

LOW POWER AND LOW OFFSET VOLTAGE SUPER SMALL-SIZED SINGLE C-MOS COMPARATOR

■GENERAL DESCRIPTION

The **NJU7108** is a super small-sized package single C-MOS comparator with push pull output.

The operating voltage is from 1V to 5.5V, and the interface can be connected with most of TTL and C-MOS type standard logic ICs.

Furthermore, The input offset voltage is lower than 4mV and Low operating current 10 μ A, therefore they can be suitable for battery use items and other portable items.

The available package is not only SC88A, but also ultra small package TSON6.

■PACKAGE INFORMATION



**NJU7108F3
(SC88A)**



**NJU7108KL1
(TSON6)**

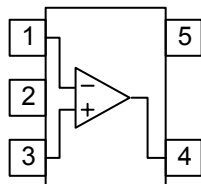
■FEATURES

- Single Low Power Supply $V_{DD}=1.0\sim 5.5V$
- Low Offset Voltage $V_{IO}=4mV$ max
- Low Operating Current $I_{DD}=10\mu A$ typ
- Push Pull Output
- Package Outline SC88A, TSON6
- C-MOS Technology

■PIN CONFIGURATION

NJU7108F3

(Top View)

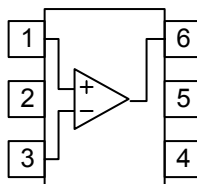


**NJU7108F3
PIN CONFIGURATION**

1. -INPUT
2. V_{SS}
3. +INPUT
4. OUTPUT
5. V_{DD}

NJU7108KL1

(Top View)

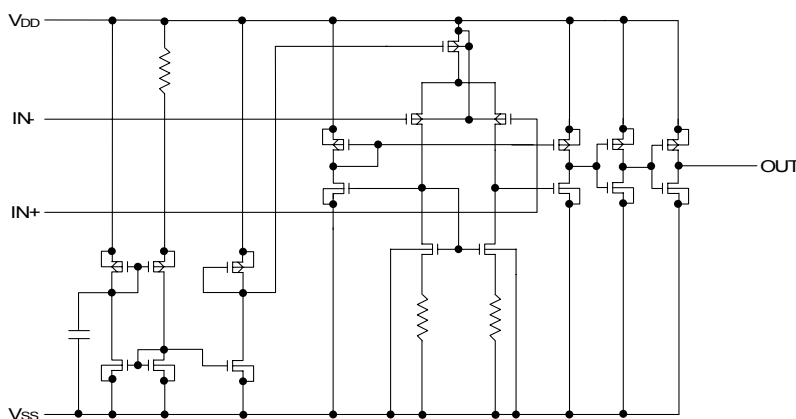


**NJU7108KL1
PIN CONFIGURATION**

1. +INPUT
2. V_{SS}
3. -INPUT
4. V_{DD}
5. V_{SS}
6. OUTPUT

(CAUTION) There is not pin-compatible with NJU7108F3 and NJU7108KL1.

■EQUIVALENT CIRCUIT



■ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATING	UNIT
Supply Voltage	V_{DD}	7.0	V
Differential Input Voltage	V_{ID}	± 7.0	V
Common Mode Input Voltage	V_{IC}	-0.3~7.0 (Note1)	V
Power Dissipation	P_D	SC88A : 250 (Note2) TSON6 : 515 (Note3)	mW
Operating Temperature	T_{opr}	-40~+85	°C
Storage Temperature	T_{stg}	-55~+125	°C

(Note1) For supply voltage less than +7.0V, the absolute maximum input voltage is equal to supply voltage.

(Note2) Mounted on a glass epoxy board (FR-4) in size of 50x50x1.6mm.

(Note3) Mounted on Two layer board(40x40x1.6mm, single layer, both-side 50% share of the wiring substrate).

(Note4) Decoupling capacitor should be connected between V_{DD} and V_{SS} due to the stabilized operation for the circuit.

