S-75V00ANC

MINI LOGIC SERIES
2 INPUT NAND GATE

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Rev.3.0_00

The S-75V00ANC is a single 2-Input NAND Gate fabricated by utilizing advanced silicon-gate CMOS technology which provides the inherent benefit of CMOS low power consumption to achieve ultra high speed operation correspond to LSTTL IC's.
All gates of the internal circuitry have buffered outputs to ensure high noise immunity and output stability.
Input voltage is allowed to be applied even if power voltage is not supplied because no diode is inserted between an input pin and V_{CC}.
This allows for interfaces between power supplies of different voltage, output level conversion from 5 V to 3 V and battery backup applications.

■ Features

- Wide power supply range: 2 V to 5.5 V
- Low current consumption: 1.0 µA max. (at 5.5 V, 25°C)
- Typical propagation delay: t_{PD} = 3.7 ns (at 5 V)
- High noise immunity: V_{NIH} = V_{NIL} = 28% V_{CC} min.
- Power down protection: All pins
- Lead-free

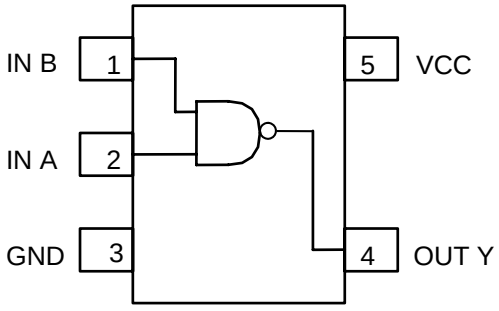
■ Applications

- Personal computers, peripherals
- Cellular phones
- Cameras
- Games

■ Package

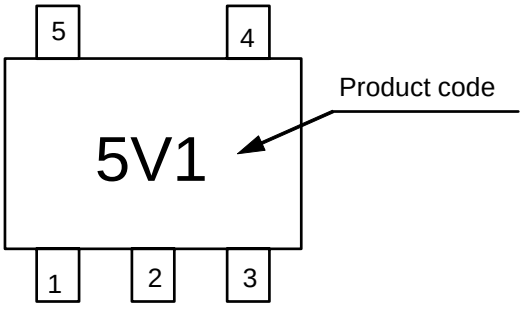
- SC-88A

■ Pin Configuration



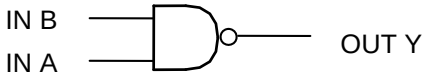
(Top view)

■ Marking Specification



(Top view)

■ Logic Diagram



True values

A	B	Y
L	L	H
L	H	H
H	L	H
H	H	L

■ Product Name Structure

S-75V00A NC – 5V1 – TF G

- Environmental code
  G : Lead-free (for details, please contact our sales office)
- IC direction in tape specification
- Product abbreviation
- Package abbreviation
  NC : SC-88A

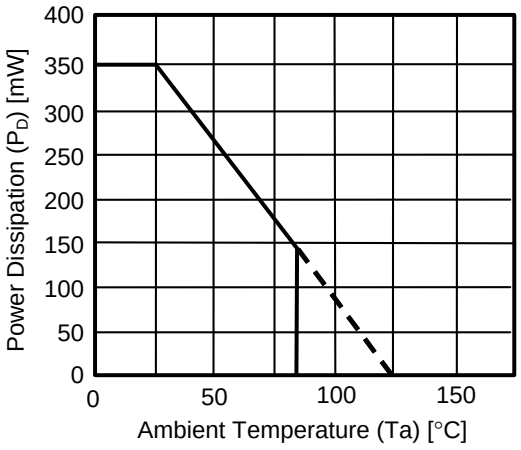
■ Absolute Maximum Ratings

(Ta = 25°C unless otherwise specified)

Item	Symbol	Absolute Maximum Ratings	Unit
Power supply voltage	V_{CC}	−0.5 to +7.0	V
Input voltage	V_{IN}	−0.5 to +7.0	V
Output voltage	V_{OUT}	−0.5 to V_{CC} + 0.5	V
Input parasitic diode current	I_{IK}	−20	mA
Output parasitic diode current	I_{OK}	±20	mA
Output current	I_{OUT}	±25	mA
V_{CC}/GND current	I_{CC}	±50	mA
Power dissipation	P_D	200 (When not mounted on board)	mW
		350*1	mW
Operating ambient temperature	T_{opr}	−40 to +85	°C
Storage temperature	T_{stg}	−65 to +150	°C
Lead temperature (10 s)	T_L	260	°C

***1.** When mounted on board
[Mounted board]
(1) Board size : 114.3 mm × 76.2 mm × t1.6 mm
(2) Board name : JEDEC STANDARD51-7

Caution The absolute maximum ratings are rated values exceeding which the product could suffer physical damage. These values must therefore not be exceeded under any conditions.



Power Dissipation of Package (When Mounted on Board)

■ Recommended Operating Conditions

Item	Symbol	Standard	Unit
Power voltage	V_{CC}	2 to 5.5	V
Input voltage	V_{IN}	0 to 5.5	V
Output voltage	V_{OUT}	0 to V_{CC}	V
Input rise / fall time	t_R, t_F	0 to 100 (V_{CC} = 3.3±0.3 V)	ns
		0 to 20 (V_{CC} = 5±0.5 V)	ns

■ DC Electrical Characteristics

Item		Symbol	Conditions			Ta = 25°C			Ta = –40 to 85°C		Unit
					V_{CC}	Min.	Typ.	Max.	Min.	Max.	
Input voltage	"H" level	V_{IH}	—		2.0	1.5	—	—	1.5	—	V
					3 to 5.5	V_{CC}×0.7	—	—	V_{CC}×0.7	—	V
	"L" level	V_{IL}	—		2.0	—	—	0.5	—	0.5	V
					3 to 5.5	—	—	V_{CC}×0.3	—	V_{CC}×0.3	V
Output voltage	"H" level	V_{OH}	V_{IN} = V_{IL} or V_{IH}	I_{OH} = –50 µA	2.0	1.9	2.0	—	1.9	—	V
					3.0	2.9	3.0	—	2.9	—	V
					4.5	4.4	4.5	—	4.4	—	V
				I_{OH} = –4 mA	3.0	2.58	—	—	2.48	—	V
				I_{OH} = –8 mA	4.5	3.94	—	—	3.80	—	V
	"L" level	V_{OL}	V_{IN} = V_{IH}	I_{OL} = 50 µA	2.0	—	0	0.1	—	0.1	V
					3.0	—	0	0.1	—	0.1	V
					4.5	—	0	0.1	—	0.1	V
				I_{OL} = 4 mA	3.0	—	—	0.36	—	0.44	V
				I_{OL} = 8 mA	4.5	—	—	0.36	—	0.44	V
Input current		I_{IN}	V_{IN} = 5.5 V or GND		0 to 5.5	—	—	±0.1	—	±1.0	µA
Current consumption		I_{CC}	V_{IN} = V_{CC} or GND		5.5	—	—	1.0	—	10.0	µA

■ AC Electrical Characteristics

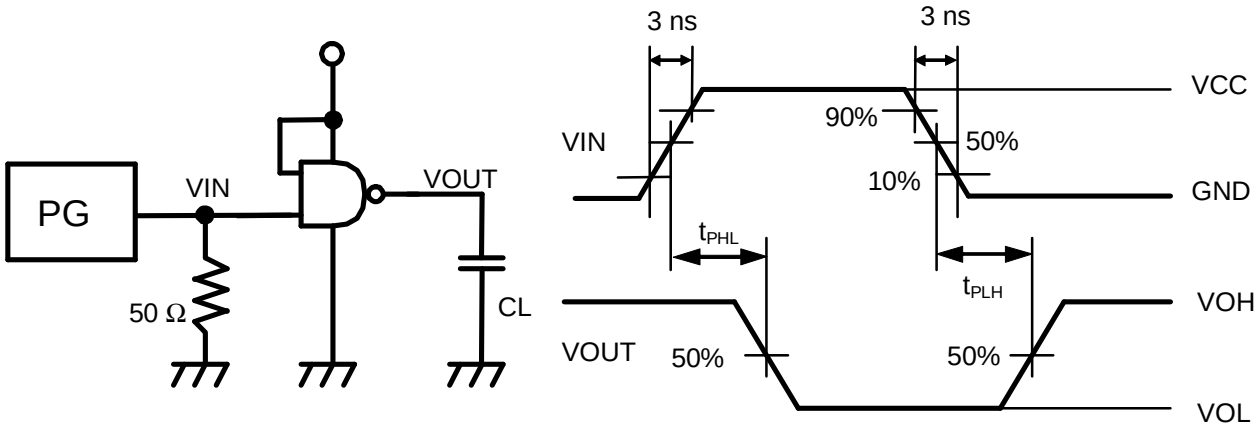
(Input $t_R = t_F = 3$ ns unless otherwise specified)

Item	Symbol	Measurement Conditions			Ta = 25°C			Ta = –40 to 85°C		Unit
			V_{CC} (V)	C_L (pF)	Min.	Typ.	Max.	Min.	Max.	
Propagation delay time	t_{PLH}, t_{PHL}	—	3.3±0.3	15	—	5.5	7.9	1.0	9.5	ns
				50	—	10.0	14.0	1.0	15.0	ns
			5.0±0.5	15	—	3.7	5.5	1.0	6.5	ns
				50	—	6.1	8.5	1.0	9.0	ns
Input capacitance	C_{IN}	—			—	4	10	—	10	pF
Equivalent internal capacitance	C_{PD} *1	—			—	14	—	—	—	pF

***1.** C_{PD} is the no-load equivalent capacitance inside the circuitry. Refer to the measurement circuit shown below. Current consumption is averaged by the following equation.

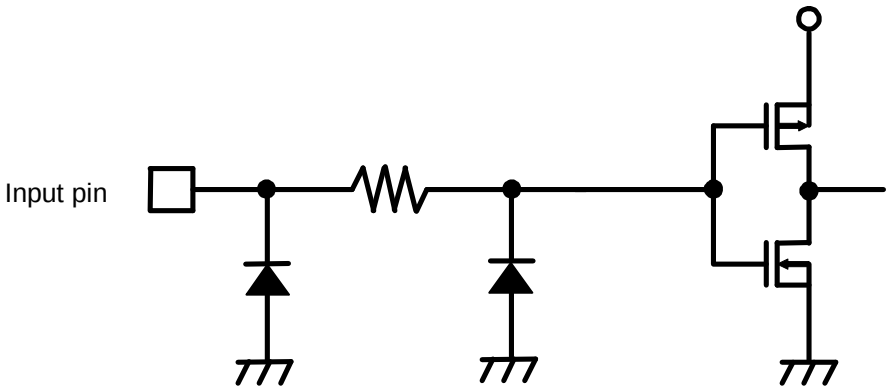
$$I_{CC(opr)} = C_{PD} \times V_{CC} \times fin + I_{CC}$$

Measurement Circuit



Remark No-load output during measurement of current consumption.

■ Input Pin Equivalent Circuit



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The S-75V02ANC is a single 2-input NOR gate fabricated by utilizing advanced silicon-gate CMOS technology which provides the inherent benefit of CMOS low power consumption to achieve ultra high speed operation correspond to LSTTL IC's.
All gates of the internal circuitry have buffered outputs to ensure high noise immunity and output stability.
Input voltage is allowed to be applied even if power voltage is not supplied because no diode is inserted between an input pin and V_{CC}.
This allows for interfaces between power supplies of different voltage, output level conversion from 5 V to 3 V and battery backup applications.

■ Features

- Wide power supply range: 2 V to 5.5 V
- Low current consumption: 1.0 µA max. (at 5.5 V, 25°C)
- Typical propagation delay: t_{PD} = 3.6 ns (at 5 V)
- High noise immunity: V_{NIH} = V_{NIL} = 28% V_{CC} min.
- Power down protection: All pins
- Lead-free

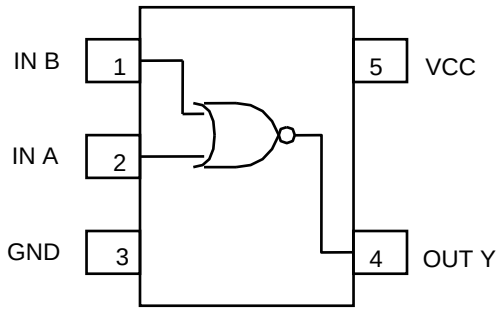
■ Applications

- Personal computers, peripherals
- Cellular phones
- Cameras
- Games

■ Package

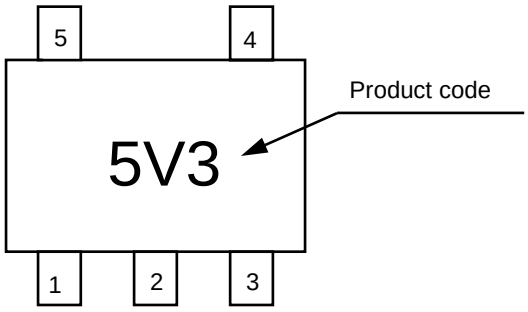
- SC-88A

■ Pin Configuration



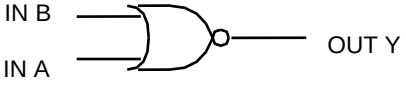
(Top view)

■ Marking Specification



(Top view)

■ Logic Diagram



True values

A	B	Y
L	L	H
L	H	L
H	L	L
H	H	L

■ Product Name Structure

S-75V02A NC – 5V3 – TF G

- Environmental code
  - G : Lead-free (for details, please contact our sales office)
- IC direction in tape specification
- Product abbreviation
- Package abbreviation
  - NC : SC-88A

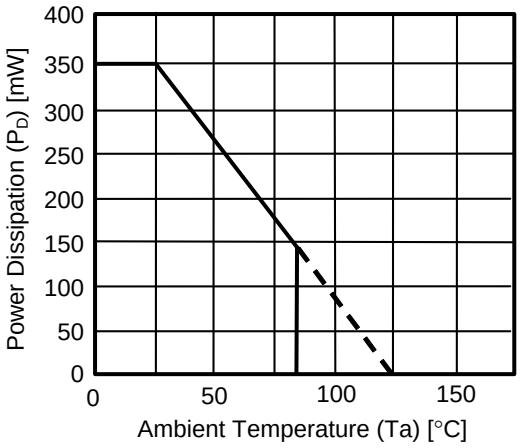
■ Absolute Maximum Ratings

(Ta = 25°C unless otherwise specified)

Item	Symbol	Absolute Maximum Ratings	Unit
Power supply voltage	V_{CC}	−0.5 to +7.0	V
Input voltage	V_{IN}	−0.5 to +7.0	V
Output voltage	V_{OUT}	−0.5 to V_{CC} + 0.5	V
Input parasitic diode current	I_{IK}	−20	mA
Output parasitic diode current	I_{OK}	±20	mA
Output current	I_{OUT}	±25	mA
V_{CC}/GND current	I_{CC}	±50	mA
Power dissipation	P_D	200 (When not mounted on board)	mW
		350*1	mW
Operating ambient temperature	T_{opr}	−40 to +85	°C
Storage temperature	T_{stg}	−65 to +150	°C
Lead temperature (10 s)	T_L	260	°C

***1.** When mounted on board
[Mounted board]
(1) Board size : 114.3 mm × 76.2 mm × t1.6 mm
(2) Board name : JEDEC STANDARD51-7

Caution The absolute maximum ratings are rated values exceeding which the product could suffer physical damage. These values must therefore not be exceeded under any conditions.



Power Dissipation of Package (When Mounted on Board)

■ Recommended Operating Conditions

Item	Symbol	Standard	Unit
Power voltage	V_{CC}	2 to 5.5	V
Input voltage	V_{IN}	0 to 5.5	V
Output voltage	V_{OUT}	0 to V_{CC}	V
Input rise / fall time	t_R, t_F	0 to 100 (V_{CC} = 3.3±0.3 V)	ns
		0 to 20 (V_{CC} = 5±0.5 V)	ns

■ DC Electrical Characteristics

Item		Symbol	Conditions		Ta = 25°C				Ta = –40 to 85°C		Unit
					V_{CC}	Min.	Typ.	Max.	Min.	Max.	
Input voltage	"H" level	V_{IH}	—		2.0	1.5	—	—	1.5	—	V
					3 to 5.5	V_{CC}×0.7	—	—	V_{CC}×0.7	—	V
	"L" level	V_{IL}	—		2.0	—	—	0.5	—	0.5	V
					3 to 5.5	—	—	V_{CC}×0.3	—	V_{CC}×0.3	V
Output voltage	"H" level	V_{OH}	V_{IN} = V_{IL}	I_{OH} = –50 µA	2.0	1.9	2.0	—	1.9	—	V
					3.0	2.9	3.0	—	2.9	—	V
					4.5	4.4	4.5	—	4.4	—	V
				I_{OH} = –4 mA	3.0	2.58	—	—	2.48	—	V
				I_{OH} = –8 mA	4.5	3.94	—	—	3.80	—	V
	"L" level	V_{OL}	V_{IN} = V_{IH} or V_{IL}	I_{OL} = 50 µA	2.0	—	0	0.1	—	0.1	V
					3.0	—	0	0.1	—	0.1	V
					4.5	—	0	0.1	—	0.1	V
				I_{OL} = 4 mA	3.0	—	—	0.36	—	0.44	V
				I_{OL} = 8 mA	4.5	—	—	0.36	—	0.44	V
Input current		I_{IN}	V_{IN} = 5.5 V or GND		0 to 5.5	—	—	±0.1	—	±1.0	µA
Current consumption		I_{CC}	V_{IN} = V_{CC} or GND		5.5	—	—	1.0	—	10.0	µA

■ AC Electrical Characteristics

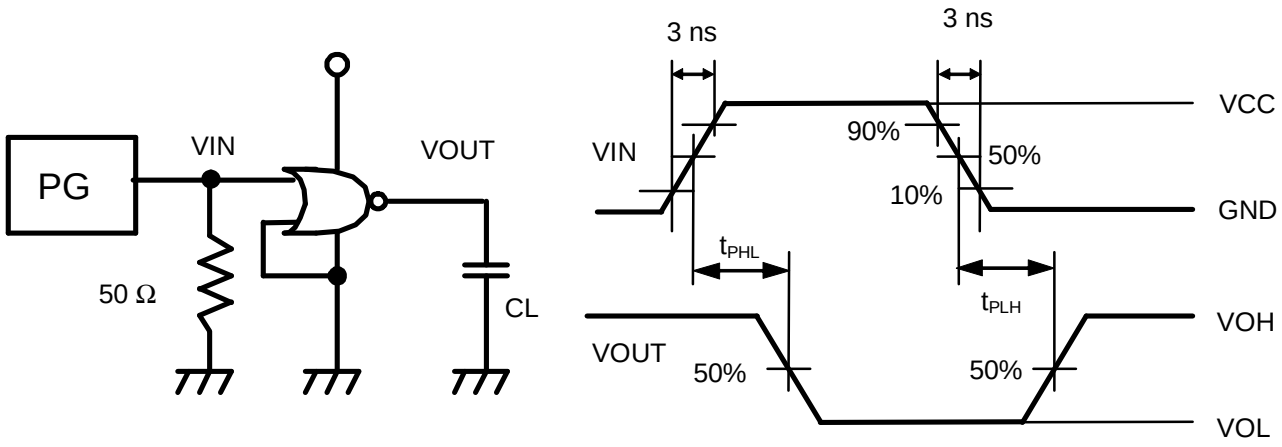
(Input $t_R = t_F = 3$ ns unless otherwise specified)

Item	Symbol	Measurement Conditions			Ta = 25°C			Ta = –40 to 85°C		Unit
			V_{CC} (V)	C_L (pF)	Min.	Typ.	Max.	Min.	Max.	
Propagation delay time	t_{PLH}, t_{PHL}	—	3.3±0.3	15	—	5.6	7.9	1.0	9.5	ns
				50	—	10.0	14.0	1.0	15.0	ns
			5.0±0.5	15	—	3.6	5.5	1.0	6.5	ns
				50	—	5.7	8.0	1.0	9.0	ns
Input capacitance	C_{IN}	—			—	4	10	—	10	pF
Equivalent internal capacitance	C_{PD} *1	—			—	15	—	—	—	pF

***1.** C_{PD} is the no-load equivalent capacitance inside the circuitry. Refer to the measurement circuit shown below. Current consumption is averaged by the following equation.

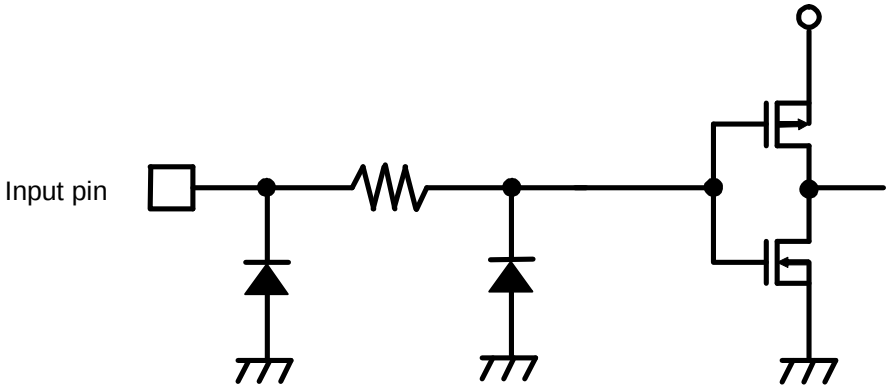
$$I_{CC(opr)} = C_{PD} \times V_{CC} \times fin + I_{CC}$$

Measurement Circuit



Remark No-load output during measurement of current consumption.

■ Input Pin Equivalent Circuit



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The S-75V04ANC is a INVERTER fabricated by utilizing advanced silicon-gate CMOS technology which provides the inherent benefit of CMOS low power consumption to achieve ultra high speed operation correspond to LSTTL IC's.
The special purpose unbuffered circuit design is suitable for a wide variety of linear circuits.
Input voltage is allowed to be applied even if power voltage is not supplied because no diode is inserted between an input pin and V_{CC}.
This allows for interfaces between power supplies of different voltage, output level conversion from 5 V to 3 V and battery backup applications.

