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TK8811

One Key Touch Detector

DATA SHEET Rev 0.91

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AMENDMENT HISTORY

Version	Date	Description
V0.90	May,2020	New release.
V0.91	Aug,2020	Add DFN-6 package information Modify Device List

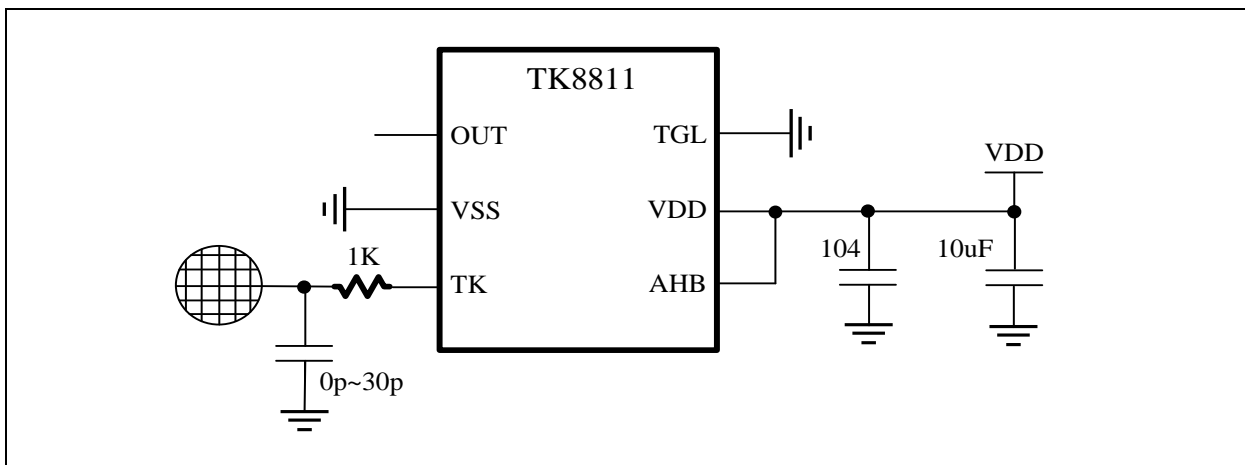
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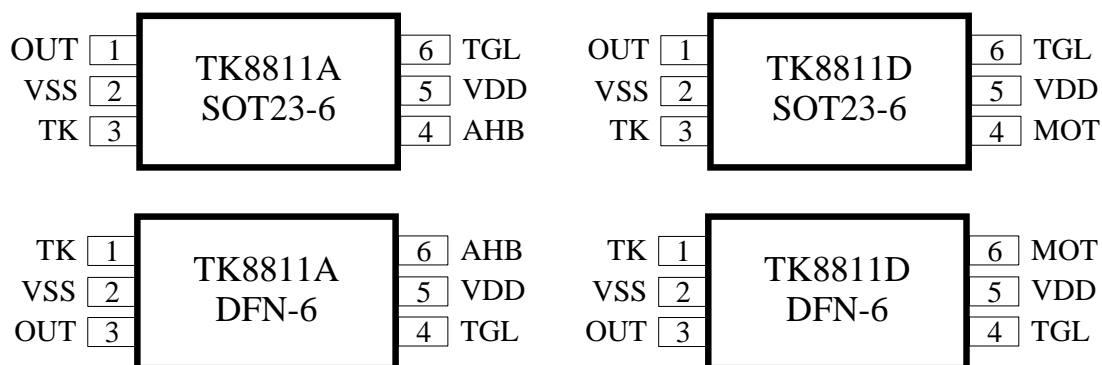
FEATURES

1. One Key Touch Detector
2. Operation Voltage: 2.2V~5.5V
3. Operation Current(TK8811A1): Normal mode = 2.1uA, Low Power mode= 1.3uA @V_{DD}=3V
4. Enter Low Power mode after no activity for 10 second
5. Response Time: Normal mode < 60mS; Low Power mode < 120mS
6. Sensitivity adjusted by TK pin capacitor (0pF~30pF)
7. Selectable output level: Active High, Active Low or Open-Drain
8. Selectable output mode: Toggle or Direct mode
9. Selectable key press time-out reset: 8 second or Unlimited
10. Built-in 2.3V LDO
11. LVR=2.0V
12. SOT23-6, DFN-6 package

APPLICATION CIRCUIT



PIN ASSIGNMENT



PIN DESCRIPTION

Name	In/Out	Pin Description
OUT	O	Touch Key output
TK	I	Touch Key input
TGL	I	OUT pin mode selection connect to VDD: OUT is Toggle mode output connect to VSS: OUT is Direct mode output
AHB	I	OUT pin output level selection (TK8811A) connect to VDD: OUT is CMOS active low output connect to VSS: OUT is CMOS active high output
MOT	I	Touch key press timeout control (TK8811D) connect to VDD: Unlimited connect to VSS: 8S
VDD, VSS	P	Power input pin and ground

DEVICE LIST

	Max. time for key press timeout	OUT pin output level	Sensitivity	2.3V LDO
TK8811A1	8S	CMOS active high or low defined by AHB	High	Enable
TK8811D1	8S or Unlimited defined by MOT	Open-Drain active low	High	Enable

Note: The standard part TK8811A1 is recommended.