■ELECTRICAL CHARACTERISTICS

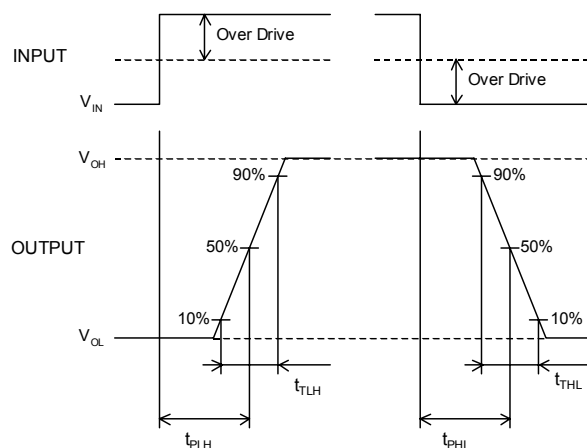
(V_{DD}=3.0V, R_L=∞, Ta=25°C)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Operating Voltage	V_{DD}		1.0	-	5.5	V
Input Offset Voltage	V_{IO}	$V_{IN}=V_{DD}/2$	-	-	4	mV
Input Offset Current	I_{IO}		-	1	-	pA
Input Bias Current	I_{IB}		-	1	-	pA
Input Common Mode Voltage Range	V_{ICM}		0~2.5	-	-	V
High Level Output Voltage	V_{OH}	$I_{OH}=-5mA$	2.7	-	-	V
Low Level Output Voltage	V_{OL}	$I_{OL}=+5mA$	-	-	0.3	V
Supply Current	I_{DD}		-	10	20	uA

