S-75L00ANC

MINI LOGIC SERIES
2 INPUT NAND GATE

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Rev.4.0_01

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

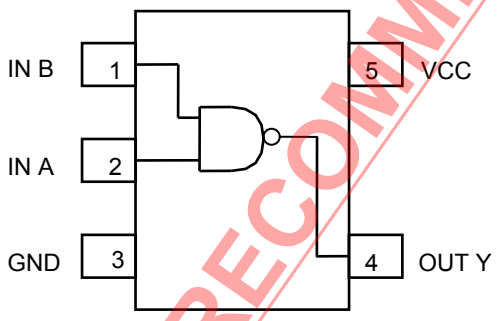
■ Applications

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

■ Package

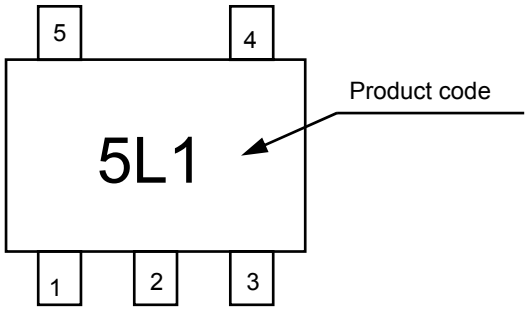
- SC-88A

■ Pin Configuration



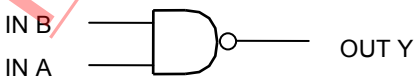
(Top view)

■ 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

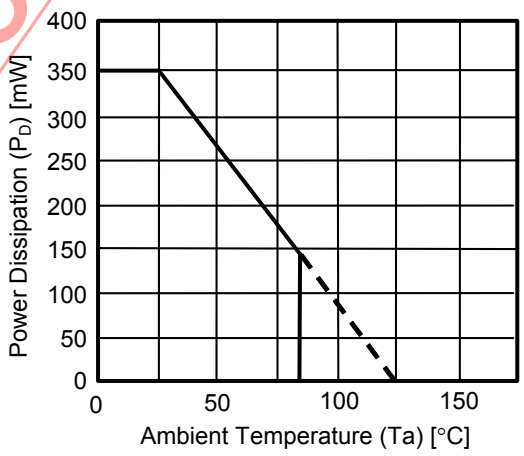
■ Absolute Maximum Ratings

(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

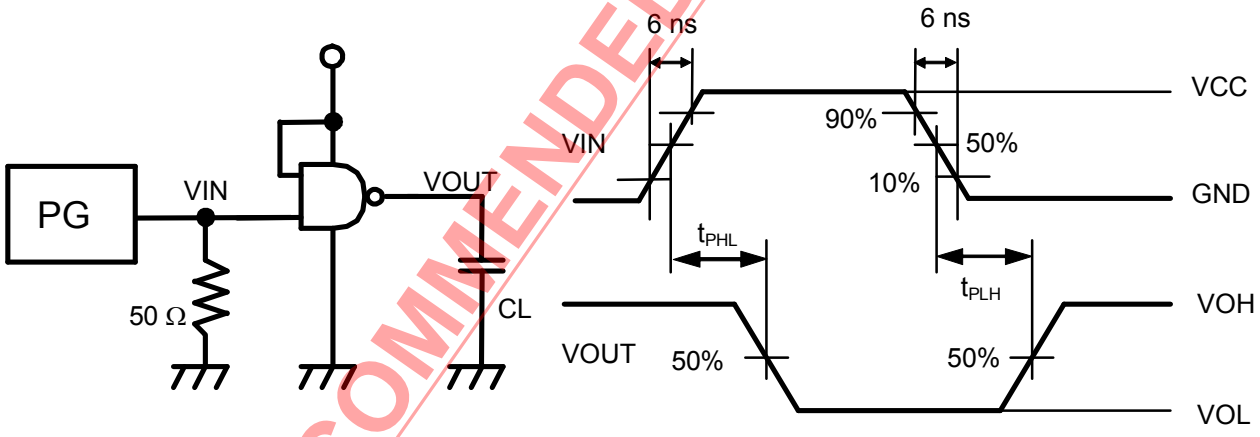
(C_L = 25 pF, Input t_R = t_F = 6 ns unless otherwise specified)

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.