■ Features

- Wide power supply range: 2 V to 5.5 V
- Low current consumption: 1.0 µA max. (at 5.5 V, 25°C)
- Typical propagation delay: t_{PD} = 3.8 ns (at 5 V)
- High noise immunity: V_{NIH} = V_{NIL} = 28% V_{CC} min.
- Power down protection: All pins
- Lead-free

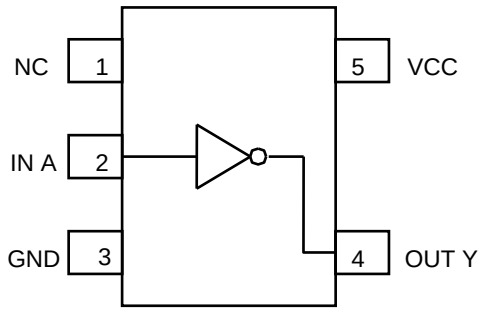
■ Applications

- Personal computers, peripherals
- Cellular phones
- Cameras
- Games

■ Package

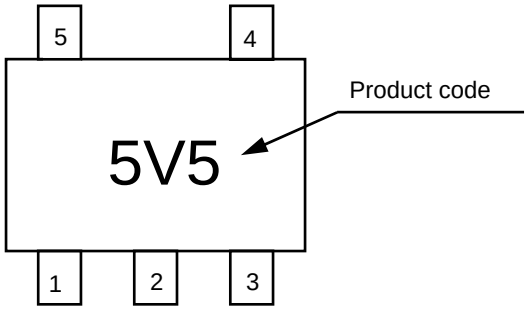
- SC-88A

■ Pin Configuration



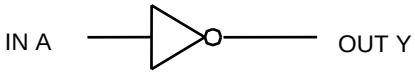
(Top view)

■ Marking Specification



(Top view)

■ Logic Diagram



True values

A	Y
L	H
H	L

■ Product Name Structure

S-75V04A NC – 5V5 – TF G

Environmental code
G : Lead-free (for details, please contact our sales office)

IC direction in tape specification

Product abbreviation

Package abbreviation
NC : SC-88A

■ Absolute Maximum Ratings

(Ta = 25°C unless otherwise specified)

Item	Symbol	Absolute Maximum Ratings	Unit
Power supply voltage	V_{CC}	−0.5 to +7.0	V
Input voltage	V_{IN}	−0.5 to +7.0	V
Output voltage	V_{OUT}	−0.5 to V_{CC} + 0.5	V
Input parasitic diode current	I_{IK}	−20	mA
Output parasitic diode current	I_{OK}	±20	mA
Output current	I_{OUT}	±25	mA
V_{CC}/GND current	I_{CC}	±50	mA
Power dissipation	P_D	200 (When not mounted on board)	mW
		350*1	mW
Operating ambient temperature	T_{opr}	−40 to +85	°C
Storage temperature	T_{stg}	−65 to +150	°C
Lead temperature (10 s)	T_L	260	°C

***1.** When mounted on board
[Mounted board]
(1) Board size : 114.3 mm × 76.2 mm × t1.6 mm
(2) Board name : JEDEC STANDARD51-7

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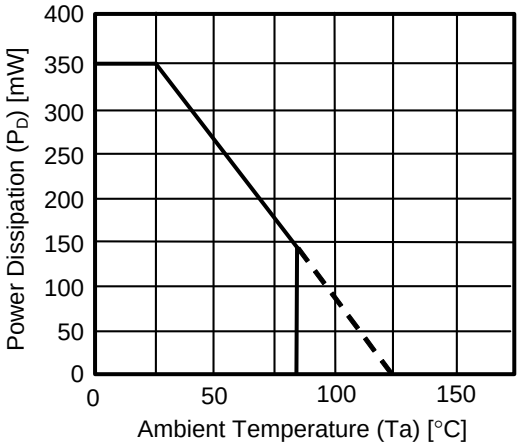


Power Dissipation of Package (When Mounted on Board)

■ Recommended Operating Conditions

Item	Symbol	Standard	Unit
Power voltage	V_{CC}	2 to 5.5	V
Input voltage	V_{IN}	0 to 5.5	V
Output voltage	V_{OUT}	0 to V_{CC}	V
Input rise / fall time	t_R, t_F	0 to 100 (V_{CC} = 3.3±0.3 V)	ns
		0 to 20 (V_{CC} = 5±0.5 V)	ns

■ DC Electrical Characteristics

Item		Symbol	Conditions			Ta = 25°C			Ta = –40 to 85°C		Unit
					V_{CC}	Min.	Typ.	Max.	Min.	Max.	
Input voltage	"H" level	V_{IH}	—		2.0	1.5	—	—	1.5	—	V
					3 to 5.5	V_{CC}×0.7	—	—	V_{CC}×0.7	—	V
	"L" level	V_{IL}	—		2.0	—	—	0.5	—	0.5	V
					3 to 5.5	—	—	V_{CC}×0.3	—	V_{CC}×0.3	V
Output voltage	"H" level	V_{OH}	V_{IN} = V_{IL}	I_{OH} = –50 µA	2.0	1.9	2.0	—	1.9	—	V
					3.0	2.9	3.0	—	2.9	—	V
					4.5	4.4	4.5	—	4.4	—	V
				I_{OH} = –4 mA	3.0	2.58	—	—	2.48	—	V
				I_{OH} = –8 mA	4.5	3.94	—	—	3.80	—	V
	"L" level	V_{OL}	V_{IN} = V_{IH}	I_{OL} = 50 µA	2.0	—	0	0.1	—	0.1	V
					3.0	—	0	0.1	—	0.1	V
					4.5	—	0	0.1	—	0.1	V
				I_{OL} = 4 mA	3.0	—	—	0.36	—	0.44	V
				I_{OL} = 8 mA	4.5	—	—	0.36	—	0.44	V
Input current		I_{IN}	V_{IN} = 5.5 V or GND		0 to 5.5	—	—	±0.1	—	±1.0	µA
Current consumption		I_{CC}	V_{IN} = V_{CC} or GND		5.5	—	—	1.0	—	10.0	µA

■ AC Electrical Characteristics

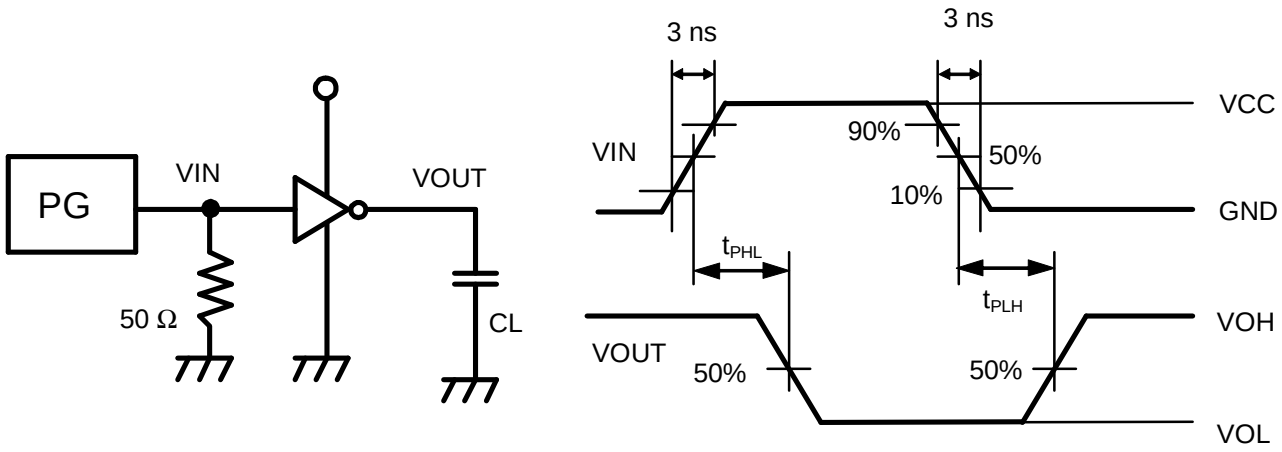
(Input $t_R = t_F$ = 3 ns unless otherwise specified)

Item	Symbol	Measurement Conditions			Ta = 25°C			Ta = –40 to 85°C		Unit
			V_{CC} (V)	C_L (pF)	Min.	Typ.	Max.	Min.	Max.	
Propagation delay time	t_{PLH}, t_{PHL}	—	3.3±0.3	15	—	5.0	7.1	1.0	8.5	ns
				50	—	9.6	13.5	1.0	14.5	ns
			5.0±0.5	15	—	3.8	5.5	1.0	6.5	ns
				50	—	5.7	8.0	1.0	9.0	ns
Input capacitance	C_{IN}	—			—	4	10	—	10	pF
Equivalent internal capacitance	C_{PD} *1	—			—	13	—	—	—	pF

***1.** C_{PD} is the no-load equivalent capacitance inside the circuitry. Refer to the measurement circuit shown below. Current consumption is averaged by the following equation.

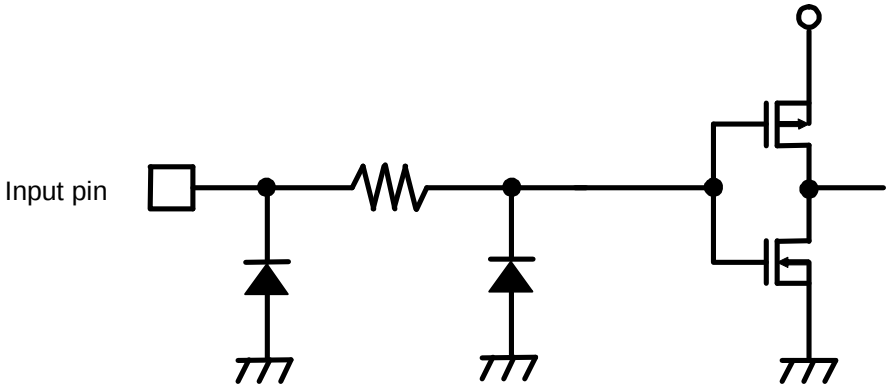
$$I_{CC(opr)} = C_{PD} \times V_{CC} \times fin + I_{CC}$$

Measurement Circuit



Remark No-load output during measurement of current consumption.

■ Input Pin Equivalent Circuit



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The S-75VU04ANC is a inverter fabricated by utilizing advanced silicon-gate CMOS technology which provides the inherent benefit of CMOS low power consumption to achieve ultra high speed operation correspond to LSTTL IC's.
The special purpose unbuffered circuit design is suitable for a wide variety of linear circuits.
Input voltage is allowed to be applied even if power voltage is not supplied because no diode is inserted between an input pin and V_{CC}.
This allows for interfaces between power supplies of different voltage, output level conversion from 5 V to 3 V and battery backup applications.

■ Features

- Wide power supply range: 2 V to 5.5 V
- Low current consumption: 1.0 µA max. (at 5.5 V, 25°C)
- Typical propagation delay: t_{PD} = 3.5 ns (at 5 V)
- High noise immunity: V_{NIH} = V_{NIL} = 10% V_{CC} min.
- Power down protection: All pins
- Lead-free

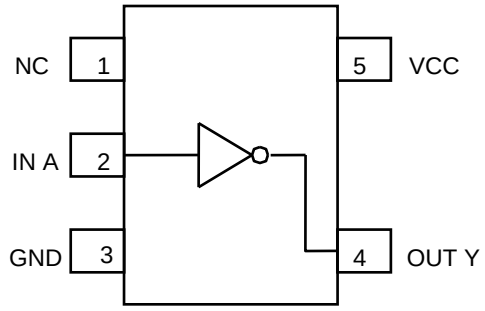
■ Applications

- Personal computers, peripherals
- Cellular phones
- Cameras
- Games

■ Package

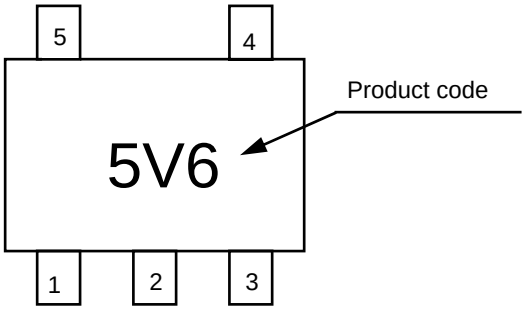
- SC-88A

■ Pin Configuration



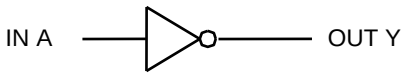
(Top view)

■ Marking Specification



(Top view)

■ Logic Diagram



True values

A	Y
L	H
H	L

■ Product Name Structure

S-75VU04A NC – 5V6 TF G

- Environmental code
  - G : Lead-free (for details, please contact our sales office)
- IC direction in tape specification
- Product abbreviation
- Package abbreviation
  - NC : SC-88A

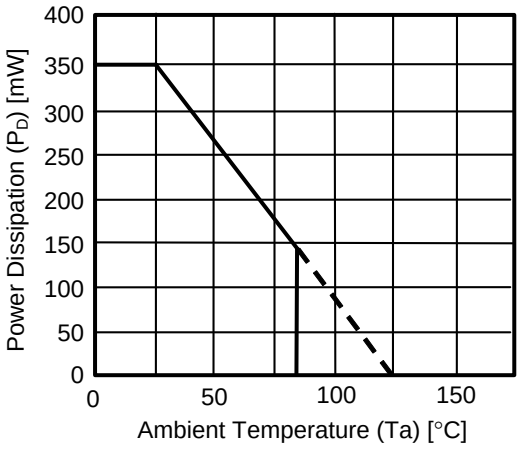
■ Absolute Maximum Ratings

(Ta = 25°C unless otherwise specified)

Item	Symbol	Absolute Maximum Ratings	Unit
Power supply voltage	V_{CC}	−0.5 to +7.0	V
Input voltage	V_{IN}	−0.5 to +7.0	V
Output voltage	V_{OUT}	−0.5 to V_{CC} + 0.5	V
Input parasitic diode current	I_{IK}	−20	mA
Output parasitic diode current	I_{OK}	±20	mA
Output current	I_{OUT}	±25	mA
V_{CC}/GND current	I_{CC}	±50	mA
Power dissipation	P_D	200 (When not mounted on board)	mW
		350[*1]	mW
Operating ambient temperature	T_{opr}	−40 to +85	°C
Storage temperature	T_{stg}	−65 to +150	°C
Lead temperature (10 s)	T_L	260	°C

***1.** When mounted on board
[Mounted board]
(1) Board size : 114.3 mm × 76.2 mm × t1.6 mm
(2) Board name : JEDEC STANDARD51-7

Caution The absolute maximum ratings are rated values exceeding which the product could suffer physical damage. These values must therefore not be exceeded under any conditions.



Power Dissipation of Package (When Mounted on Board)

■ Recommended Operating Conditions

Item	Symbol	Standard	Unit
Power voltage	V_{CC}	2 to 5.5	V
Input voltage	V_{IN}	0 to 5.5	V
Output voltage	V_{OUT}	0 to V_{CC}	V

■ DC Electrical Characteristics

Item		Symbol	Conditions			Ta = 25°C			Ta = –40 to 85°C		Unit
					V_{CC}	Min.	Typ.	Max.	Min.	Max.	
Input voltage	"H" level	V_{IH}	$V_{OUT} = V_{OL}$		2.0	1.7	—	—	1.7	—	V
					3 to 5.5	V_{CC}×0.8	—	—	V_{CC}×0.8	—	V
	"L" level	V_{IL}	$V_{OUT} = V_{OH}$		2.0	—	—	0.3	—	0.3	V
					3 to 5.5	—	—	V_{CC}×0.2	—	V_{CC}×0.2	V
Output voltage	"H" level	V_{OH}	$V_{IN} = V_{IL}$	I_{OH} = –50 µA	2.0	1.8	2.0	—	1.8	—	V
					3.0	2.7	3.0	—	2.7	—	V
					4.5	4.0	4.5	—	4.0	—	V
			V_{IN} = GND	I_{OH} = –4 mA	3.0	2.58	—	—	2.48	—	V
				I_{OH} = –8 mA	4.5	3.94	—	—	3.80	—	V
	"L" level	V_{OL}	$V_{IN} = V_{IH}$	I_{OL} = 50 µA	2.0	—	0	0.2	—	0.2	V
					3.0	—	0	0.3	—	0.3	V
					4.5	—	0	0.5	—	0.5	V
			$V_{IN} = V_{CC}$	I_{OL} = 4 mA	3.0	—	—	0.36	—	0.44	V
				I_{OL} = 8 mA	4.5	—	—	0.36	—	0.44	V
Input current		I_{IN}	V_{IN} = 5.5 V or GND		0 to 5.5	—	—	±0.1	—	±1.0	µA
Current consumption		I_{CC}	$V_{IN} = V_{CC}$ or GND		5.5	—	—	1.0	—	10.0	µA

■ AC Electrical Characteristics

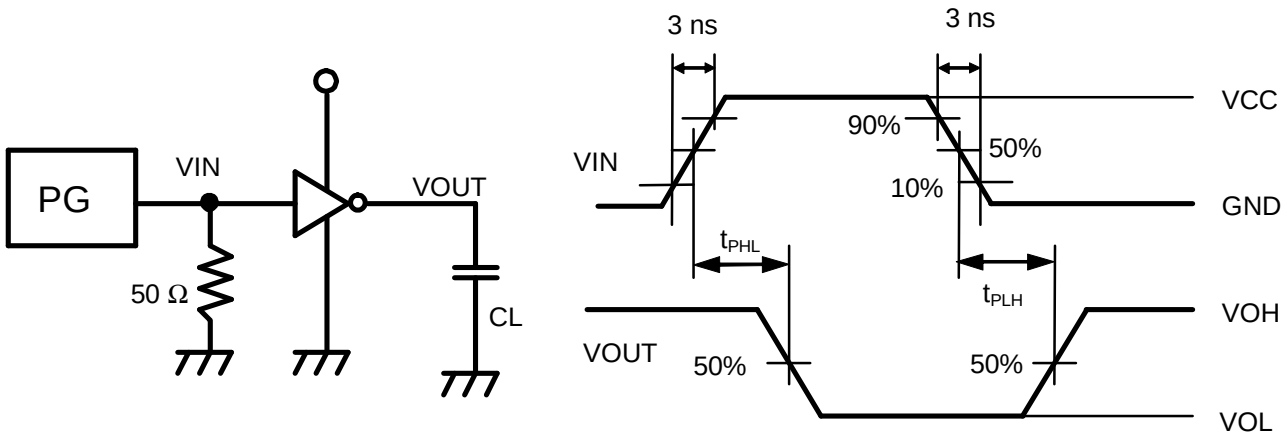
(Input $t_R = t_F = 3$ ns unless otherwise specified)

Item	Symbol	Measurement Conditions			Ta = 25°C			Ta = –40 to 85°C		Unit
			V_{CC} (V)	C_L (pF)	Min.	Typ.	Max.	Min.	Max.	
Propagation delay time	t_{PLH}, t_{PHL}	—	3.3±0.3	15	—	5.0	8.9	1.0	10.5	ns
				50	—	8.9	12.5	1.0	13.5	ns
			5.0±0.5	15	—	3.5	5.5	1.0	6.5	ns
				50	—	5.4	7.5	1.0	8.0	ns
Input capacitance	C_{IN}	—			—	5	10	—	10	pF
Equivalent internal capacitance	C_{PD} *1	—			—	6	—	—	—	pF

***1.** C_{PD} is the no-load equivalent capacitance inside the circuitry. Refer to the measurement circuit shown below. Current consumption is averaged by the following equation.

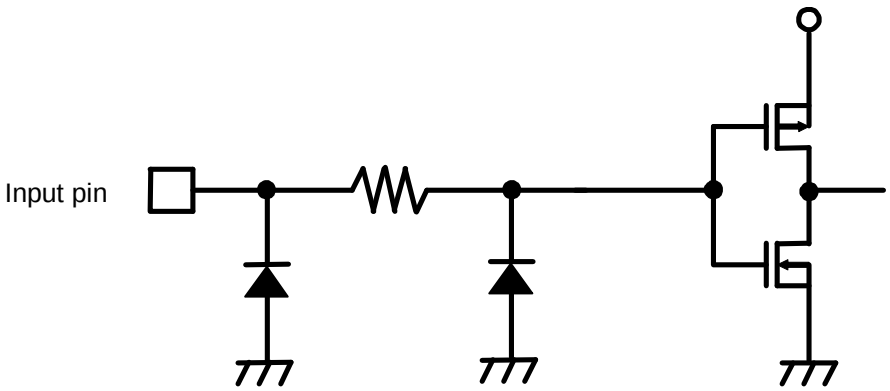
$$I_{CC(opr)} = C_{PD} \times V_{CC} \times fin + I_{CC}$$

Measurement Circuit



Remark No-load output during measurement of current consumption.

■ Input Pin Equivalent Circuit



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The S-75V08ANC is a Single 2-Input AND Gate fabricated by utilizing advanced silicon-gate CMOS technology which provides the inherent benefit of CMOS low power consumption to achieve ultra high speed operation correspond to LSTTL IC's.
All gates of the internal circuitry have buffered outputs to ensure high noise immunity and output stability.
Input voltage is allowed to be applied even if power voltage is not supplied because no diode is inserted between an input pin and V_{CC}.
This allows for interfaces between power supplies of different voltage, output level conversion from 5 V to 3 V and battery backup applications.

■ Features

- Wide power supply range: 2 V to 5.5 V
- Low current consumption: 1.0 µA max. (at 5.5 V, 25°C)
- Typical propagation delay: t_{PD} = 4.3 ns (at 5 V)
- High noise immunity: V_{NIH} = V_{NIL} = 28% V_{CC} min.
- Power down protection: All pins
- Lead-free

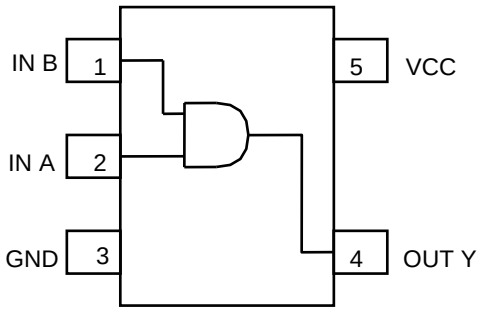
■ Applications

- Personal computers, peripherals
- Cellular phones
- Cameras
- Games

■ Package

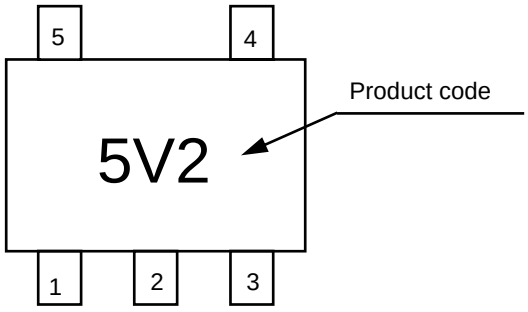
- SC-88A

■ Pin Configuration



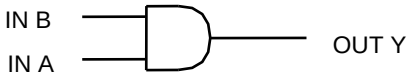
(Top view)

■ Marking Specification



(Top view)

■ Logic Diagram



True values

A	B	Y
L	L	L
L	H	L
H	L	L
H	H	H

■ Product Name Structure

S-75V08A NC – 5V2 – TF G

- Environmental code
  - G : Lead-free (for details, please contact our sales office)
- IC direction in tape specification
- Product abbreviation
- Package abbreviation
  - NC : SC-88A

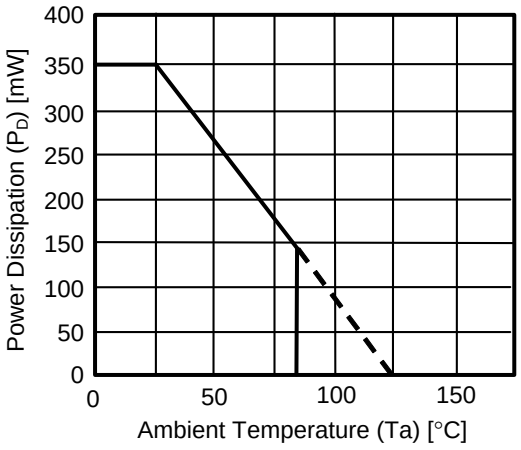
■ Absolute Maximum Ratings

(Ta = 25°C unless otherwise specified)

Item	Symbol	Absolute Maximum Ratings	Unit
Power supply voltage	V_{CC}	−0.5 to +7.0	V
Input voltage	V_{IN}	−0.5 to +7.0	V
Output voltage	V_{OUT}	−0.5 to V_{CC} + 0.5	V
Input parasitic diode current	I_{IK}	−20	mA
Output parasitic diode current	I_{OK}	±20	mA
Output current	I_{OUT}	±25	mA
V_{CC}/GND current	I_{CC}	±50	mA
Power dissipation	P_D	200 (When not mounted on board)	mW
		350*1	mW
Operating ambient temperature	T_{opr}	−40 to +85	°C
Storage temperature	T_{stg}	−65 to +150	°C
Lead temperature (10 s)	T_L	260	°C

***1.** When mounted on board
[Mounted board]
(1) Board size : 114.3 mm × 76.2 mm × t1.6 mm
(2) Board name : JEDEC STANDARD51-7

Caution The absolute maximum ratings are rated values exceeding which the product could suffer physical damage. These values must therefore not be exceeded under any conditions.