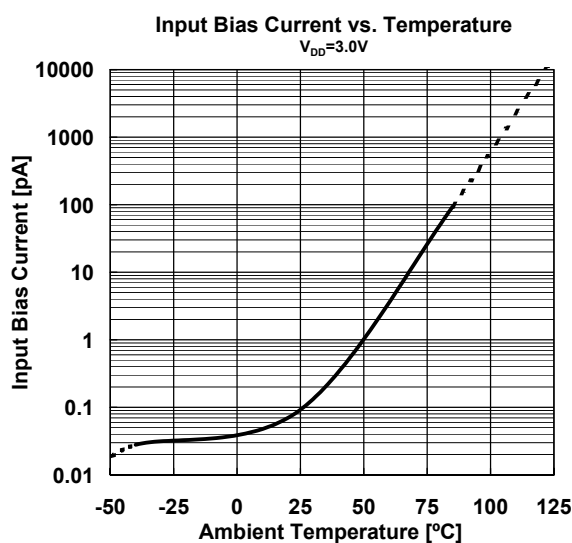
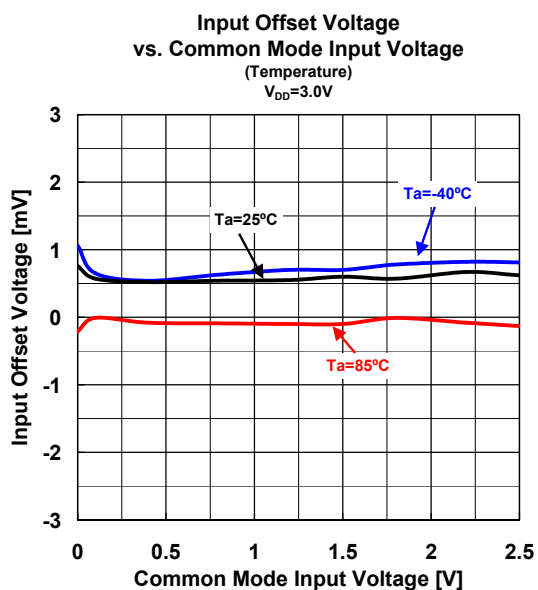
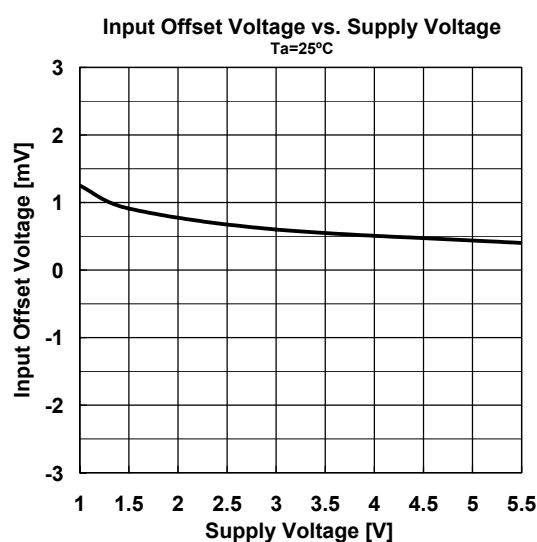
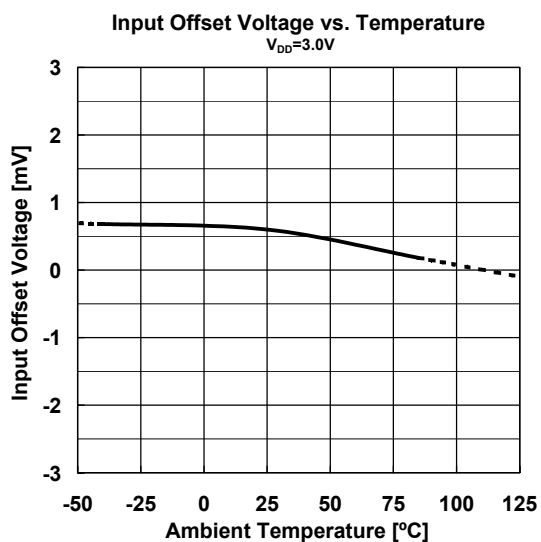
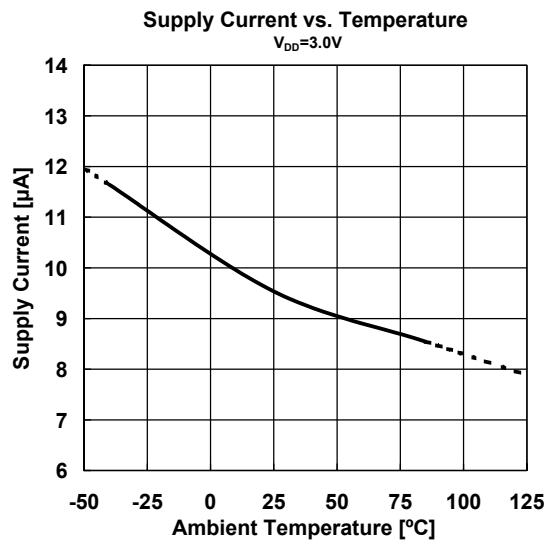
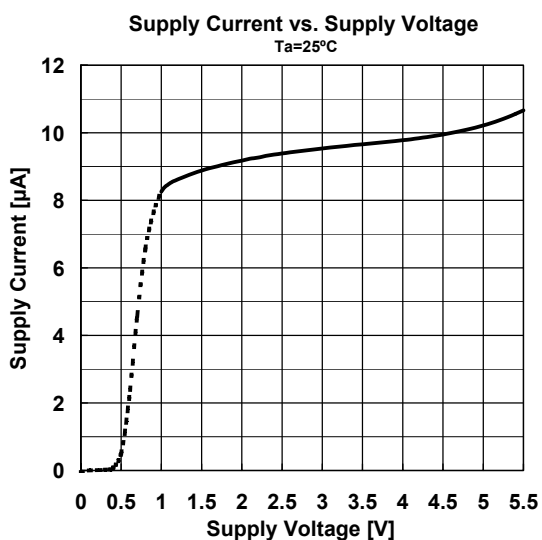
(V_{DD}=3.0V, f=19kHz, C_L=15pF, Ta=25°C)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Propagation Delay Low to High	t_{PLH}	Over Drive=100mV	-	500	-	ns
Propagation Delay High to Low	t_{PHL}	Over Drive=100mV	-	190	-	ns
Output Signal Rising Time	t_{TLH}	Over Drive=100mV	-	10	-	ns
Output Signal Falling Time	t_{THL}	Over Drive=100mV	-	5	-	ns