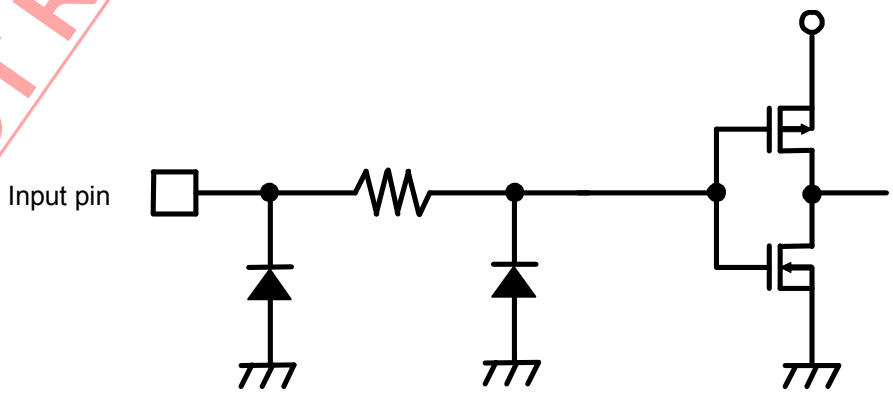
$$I_{CC(opr)} = C_{PD} \times V_{CC} \times fin + I_{CC}$$

Measurement Circuit



Remark No-load output during measurement of current consumption.

■ Input Pin Equivalent Circuit



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

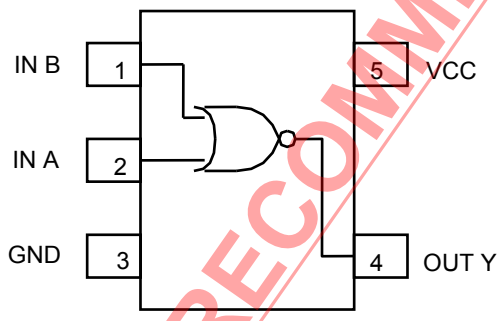
■ Applications

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

■ Package

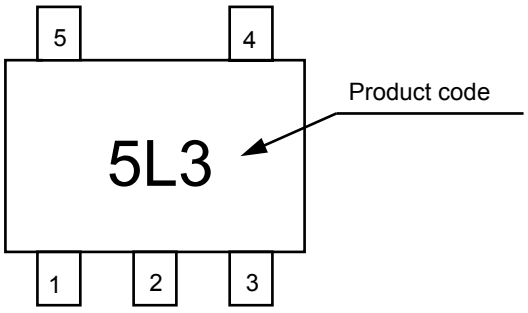
- SC-88A

■ Pin Configuration



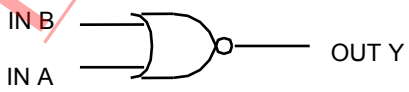
(Top view)

■ 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

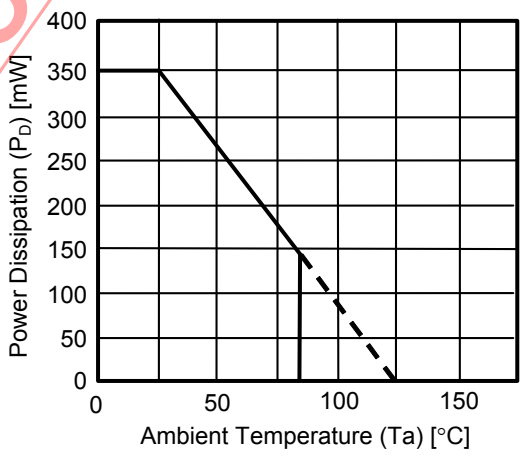
■ Absolute Maximum Ratings

(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		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_{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