Power Dissipation of Package (When Mounted on Board)

■ Recommended Operating Conditions

Item	Symbol	Standard	Unit
Power voltage	V_{CC}	2 to 5.5	V
Input voltage	V_{IN}	0 to 5.5	V
Output voltage	V_{OUT}	0 to V_{CC}	V
Input rise / fall time	t_R, t_F	0 to 100 (V_{CC} = 3.3±0.3 V)	ns
		0 to 20 (V_{CC} = 5±0.5 V)	ns

■ DC Electrical Characteristics

Item		Symbol	Conditions			Ta = 25°C			Ta = –40 to 85°C		Unit
					V_{CC}	Min.	Typ.	Max.	Min.	Max.	
Input voltage	"H" level	V_{IH}	—		2.0	1.5	—	—	1.5	—	V
					3 to 5.5	V_{CC}×0.7	—	—	V_{CC}×0.7	—	V
	"L" level	V_{IL}	—		2.0	—	—	0.5	—	0.5	V
					3 to 5.5	—	—	V_{CC}×0.3	—	V_{CC}×0.3	V
Output voltage	"H" level	V_{OH}	V_{IN} = V_{IH}	I_{OH} = –50 µA	2.0	1.9	2.0	—	1.9	—	V
					3.0	2.9	3.0	—	2.9	—	V
					4.5	4.4	4.5	—	4.4	—	V
				I_{OH} = –4 mA	3.0	2.58	—	—	2.48	—	V
				I_{OH} = –8 mA	4.5	3.94	—	—	3.80	—	V
	"L" level	V_{OL}	V_{IN} = V_{IH} or V_{IL}	I_{OL} = 50 µA	2.0	—	0	0.1	—	0.1	V
					3.0	—	0	0.1	—	0.1	V
					4.5	—	0	0.1	—	0.1	V
				I_{OL} = 4 mA	3.0	—	—	0.36	—	0.44	V
				I_{OL} = 8 mA	4.5	—	—	0.36	—	0.44	V
Input current		I_{IN}	V_{IN} = 5.5 V or GND		0 to 5.5	—	—	±0.1	—	±1.0	µA
Current consumption		I_{CC}	V_{IN} = V_{CC} or GND		5.5	—	—	1.0	—	10.0	µA

■ AC Electrical Characteristics

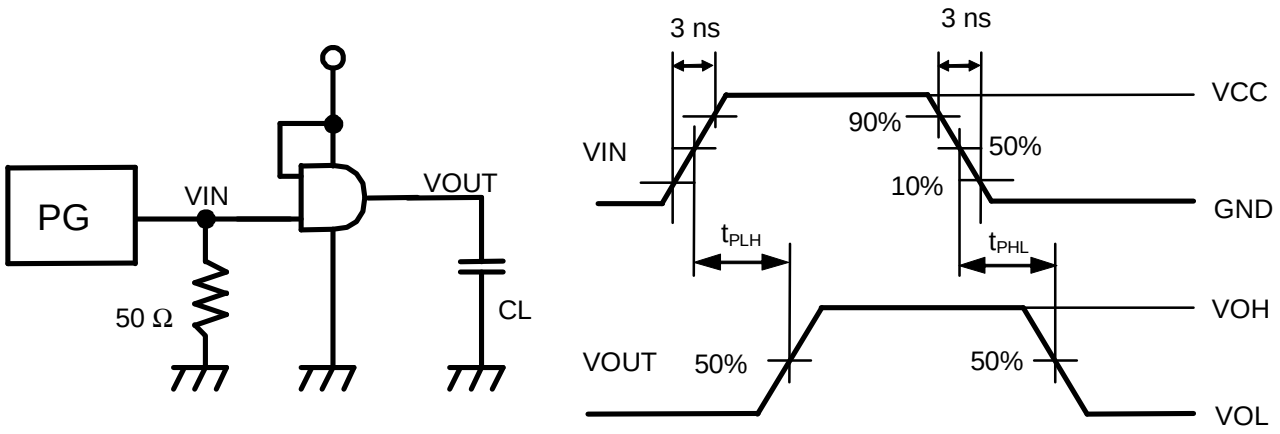
(Input $t_R = t_F = 3$ ns unless otherwise specified)

Item	Symbol	Measurement Conditions			Ta = 25°C			Ta = –40 to 85°C		Unit
			V_{CC} (V)	C_L (pF)	Min.	Typ.	Max.	Min.	Max.	
Propagation delay time	t_{PLH}, t_{PHL}	—	3.3±0.3	15	—	6.2	8.8	1.0	10.5	ns
				50	—	9.6	13.5	1.0	14.5	ns
			5.0±0.5	15	—	4.3	5.9	1.0	7.0	ns
				50	—	5.7	7.9	1.0	9.0	ns
Input capacitance	C_{IN}	—			—	4	10	—	10	pF
Equivalent internal capacitance	C_{PD} *1	—			—	14	—	—	—	pF

***1.** C_{PD} is the no-load equivalent capacitance inside the circuitry. Refer to the measurement circuit shown below. Current consumption is averaged by the following equation.

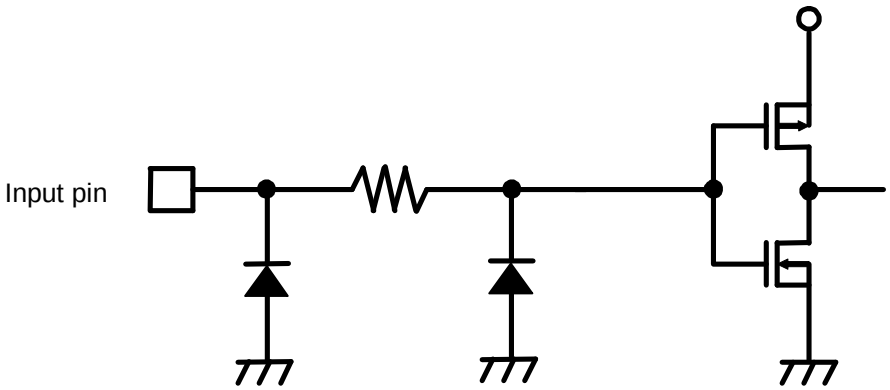
$$I_{CC(opr)} = C_{PD} \times V_{CC} \times fin + I_{CC}$$

Measurement Circuit



Remark No-load output during measurement of current consumption.

■ Input Pin Equivalent Circuit



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The S-75V14ANC is a SCHMITT INVERTER fabricated by utilizing advanced silicon-gate CMOS technology which provides the inherent benefit of CMOS low power consumption to achieve ultra high speed operation correspond to LSTTL IC's.
All gates of the internal circuitry have buffered outputs to ensure high noise immunity and output stability.
Input voltage is allowed to be applied even if power voltage is not supplied because no diode is inserted between an input pin and V_{CC}.
This allows for interfaces between power supplies of different voltage, output level conversion from 5 V to 3 V and battery backup applications.

■ Features

- Wide power supply range: 2 V to 5.5 V
- Low current consumption: 1.0 µA max. (at 5.5 V, 25°C)
- Typical propagation delay: t_{PD} = 5.5 ns (at 5 V)
- High noise immunity: V_{NIH} = V_{NIL} = 28% V_{CC} min.
- Power down protection: All pins
- Lead-free

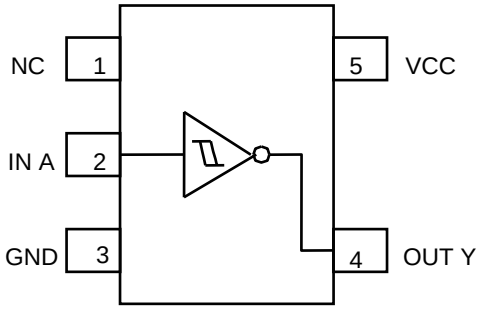
■ Applications

- Personal computers, peripherals
- Cellular phones
- Cameras
- Games

■ Package

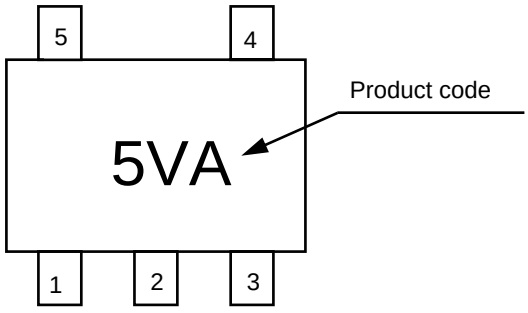
- SC-88A

■ Pin Configuration



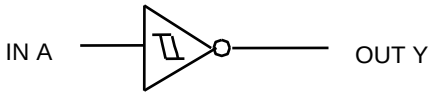
(Top view)

■ Marking Specification



(Top view)

■ Logic Diagram



True values

A	Y
L	H
H	L

■ Product Name Structure

S-75V14A NC – 5VA – TF G

Environmental code
G : Lead-free (for details, please contact our sales office)

IC direction in tape specification

Product abbreviation

Package abbreviation
NC : SC-88A

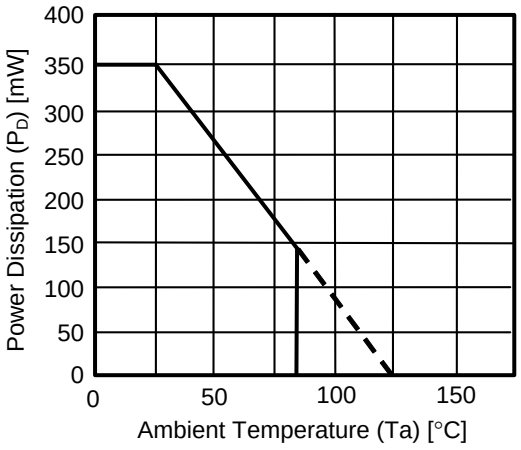
■ Absolute Maximum Ratings

(Ta = 25°C unless otherwise specified)

Item	Symbol	Absolute Maximum Ratings	Unit
Power supply voltage	V_{CC}	−0.5 to +7.0	V
Input voltage	V_{IN}	−0.5 to +7.0	V
Output voltage	V_{OUT}	−0.5 to V_{CC} + 0.5	V
Input parasitic diode current	I_{IK}	−20	mA
Output parasitic diode current	I_{OK}	±20	mA
Output current	I_{OUT}	±25	mA
V_{CC}/GND current	I_{CC}	±50	mA
Power dissipation	P_D	200 (When not mounted on board)	mW
		350[*1]	mW
Operating ambient temperature	T_{opr}	−40 to +85	°C
Storage temperature	T_{stg}	−65 to +150	°C
Lead temperature (10 s)	T_L	260	°C

***1.** When mounted on board
[Mounted board]
(1) Board size : 114.3 mm × 76.2 mm × t1.6 mm
(2) Board name : JEDEC STANDARD51-7

Caution The absolute maximum ratings are rated values exceeding which the product could suffer physical damage. These values must therefore not be exceeded under any conditions.



Power Dissipation of Package (When Mounted on Board)

■ Recommended Operating Conditions

Item	Symbol	Standard	Unit
Power voltage	V_{CC}	2 to 5.5	V
Input voltage	V_{IN}	0 to 5.5	V
Output voltage	V_{OUT}	0 to V_{CC}	V

■ DC Electrical Characteristics

Item		Symbol	Conditions		Ta = 25°C				Ta = −40 to 85°C		Unit
					V_{CC}	Min.	Typ.	Max.	Min.	Max.	
Threshold voltage	"H" level	V_P	—		3.0	—	—	2.20	—	2.20	V
					4.5	—	—	3.15	—	3.15	V
					5.5	—	—	3.85	—	3.85	V
	"L" level	V_N	—		3.0	0.90	—	—	0.90	—	V
					4.5	1.35	—	—	1.35	—	V
					5.5	1.65	—	—	1.65	—	V
Hysteresis voltage		V_H	—		3.0	0.30	—	1.20	0.30	1.20	V
					4.5	0.40	—	1.40	0.40	1.40	V
					5.5	0.5	—	1.60	0.5	1.60	V
Output voltage	"H" level	V_{OH}	$V_{IN} = V_{IL}$	I_{OH} = −50 µA	2.0	1.9	2.0	—	1.9	—	V
					3.0	2.9	3.0	—	2.9	—	V
					4.5	4.4	4.5	—	4.4	—	V
				I_{OH} = −4 mA	3.0	2.58	—	—	2.48	—	V
				I_{OH} = −8 mA	4.5	3.94	—	—	3.80	—	V
	"L" level	V_{OL}	$V_{IN} = V_{IH}$	I_{OL} = 50 µA	2.0	—	0	0.1	—	0.1	V
					3.0	—	0	0.1	—	0.1	V
					4.5	—	0	0.1	—	0.1	V
				I_{OL} = 4 mA	3.0	—	—	0.36	—	0.44	V
				I_{OL} = 8 mA	4.5	—	—	0.36	—	0.44	V
Input current		I_{IN}	V_{IN} = 5.5 V or GND		0 to 5.5	—	—	±0.1	—	±1.0	µA
Current consumption		I_{CC}	$V_{IN} = V_{CC}$ or GND		5.5	—	—	1.0	—	10.0	µA

■ AC Electrical Characteristics

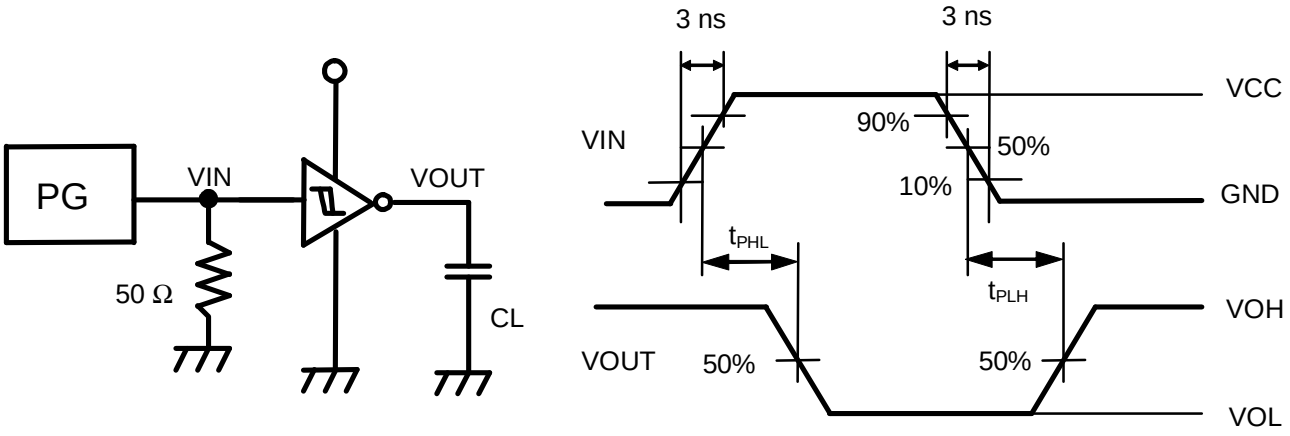
(Input $t_R = t_F = 3$ ns unless otherwise specified)

Item	Symbol	Measurement Conditions			Ta = 25°C			Ta = –40 to 85°C		Unit
			V_{CC} (V)	C_L (pF)	Min.	Typ.	Max.	Min.	Max.	
Propagation delay time	t_{PLH}, t_{PHL}	—	3.3±0.3	15	—	8.3	12.8	1.0	15.0	ns
				50	—	10.8	16.3	1.0	18.5	ns
			5.0±0.5	15	—	5.5	8.6	1.0	10.0	ns
				50	—	7.0	10.6	1.0	12.0	ns
Input capacitance	C_{IN}	—			—	4	10	—	10	pF
Equivalent internal capacitance	C_{PD} *1	—			—	14	—	—	—	pF

***1.** C_{PD} is the no-load equivalent capacitance inside the circuitry. Refer to the measurement circuit shown below. Current consumption is averaged by the following equation.

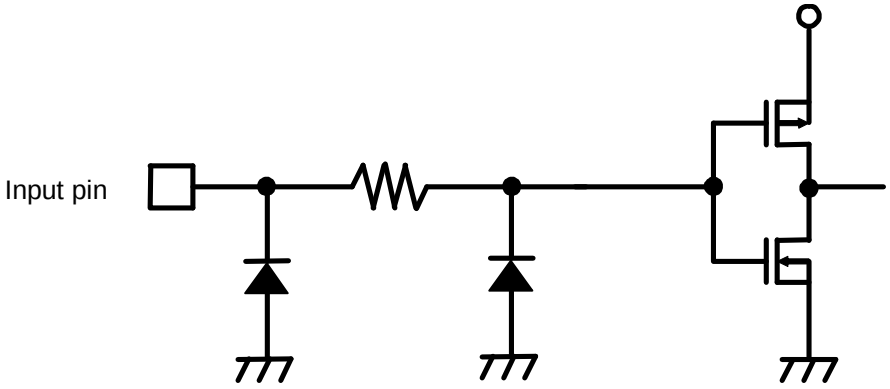
$$I_{CC(opr)} = C_{PD} \times V_{CC} \times fin + I_{CC}$$

Measurement Circuit



Remark No-load output during measurement of current consumption.

■ Input Pin Equivalent Circuit



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The S-75V32ANC is a single 2-input OR gate fabricated by utilizing advanced silicon-gate CMOS technology which provides the inherent benefit of CMOS low power consumption to achieve ultra high speed operation correspond to LSTTL IC's.
All gates of the internal circuitry have buffered outputs to ensure high noise immunity and output stability.
Input voltage is allowed to be applied even if power voltage is not supplied because no diode is inserted between an input pin and V_{CC}.
This allows for interfaces between power supplies of different voltage, output level conversion from 5 V to 3 V and battery backup applications.

■ Features

- Wide power supply range: 2 V to 5.5 V
- Low current consumption: 1.0 µA max. (at 5.5 V, 25°C)
- Typical propagation delay: t_{PD} = 3.8 ns (at 5 V)
- High noise immunity: V_{NIH} = V_{NIL} = 28% V_{CC} min.
- Power down protection: All pins
- Lead-free

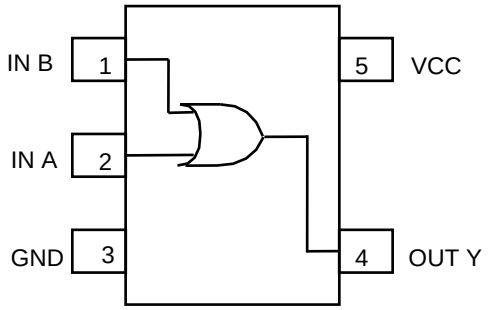
■ Applications

- Personal computers, peripherals
- Cellular phones
- Cameras
- Games

■ Package

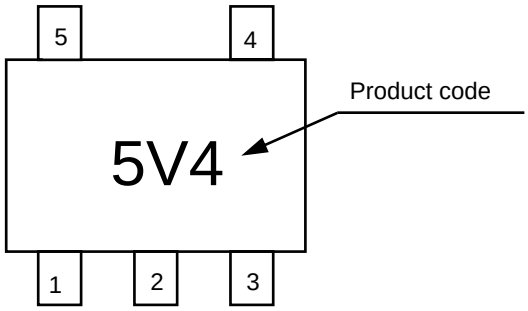
- SC-88A

■ Pin Configuration



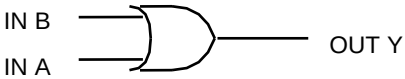
(Top view)

■ Marking Specification



(Top view)

■ Logic Diagram



True values

A	B	Y
L	L	L
L	H	H
H	L	H
H	H	H

■ Product Name Structure

S-75V32A NC – 5V4 – TF G

- Environmental code
  G : Lead-free (for details, please contact our sales office)
- IC direction in tape specification
- Product abbreviation
- Package abbreviation
  NC : SC-88A

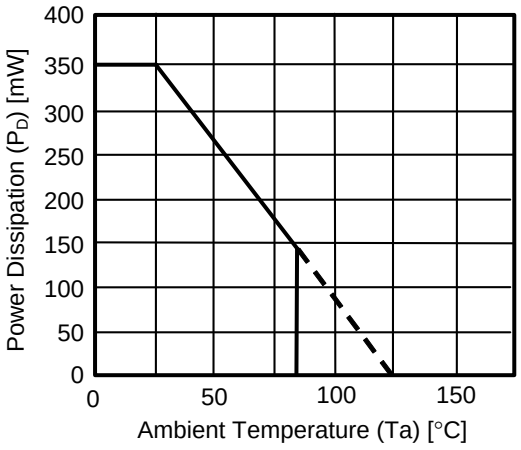
■ Absolute Maximum Ratings

(Ta = 25°C unless otherwise specified)

Item	Symbol	Absolute Maximum Ratings	Unit
Power supply voltage	V_{CC}	−0.5 to +7.0	V
Input voltage	V_{IN}	−0.5 to +7.0	V
Output voltage	V_{OUT}	−0.5 to V_{CC} + 0.5	V
Input parasitic diode current	I_{IK}	−20	mA
Output parasitic diode current	I_{OK}	±20	mA
Output current	I_{OUT}	±25	mA
V_{CC}/GND current	I_{CC}	±50	mA
Power dissipation	P_D	200 (When not mounted on board)	mW
		350*1	mW
Operating ambient temperature	T_{opr}	−40 to +85	°C
Storage temperature	T_{stg}	−65 to +150	°C
Lead temperature (10 s)	T_L	260	°C

***1.** When mounted on board
[Mounted board]
(1) Board size : 114.3 mm × 76.2 mm × t1.6 mm
(2) Board name : JEDEC STANDARD51-7

Caution The absolute maximum ratings are rated values exceeding which the product could suffer physical damage. These values must therefore not be exceeded under any conditions.