■TIMING WAVEFORM

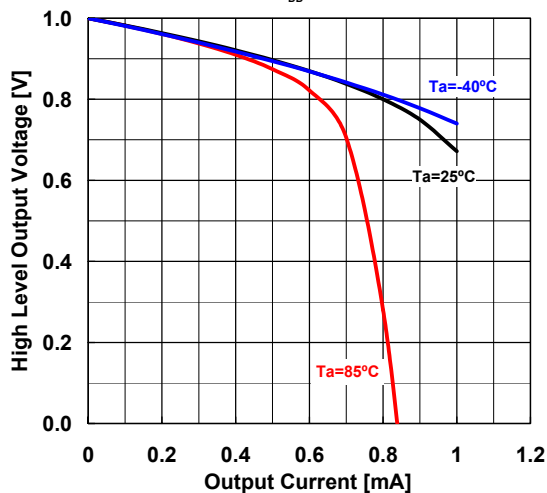


■TYPICAL CHARACTERISTICS

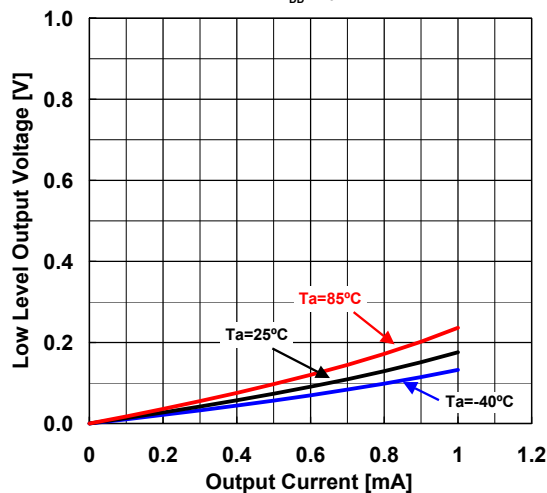


■ TYPICAL CHARACTERISTICS

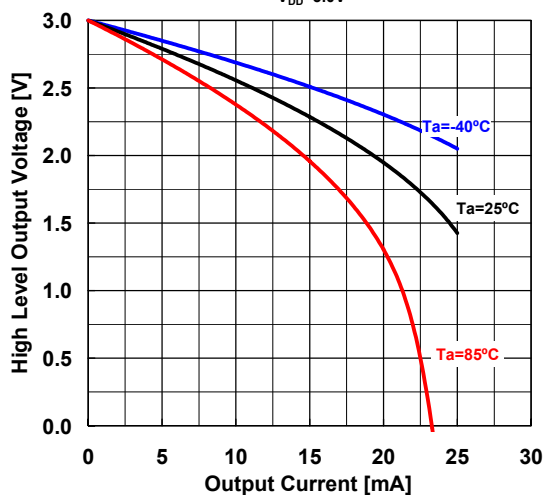
High Level Output Voltage vs. Output Current
(Temperature)
 $V_{DD}=1.0V$