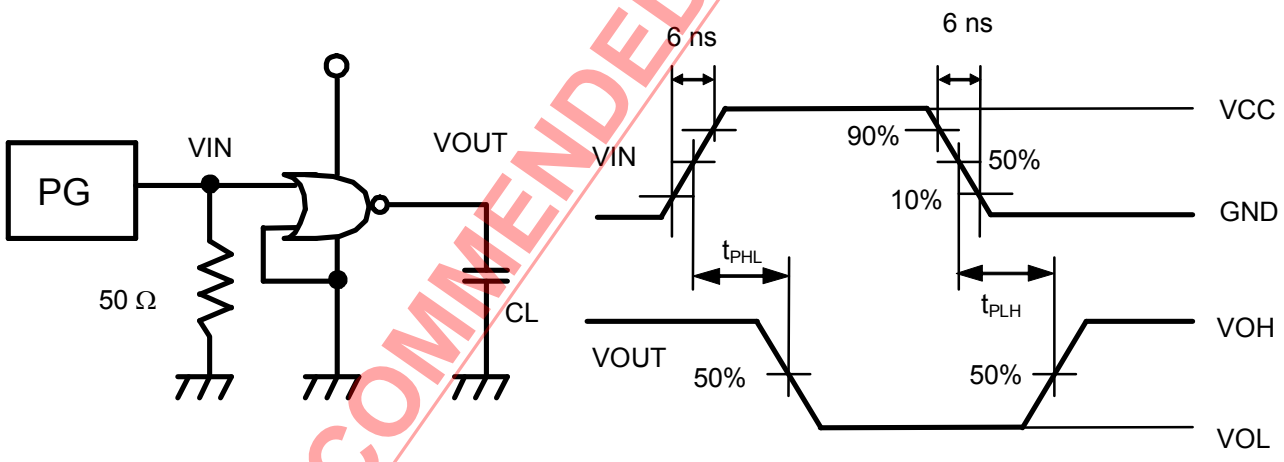
(C_L = 25 pF, Input t_R = t_F = 6 ns unless otherwise specified)

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.

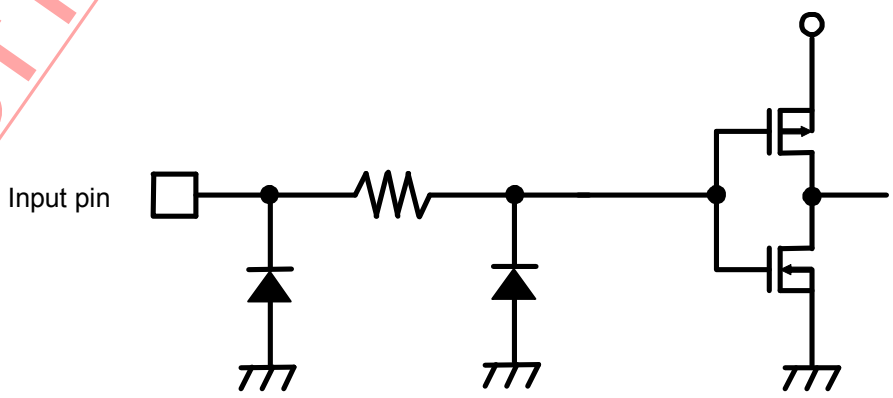
$$I_{CC(opr)} = C_{PD} \times V_{CC} \times fin + I_{CC}$$

Measurement Circuit



Remark No-load output during measurement of current consumption.

■ Input Pin Equivalent Circuit



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

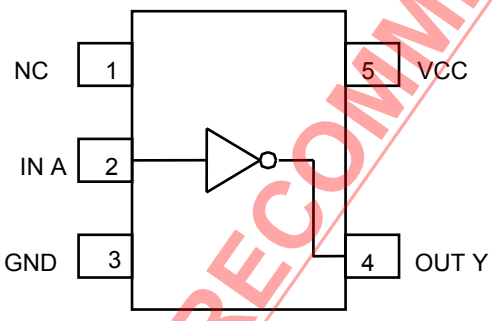
■ Applications

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

■ Package

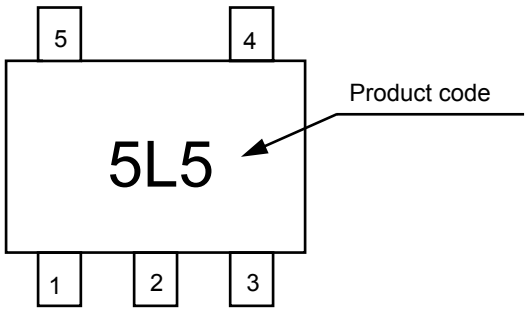
- SC-88A

■ Pin Configuration



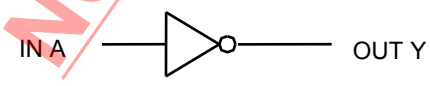
(Top view)