Power Dissipation of Package (When Mounted on Board)

■ Recommended Operating Conditions

Item	Symbol	Standard	Unit
Power voltage	V_{CC}	2 to 5.5	V
Input voltage	V_{IN}	0 to 5.5	V
Output voltage	V_{OUT}	0 to V_{CC}	V
Input rise / fall time	t_R, t_F	0 to 100 (V_{CC} = 3.3±0.3 V)	ns
		0 to 20 (V_{CC} = 5±0.5 V)	ns

■ DC Electrical Characteristics

Item		Symbol	Conditions			Ta = 25°C			Ta = –40 to 85°C		Unit
					V_{CC}	Min.	Typ.	Max.	Min.	Max.	
Input voltage	"H" level	V_{IH}	—		2.0	1.5	—	—	1.5	—	V
					3 to 5.5	V_{CC}×0.7	—	—	V_{CC}×0.7	—	V
	"L" level	V_{IL}	—		2.0	—	—	0.5	—	0.5	V
					3 to 5.5	—	—	V_{CC}×0.3	—	V_{CC}×0.3	V
Output voltage	"H" level	V_{OH}	V_{IN} = V_{IL} or V_{IH}	I_{OH} = –50 µA	2.0	1.9	2.0	—	1.9	—	V
					3.0	2.9	3.0	—	2.9	—	V
					4.5	4.4	4.5	—	4.4	—	V
				I_{OH} = –4 mA	3.0	2.58	—	—	2.48	—	V
				I_{OH} = –8 mA	4.5	3.94	—	—	3.80	—	V
	"L" level	V_{OL}	V_{IN} = V_{IL}	I_{OL} = 50 µA	2.0	—	0	0.1	—	0.1	V
					3.0	—	0	0.1	—	0.1	V
					4.5	—	0	0.1	—	0.1	V
				I_{OL} = 4 mA	3.0	—	—	0.36	—	0.44	V
				I_{OL} = 8 mA	4.5	—	—	0.36	—	0.44	V
Input current		I_{IN}	V_{IN} = 5.5 V or GND		0 to 5.5	—	—	±0.1	—	±1.0	µA
Current consumption		I_{CC}	V_{IN} = V_{CC} or GND		5.5	—	—	1.0	—	10.0	µA

■ AC Electrical Characteristics

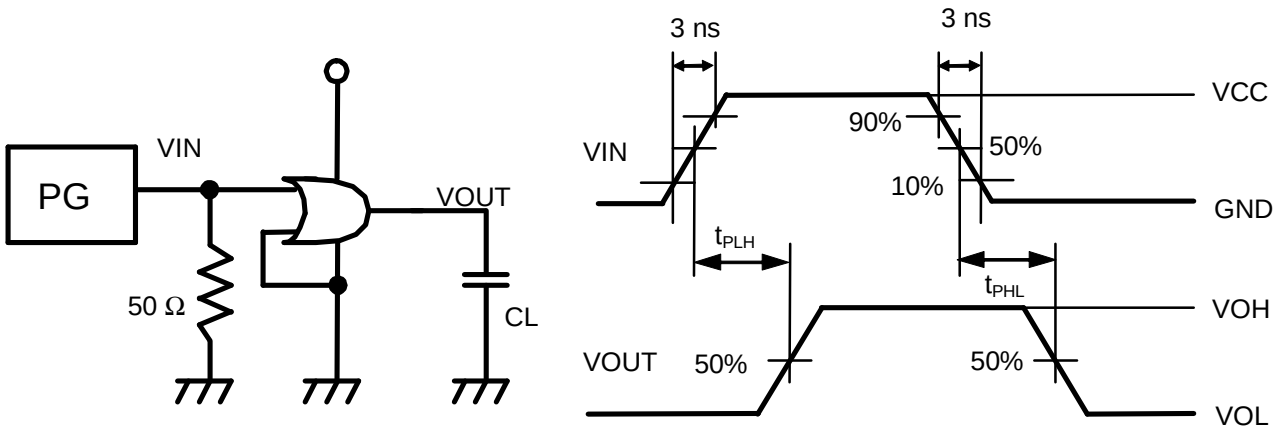
(Input $t_R = t_F = 3$ ns unless otherwise specified)

Item	Symbol	Measurement Conditions			Ta = 25°C			Ta = –40 to 85°C		Unit
			V_{CC} (V)	C_L (pF)	Min.	Typ.	Max.	Min.	Max.	
Propagation delay time	t_{PLH}, t_{PHL}	—	3.3±0.3	15	—	5.5	7.9	1.0	9.5	ns
				50	—	10.0	14.0	1.0	15.0	ns
			5.0±0.5	15	—	3.8	5.5	1.0	6.5	ns
				50	—	6.1	8.5	1.0	9.0	ns
Input capacitance	C_{IN}	—			—	4	10	—	10	pF
Equivalent internal capacitance	C_{PD} *1	—			—	15	—	—	—	pF

***1.** C_{PD} is the no-load equivalent capacitance inside the circuitry. Refer to the measurement circuit shown below. Current consumption is averaged by the following equation.

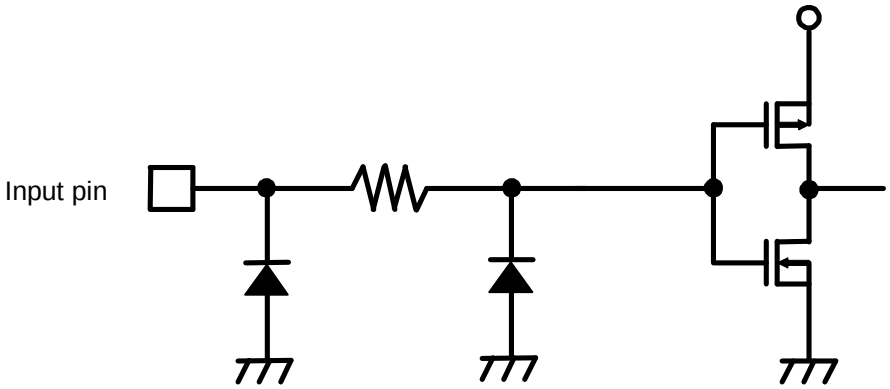
$$I_{CC(opr)} = C_{PD} \times V_{CC} \times fin + I_{CC}$$

Measurement Circuit



Remark No-load output during measurement of current consumption.

■ Input Pin Equivalent Circuit



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The S-75V86ANC is a EXCLUSIVE OR GATE fabricated by utilizing advanced silicon-gate CMOS technology which provides the inherent benefit of CMOS low power consumption to achieve ultra high speed operation correspond to LSTTL IC's.
All gates of the internal circuitry have buffered outputs to ensure high noise immunity and output stability.
Input voltage is allowed to be applied even if power voltage is not supplied because no diode is inserted between an input pin and V_{CC}.
This allows for interfaces between power supplies of different voltage, output level conversion from 5 V to 3 V and battery backup applications.

■ Features

- Wide power supply range: 2 V to 5.5 V
- Low current consumption: 1.0 µA max. (at 5.5 V, 25°C)
- Typical propagation delay: t_{PD} = 4.8 ns (at 5 V)
- High noise immunity: V_{NIH} = V_{NIL} = 28% V_{CC} min.
- Power down protection: All pins
- Lead-free

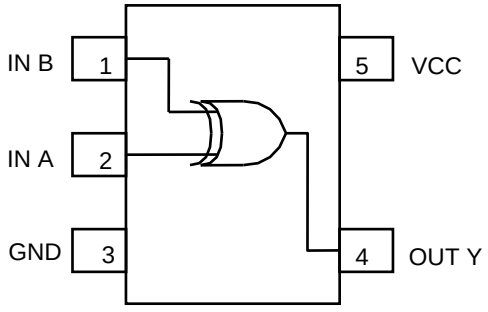
■ Applications

- Personal computers, peripherals
- Cellular phones
- Cameras
- Games

■ Package

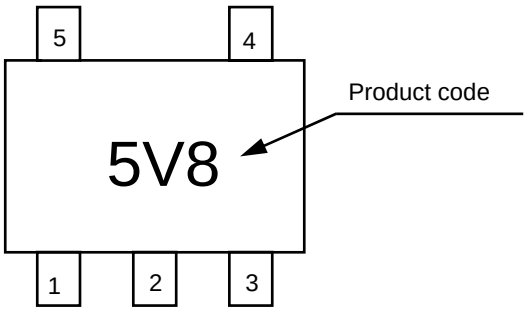
- SC-88A

■ Pin Configuration



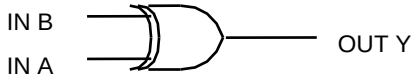
(Top view)

■ Marking Specification



(Top view)

■ Logic Diagram



True values

A	B	Y
L	L	L
L	H	H
H	L	H
H	H	L

■ Product Name Structure

S-75V86A NC – 5V8 – TF G

- Environmental code
  G : Lead-free (for details, please contact our sales office)
- IC direction in tape specification
- Product abbreviation
- Package abbreviation
  NC : SC-88A

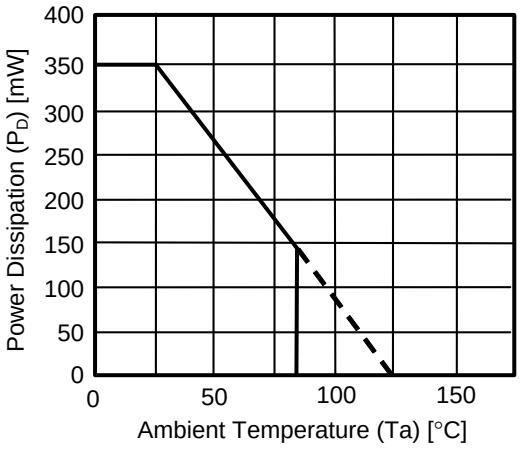
■ Absolute Maximum Ratings

(Ta = 25°C unless otherwise specified)

Item	Symbol	Absolute Maximum Ratings	Unit
Power supply voltage	V_{CC}	−0.5 to +7.0	V
Input voltage	V_{IN}	−0.5 to +7.0	V
Output voltage	V_{OUT}	−0.5 to V_{CC} + 0.5	V
Input parasitic diode current	I_{IK}	−20	mA
Output parasitic diode current	I_{OK}	±20	mA
Output current	I_{OUT}	±25	mA
V_{CC}/GND current	I_{CC}	±50	mA
Power dissipation	P_D	200 (When not mounted on board)	mW
		350*1	mW
Operating ambient temperature	T_{opr}	−40 to +85	°C
Storage temperature	T_{stg}	−65 to +150	°C
Lead temperature (10 s)	T_L	260	°C

***1.** When mounted on board
[Mounted board]
(1) Board size : 114.3 mm × 76.2 mm × t1.6 mm
(2) Board name : JEDEC STANDARD51-7

Caution The absolute maximum ratings are rated values exceeding which the product could suffer physical damage. These values must therefore not be exceeded under any conditions.



Power Dissipation of Package (When Mounted on Board)

■ Recommended Operating Conditions

Item	Symbol	Standard	Unit
Power voltage	V_{CC}	2 to 5.5	V
Input voltage	V_{IN}	0 to 5.5	V
Output voltage	V_{OUT}	0 to V_{CC}	V
Input rise / fall time	t_R, t_F	0 to 100 (V_{CC} = 3.3±0.3 V)	ns
		0 to 20 (V_{CC} = 5±0.5 V)	ns

■ DC Electrical Characteristics

Item		Symbol	Conditions			Ta = 25°C			Ta = –40 to 85°C		Unit
					V_{CC}	Min.	Typ.	Max.	Min.	Max.	
Input voltage	"H" level	V_{IH}	—		2.0	1.5	—	—	1.5	—	V
					3 to 5.5	V_{CC}×0.7	—	—	V_{CC}×0.7	—	V
	"L" level	V_{IL}	—		2.0	—	—	0.5	—	0.5	V
					3 to 5.5	—	—	V_{CC}×0.3	—	V_{CC}×0.3	V
Output voltage	"H" level	V_{OH}	V_{IN} = V_{IL} or V_{IH}	I_{OH} = –50 µA	2.0	1.9	2.0	—	1.9	—	V
					3.0	2.9	3.0	—	2.9	—	V
					4.5	4.4	4.5	—	4.4	—	V
				I_{OH} = –4 mA	3.0	2.58	—	—	2.48	—	V
				I_{OH} = –8 mA	4.5	3.94	—	—	3.80	—	V
	"L" level	V_{OL}	V_{IN} = V_{IL} or V_{IH}	I_{OL} = 50 µA	2.0	—	0	0.1	—	0.1	V
					3.0	—	0	0.1	—	0.1	V
					4.5	—	0	0.1	—	0.1	V
				I_{OL} = 4 mA	3.0	—	—	0.36	—	0.44	V
				I_{OL} = 8 mA	4.5	—	—	0.36	—	0.44	V
Input current		I_{IN}	V_{IN} = 5.5 V or GND		0 to 5.5	—	—	±0.1	—	±1.0	µA
Current consumption		I_{CC}	V_{IN} = V_{CC} or GND		5.5	—	—	1.0	—	10.0	µA

■ AC Electrical Characteristics

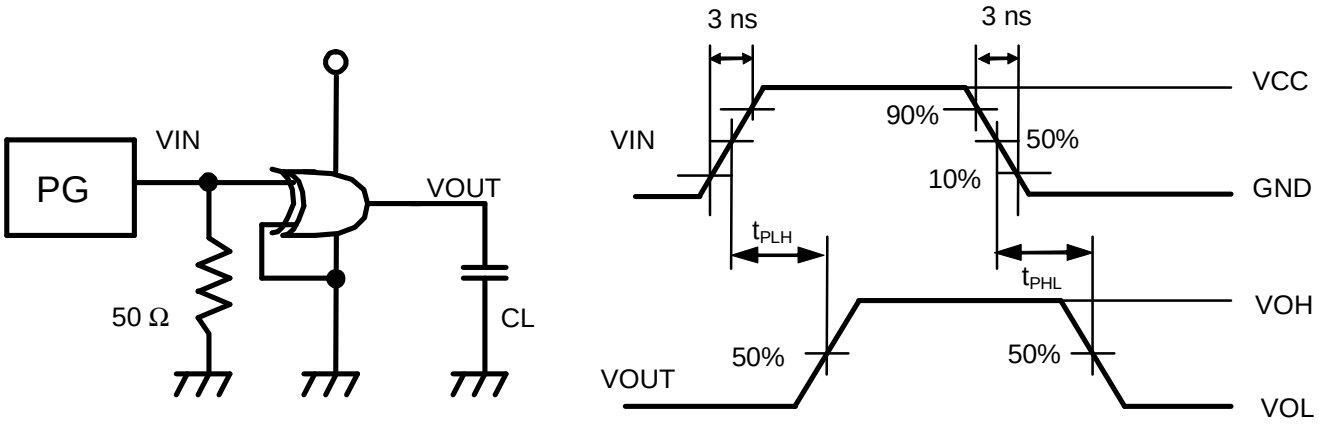
(Input $t_R = t_F = 3$ ns unless otherwise specified)

Item	Symbol	Measurement Conditions			Ta = 25°C			Ta = –40 to 85°C		Unit
			V_{CC} (V)	C_L (pF)	Min.	Typ.	Max.	Min.	Max.	
Propagation delay time	t_{PLH}, t_{PHL}	—	3.3±0.3	15	—	7.0	11.0	1.0	13.0	ns
				50	—	10.4	14.5	1.0	16.5	ns
			5.0±0.5	15	—	4.8	6.8	1.0	8.0	ns
				50	—	6.5	9.0	1.0	10.0	ns
Input capacitance	C_{IN}	—			—	4	10	—	10	pF
Equivalent internal capacitance	C_{PD} *1	—			—	18	—	—	—	pF

***1.** C_{PD} is the no-load equivalent capacitance inside the circuitry. Refer to the measurement circuit shown below. Current consumption is averaged by the following equation.

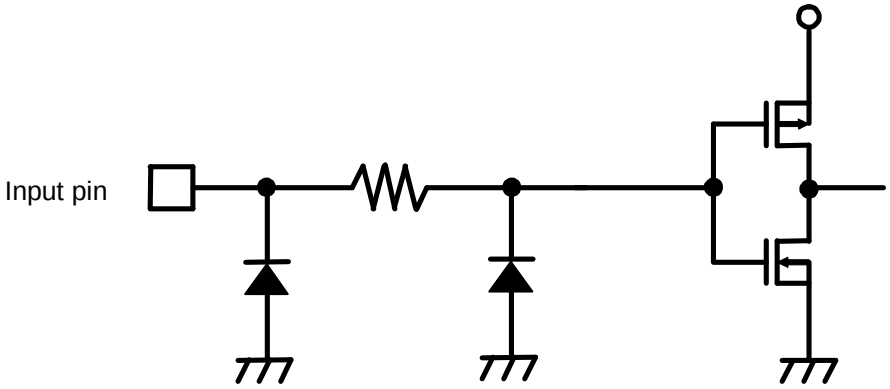
$$I_{CC(opr)} = C_{PD} \times V_{CC} \times fin + I_{CC}$$

Measurement Circuit



Remark No-load output during measurement of current consumption.

■ Input Pin Equivalent Circuit



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The S-75L00ANC is a single 2-input NAND gate fabricated by utilizing advanced silicon-gate CMOS technology which provides the inherent benefit of CMOS low power consumption to achieve operation by only a couple of batteries (1 to 3 V).
The internal circuitry has buffered outputs to ensure high noise immunity and output stability.
Input voltage is allowed to be applied even if power voltage is not supplied because no diode is inserted between an input pin and V_{CC}.
This allows for interfaces between power supplies of different voltage, output level conversion from 3 V to 1 V and battery backup applications.

■ Features

- Wide power supply range: 1 V to 3.6 V
- Low current consumption: 1.0 µA max. (at 3.6 V, 25°C)
- Typical propagation delay: t_{PD} = 7 ns (at 3 V)
- High noise immunity: V_{NIH} = V_{NIL} = 28% V_{CC} min.
- Power down protection: All pins
- Lead-free

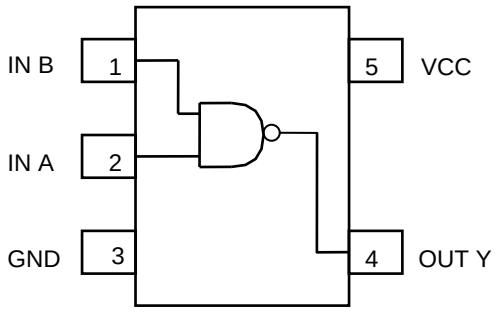
■ Applications

- Personal computers, peripherals
- Cellular phones
- Cameras
- Games

■ Package

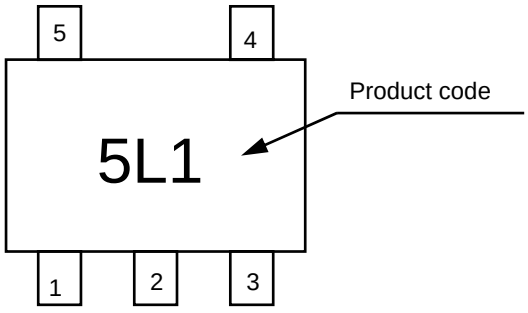
- SC-88A

■ Pin Configuration



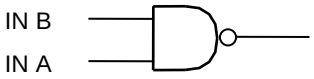
(Top view)

■ Marking Specification



(Top view)

■ Logic Diagram



True values

A	B	Y
L	L	H
L	H	H
H	L	H
H	H	L

■ Product Name Structure

S-75L00A NC – 5L1 – TF G

Environmental code
G : Lead-free (for details, please contact our sales office)

IC direction in tape specification

Product abbreviation

Package abbreviation
NC : SC-88A

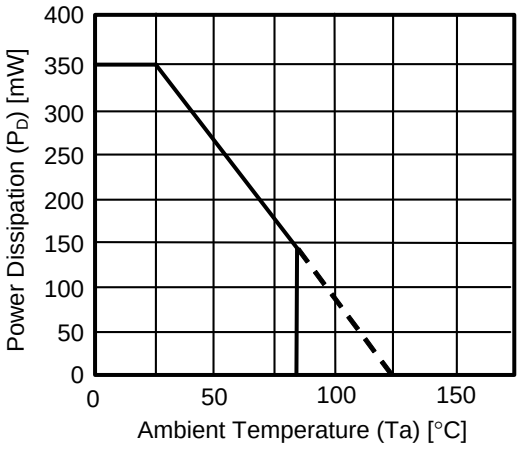
■ Absolute Maximum Ratings

(Ta = 25°C unless otherwise specified)

Item	Symbol	Absolute Maximum Ratings	Unit
Power supply voltage	V_{CC}	−0.5 to +5.0	V
Input voltage	V_{IN}	−0.5 to +5.0	V
Output voltage	V_{OUT}	−0.5 to V_{CC} + 0.5	V
Input parasitic diode current	I_{IK}	−20	mA
Output parasitic diode current	I_{OK}	±20	mA
Output current	I_{OUT}	±12.5	mA
V_{CC}/GND current	I_{CC}	±25	mA
Power dissipation	P_D	200 (When not mounted on board)	mW
		350*1	mW
Operating ambient temperature	T_{opr}	−40 to +85	°C
Storage temperature	T_{stg}	−65 to +150	°C
Lead temperature (10 s)	T_L	260	°C

***1.** When mounted on board
[Mounted board]
(1) Board size : 114.3 mm × 76.2 mm × t1.6 mm
(2) Board name : JEDEC STANDARD51-7

Caution The absolute maximum ratings are rated values exceeding which the product could suffer physical damage. These values must therefore not be exceeded under any conditions.



Power Dissipation of Package (When Mounted on Board)

■ Recommended Operating Conditions

Item	Symbol	Standard	Unit
Power voltage	V_{CC}	1 to 3.6	V
Input voltage	V_{IN}	0 to 3.6	V
Output voltage	V_{OUT}	0 to V_{CC}	V
Input rise / fall time	t_R, t_F	0 to 1000 (V_{CC} = 1.0 V)	ns
		0 to 500 (V_{CC} = 2.0 V)	ns
		0 to 400 (V_{CC} = 3.0 V)	ns

■ DC Electrical Characteristics

Item		Symbol	Conditions		V_{CC}	Ta = 25°C Min.	Ta = 25°C Typ.	Ta = 25°C Max.	Ta = –40 to 85°C Min.	Ta = –40 to 85°C Max.	Unit
Input voltage	"H" level	V_{IH}	—		1.0	0.75	—	—	0.75	—	V
					1.5	1.05	—	—	1.05	—	V
					3.0	2.10	—	—	2.10	—	V
	"L" level	V_{IL}	—		1.0	—	—	0.25	—	0.25	V
					1.5	—	—	0.45	—	0.45	V
					3.0	—	—	0.90	—	0.90	V
Output voltage	"H" level	V_{OH}	V_{IN} = V_{IH} or V_{IL}	I_{OH} = –20 µA	1.0	0.9	1.0	—	0.9	—	V
					1.5	1.4	1.5	—	1.4	—	V
					3.0	2.9	3.0	—	2.9	—	V
				I_{OH} = –1 mA	1.5	1.07	1.23	—	0.99	—	V
				I_{OH} = –2.6 mA	3.0	2.61	2.68	—	2.55	—	V
	"L" level	V_{OL}	V_{IN} = V_{IH}	I_{OL} = 20 µA	1.0	—	0	0.1	—	0.1	V
					1.5	—	0	0.1	—	0.1	V
					3.0	—	0	0.1	—	0.1	V
				I_{OL} = 1 mA	1.5	—	0.23	0.31	—	0.37	V
				I_{OL} = 2.6 mA	3.0	—	0.23	0.31	—	0.33	V
Input current		I_{IN}	V_{IN} = V_{CC} or GND		3.6	—	—	±0.1	—	±1.0	µA
Current consumption		I_{CC}	V_{IN} = V_{CC} or GND		3.6	—	—	1.0	—	10.0	µA

■ AC Electrical Characteristics

(C_L = 15 pf, Input $t_R = t_F$ = 6 ns, V_{CC} = 3.3±0.3 V, Ta = 25°C unless otherwise specified)

Item	Symbol	Measurement Conditions	Min.	Typ.	Max.	Unit
Output rise / fall time	t_{TLH}, t_{THL}	—	—	4.0	8.5	ns
Propagation delay time	t_{PLH}, t_{PHL}	—	—	6.0	9.0	ns

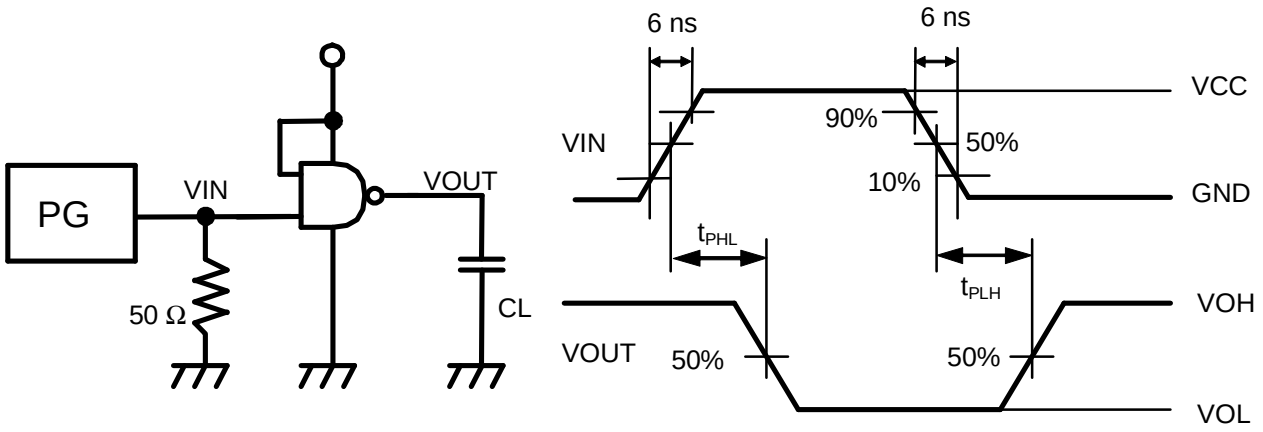
(C_L = 25 pf, Input $t_R = t_F$ = 6 ns unless otherwise specified)

Item	Symbol	Measurement Conditions		Ta = 25°C			Ta = –40 to 85°C		Unit
			V_{CC} (V)	Min.	Typ.	Max.	Min.	Max.	
Output rise / fall time	t_{TLH}, t_{THL}	—	1.0	—	35	70	—	90	ns
			1.5	—	15	25	—	30	ns
			3.0	—	7	10	—	14	ns
Propagation delay time	t_{PLH}, t_{PHL}	—	1.0	—	30	60	—	75	ns
			1.5	—	15	25	—	30	ns
			3.0	—	7	10	—	14	ns
Input capacitance	C_{IN}	—		—	5	10	—	10	pF
Equivalent internal capacitance	C_{PD} *1	—		—	10	—	—	—	pF

***1.** C_{PD} is the no-load equivalent capacitance inside the circuitry. Refer to the measurement circuit shown below. Current consumption is averaged by the following equation.