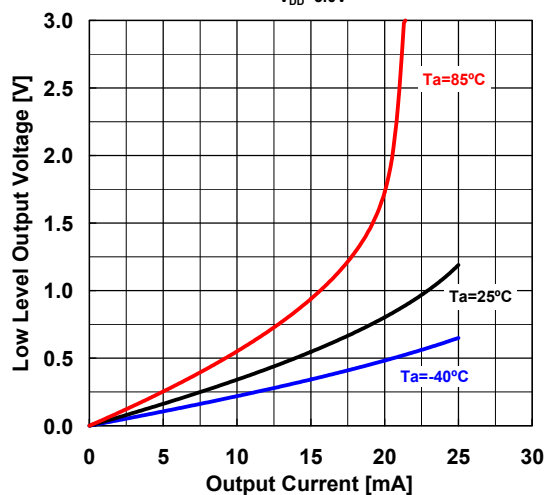
Low Level Output Voltage vs. Output Current
(Temperature)
 $V_{DD}=1.0V$



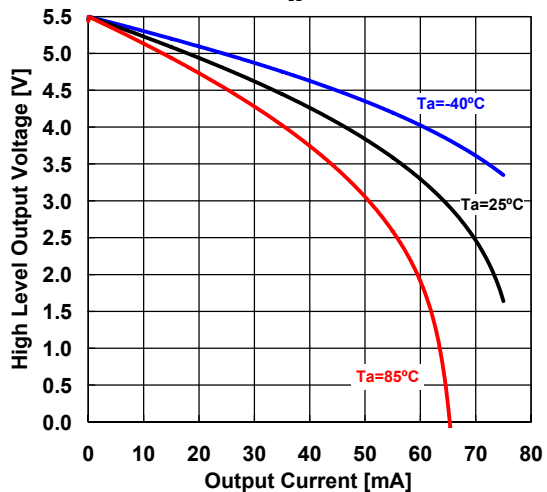
High Level Output Voltage vs. Output Current
(Temperature)
 $V_{DD}=3.0V$



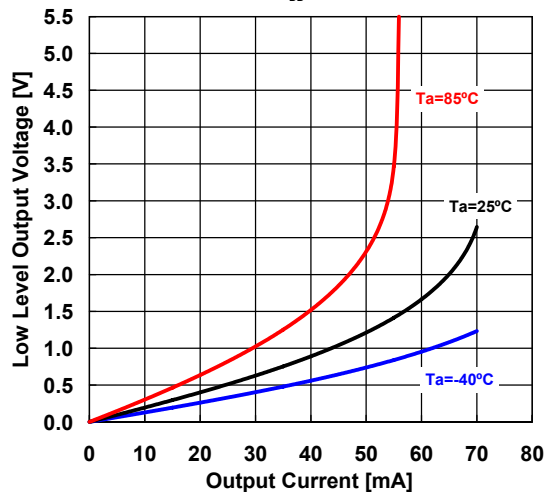
Low Level Output Voltage vs. Output Current
(Temperature)
 $V_{DD}=3.0V$



High Level Output Voltage vs. Output Current
(Temperature)
 $V_{DD}=5.5V$



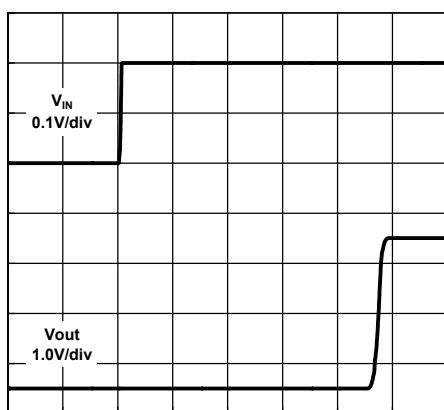
Low Level Output Voltage vs. Output Current
(Temperature)
 $V_{DD}=5.5V$



■TYPICAL CHARACTERISTICS

Propagation Delay t_{PLH}

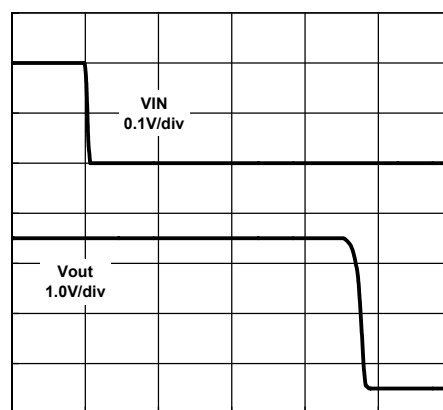
$V_{DD}/V_{SS}=\pm 1.5V$, Over Drive=100mV, $C_L=15pF$, $T_a=25^\circ C$