■ 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

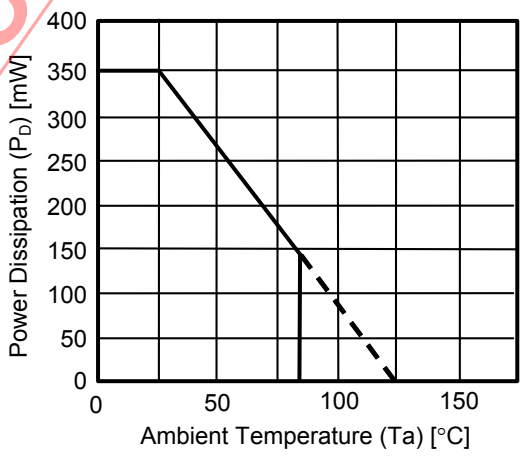
■ Absolute Maximum Ratings

(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		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}	—	—	4.0	8.0	ns
Propagation delay time	t_{PLH}, t_{PHL}	—	—	6.0	9.0	ns

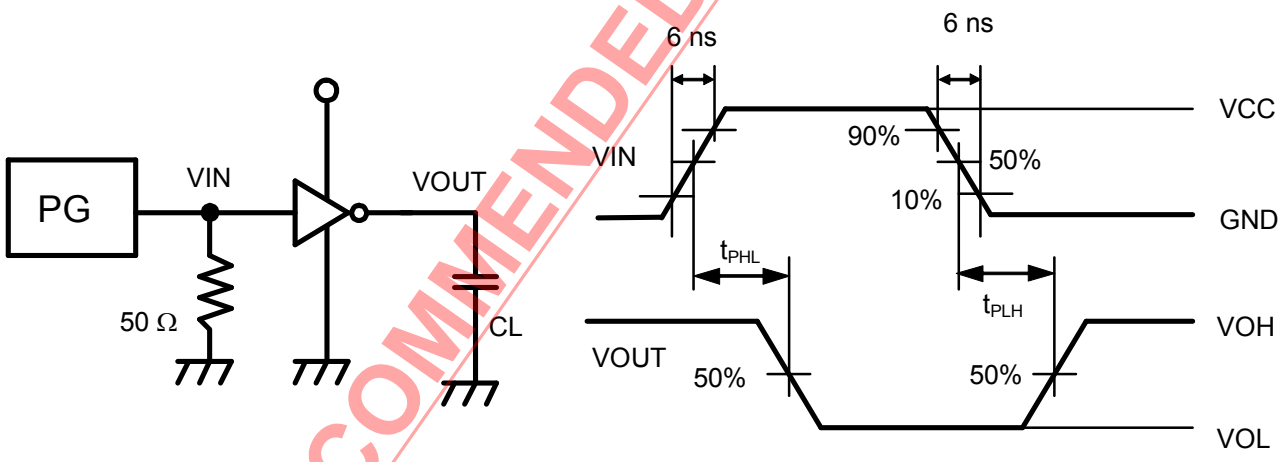
(C_L = 25 pF, Input t_R = t_F = 6 ns unless otherwise specified)

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.

