



## KEY FEATURES

- Low power operation
  - 1.65V to 3.7V (SX8651/53)
  - 2.3V to 3.6V (SX8674/75/76/77/78)
  - 30 $\mu$ A @ 2.3V 8ksp/s
  - 0.4 $\mu$ A stand-by current
- 4/5-wire touch screen interface with programmable digital filtering/averaging
- Supports various multi-touch gestures such as pinch/stretch/rotate on low cost 4-wire resistive touch screen
- Fully programmable proximity sensing (SX8674/76)
  - > 5cm detection distance
  - No additional components required
- Built-in haptics driver for LRA and ERM (SX8674/75)
  - Up to 250 mA drive capability
  - Short circuit and over temperature protection
- On-chip ESD protection up to  $\pm$ 15kV
- Ultra-small footprint solution:
  - SX8651/53:
    - 1.46 mm x 1.96 mm 12-WLCSP,
    - 3 mm x 3mm 12-DFN,
    - 4 mm x 3mm 14-DFN
  - SX8674/75/76/77/78:
    - 2.07 mm x 2.07mm 19-WLCSP,
    - 4 mm x 4mm 20-QFN
- Dedicated hardware reset pin
- 400kHz I<sup>2</sup>C interface

## APPLICATIONS

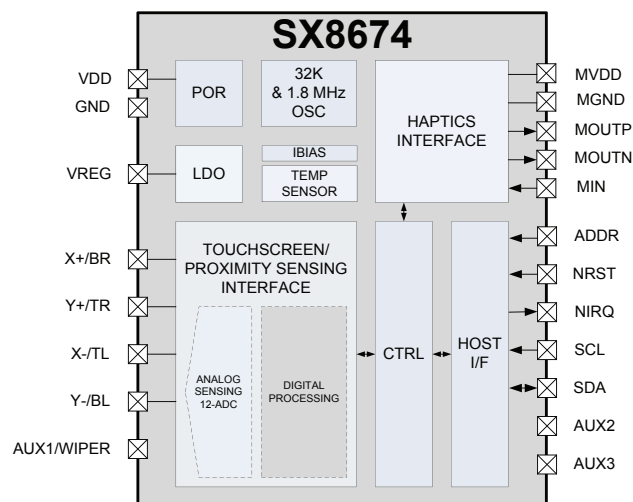
- Game machines, portable music players
- Mobile phones
- DSC
- GPS
- Conference phone
- Home appliance control panels
- POS/POI terminals
- Touch screen monitors



## SX8651/53/74/75/76/77/78

## RESISTIVE TOUCH SCREEN CONTROLLER

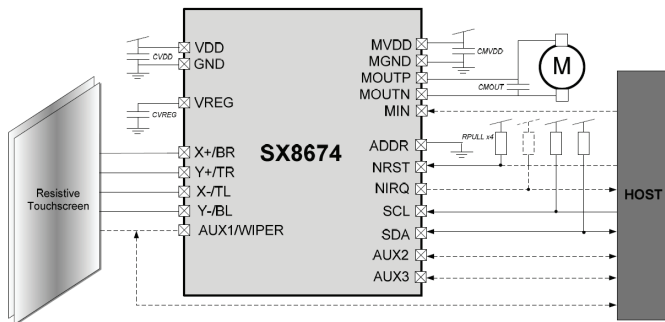
It is the world's first haptics enabled, multi-touch resistive touch screen controller with proximity sensing and  $\pm$ 15kV ESD protection. The SX8674, SX8675 and SX8676 belong to a family of high performance, haptics-enabled multi-touch, 4/5-wire resistive touch screen controllers with proximity detection that are optimized for hand held applications such as mobile phones, portable music players, game machines, point-of-sales terminal, and other consumer and industrial applications. They feature a wide input supply ranging from 2.3V to 3.6V.



SX8674 Block Diagram

Electrical Characteristics						
Symbol	Description	Condition	Min	Typ	Max	Unit
Supply						
VDD	Main supply voltage		2.3	-	3.6	V
IDD	Main supply current	<b>OFF</b> (MAN mode, no command, HAPT OFF)	-	0.4	0.75	µA
		<b>WAIT</b> (PENDET/TRG mode, pen up, PROX OFF, HAPT OFF)	-	1.7	-	µA
		<b>TOUCH1</b> (PENTRG mode, pen down, X+Y, RATE=4kcps, Nfilt=1, POWDLY=0.5us, touch screen current excluded, HAPT OFF, VDD=2.3V)	-	30	-	µA
		<b>TOUCH2</b> (PENTRG mode, pen down, X+Y, RATE=3kcps, Nfilt=7, POWDLY=0.5us, touch screen current excluded, HAPT OFF)	-	120	160	µA
		<b>PROX</b> (PENDET/TRG mode, pen up, TOUCHRATE=80cps, PROX ON, SCANPERIOD=200ms, HIGHIM=ON, SENSITIVITY=Max, FREQ=150kHz, BOOST=OFF, HAPT OFF)	-	8	20	µA
		<b>HAPT</b> (MAN mode, no command, LRA-PWM mode, MIN= 44.8kHz/50%, GAIN = Max, BW = 100, MOUTP/N floating, Squelch=011)	-	115	145	µA
MVDD	Haptics supply voltage		VDD	-	3.6	V
MIDD	Haptics supply current	<b>OFF</b>	-	0.01	1	µA
		<b>SQUELCH</b> (LRA-PWM mode, MIN= 44.8kHz/50%, GAIN = Max, BW = 100, MOUTP/N floating, Squelch=011)	-	6	10	µA

**TYPICAL APPLICATION CIRCUIT**



**ORDERING INFORMATION**

Part Number	Package (mm)	Multi-touch	Proximity	Haptics
SX8651IWLTRT	3x3 DFN-12	x		
SX8651ICSTRT	1.46x1.96 WLCSP-12	x		
SX8653IWLTRT	4x4 DFN-14	x		
SX8653ICSTRT	1.46x1.96 WLCSP-12	x		
SX8674IWLTRT	4x4 QFN-20	x	x	Generic
SX8674ICSTRT	2.07x2.07 WLCSP-19	x	x	Generic
SX8675IWLTRT	4x4 QFN-20	x		Generic
SX8675ICSTRT	2.07x2.07 WLCSP-19	x		Generic
SX8676IWLTRT	4x4 QFN-20	x	x	
SX8676ICSTRT	2.07x2.07 WLCSP-19	x	x	
SX8677IWLTRT	4x4 QFN-20	x	x	Immersion
SX8677ICSTRT	2.07x2.07 WLCSP-19	x	x	Immersion
SX8678IWLTRT	4x4 QFN-20	x		Immersion
SX8678ICSTRT	2.07x2.07 WLCSP-19	x		Immersion



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