100ns/div

Propagation Delay t_{PHL}

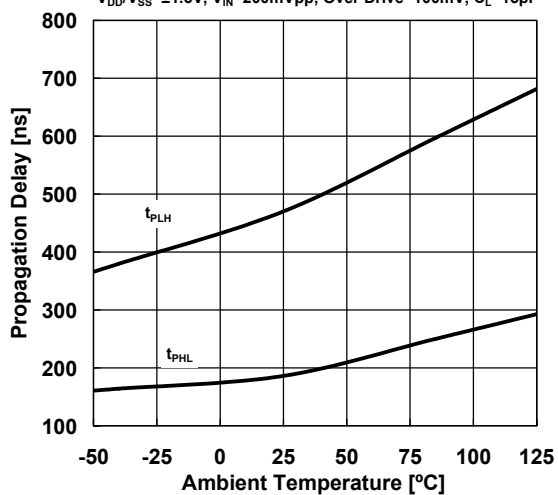
$V_{DD}/V_{SS}=\pm 1.5V$, Over Drive=100mV, $C_L=15pF$, $T_a=25^\circ C$



50ns/div

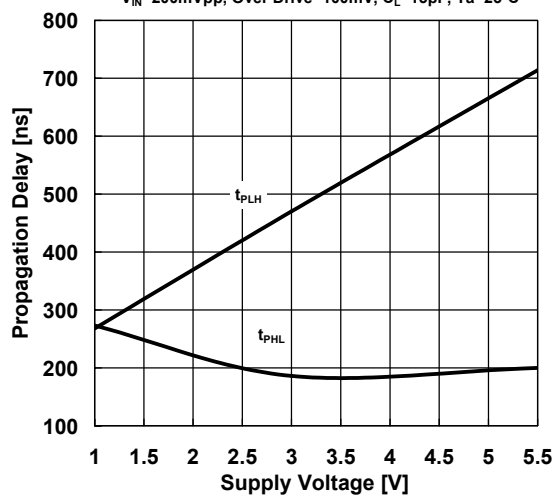
Propagation Delay vs. Temperature