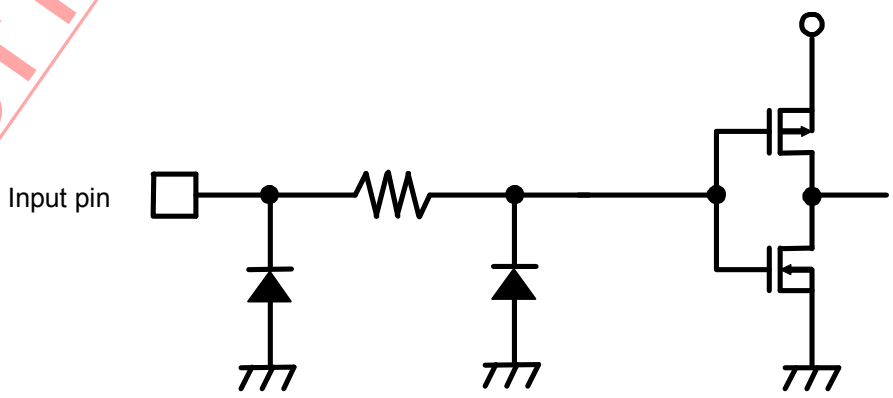
$$I_{CC(opr)} = C_{PD} \times V_{CC} \times fin + I_{CC}$$

Measurement Circuit



Remark No-load output during measurement of current consumption.

■ Input Pin Equivalent Circuit



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

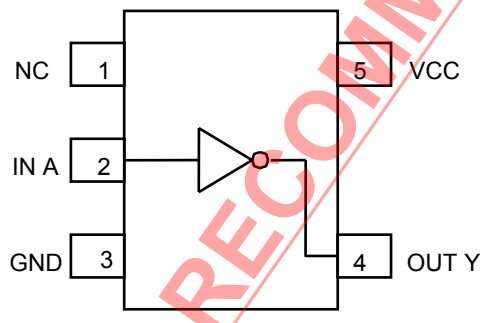
■ Applications

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

■ Package

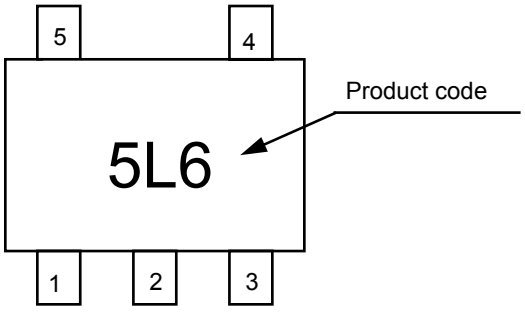
- SC-88A

■ Pin Configuration



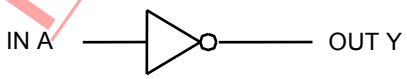
(Top view)