FUNCTIONAL DESCRIPTION

1. Output Pin Mode Selection

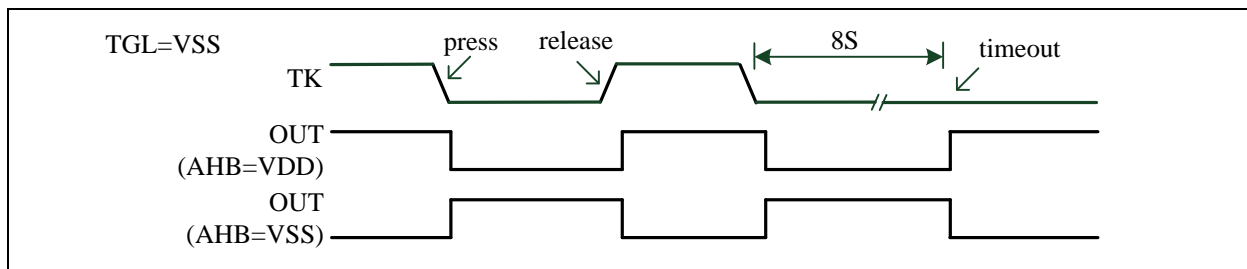
The OUT pin mode is defined by TGL, AHB

TGL	OUT output mode
VDD	Toggle mode
VSS	Direct mode

AHB	OUT output level
VDD	CMOS active Low
VSS	CMOS active High

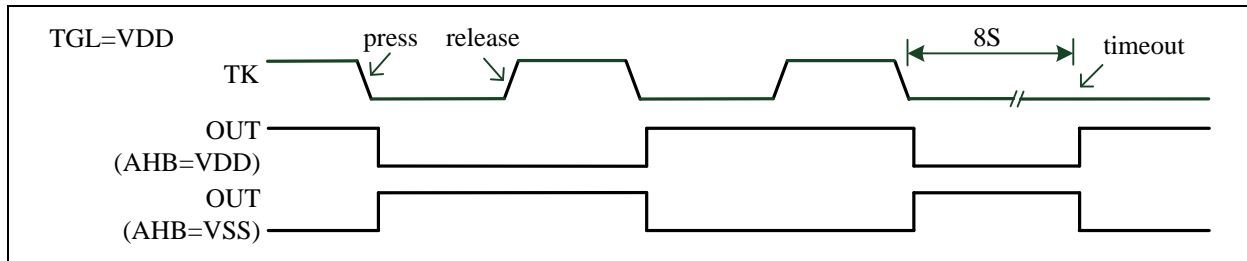
1.1 Direct output mode

This mode needs to connect TGL to VSS. The Direct mode waveform is as shown below.



1.2 Toggle output mode

This mode needs to connect TGL to VDD. The Toggle mode waveform is as shown below.



2. Touch Sensitivity Adjustment

The sensitivity of touch key can be adjusted by the capacitance of TK pin. The adjustment range is from 0pF to 30pF. Smaller capacitance can make higher sensitivity.

3. Key Press Timeout Reset

Long press on the touch key will generate a timeout reset. The maximum time is 8 seconds or unlimited according to the part number.

4. Normal mode and Low Power mode

The chip starts at Normal mode after reset. If no event occurred for 10 second, it switches to Low Power mode. It switches to Normal mode after sampling TK pin's capacitance variation event.

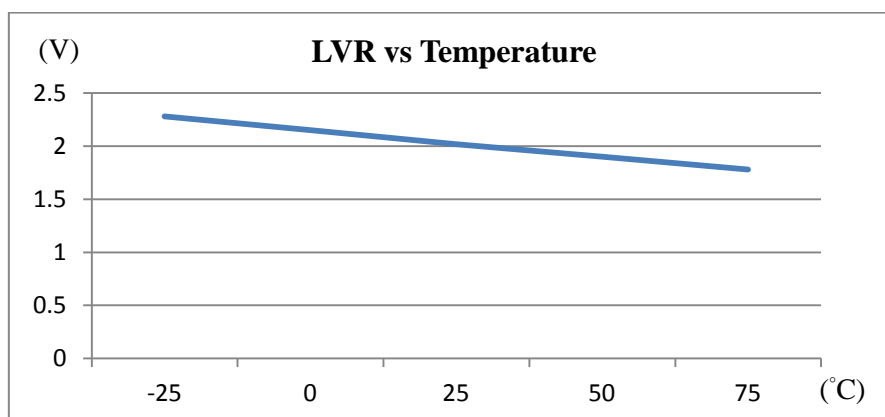
ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings

Parameter	Rating	Unit
Supply voltage	$V_{SS} - 0.3 \sim V_{SS} + 5.5$	V
Input voltage	$V_{SS} - 0.3 \sim V_{DD} + 0.3$	
Operating temperature	-20 ~ +70	°C
Storage temperature	-65 ~ +150	

DC Characteristics (TA=25°C)

Parameter	Sym	Conditions		Min	Typ	Max	Unit
Input High Voltage	V_{IH}	all Input	-	$0.8V_{DD}$			V
Input Low Voltage	V_{IL}			-	-	$0.2V_{DD}$	
I/O Port Source Current	I_{OH}	all Output	$V_{DD}=3.0V$ $V_{OH}=2.7V$	-	5	-	mA
			$V_{DD}=5.0V$ $V_{OH}=4.5V$	-	10	-	
I/O Port Sink Current	I_{OL}	all Output	$V_{DD}=3.0V$ $V_{OL}=0.3V$	-	15	-	mA
			$V_{DD}=5.0V$ $V_{OL}=0.5V$	-	30	-	
Power Supply Current (TK8811A1/D1)	I_{DD}	Normal mode	$V_{DD}=4.2V$	-	2.4	-	µA
			$V_{DD}=3.0V$	-	2.1	-	
		Low Power mode	$V_{DD}=4.2V$	-	1.5	-	
			$V_{DD}=3.0V$	-	1.3	-	
Power Supply Current (TK8811A0/D0)	I_{DD}	Normal mode	$V_{DD}=4.2V$	-	5.6	-	µA
			$V_{DD}=3.0V$	-	2.8	-	
		Low Power mode	$V_{DD}=4.2V$	-	3.0	-	
			$V_{DD}=3.0V$	-	1.4	-	
Timeout Lead Time	T_{LT}		$V_{DD}=3.0V$	-	8	-	S
LVR Voltage	V_{LVR}	TA=25°C		1.8	2.0	2.2	V



PACKAGE INFORMATION

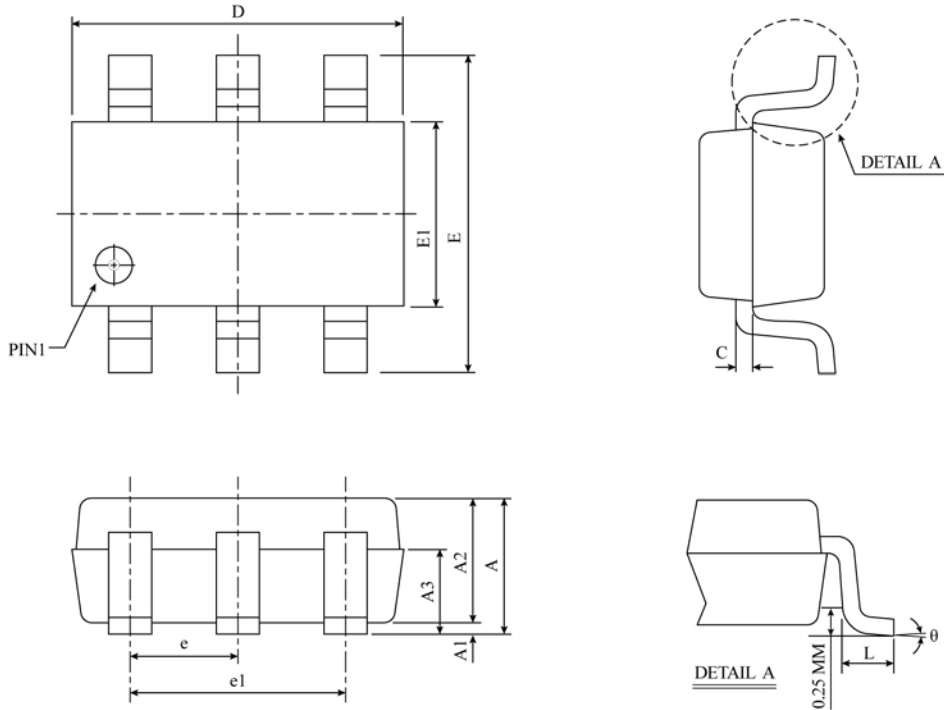
Please note that the package information provided is for reference only. Since this information is frequently updated, users can contact Sales to consult the latest package information and stocks.