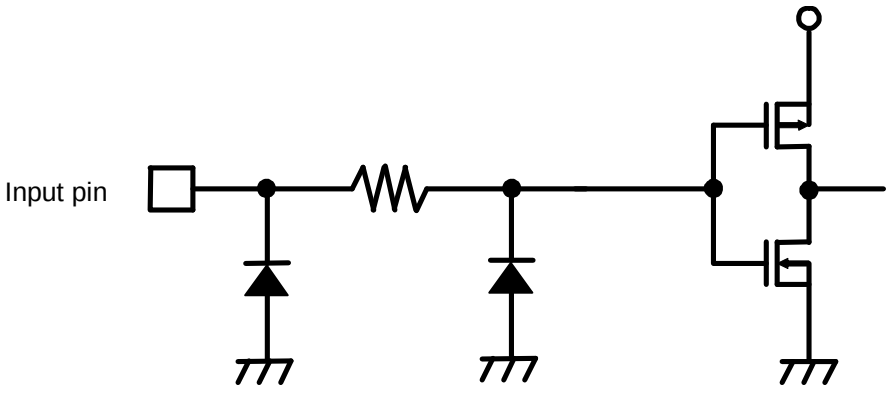
$$I_{CC(opr)} = C_{PD} \times V_{CC} \times fin + I_{CC}$$

Measurement Circuit



Remark No-load output during measurement of current consumption.

■ Input Pin Equivalent Circuit



S-75L02ANC

MINI LOGIC SERIES
2 INPUT NOR GATE

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The S-75L02ANC is a single 2-input NOR gate fabricated by utilizing advanced silicon-gate CMOS technology which provides the inherent benefit of CMOS low power consumption to achieve operation by only a couple of batteries (1 to 3 V).
The internal circuitry has buffered outputs to ensure high noise immunity and output stability.
Input voltage is allowed to be applied even if power voltage is not supplied because no diode is inserted between an input pin and V_{CC}.
This allows for interfaces between power supplies of different voltage, output level conversion from 3 V to 1 V and battery backup applications.

■ Features

- Wide power supply range: 1 V to 3.6 V
- Low current consumption: 1.0 µA max. (at 3.6 V, 25°C)
- Typical propagation delay: t_{PD} = 7 ns (at 3 V)
- High noise immunity: V_{NIH} = V_{NIL} = 28% V_{CC} min.
- Power down protection: All pins
- Lead-free

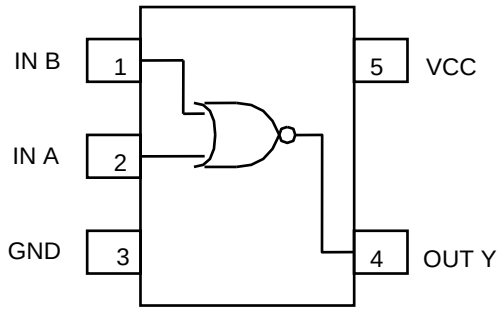
■ Applications

- Personal computers, peripherals
- Cellular phones
- Cameras
- Games

■ Package

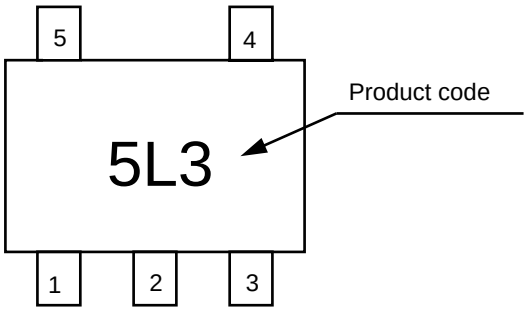
- SC-88A

■ Pin Configuration



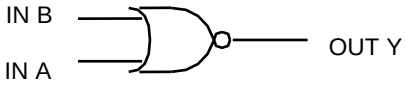
(Top view)

■ Marking Specification



(Top view)

■ Logic Diagram



True values

A	B	Y
L	L	H
L	H	L
H	L	L
H	H	L

■ Product Name Structure

S-75L02A NC – 5L3 – TF G

- Environmental code
  G : Lead-free (for details, please contact our sales office)
- IC direction in tape specification
- Product abbreviation
- Package abbreviation
  NC : SC-88A

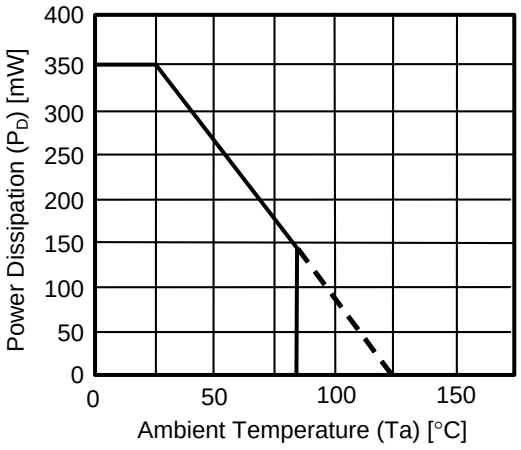
■ Absolute Maximum Ratings

(Ta = 25°C unless otherwise specified)

Item	Symbol	Absolute Maximum Ratings	Unit
Power supply voltage	V_{CC}	−0.5 to +5.0	V
Input voltage	V_{IN}	−0.5 to +5.0	V
Output voltage	V_{OUT}	−0.5 to V_{CC} + 0.5	V
Input parasitic diode current	I_{IK}	−20	mA
Output parasitic diode current	I_{OK}	±20	mA
Output current	I_{OUT}	±12.5	mA
V_{CC}/GND current	I_{CC}	±25	mA
Power dissipation	P_D	200 (When not mounted on board)	mW
		350[*1]	mW
Operating ambient temperature	T_{opr}	−40 to +85	°C
Storage temperature	T_{stg}	−65 to +150	°C
Lead temperature (10 s)	T_L	260	°C

***1.** When mounted on board
[Mounted board]
(1) Board size : 114.3 mm × 76.2 mm × t1.6 mm
(2) Board name : JEDEC STANDARD51-7

Caution The absolute maximum ratings are rated values exceeding which the product could suffer physical damage. These values must therefore not be exceeded under any conditions.



Power Dissipation of Package (When Mounted on Board)

■ Recommended Operating Conditions

Item	Symbol	Standard	Unit
Power voltage	V_{CC}	1 to 3.6	V
Input voltage	V_{IN}	0 to 3.6	V
Output voltage	V_{OUT}	0 to V_{CC}	V
Input rise / fall time	t_R, t_F	0 to 1000 (V_{CC} = 1.0 V)	ns
		0 to 500 (V_{CC} = 2.0 V)	ns
		0 to 400 (V_{CC} = 3.0 V)	ns

■ DC Electrical Characteristics

Item		Symbol	Conditions		Ta = 25°C				Ta = –40 to 85°C		Unit
					V_{CC}	Min.	Typ.	Max.	Min.	Max.	
Input voltage	"H" level	V_{IH}	—		1.0	0.75	—	—	0.75	—	V
					1.5	1.05	—	—	1.05	—	V
					3.0	2.10	—	—	2.10	—	V
	"L" level	V_{IL}	—		1.0	—	—	0.25	—	0.25	V
					1.5	—	—	0.45	—	0.45	V
					3.0	—	—	0.90	—	0.90	V
Output voltage	"H" level	V_{OH}	V_{IN} = V_{IL}	I_{OH} = –20 µA	1.0	0.9	1.0	—	0.9	—	V
					1.5	1.4	1.5	—	1.4	—	V
					3.0	2.9	3.0	—	2.9	—	V
				I_{OH} = –1 mA	1.5	1.07	1.23	—	0.99	—	V
				I_{OH} = –2.6 mA	3.0	2.61	2.68	—	2.55	—	V
	"L" level	V_{OL}	V_{IN} = V_{IL} or V_{IH}	I_{OL} = 20 µA	1.0	—	0	0.1	—	0.1	V
					1.5	—	0	0.1	—	0.1	V
					3.0	—	0	0.1	—	0.1	V
				I_{OL} = 1 mA	1.5	—	0.23	0.31	—	0.37	V
				I_{OL} = 2.6 mA	3.0	—	0.23	0.31	—	0.33	V
Input current		I_{IN}	V_{IN} = V_{CC} or GND		3.6	—	—	±0.1	—	±1.0	µA
Current consumption		I_{CC}	V_{IN} = V_{CC} or GND		3.6	—	—	1.0	—	10.0	µA

■ AC Electrical Characteristics

(C_L = 15 pf, Input $t_R = t_F$ = 6 ns, V_{CC} = 3.3±0.3 V, Ta = 25°C unless otherwise specified)

Item	Symbol	Measurement Conditions	Min.	Typ.	Max.	Unit
Output rise / fall time	t_{TLH}, t_{THL}	—	—	4.0	8.0	ns
Propagation delay time	t_{PLH}, t_{PHL}	—	—	6.0	9.0	ns

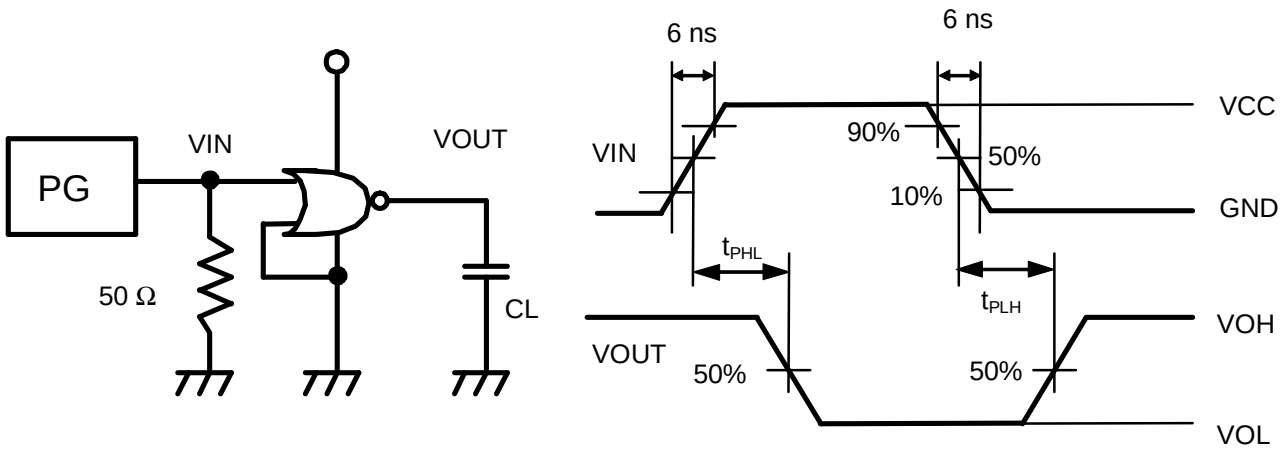
(C_L = 25 pf, Input $t_R = t_F$ = 6 ns unless otherwise specified)

Item	Symbol	Measurement Conditions		Ta = 25°C			Ta = –40 to 85°C		Unit
			V_{CC} (V)	Min.	Typ.	Max.	Min.	Max.	
Output rise / fall time	t_{TLH}, t_{THL}	—	1.0	—	35	70	—	90	ns
			1.5	—	15	25	—	30	ns
			3.0	—	7	10	—	14	ns
Propagation delay time	t_{PLH}, t_{PHL}	—	1.0	—	30	60	—	75	ns
			1.5	—	15	25	—	30	ns
			3.0	—	7	10	—	14	ns
Input capacitance	C_{IN}	—		—	5	10	—	10	pF
Equivalent internal capacitance	C_{PD} *1	—		—	10	—	—	—	pF

***1.** C_{PD} is the no-load equivalent capacitance inside the circuitry. Refer to the measurement circuit shown below. Current consumption is averaged by the following equation.

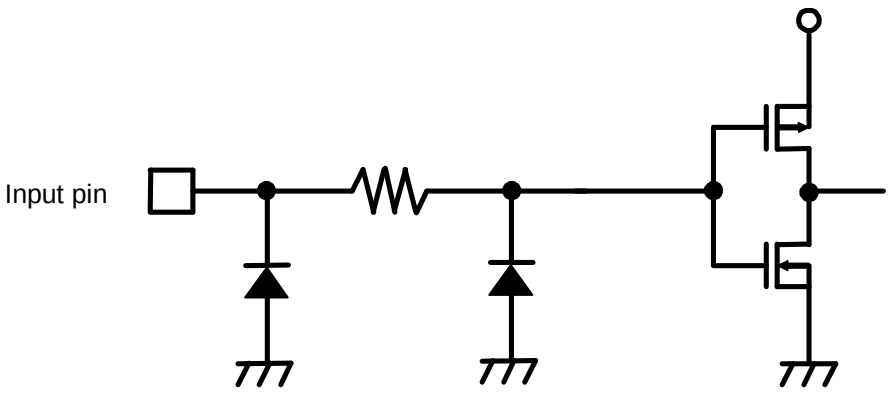
$$I_{CC(opr)} = C_{PD} \times V_{CC} \times fin + I_{CC}$$

Measurement Circuit



Remark No-load output during measurement of current consumption.

■ Input Pin Equivalent Circuit



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The S-75L04ANC is an inverter fabricated by utilizing advanced silicon-gate CMOS technology which provides the inherent benefit of CMOS low power consumption to achieve operation by only a couple of batteries (1 to 3 V).
The internal circuitry has buffered outputs to ensure high noise immunity and output stability.
Input voltage is allowed to be applied even if power voltage is not supplied because no diode is inserted between an input pin and V_{CC}.
This allows for interfaces between power supplies of different voltage, output level conversion from 3 V to 1 V and battery backup applications.

■ Features

- Wide power supply range: 1 V to 3.6 V
- Low current consumption: 1.0 µA max. (at 3.6 V, 25°C)
- Typical propagation delay: t_{PD} = 7 ns (at 3 V)
- High noise immunity: V_{NIH} = V_{NIL} = 28% V_{CC} min.
- Power down protection: All pins
- Lead-free

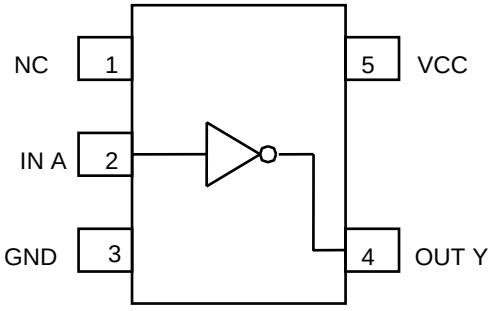
■ Applications

- Personal computers, peripherals
- Cellular phones
- Cameras
- Games

■ Package

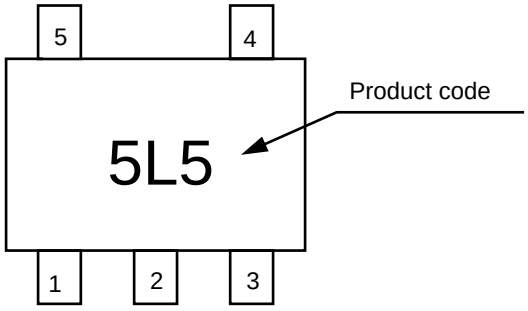
- SC-88A

■ Pin Configuration



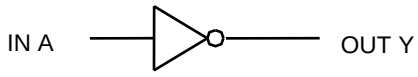
(Top view)

■ Marking Specification



(Top view)

■ Logic Diagram



True values

A	Y
L	H
H	L

■ Product Name Structure

S-75L04A NC – 5L5 – TF G

- Environmental code
  G : Lead-free (for details, please contact our sales office)
- IC direction in tape specification
- Product abbreviation
- Package abbreviation
  NC : SC-88A

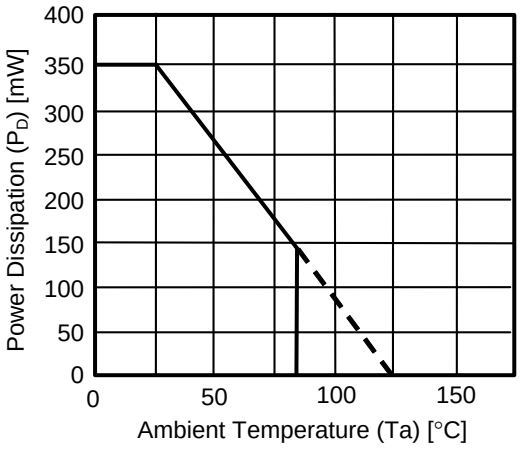
■ Absolute Maximum Ratings

(Ta = 25°C unless otherwise specified)

Item	Symbol	Absolute Maximum Ratings	Unit
Power supply voltage	V_{CC}	−0.5 to +5.0	V
Input voltage	V_{IN}	−0.5 to +5.0	V
Output voltage	V_{OUT}	−0.5 to V_{CC} + 0.5	V
Input parasitic diode current	I_{IK}	−20	mA
Output parasitic diode current	I_{OK}	±20	mA
Output current	I_{OUT}	±12.5	mA
V_{CC}/GND current	I_{CC}	±25	mA
Power dissipation	P_D	200 (When not mounted on board)	mW
		350[*1]	mW
Operating ambient temperature	T_{opr}	−40 to +85	°C
Storage temperature	T_{stg}	−65 to +150	°C
Lead temperature (10 s)	T_L	260	°C

***1.** When mounted on board
[Mounted board]
(1) Board size : 114.3 mm × 76.2 mm × t1.6 mm
(2) Board name : JEDEC STANDARD51-7

Caution The absolute maximum ratings are rated values exceeding which the product could suffer physical damage. These values must therefore not be exceeded under any conditions.



Power Dissipation of Package (When Mounted on Board)

■ Recommended Operating Conditions

Item	Symbol	Standard	Unit
Power voltage	V_{CC}	1 to 3.6	V
Input voltage	V_{IN}	0 to 3.6	V
Output voltage	V_{OUT}	0 to V_{CC}	V
Input rise / fall time	t_R, t_F	0 to 1000 (V_{CC} = 1.0 V)	ns
		0 to 500 (V_{CC} = 2.0 V)	ns
		0 to 400 (V_{CC} = 3.0 V)	ns

■ DC Electrical Characteristics

Item		Symbol	Conditions		Ta = 25°C				Ta = –40 to 85°C		Unit
					V_{CC}	Min.	Typ.	Max.	Min.	Max.	
Input voltage	"H" level	V_{IH}	—		1.0	0.75	—	—	0.75	—	V
					1.5	1.05	—	—	1.05	—	V
					3.0	2.10	—	—	2.10	—	V
	"L" level	V_{IL}	—		1.0	—	—	0.25	—	0.25	V
					1.5	—	—	0.45	—	0.45	V
					3.0	—	—	0.90	—	0.90	V
Output voltage	"H" level	V_{OH}	V_{IN} = V_{IL}	I_{OH} = –20 µA	1.0	0.9	1.0	—	0.9	—	V
					1.5	1.4	1.5	—	1.4	—	V
					3.0	2.9	3.0	—	2.9	—	V
				I_{OH} = –1 mA	1.5	1.07	1.23	—	0.99	—	V
				I_{OH} = –2.6 mA	3.0	2.61	2.68	—	2.55	—	V
	"L" level	V_{OL}	V_{IN} = V_{IH}	I_{OL} = 20 µA	1.0	—	0	0.1	—	0.1	V
					1.5	—	0	0.1	—	0.1	V
					3.0	—	0	0.1	—	0.1	V
				I_{OL} = 1 mA	1.5	—	0.23	0.31	—	0.37	V
				I_{OL} = 2.6 mA	3.0	—	0.23	0.31	—	0.33	V
Input current		I_{IN}	V_{IN} = V_{CC} or GND		3.6	—	—	±0.1	—	±1.0	µA
Current consumption		I_{CC}	V_{IN} = V_{CC} or GND		3.6	—	—	1.0	—	10.0	µA

■ AC Electrical Characteristics

(C_L = 15 pf, Input $t_R = t_F$ = 6 ns, V_{CC} = 3.3±0.3 V, Ta = 25°C unless otherwise specified)

Item	Symbol	Measurement Conditions	Min.	Typ.	Max.	Unit
Output rise / fall time	t_{TLH}, t_{THL}	—	—	4.0	8.0	ns
Propagation delay time	t_{PLH}, t_{PHL}	—	—	6.0	9.0	ns

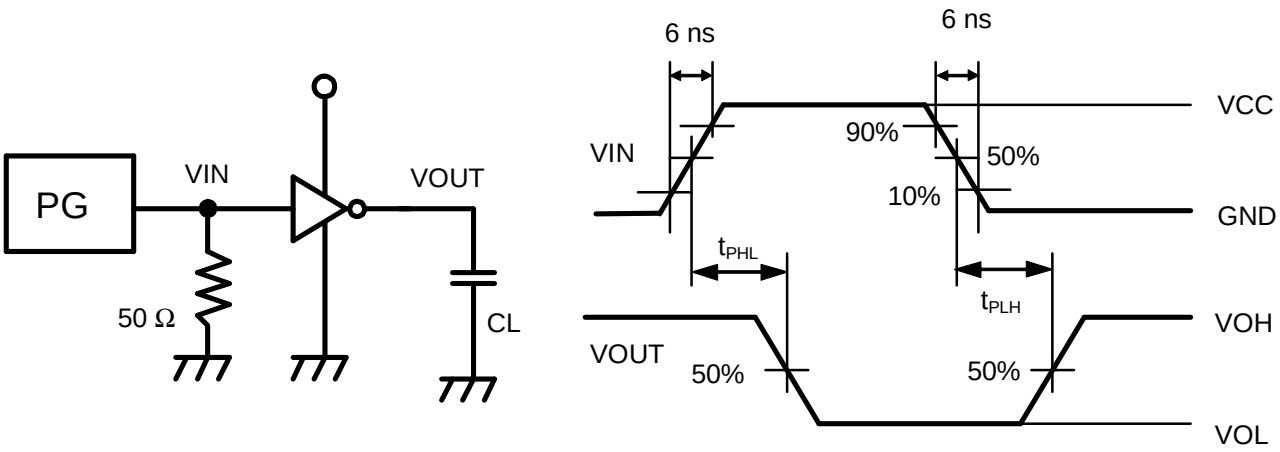
(C_L = 25 pf, Input $t_R = t_F$ = 6 ns unless otherwise specified)

Item	Symbol	Measurement Conditions		Ta = 25°C			Ta = –40 to 85°C		Unit
			V_{CC} (V)	Min.	Typ.	Max.	Min.	Max.	
Output rise / fall time	t_{TLH}, t_{THL}	—	1.0	—	35	70	—	90	ns
			1.5	—	15	25	—	30	ns
			3.0	—	7	10	—	14	ns
Propagation delay time	t_{PLH}, t_{PHL}	—	1.0	—	30	60	—	75	ns
			1.5	—	15	25	—	30	ns
			3.0	—	7	10	—	14	ns
Input capacitance	C_{IN}	—		—	5	10	—	10	pF
Equivalent internal capacitance	C_{PD} *1	—		—	10	—	—	—	pF

***1.** C_{PD} is the no-load equivalent capacitance inside the circuitry. Refer to the measurement circuit shown below. Current consumption is averaged by the following equation.