■ 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

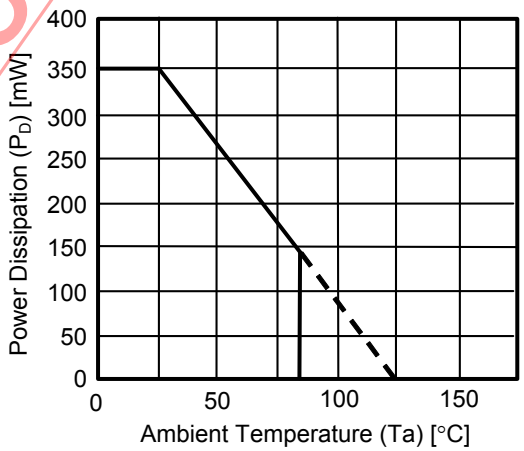
■ Absolute Maximum Ratings

(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

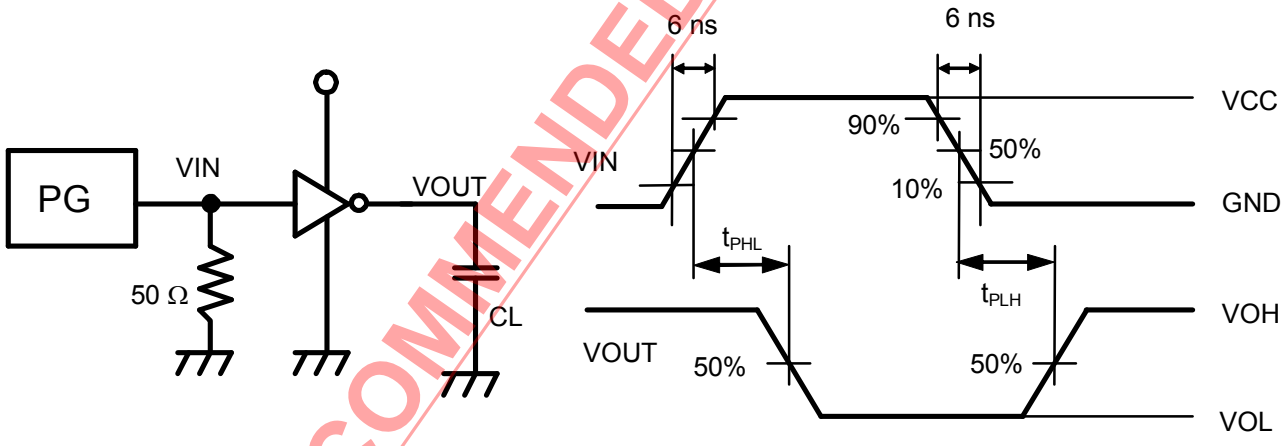
(C_L = 25 pF, Input t_R = t_F = 6 ns unless otherwise specified)

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.

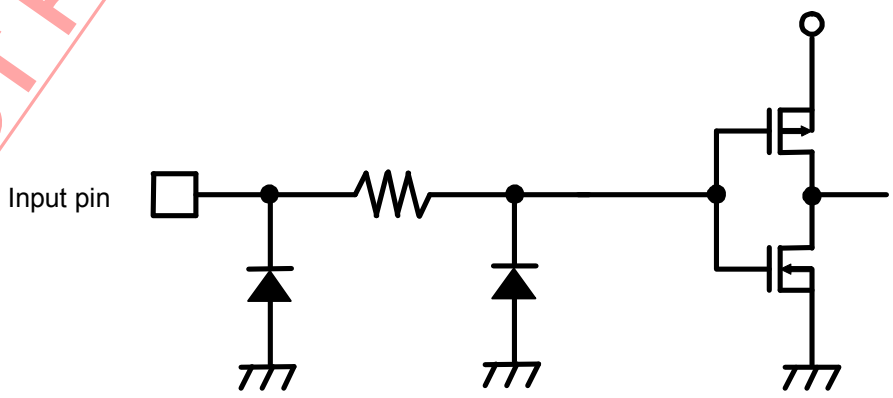
$$I_{CC(opr)} = C_{PD} \times V_{CC} \times fin + I_{CC}$$

Measurement Circuit



Remark No-load output during measurement of current consumption.

■ Input Pin Equivalent Circuit



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

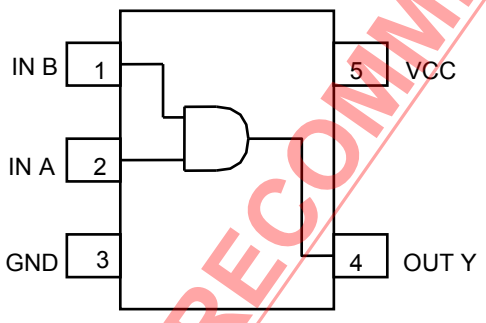
■ Applications

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

■ Package

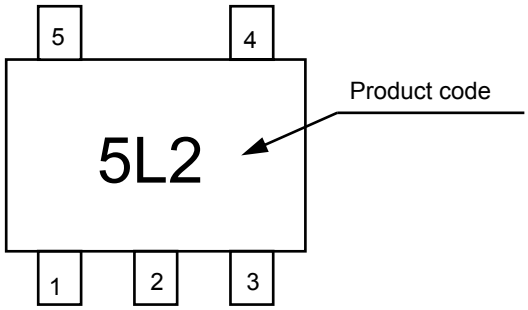
- SC-88A

■ Pin Configuration



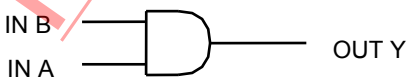
(Top view)

