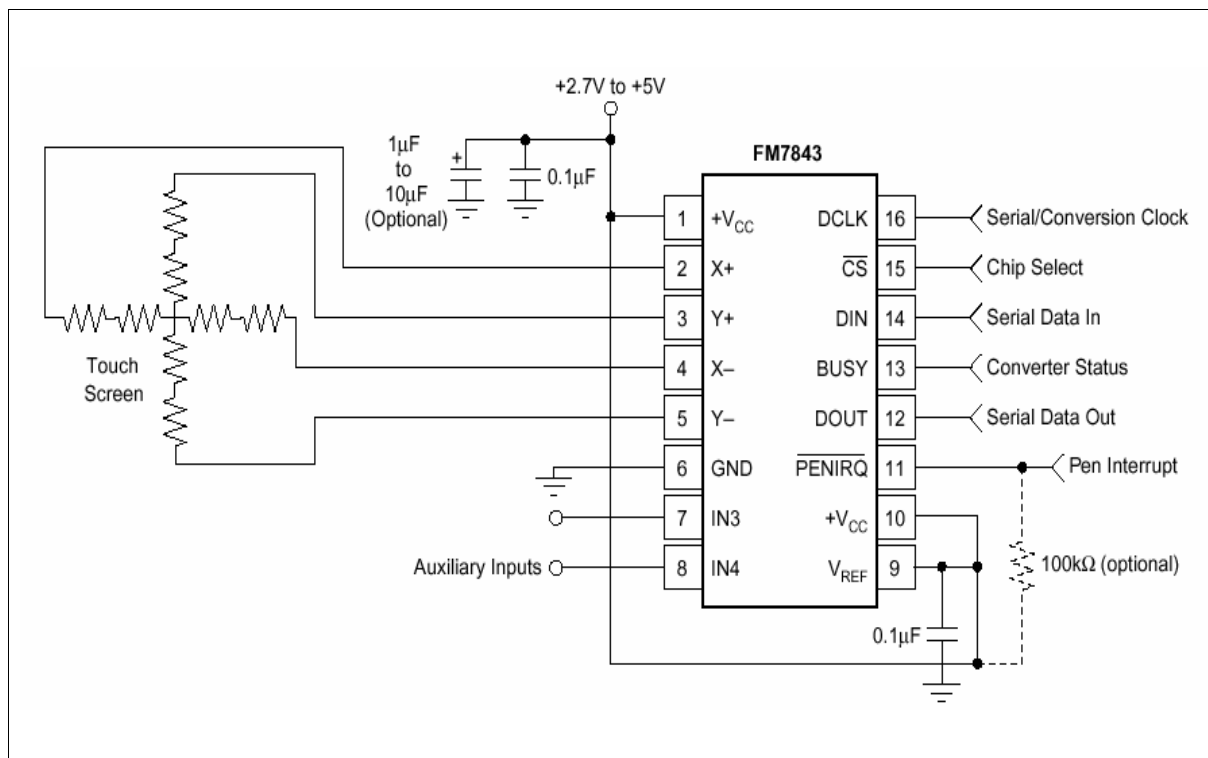
Symbol	Parameter	Min	Max	Unit
V <sub>CC</sub>	Maximum Operation Voltage	-0.3	6	V
V <sub>IA</sub>	Analog input voltage	-0.3	V <sub>CC</sub> +0.3	V
V <sub>ID</sub>	Digital input voltage	-0.3	V <sub>CC</sub> +0.3	V
P <sub>TOT</sub>	Total power dissipation		250	mW
T <sub>STG</sub>	Storage temperature	-55	+150	°C
T <sub>OPR</sub>	Operation temperature	-40	+85	°C

## Electrical Characteristic

(V<sub>CC</sub>=2.7V, V<sub>ref</sub>=2.5V, f<sub>sample</sub>=125KHz, f<sub>clk</sub>=2MHz)

Parameter		Min	Typ	Max	Unit
Analog Input	Absolute input range	-0.2		V <sub>CC</sub> + 0.2	V
	Capacitance		2.5		pF
	Leakage Current		0.1		μA
System Performance	Resolution		12		Bits
	No Missing Codes	11			Bits
	Integral Linearity Error			± 2	LSB
	Offset Error			± 6	LSB
	Gain Error			± 4	LSB
	Power Supply Rejection		70		dB
Sampling Dynamics	Conversion Time			12	Clk Cycles
	Acquisition Time	3			Clk Cycles
	Throughput Rate			125	KHz
Switch Drivers	On-Resistance		5		Ω
Power Supply Requirements	Quiescent Current		280	650	μA
	Shut Down Mode			3	μA
	Power Dissipation			1.8	mW