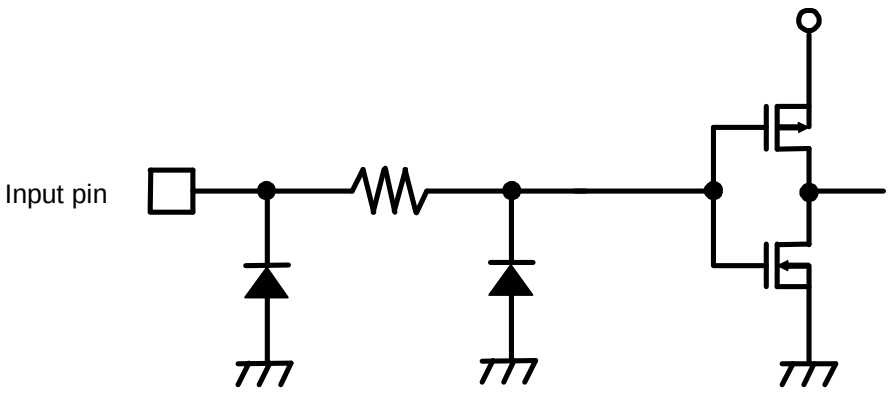
$$I_{CC(opr)} = C_{PD} \times V_{CC} \times fin + I_{CC}$$

Measurement Circuit



Remark No-load output during measurement of current consumption.

■ Input Pin Equivalent Circuit



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The S-75LU04ANC is a single packaged inverter without buffer fabricated by utilizing advanced silicon-gate CMOS technology which provides the inherent benefit of CMOS low power consumption to achieve operation by only a couple of batteries (1 to 3 V).
The S-75LU04ANC is suitable for a wide variety of linear circuits.
Input voltage is allowed to be applied even if power voltage is not supplied because no diode is inserted between an input pin and V_{CC}.
This allows for interfaces between power supplies of different voltage, output level conversion from 3 V to 1 V and battery backup applications.

■ Features

- Wide power supply range: 1 V to 3.6 V
- Low current consumption: 1.0 µA max. (at 3.6 V, 25°C)
- Typical propagation delay: t_{PD} = 6 ns (at 3 V)
- High noise immunity: V_{NIH} = V_{NIL} = 10% V_{CC} min.
- Power down protection: All pins
- Lead-free

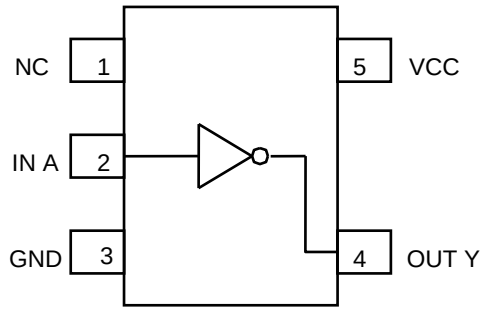
■ Applications

- Personal computers, peripherals
- Cellular phones
- Cameras
- Games

■ Package

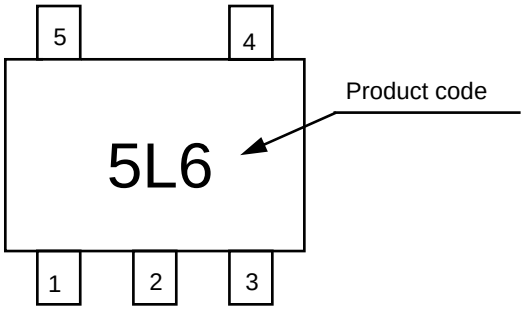
- SC-88A

■ Pin Configuration



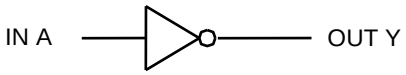
(Top view)

■ Marking Specification



(Top view)

■ Logic Diagram



True values

A	Y
L	H
H	L

■ Product Name Structure

S-75LU04A NC – 5L6 TF G

- Environmental code
  - G : Lead-free (for details, please contact our sales office)
- IC direction in tape specification
- Product abbreviation
- Package abbreviation
  - NC : SC-88A

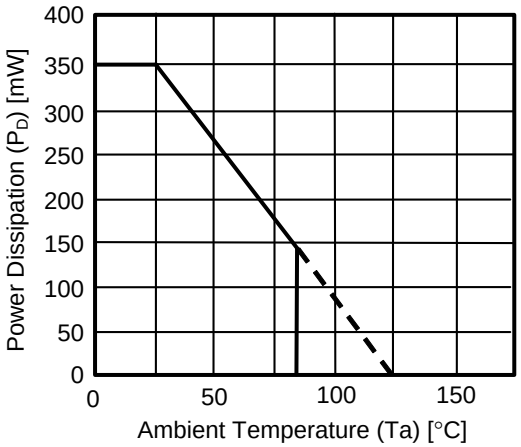
■ Absolute Maximum Ratings

(Ta = 25°C unless otherwise specified)

Item	Symbol	Absolute Maximum Ratings	Unit
Power supply voltage	V_{CC}	−0.5 to +5.0	V
Input voltage	V_{IN}	−0.5 to +5.0	V
Output voltage	V_{OUT}	−0.5 to V_{CC} + 0.5	V
Input parasitic diode current	I_{IK}	−20	mA
Output parasitic diode current	I_{OK}	±20	mA
Output current	I_{OUT}	±12.5	mA
V_{CC}/GND current	I_{CC}	±25	mA
Power dissipation	P_D	200 (When not mounted on board)	mW
		350[*1]	mW
Operating ambient temperature	T_{opr}	−40 to +85	°C
Storage temperature	T_{stg}	−65 to +150	°C
Lead temperature (10 s)	T_L	260	°C

***1.** When mounted on board
[Mounted board]
(1) Board size : 114.3 mm × 76.2 mm × t1.6 mm
(2) Board name : JEDEC STANDARD51-7

Caution The absolute maximum ratings are rated values exceeding which the product could suffer physical damage. These values must therefore not be exceeded under any conditions.



Power Dissipation of Package (When Mounted on Board)

■ Recommended Operating Conditions

Item	Symbol	Standard	Unit
Power voltage	V_{CC}	1 to 3.6	V
Input voltage	V_{IN}	0 to 3.6	V
Output voltage	V_{OUT}	0 to V_{CC}	V
Input rise / fall time	t_R, t_F	0 to 1000 (V_{CC} = 1.0 V)	ns
		0 to 500 (V_{CC} = 2.0 V)	ns
		0 to 400 (V_{CC} = 3.0 V)	ns

■ DC Electrical Characteristics

Item		Symbol	Conditions		V_{CC}	Ta = 25°C Min.	Ta = 25°C Typ.	Ta = 25°C Max.	Ta = –40 to 85°C Min.	Ta = –40 to 85°C Max.	Unit
Input voltage	"H" level	V_{IH}	—		1.0	0.75	—	—	0.75	—	V
					1.5	1.05	—	—	1.05	—	V
					3.0	2.10	—	—	2.10	—	V
	"L" level	V_{IL}	—		1.0	—	—	0.25	—	0.25	V
					1.5	—	—	0.45	—	0.45	V
					3.0	—	—	0.90	—	0.90	V
Output voltage	"H" level	V_{OH}	V_{IN} = V_{IL}	I_{OH} = –20 µA	1.0	0.9	1.0	—	0.9	—	V
					1.5	1.4	1.5	—	1.4	—	V
					3.0	2.9	3.0	—	2.9	—	V
				I_{OH} = –1 mA	1.5	1.07	1.23	—	0.99	—	V
				I_{OH} = –2.6 mA	3.0	2.61	2.68	—	2.55	—	V
	"L" level	V_{OL}	V_{IN} = V_{IH}	I_{OL} = 20 µA	1.0	—	0	0.1	—	0.1	V
					1.5	—	0	0.1	—	0.1	V
					3.0	—	0	0.1	—	0.1	V
				I_{OL} = 1 mA	1.5	—	0.23	0.31	—	0.37	V
				I_{OL} = 2.6 mA	3.0	—	0.23	0.31	—	0.33	V
Input current		I_{IN}	V_{IN} = V_{CC} or GND		3.6	—	—	±0.1	—	±1.0	µA
Current consumption		I_{CC}	V_{IN} = V_{CC} or GND		3.6	—	—	1.0	—	10.0	µA

■ AC Electrical Characteristics

(C_L = 15 pf, Input $t_R = t_F$ = 6 ns, V_{CC} = 3.3±0.3 V, Ta = 25°C unless otherwise specified)

Item	Symbol	Measurement Conditions	Min.	Typ.	Max.	Unit
Output rise / fall time	t_{TLH}, t_{THL}	—	—	6.0	9.0	ns
Propagation delay time	t_{PLH}, t_{PHL}	—	—	4.0	10.0	ns

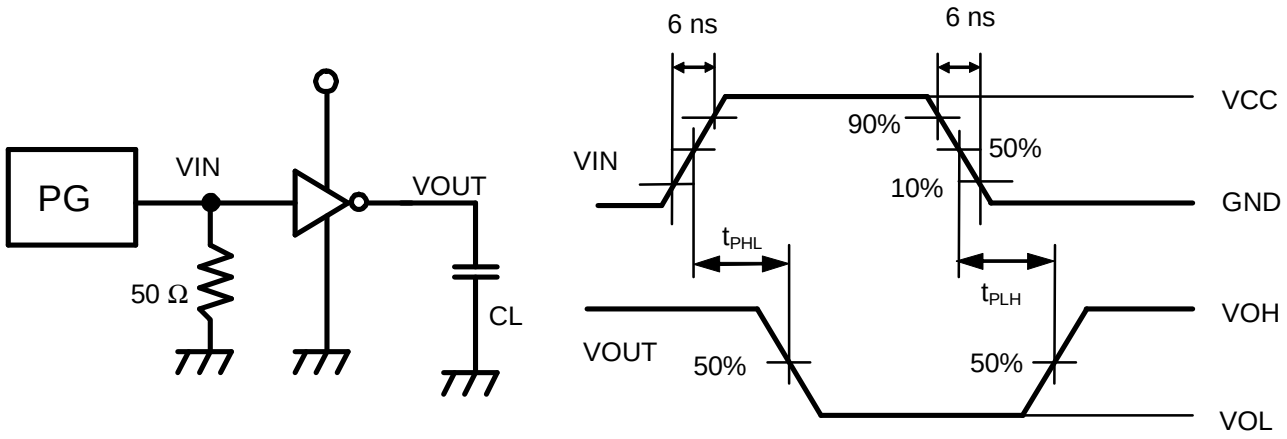
(C_L = 25 pf, Input $t_R = t_F$ = 6 ns unless otherwise specified)

Item	Symbol	Measurement Conditions		Ta = 25°C			Ta = –40 to 85°C		Unit
			V_{CC} (V)	Min.	Typ.	Max.	Min.	Max.	
Output rise / fall time	t_{TLH}, t_{THL}	—	1.0	—	35	70	—	90	ns
			1.5	—	15	25	—	30	ns
			3.0	—	7	10	—	14	ns
Propagation delay time	t_{PLH}, t_{PHL}	—	1.0	—	20	40	—	50	ns
			1.5	—	10	15	—	20	ns
			3.0	—	6	9	—	12	ns
Input capacitance	C_{IN}	—		—	5	10	—	10	pF
Equivalent internal capacitance	C_{PD} *1	—		—	10	—	—	—	pF

***1.** C_{PD} is the no-load equivalent capacitance inside the circuitry. Refer to the measurement circuit shown below. Current consumption is averaged by the following equation.

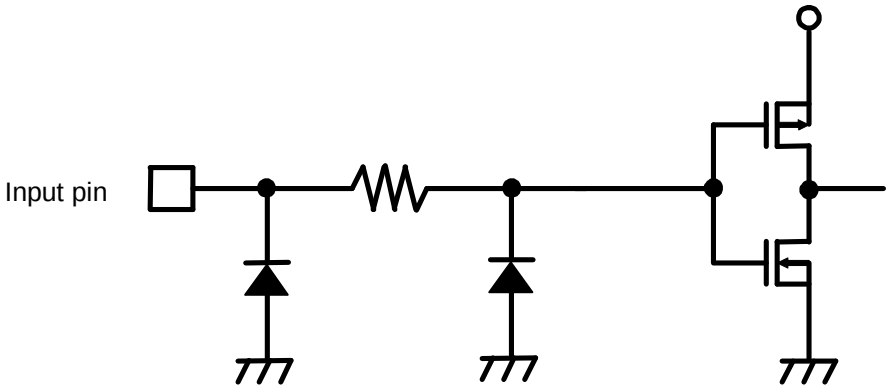
$$I_{CC(opr)} = C_{PD} \times V_{CC} \times fin + I_{CC}$$

Measurement Circuit



Remark No-load output during measurement of current consumption.

■ Input Pin Equivalent Circuit



S-75L08ANC

MINI LOGIC SERIES
2 INPUT AND GATE

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The S-75L08ANC is a single 2-Input AND Gate fabricated by utilizing advanced silicon-gate CMOS technology which provides the inherent benefit of CMOS low power consumption to achieve operation by only a couple of batteries (1 to 3 V).
The internal circuitry has buffered outputs to ensure high noise immunity and output stability.
Input voltage is allowed to be applied even if power voltage is not supplied because no diode is inserted between an input pin and V_{CC}.
This allows for interfaces between power supplies of different voltage, output level conversion from 3 V to 1 V and battery backup applications.

■ Features

- Wide power supply range: 1 V to 3.6 V
- Low current consumption: 1.0 µA max. (at 3.6 V, 25°C)
- Typical propagation delay: t_{PD} = 7 ns (at 3 V)
- High noise immunity: V_{NIH} = V_{NIL} = 28% V_{CC} min.
- Power down protection: All pins
- Lead-free

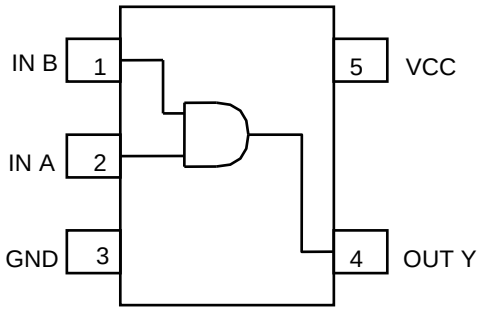
■ Applications

- Personal computers, peripherals
- Cellular phones
- Cameras
- Games

■ Package

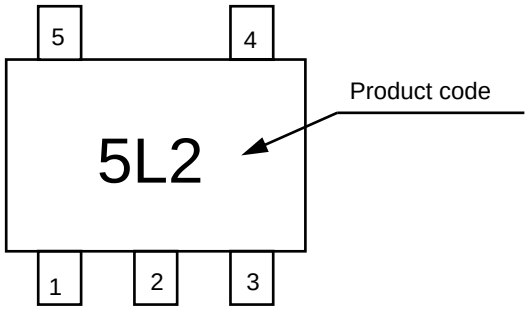
- SC-88A

■ Pin Configuration



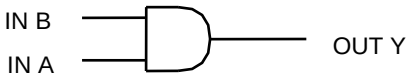
(Top view)

■ Marking Specification



(Top view)

■ Logic Diagram



True values

A	B	Y
L	L	L
L	H	L
H	L	L
H	H	H

■ Product Name Structure

S-75L08A NC – 5L2 – TF G

- Environmental code
  G : Lead-free (for details, please contact our sales office)
- IC direction in tape specification
- Product abbreviation
- Package abbreviation
  NC : SC-88A

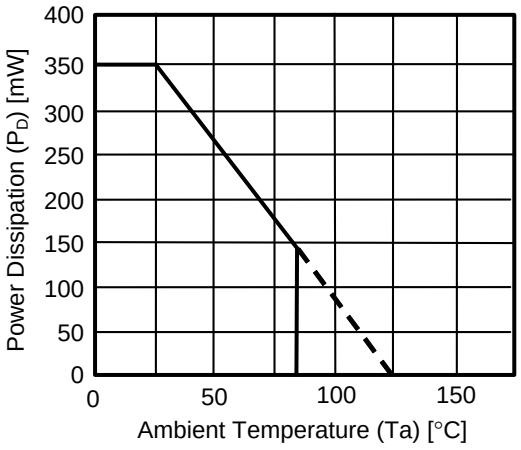
■ Absolute Maximum Ratings

(Ta = 25°C unless otherwise specified)

Item	Symbol	Absolute Maximum Ratings	Unit
Power supply voltage	V_{CC}	−0.5 to +5.0	V
Input voltage	V_{IN}	−0.5 to +5.0	V
Output voltage	V_{OUT}	−0.5 to V_{CC} + 0.5	V
Input parasitic diode current	I_{IK}	−20	mA
Output parasitic diode current	I_{OK}	±20	mA
Output current	I_{OUT}	±12.5	mA
V_{CC}/GND current	I_{CC}	±25	mA
Power dissipation	P_D	200 (When not mounted on board)	mW
		350*1	mW
Operating ambient temperature	T_{opr}	−40 to +85	°C
Storage temperature	T_{stg}	−65 to +150	°C
Lead temperature (10 s)	T_L	260	°C

***1.** When mounted on board
[Mounted board]
(1) Board size : 114.3 mm × 76.2 mm × t1.6 mm
(2) Board name : JEDEC STANDARD51-7

Caution The absolute maximum ratings are rated values exceeding which the product could suffer physical damage. These values must therefore not be exceeded under any conditions.



Power Dissipation of Package (When Mounted on Board)

■ Recommended Operating Conditions

Item	Symbol	Standard	Unit
Power voltage	V_{CC}	1 to 3.6	V
Input voltage	V_{IN}	0 to 3.6	V
Output voltage	V_{OUT}	0 to V_{CC}	V
Input rise / fall time	t_R, t_F	0 to 1000 (V_{CC} = 1.0 V)	ns
		0 to 500 (V_{CC} = 2.0 V)	ns
		0 to 400 (V_{CC} = 3.0 V)	ns

■ DC Electrical Characteristics

Item		Symbol	Conditions		Ta = 25°C				Ta = –40 to 85°C		Unit
					V_{CC}	Min.	Typ.	Max.	Min.	Max.	
Input voltage	"H" level	V_{IH}	—		1.0	0.75	—	—	0.75	—	V
					1.5	1.05	—	—	1.05	—	V
					3.0	2.10	—	—	2.10	—	V
	"L" level	V_{IL}	—		1.0	—	—	0.25	—	0.25	V
					1.5	—	—	0.45	—	0.45	V
					3.0	—	—	0.90	—	0.90	V
Output voltage	"H" level	V_{OH}	V_{IN} = V_{IH}	I_{OH} = –20 µA	1.0	0.9	1.0	—	0.9	—	V
					1.5	1.4	1.5	—	1.4	—	V
					3.0	2.9	3.0	—	2.9	—	V
				I_{OH} = –1 mA	1.5	1.07	1.23	—	0.99	—	V
				I_{OH} = –2.6 mA	3.0	2.61	2.68	—	2.55	—	V
	"L" level	V_{OL}	V_{IN} = V_{IL} or V_{IH}	I_{OL} = 20 µA	1.0	—	0	0.1	—	0.1	V
					1.5	—	0	0.1	—	0.1	V
					3.0	—	0	0.1	—	0.1	V
				I_{OL} = 1 mA	1.5	—	0.23	0.31	—	0.37	V
				I_{OL} = 2.6 mA	3.0	—	0.23	0.31	—	0.33	V
Input current		I_{IN}	V_{IN} = V_{CC} or GND		3.6	—	—	±0.1	—	±1.0	µA
Current consumption		I_{CC}	V_{IN} = V_{CC} or GND		3.6	—	—	1.0	—	10.0	µA

■ AC Electrical Characteristics

(C_L = 15 pf, Input $t_R = t_F$ = 6 ns, V_{CC} = 3.3±0.3 V, Ta = 25°C unless otherwise specified)

Item	Symbol	Measurement Conditions	Min.	Typ.	Max.	Unit
Output rise / fall time	t_{TLH}, t_{THL}	—	—	4.0	8.0	ns
Propagation delay time	t_{PLH}, t_{PHL}	—	—	6.0	9.0	ns

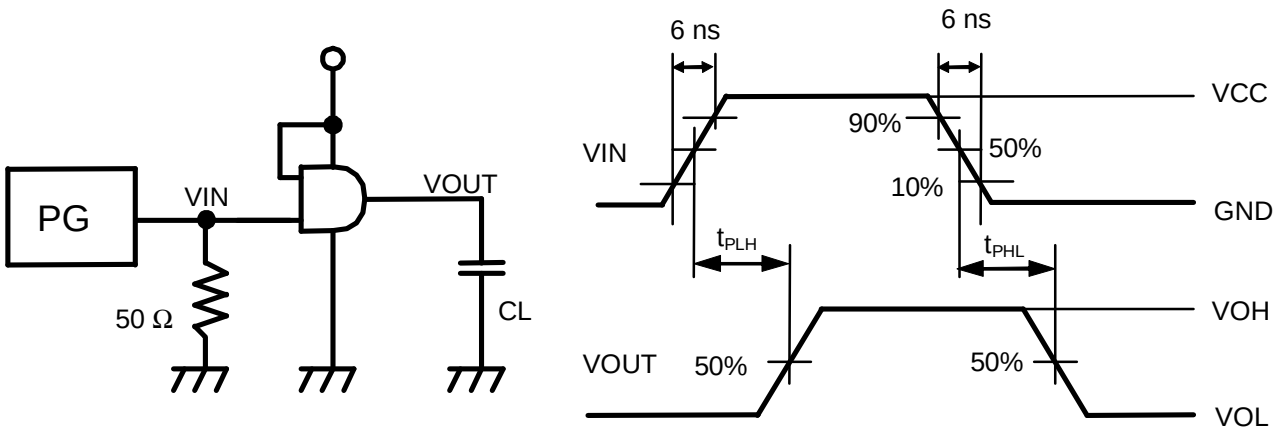
(C_L = 25 pf, Input $t_R = t_F$ = 6 ns unless otherwise specified)

Item	Symbol	Measurement Conditions		Ta = 25°C			Ta = –40 to 85°C		Unit
			V_{CC} (V)	Min.	Typ.	Max.	Min.	Max.	
Output rise / fall time	t_{TLH}, t_{THL}	—	1.0	—	35	70	—	90	ns
			1.5	—	15	25	—	30	ns
			3.0	—	7	10	—	14	ns
Propagation delay time	t_{PLH}, t_{PHL}	—	1.0	—	30	60	—	75	ns
			1.5	—	15	25	—	30	ns
			3.0	—	7	10	—	14	ns
Input capacitance	C_{IN}	—		—	5	10	—	10	pF
Equivalent internal capacitance	C_{PD} *1	—		—	10	—	—	—	pF

***1.** C_{PD} is the no-load equivalent capacitance inside the circuitry. Refer to the measurement circuit shown below. Current consumption is averaged by the following equation.