■ 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

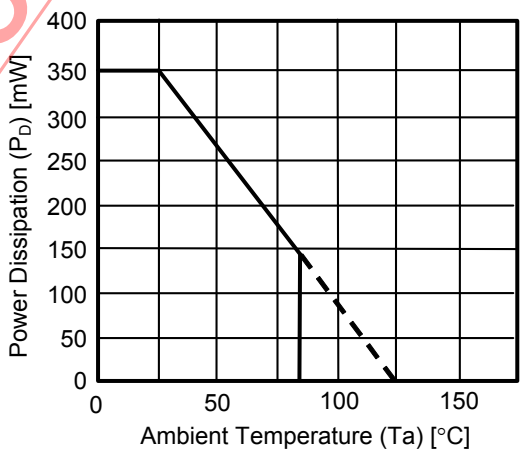
■ Absolute Maximum Ratings

(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		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}	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

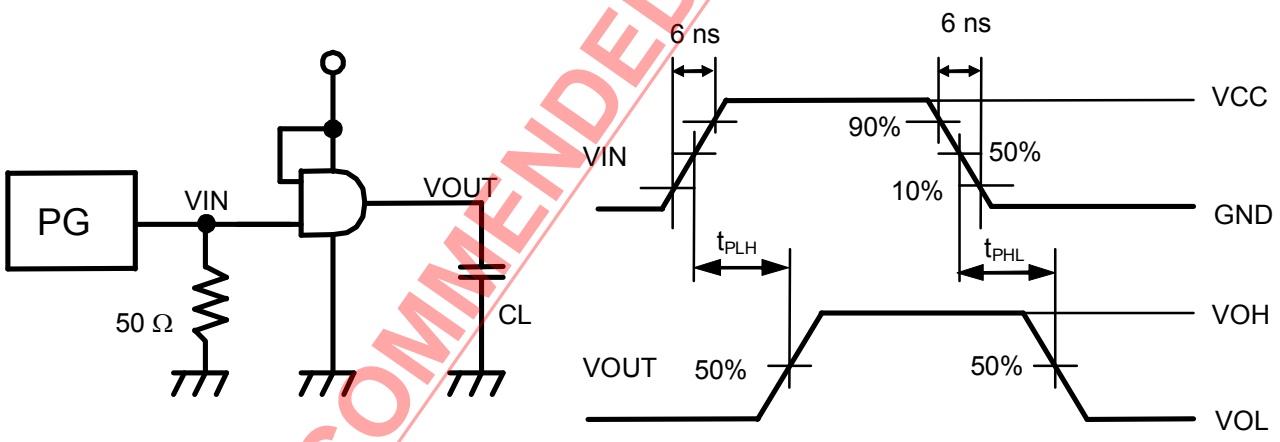
(C_L = 25 pF, Input t_R = t_F = 6 ns unless otherwise specified)

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.

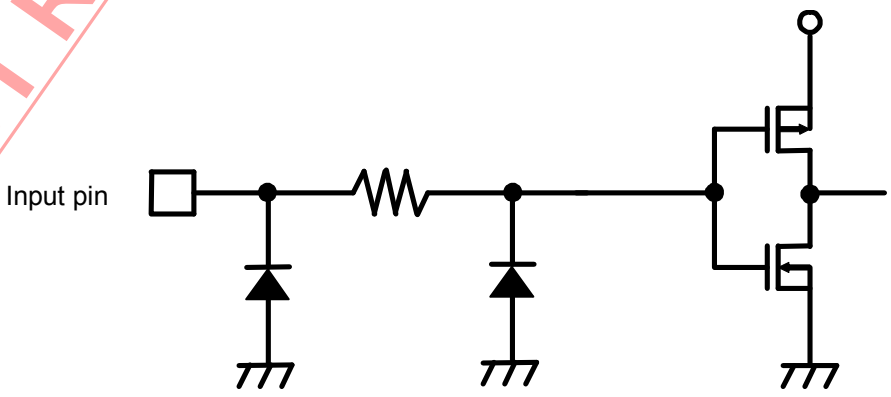
$$I_{CC(opr)} = C_{PD} \times V_{CC} \times fin + I_{CC}$$

Measurement Circuit



Remark No-load output during measurement of current consumption.