$V_{DD}/V_{SS}=\pm 1.5V$, $V_{IN}=200mV_{pp}$, Over Drive=100mV, $C_L=15pF$



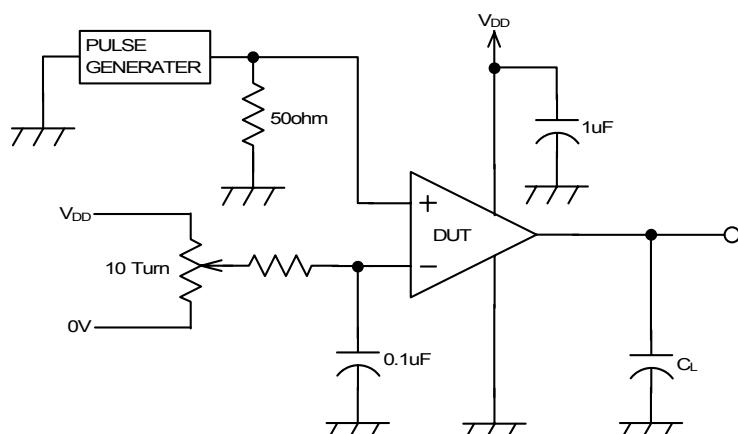
Propagation Delay vs. Supply Voltage

$V_{IN}=200mV_{pp}$, Over Drive=100mV, $C_L=15pF$, $T_a=25^\circ C$