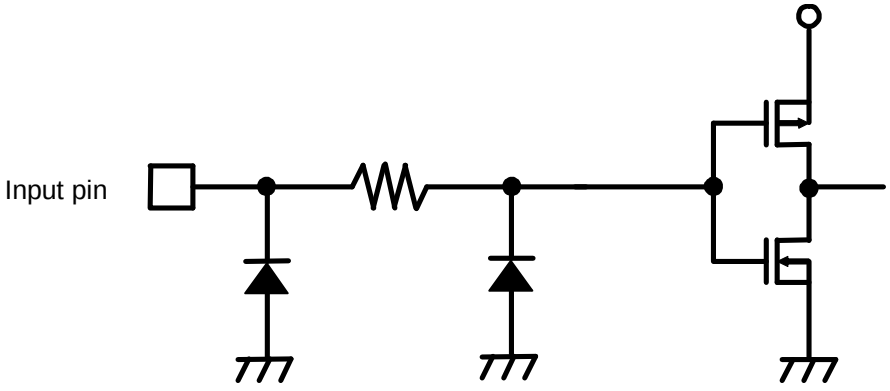
$$I_{CC(opr)} = C_{PD} \times V_{CC} \times fin + I_{CC}$$

Measurement Circuit



Remark No-load output during measurement of current consumption.

■ Input Pin Equivalent Circuit



S-75L14ANC

MINI LOGIC SERIES
SCHMITT INVERTER

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The S-75L14ANC is a SCHMITT INVERTER fabricated by utilizing advanced silicon-gate CMOS technology which provides the inherent benefit of CMOS low power consumption to achieve operation by only a couple of batteries (1 to 3 V).
The internal circuitry has buffered outputs to ensure high noise immunity and output stability.
Input voltage is allowed to be applied even if power voltage is not supplied because no diode is inserted between an input pin and V_{CC}.
This allows for interfaces between power supplies of different voltage, output level conversion from 3 V to 1 V and battery backup applications.

■ Features

- Wide power supply range: 1 V to 3.6 V
- Low current consumption: 1.0 µA max. (at 3.6 V, 25°C)
- Typical propagation delay: t_{PD} = 8 ns (at 3 V)
- High noise immunity: V_{NIH} = V_{NIL} = 28% V_{CC} min.
- Power down protection: All pins
- Lead-free

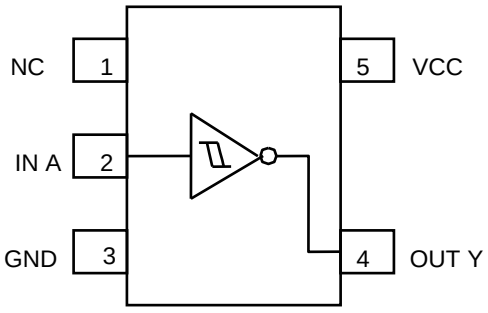
■ Applications

- Personal computers, peripherals
- Cellular phones
- Cameras
- Games

■ Package

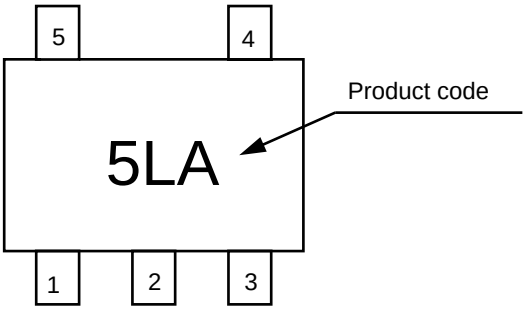
- SC-88A

■ Pin Configuration



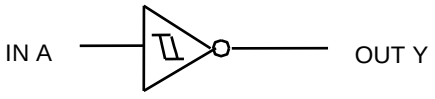
(Top view)

■ Marking Specification



(Top view)

■ Logic Diagram



True values

A	Y
L	H
H	L

■ Product Name Structure

S-75L14A NC – 5LA – TF G

Environmental code
G : Lead-free (for details, please contact our sales office)

IC direction in tape specification

Product abbreviation

Package abbreviation
NC : SC-88A

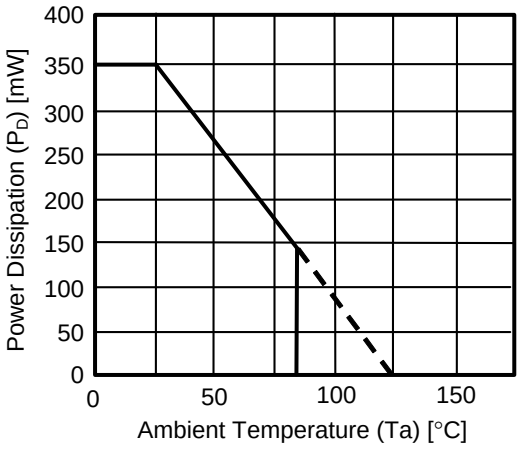
■ Absolute Maximum Ratings

(Ta = 25°C unless otherwise specified)

Item	Symbol	Absolute Maximum Ratings	Unit
Power supply voltage	V_{CC}	−0.5 to +5.0	V
Input voltage	V_{IN}	−0.5 to +5.0	V
Output voltage	V_{OUT}	−0.5 to V_{CC} + 0.5	V
Input parasitic diode current	I_{IK}	−20	mA
Output parasitic diode current	I_{OK}	±20	mA
Output current	I_{OUT}	±12.5	mA
V_{CC}/GND current	I_{CC}	±25	mA
Power dissipation	P_D	200 (When not mounted on board)	mW
		350*1	mW
Operating ambient temperature	T_{opr}	−40 to +85	°C
Storage temperature	T_{stg}	−65 to +150	°C
Lead temperature (10 s)	T_L	260	°C

***1.** When mounted on board
[Mounted board]
(1) Board size : 114.3 mm × 76.2 mm × t1.6 mm
(2) Board name : JEDEC STANDARD51-7

Caution The absolute maximum ratings are rated values exceeding which the product could suffer physical damage. These values must therefore not be exceeded under any conditions.



Power Dissipation of Package (When Mounted on Board)

■ Recommended Operating Conditions

Item	Symbol	Standard	Unit
Power voltage	V_{CC}	1 to 3.6	V
Input voltage	V_{IN}	0 to 3.6	V
Output voltage	V_{OUT}	0 to V_{CC}	V
Input rise / fall time	t_R, t_F	0 to 1000 (V_{CC} = 1.0 V)	ns
		0 to 500 (V_{CC} = 2.0 V)	ns
		0 to 400 (V_{CC} = 3.0 V)	ns

■ DC Electrical Characteristics

Item		Symbol	Conditions		Ta = 25°C			Ta = –40 to 85°C		Unit
				V_{CC}	Min.	Typ.	Max.	Min.	Max.	
Input voltage	"H" level	V_{IH}	—	1.0	0.80	—	—	0.80	—	V
				1.5	1.20	—	—	1.20	—	V
				3.0	2.10	—	—	2.10	—	V
	"L" level	V_{IL}	—	1.0	—	—	0.20	—	0.20	V
				1.5	—	—	0.45	—	0.45	V
				3.0	—	—	0.90	—	0.90	V
Output voltage	"H" level	V_{OH}	V_{IN} = V_{IL}	1.0	0.9	1.0	—	0.9	—	V
			I_{OH} = –20 µA	1.5	1.4	1.5	—	1.4	—	V
				3.0	2.9	3.0	—	2.9	—	V
			I_{OH} = –1 mA	1.5	1.07	1.23	—	0.99	—	V
			I_{OH} = –2.6 mA	3.0	2.61	2.68	—	2.55	—	V
	"L" level	V_{OL}	V_{IN} = V_{IH}	1.0	—	0	0.1	—	0.1	V
			I_{OL} = 20 µA	1.5	—	0	0.1	—	0.1	V
				3.0	—	0	0.1	—	0.1	V
			I_{OL} = 1 mA	1.5	—	0.23	0.31	—	0.37	V
			I_{OL} = 2.6 mA	3.0	—	0.23	0.31	—	0.33	V
Hysteresis Voltage		V_H	—	1.0	0.20	—	0.50	—	—	V
				1.5	0.25	—	0.50	—	—	V
				3.0	0.45	—	0.65	—	—	V
Input current		I_{IN}	V_{IN} = V_{CC} or GND	3.6	—	—	±0.1	—	±1.0	µA
Current consumption		I_{CC}	V_{IN} = V_{CC} or GND	3.6	—	—	1.0	—	10.0	µA

■ AC Electrical Characteristics

(C_L = 15 pf, Input $t_R = t_F$ = 6 ns, V_{CC} = 3.3±0.3 V, Ta = 25°C unless otherwise specified)

Item	Symbol	Measurement Conditions	Min.	Typ.	Max.	Unit
Output rise / fall time	t_{TLH}, t_{THL}	—	—	4.0	8.0	ns
Propagation delay time	t_{PLH}, t_{PHL}	—	—	4.0	10.5	ns

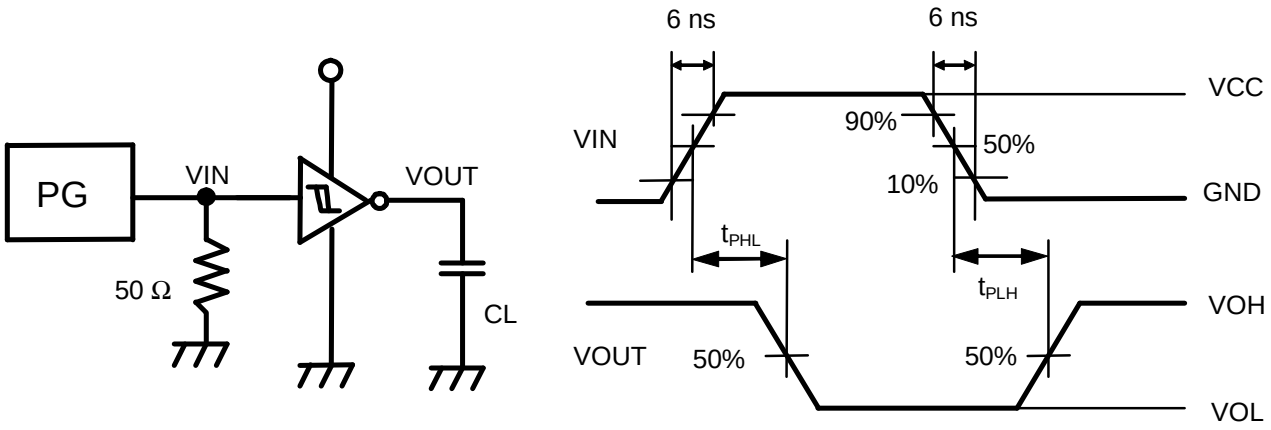
(C_L = 25 pf, Input $t_R = t_F$ = 6 ns unless otherwise specified)

Item	Symbol	Measurement Conditions		Ta = 25°C			Ta = –40 to 85°C		Unit
			V_{CC} (V)	Min.	Typ.	Max.	Min.	Max.	
Output rise / fall time	t_{TLH}, t_{THL}	—	1.0	—	35	70	—	90	ns
			1.5	—	15	25	—	30	ns
			3.0	—	7	10	—	14	ns
Propagation delay time	t_{PLH}, t_{PHL}	—	1.0	—	35	70	—	90	ns
			1.5	—	15	25	—	30	ns
			3.0	—	8	12	—	15	ns
Input capacitance	C_{IN}	—		—	5	10	—	10	pF
Equivalent internal capacitance	C_{PD} *1	—		—	10	—	—	—	pF

***1.** C_{PD} is the no-load equivalent capacitance inside the circuitry. Refer to the measurement circuit shown below. Current consumption is averaged by the following equation.

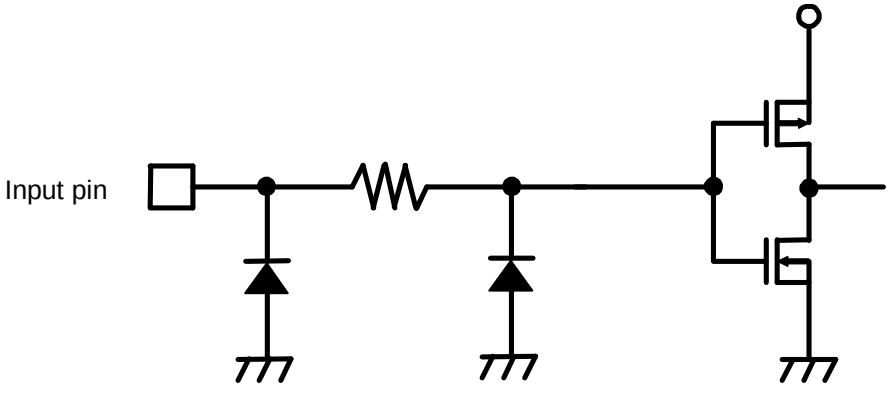
$$I_{CC(opr)} = C_{PD} \times V_{CC} \times fin + I_{CC}$$

Measurement Circuit



Remark No-load output during measurement of current consumption.

■ Input Pin Equivalent Circuit



S-75L32ANC

MINI LOGIC SERIES
2 INPUT OR GATE

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The S-75L32ANC is a single 2-input OR gate fabricated by utilizing advanced silicon-gate CMOS technology which provides the inherent benefit of CMOS low power consumption to achieve operation by only a couple of batteries (1 to 3 V).
The internal circuitry has buffered outputs to ensure high noise immunity and output stability.
Input voltage is allowed to be applied even if power voltage is not supplied because no diode is inserted between an input pin and V_{CC}.
This allows for interfaces between power supplies of different voltage, output level conversion from 3 V to 1 V and battery backup applications.

■ Features

- Wide power supply range: 1 V to 3.6 V
- Low current consumption: 1.0 µA max. (at 3.6 V, 25°C)
- Typical propagation delay: t_{PD} = 7 ns (at 3 V)
- High noise immunity: V_{NIH} = V_{NIL} = 28% V_{CC} min.
- Power down protection: All pins
- Lead-free

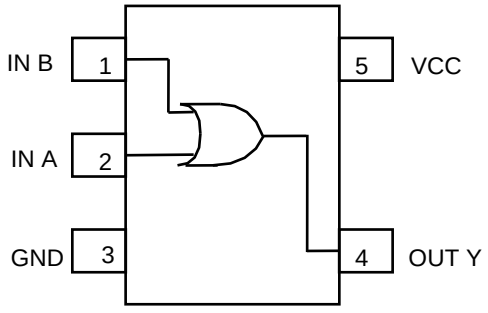
■ Applications

- Personal computers, peripherals
- Cellular phones
- Cameras
- Games

■ Package

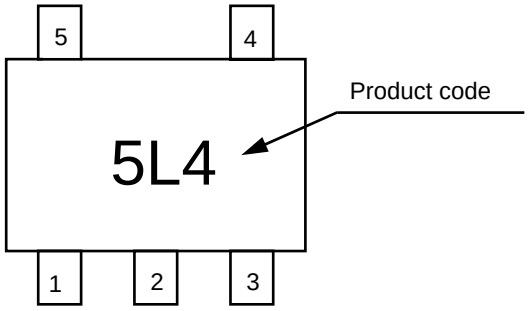
- SC-88A

■ Pin Configuration



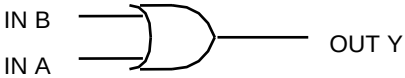
(Top view)

■ Marking Specification



(Top view)

■ Logic Diagram



True values

A	B	Y
L	L	L
L	H	H
H	L	H
H	H	H

■ Product Name Structure

S-75L32A NC – 5L4 – TF G

- Environmental code
  G : Lead-free (for details, please contact our sales office)
- IC direction in tape specification
- Product abbreviation
- Package abbreviation
  NC : SC-88A

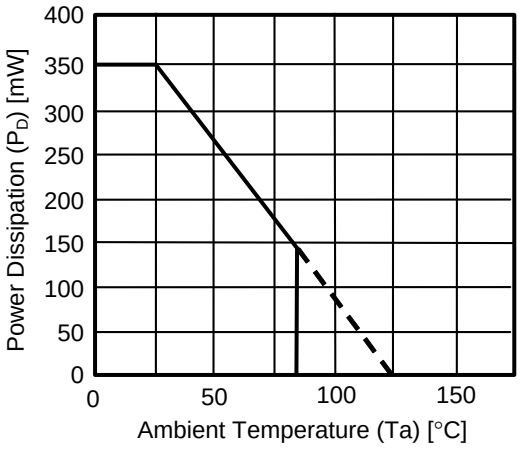
■ Absolute Maximum Ratings

(Ta = 25°C unless otherwise specified)

Item	Symbol	Absolute Maximum Ratings	Unit
Power supply voltage	V_{CC}	−0.5 to +5.0	V
Input voltage	V_{IN}	−0.5 to +5.0	V
Output voltage	V_{OUT}	−0.5 to V_{CC} + 0.5	V
Input parasitic diode current	I_{IK}	−20	mA
Output parasitic diode current	I_{OK}	±20	mA
Output current	I_{OUT}	±12.5	mA
V_{CC}/GND current	I_{CC}	±25	mA
Power dissipation	P_D	200 (When not mounted on board)	mW
		350*1	mW
Operating ambient temperature	T_{opr}	−40 to +85	°C
Storage temperature	T_{stg}	−65 to +150	°C
Lead temperature (10 s)	T_L	260	°C

***1.** When mounted on board
[Mounted board]
(1) Board size : 114.3 mm × 76.2 mm × t1.6 mm
(2) Board name : JEDEC STANDARD51-7

Caution The absolute maximum ratings are rated values exceeding which the product could suffer physical damage. These values must therefore not be exceeded under any conditions.



Power Dissipation of Package (When Mounted on Board)

■ Recommended Operating Conditions

Item	Symbol	Standard	Unit
Power voltage	V_{CC}	1 to 3.6	V
Input voltage	V_{IN}	0 to 3.6	V
Output voltage	V_{OUT}	0 to V_{CC}	V
Input rise / fall time	t_R, t_F	0 to 1000 (V_{CC} = 1.0 V)	ns
		0 to 500 (V_{CC} = 2.0 V)	ns
		0 to 400 (V_{CC} = 3.0 V)	ns

■ DC Electrical Characteristics

Item		Symbol	Conditions		Ta = 25°C				Ta = –40 to 85°C		Unit
					V_{CC}	Min.	Typ.	Max.	Min.	Max.	
Input voltage	"H" level	V_{IH}	—		1.0	0.75	—	—	0.75	—	V
					1.5	1.05	—	—	1.05	—	V
					3.0	2.10	—	—	2.10	—	V
	"L" level	V_{IL}	—		1.0	—	—	0.25	—	0.25	V
					1.5	—	—	0.45	—	0.45	V
					3.0	—	—	0.90	—	0.90	V
Output voltage	"H" level	V_{OH}	V_{IN} = V_{IH} or V_{IL}	I_{OH} = –20 µA	1.0	0.9	1.0	—	0.9	—	V
					1.5	1.4	1.5	—	1.4	—	V
					3.0	2.9	3.0	—	2.9	—	V
				I_{OH} = –1 mA	1.5	1.07	1.23	—	0.99	—	V
				I_{OH} = –2.6 mA	3.0	2.61	2.68	—	2.55	—	V
	"L" level	V_{OL}	V_{IN} = V_{IL}	I_{OL} = 20 µA	1.0	—	0	0.1	—	0.1	V
					1.5	—	0	0.1	—	0.1	V
					3.0	—	0	0.1	—	0.1	V
				I_{OL} = 1 mA	1.5	—	0.23	0.31	—	0.37	V
				I_{OL} = 2.6 mA	3.0	—	0.23	0.31	—	0.33	V
Input current		I_{IN}	V_{IN} = V_{CC} or GND		3.6	—	—	±0.1	—	±1.0	µA
Current consumption		I_{CC}	V_{IN} = V_{CC} or GND		3.6	—	—	1.0	—	10.0	µA

■ AC Electrical Characteristics

(C_L = 15 pf, Input $t_R = t_F$ = 6 ns, V_{CC} = 3.3±0.3 V, Ta = 25°C unless otherwise specified)

Item	Symbol	Measurement Conditions	Min.	Typ.	Max.	Unit
Output rise / fall time	t_{TLH}, t_{THL}	—	—	4.0	8.0	ns
Propagation delay time	t_{PLH}, t_{PHL}	—	—	6.0	9.0	ns

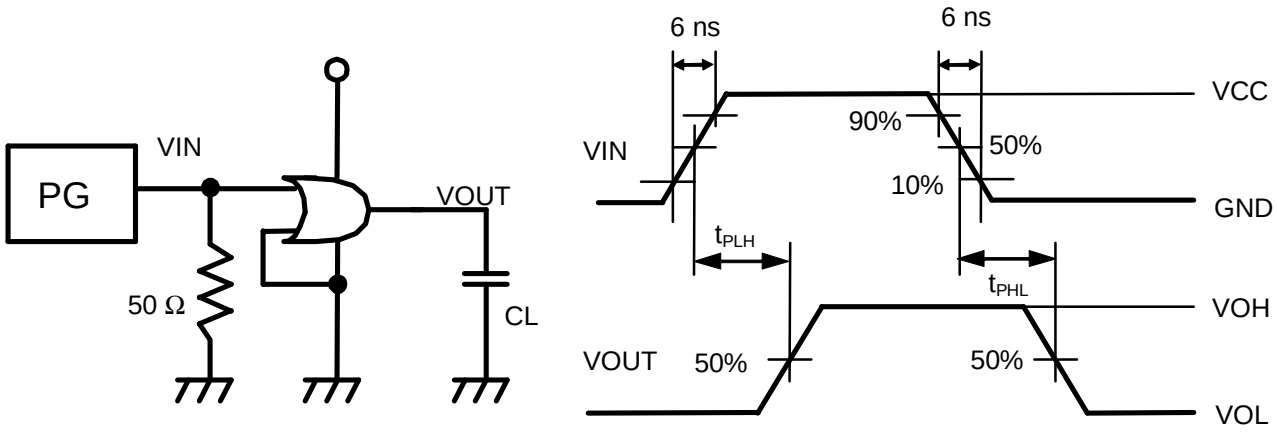
(C_L = 25 pf, Input $t_R = t_F$ = 6 ns unless otherwise specified)

Item	Symbol	Measurement Conditions		Ta = 25°C			Ta = –40 to 85°C		Unit
			V_{CC} (V)	Min.	Typ.	Max.	Min.	Max.	
Output rise / fall time	t_{TLH}, t_{THL}	—	1.0	—	35	70	—	90	ns
			1.5	—	15	25	—	30	ns
			3.0	—	7	10	—	14	ns
Propagation delay time	t_{PLH}, t_{PHL}	—	1.0	—	30	60	—	75	ns
			1.5	—	15	25	—	30	ns
			3.0	—	7	10	—	14	ns
Input capacitance	C_{IN}	—		—	5	10	—	10	pF
Equivalent internal capacitance	C_{PD} *1	—		—	10	—	—	—	pF

***1.** C_{PD} is the no-load equivalent capacitance inside the circuitry. Refer to the measurement circuit shown below. Current consumption is averaged by the following equation.