# Application Example

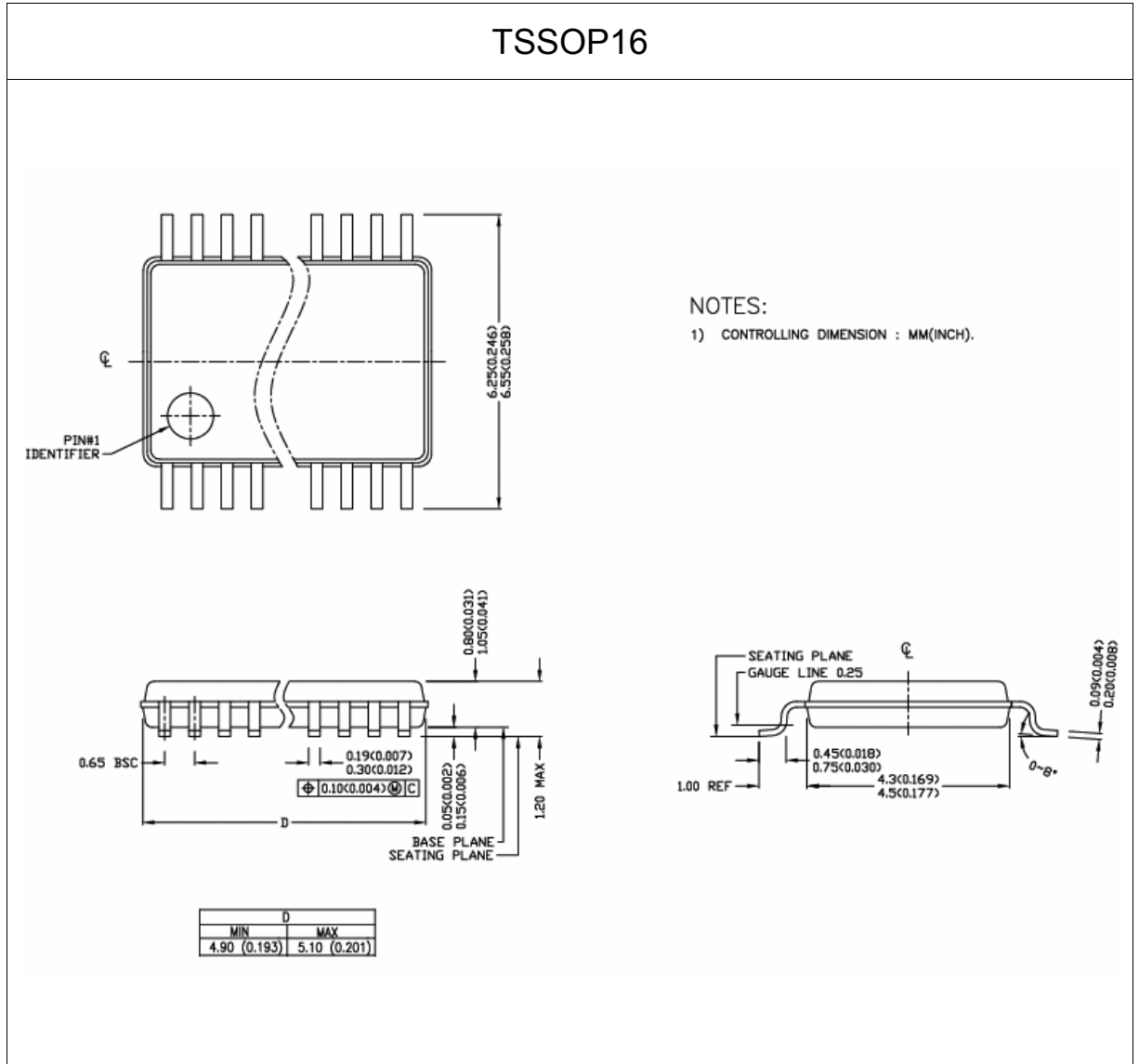




## Ordering Information

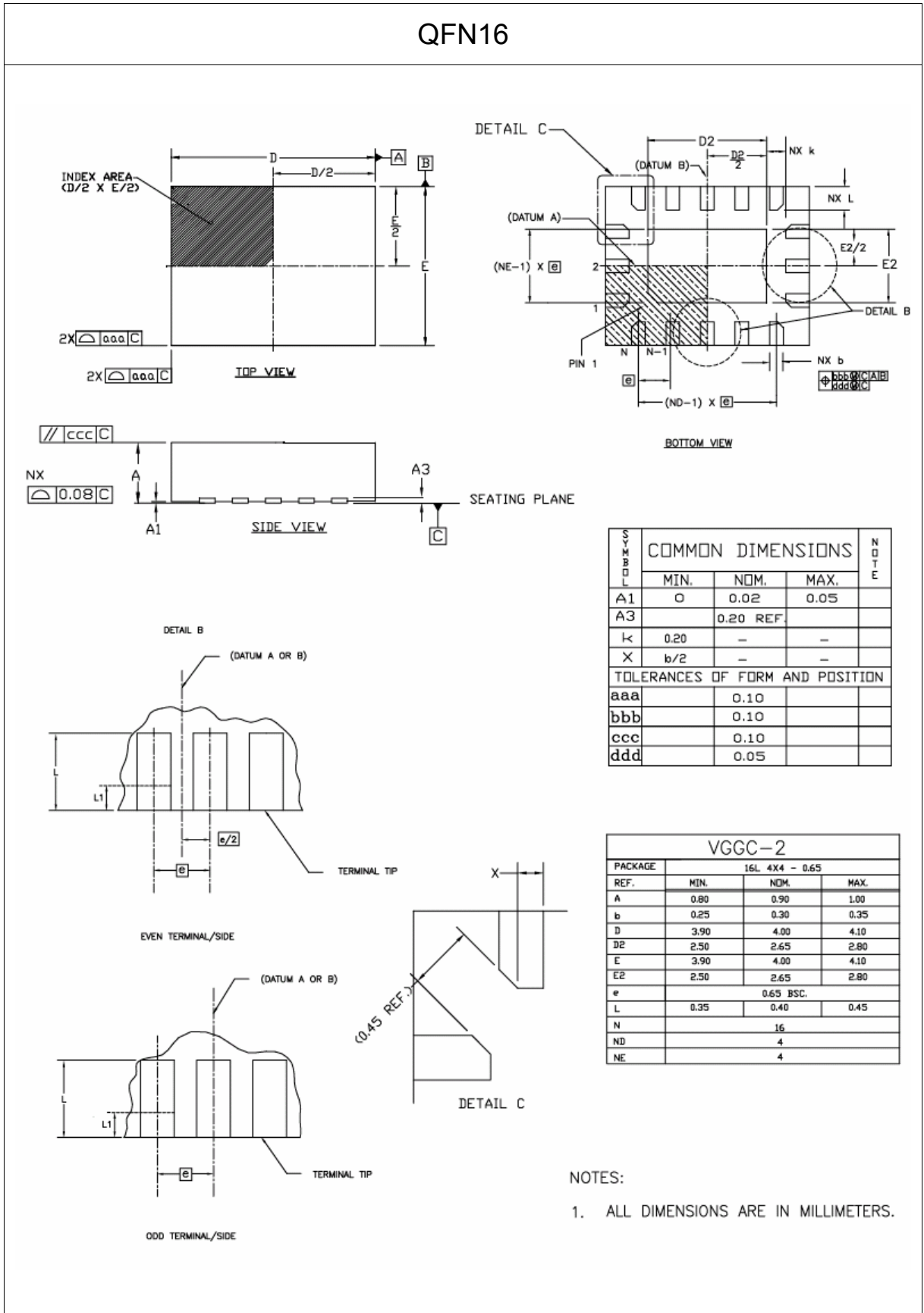
Ordering Code	Package	Operation Temperature
FM7843-TS	TSSOP16	Industrial Temperature (-40°C ~ +85°C)
FM7843-QF	QFN16	

# Package Dimensions





# QFN16



SYMBOL	COMMON DIMENSIONS			NOTE
	MIN.	NOM.	MAX.	
A1	0	0.02	0.05	
A3		0.20 REF.		
k	0.20	-	-	
X	b/2	-	-	
TOLERANCES OF FORM AND POSITION				
aaa		0.10		
bbb		0.10		
ccc		0.10		
ddd		0.05		

VGGC-2			
PACKAGE	16L 4X4 - 0.65		
REF.	MIN.	NOM.	MAX.
A	0.80	0.90	1.00
b	0.25	0.30	0.35
D	3.90	4.00	4.10
D2	2.50	2.65	2.80
E	3.90	4.00	4.10
E2	2.50	2.65	2.80
e	0.65 BSC.		
L	0.35	0.40	0.45
N	16		
ND	4		
NE	4		

NOTES:  
1. ALL DIMENSIONS ARE IN MILLIMETERS.

## Revision History

Version	Publication date	Pages	Paragraph or Illustration	Revise Description
1.0	Oct. 2007	11		Initial Release.

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