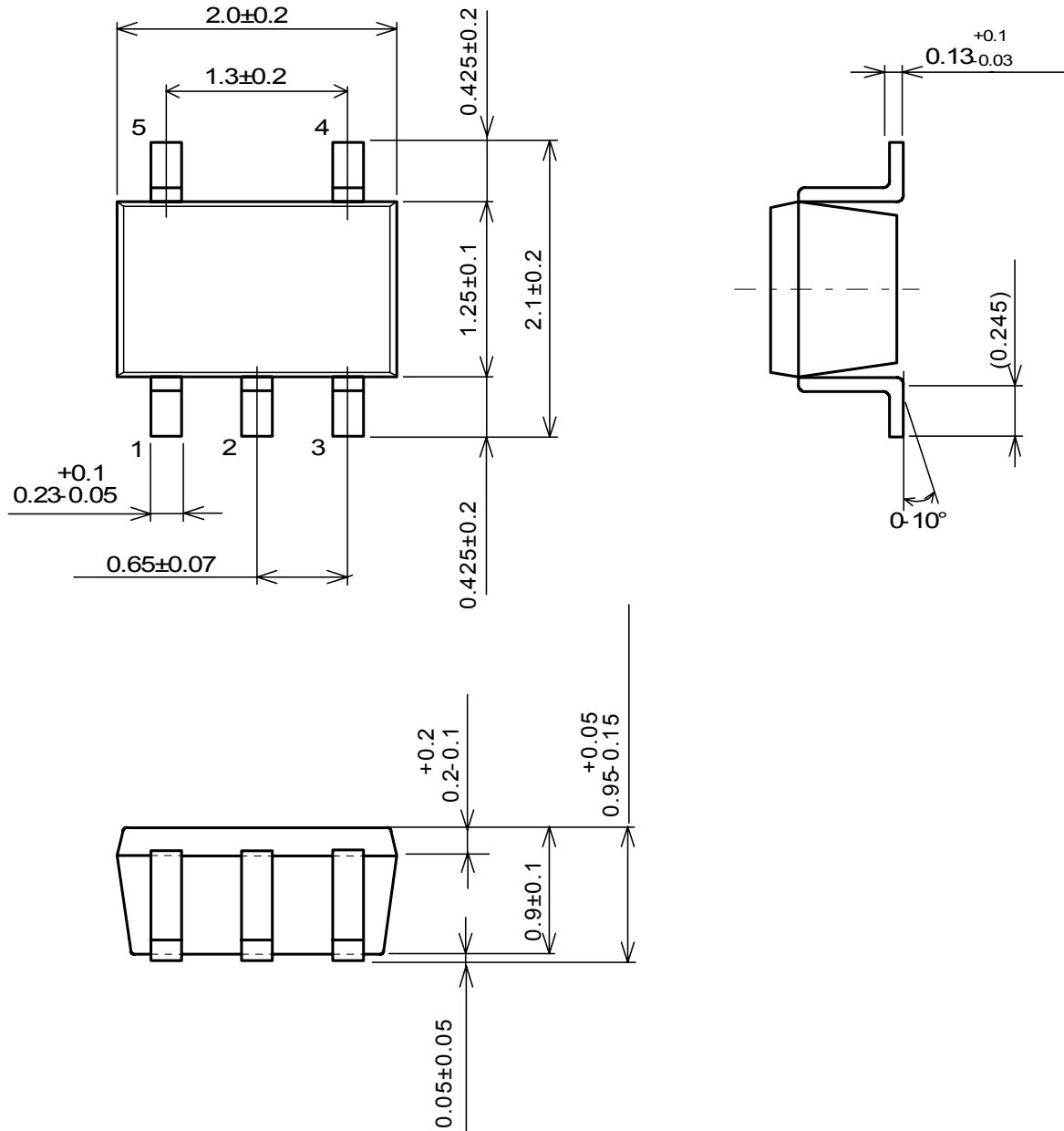
■TEST CIRCUIT

Switching Characteristics Measurement Circuit



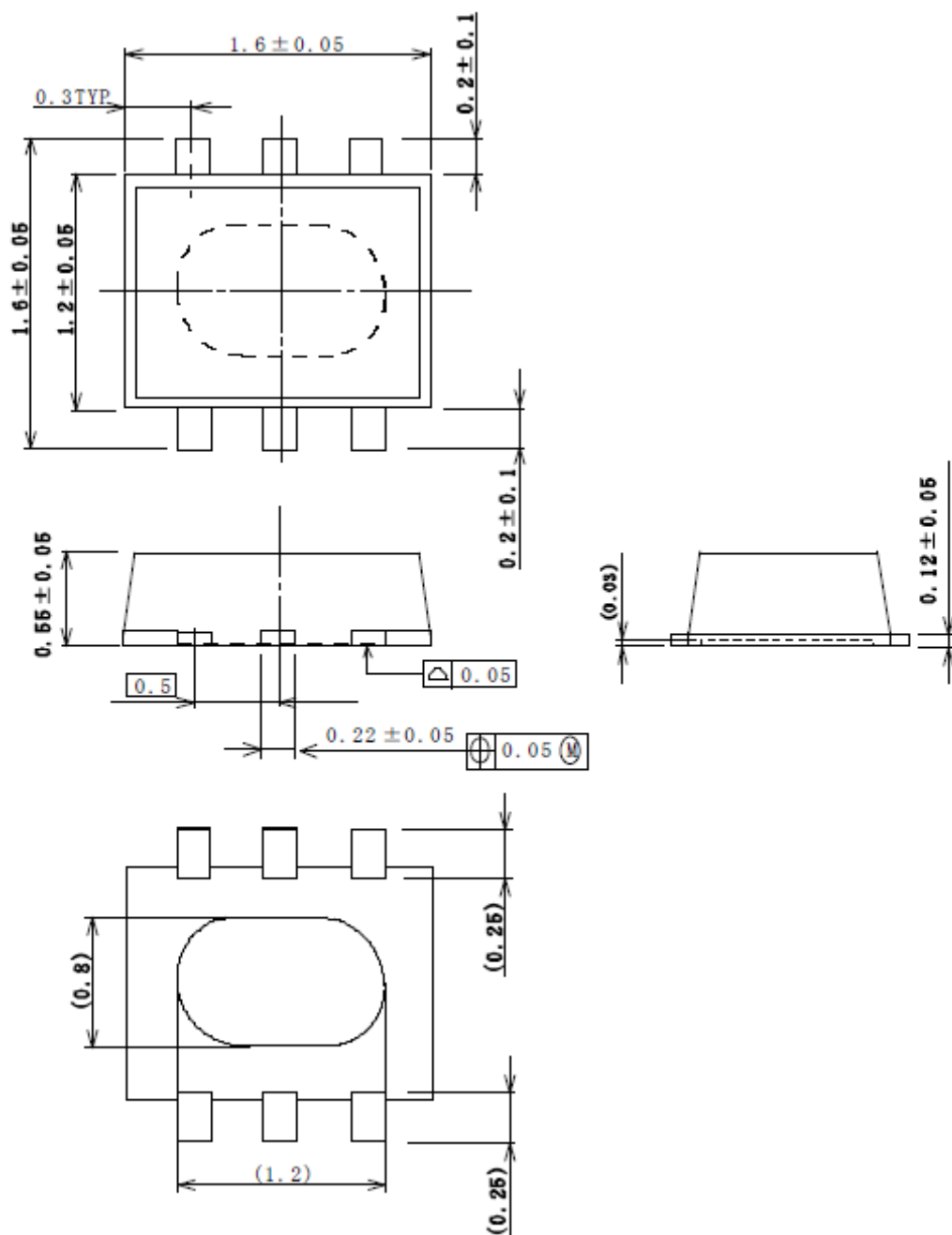
■PACKAGE DIMENSIONS

SC88A



■PACKAGE DIMENSIONS

TS0N6



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