Ordering Information

Ordering number	Package
TK8811A1-101-A8	SOT23-6
TK8811D1-111-A8	SOT23-6
TK8811A1-101-C1	DFN-6
TK8811D1-111-C1	DFN-6

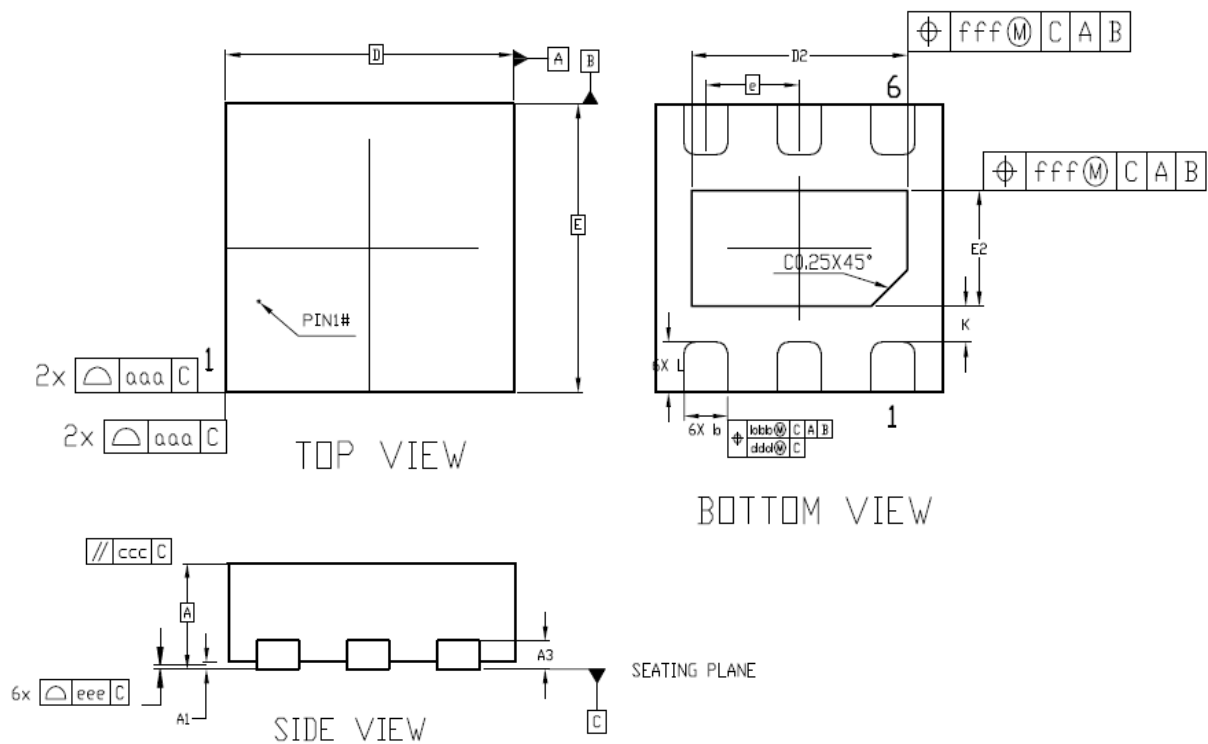
Package Information

• SOT23-6 Package Dimension



SYMBOL	DIMENSION IN MM			DIMENSION IN INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	-	-	1.45	-	-	0.057
A1	0	0.08	0.15	0	0.003	0.006
A2	0.90	1.10	1.30	0.035	0.043	0.051
A3	0.60	0.65	0.70	0.024	0.026	0.028
c	0.12	0.16	0.19	0.005	0.006	0.007
D	2.82	2.92	3.02	0.111	0.115	0.119
E	2.70	2.90	3.10	0.106	0.114	0.122
E1	1.52	1.62	1.72	0.060	0.064	0.068
e	0.85	0.95	1.05	0.033	0.037	0.041
e1	1.80	1.90	2.00	0.071	0.075	0.079
L	0.35	0.48	0.60	0.014	0.019	0.024
θ	0°	4°	8°	0°	4°	8°
JEDEC	M0-178 (AB)					

△ * NOTES : ALL DIMENSIONS REFER TO JEDEC STANDARD MO-178 AB
DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS.

DFN-6 Package Dimension


DIM SYMBOL	MIN.	NOM.	MAX.
A	0.70	0.75	0.80
	0.80	0.85	0.90
A1	0	0.02	0.05
A3	-	0.20 REF	-
b	0.25	0.30	0.35
D	2.00BSC		
E	2.00BSC		
D2	1.40	1.50	1.60
E2	0.70	0.80	0.90
e	0.65BSC		
L	0.30	0.35	0.40
K	0.25	-	-
aaa	0.15		
bbb	0.10		
ccc	0.10		
ddd	0.05		
eee	0.08		
fff	0.10		