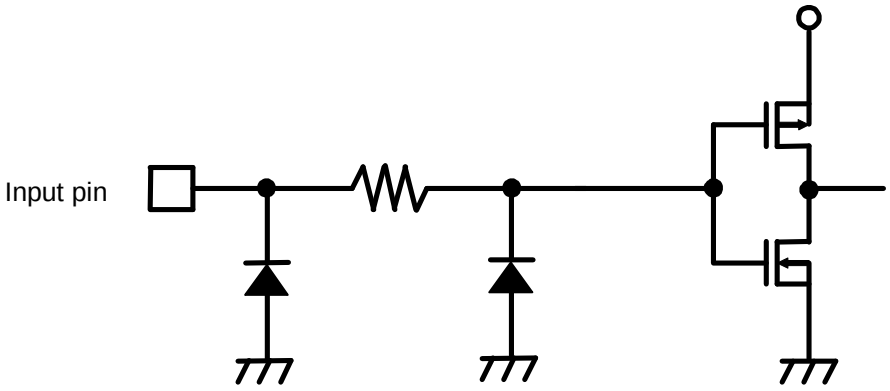
$$I_{CC(opr)} = C_{PD} \times V_{CC} \times fin + I_{CC}$$

Measurement Circuit



Remark No-load output during measurement of current consumption.

■ Input Pin Equivalent Circuit



S-75L86ANC

MINI LOGIC SERIES
EXCLUSIVE OR GATE

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The S-75L86ANC is an EXCLUSIVE OR GATE fabricated by utilizing advanced silicon-gate CMOS technology which provides the inherent benefit of CMOS low power consumption to achieve operation by only a couple of batteries (1 to 3 V).
The internal circuitry has buffered outputs to ensure high noise immunity and output stability.
Input voltage is allowed to be applied even if power voltage is not supplied because no diode is inserted between an input pin and V_{CC}.
This allows for interfaces between power supplies of different voltage, output level conversion from 3 V to 1 V and battery backup applications.

■ Features

- Wide power supply range: 1 V to 3.6 V
- Low current consumption: 1.0 µA max. (at 3.6 V, 25°C)
- Typical propagation delay: t_{PD} = 7 ns (at 3 V)
- High noise immunity: V_{NIH} = V_{NIL} = 28% V_{CC} min.
- Power down protection: All pins
- Lead-free

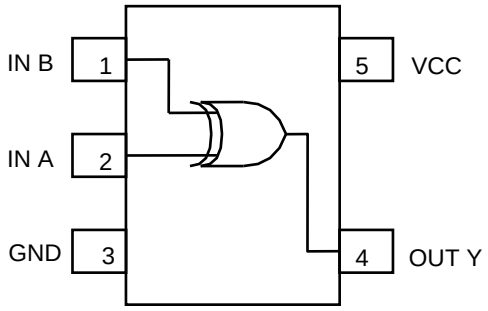
■ Applications

- Personal computers, peripherals
- Cellular phones
- Cameras
- Games

■ Package

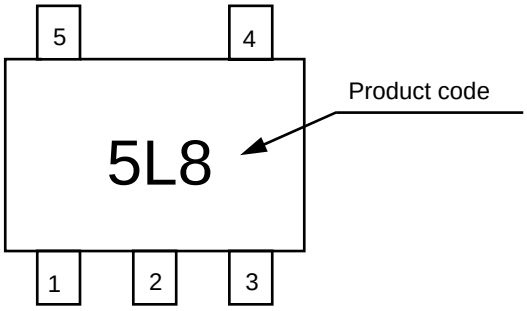
- SC-88A

■ Pin Configuration



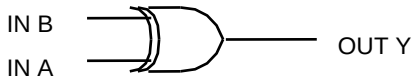
(Top view)

■ Marking Specification



(Top view)

■ Logic Diagram



True values

A	B	Y
L	L	L
L	H	H
H	L	H
H	H	L

■ Product Name Structure

S-75L86A NC – 5L8 – TF G

- Environmental code
  G : Lead-free (for details, please contact our sales office)
- IC direction in tape specification
- Product abbreviation
- Package abbreviation
  NC : SC-88A

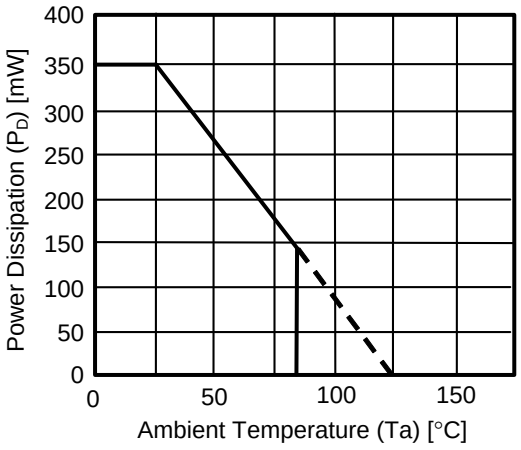
■ Absolute Maximum Ratings

(Ta = 25°C unless otherwise specified)

Item	Symbol	Absolute Maximum Ratings	Unit
Power supply voltage	V_{CC}	−0.5 to +5.0	V
Input voltage	V_{IN}	−0.5 to +5.0	V
Output voltage	V_{OUT}	−0.5 to V_{CC} + 0.5	V
Input parasitic diode current	I_{IK}	−20	mA
Output parasitic diode current	I_{OK}	±20	mA
Output current	I_{OUT}	±12.5	mA
V_{CC}/GND current	I_{CC}	±25	mA
Power dissipation	P_D	200 (When not mounted on board)	mW
		350*1	mW
Operating ambient temperature	T_{opr}	−40 to +85	°C
Storage temperature	T_{stg}	−65 to +150	°C
Lead temperature (10 s)	T_L	260	°C

***1.** When mounted on board
[Mounted board]
(1) Board size : 114.3 mm × 76.2 mm × t1.6 mm
(2) Board name : JEDEC STANDARD51-7

Caution The absolute maximum ratings are rated values exceeding which the product could suffer physical damage. These values must therefore not be exceeded under any conditions.



Power Dissipation of Package (When Mounted on Board)

■ Recommended Operating Conditions

Item	Symbol	Standard	Unit
Power voltage	V_{CC}	1 to 3.6	V
Input voltage	V_{IN}	0 to 3.6	V
Output voltage	V_{OUT}	0 to V_{CC}	V
Input rise / fall time	t_R, t_F	0 to 1000 (V_{CC} = 1.0 V)	ns
		0 to 500 (V_{CC} = 2.0 V)	ns
		0 to 400 (V_{CC} = 3.0 V)	ns

■ DC Electrical Characteristics

Item		Symbol	Conditions		V_{CC}	Ta = 25°C Min.	Ta = 25°C Typ.	Ta = 25°C Max.	Ta = –40 to 85°C Min.	Ta = –40 to 85°C Max.	Unit
Input voltage	"H" level	V_{IH}	—		1.0	0.75	—	—	0.75	—	V
					1.5	1.05	—	—	1.05	—	V
					3.0	2.10	—	—	2.10	—	V
	"L" level	V_{IL}	—		1.0	—	—	0.25	—	0.25	V
					1.5	—	—	0.45	—	0.45	V
					3.0	—	—	0.90	—	0.90	V
Output voltage	"H" level	V_{OH}	V_{IN} = V_{IH} or V_{IL}	I_{OH} = –20 µA	1.0	0.9	1.0	—	0.9	—	V
					1.5	1.4	1.5	—	1.4	—	V
					3.0	2.9	3.0	—	2.9	—	V
				I_{OH} = –1 mA	1.5	1.07	1.23	—	0.99	—	V
				I_{OH} = –2.6 mA	3.0	2.61	2.68	—	2.55	—	V
	"L" level	V_{OL}	V_{IN} = V_{IH} or V_{IL}	I_{OL} = 20 µA	1.0	—	0	0.1	—	0.1	V
					1.5	—	0	0.1	—	0.1	V
					3.0	—	0	0.1	—	0.1	V
				I_{OL} = 1 mA	1.5	—	0.23	0.31	—	0.37	V
				I_{OL} = 2.6 mA	3.0	—	0.23	0.31	—	0.33	V
Input current		I_{IN}	V_{IN} = V_{CC} or GND		3.6	—	—	±0.1	—	±1.0	µA
Current consumption		I_{CC}	V_{IN} = V_{CC} or GND		3.6	—	—	1.0	—	10.0	µA

■ AC Electrical Characteristics

(C_L = 15 pf, Input $t_R = t_F$ = 6 ns, V_{CC} = 3.3±0.3 V, Ta = 25°C unless otherwise specified)

Item	Symbol	Measurement Conditions	Min.	Typ.	Max.	Unit
Output rise / fall time	t_{TLH}, t_{THL}	—	—	4.0	8.0	ns
Propagation delay time	t_{PLH}, t_{PHL}	—	—	6.0	9.0	ns

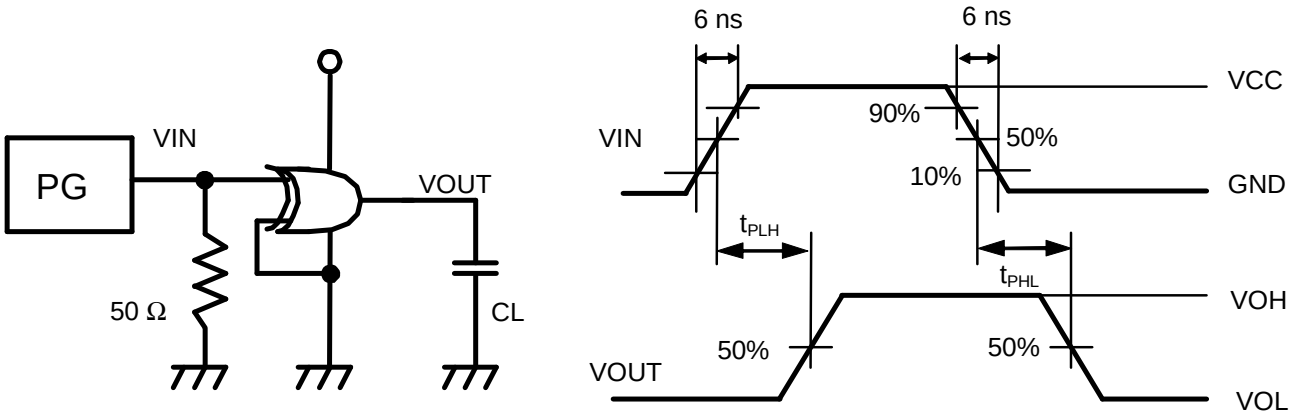
(C_L = 25 pf, Input $t_R = t_F$ = 6 ns unless otherwise specified)

Item	Symbol	Measurement Conditions		Ta = 25°C			Ta = –40 to 85°C		Unit
			V_{CC} (V)	Min.	Typ.	Max.	Min.	Max.	
Output rise / fall time	t_{TLH}, t_{THL}	—	1.0	—	35	70	—	90	ns
			1.5	—	15	25	—	30	ns
			3.0	—	7	10	—	14	ns
Propagation delay time	t_{PLH}, t_{PHL}	—	1.0	—	30	60	—	75	ns
			1.5	—	15	25	—	30	ns
			3.0	—	7	10	—	14	ns
Input capacitance	C_{IN}	—		—	5	10	—	10	pF
Equivalent internal capacitance	C_{PD} *1	—		—	10	—	—	—	pF

***1.** C_{PD} is the no-load equivalent capacitance inside the circuitry. Refer to the measurement circuit shown below. Current consumption is averaged by the following equation.

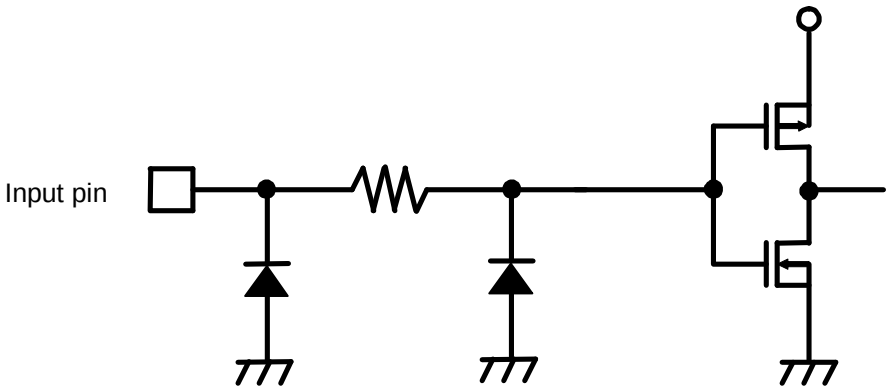
$$I_{CC(opr)} = C_{PD} \times V_{CC} \times fin + I_{CC}$$

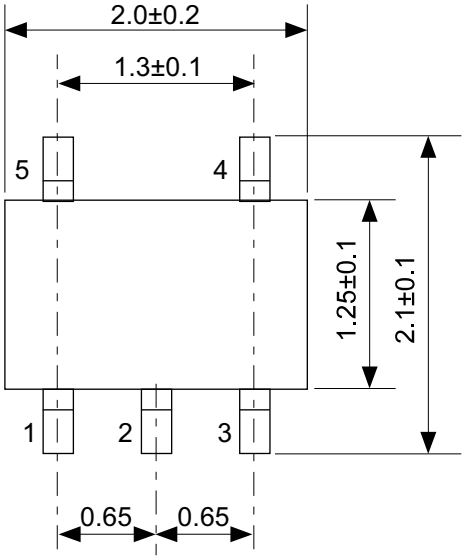
Measurement Circuit

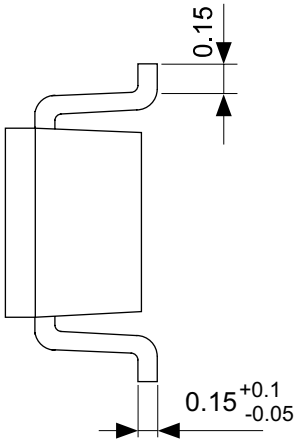


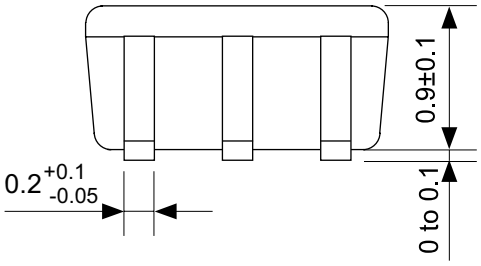
Remark No-load output during measurement of current consumption.

■ Input Pin Equivalent Circuit









No. NP005-B-P-SD-1.1

TITLE	SC88A-B-PKG Dimensions
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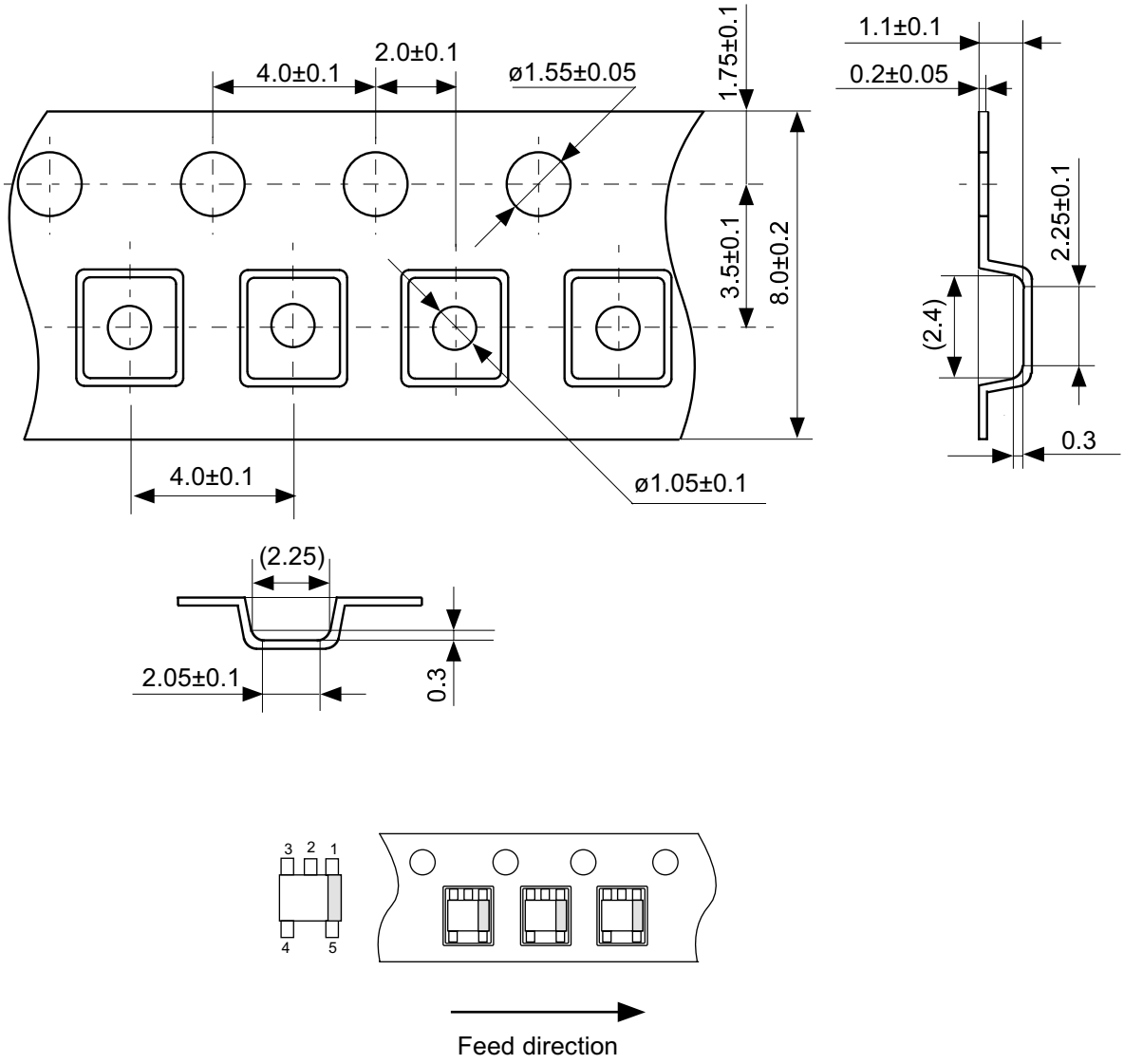
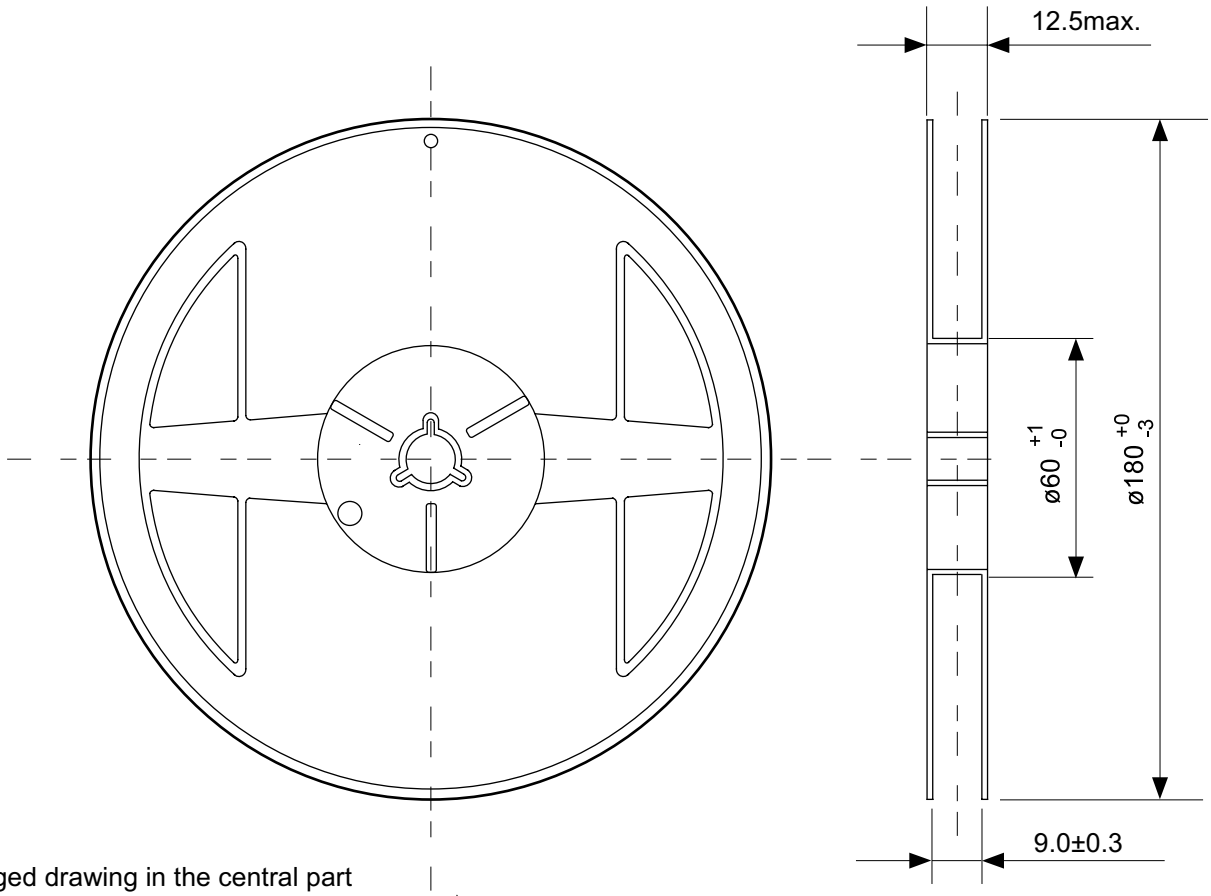
UNIT	mm
Seiko Instruments Inc.	

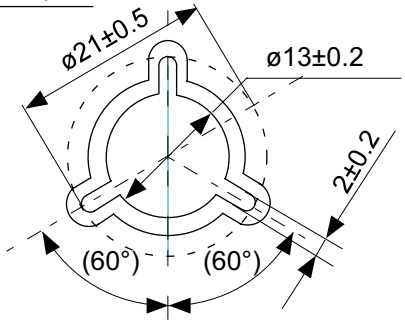


No. NP005-B-C-SD-2.0

TITLE	SC88A-B-Carrier Tape
No.	NP005-B-C-SD-2.0
SCALE	
UNIT	mm
Seiko Instruments Inc.	



Enlarged drawing in the central part



No. NP005-B-R-SD-2.1

TITLE	SC88A-B-Reel		
No.	NP005-B-R-SD-2.1		
SCALE		QTY.	3000
UNIT	mm		
Seiko Instruments Inc.			

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Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:
moschip.ru
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moschip.ru_6
moschip.ru_9