■ Input Pin Equivalent Circuit



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

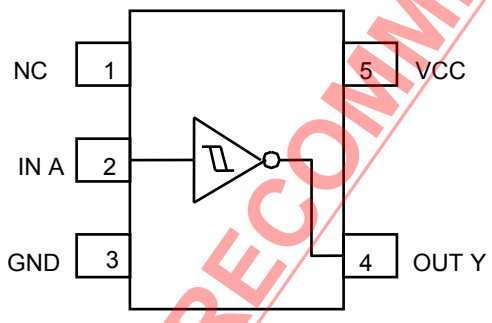
■ Applications

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

■ Package

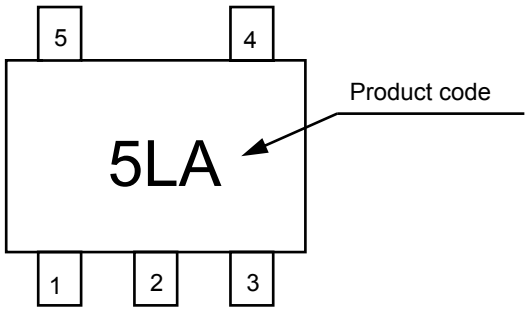
- SC-88A

■ Pin Configuration



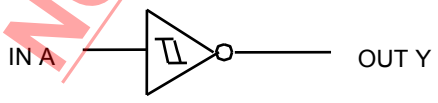
(Top view)

■ 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

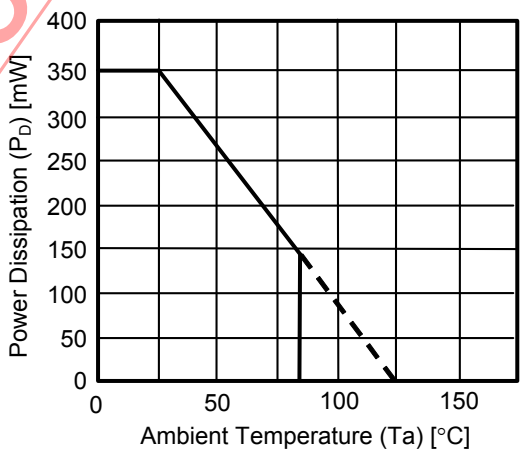
■ Absolute Maximum Ratings

(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		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	0.80	—	—	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}	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
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

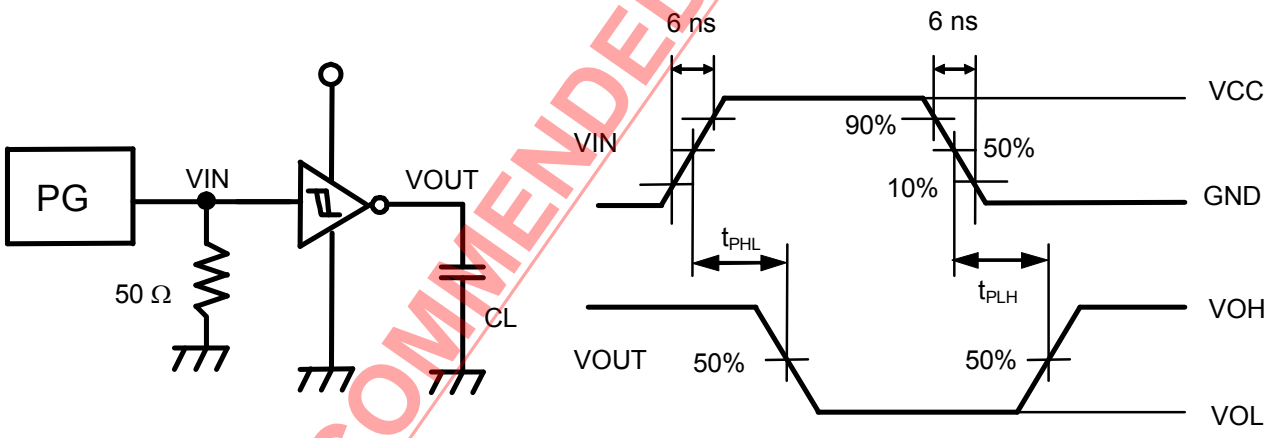
(C_L = 25 pF, Input t_R = t_F = 6 ns unless otherwise specified)

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.

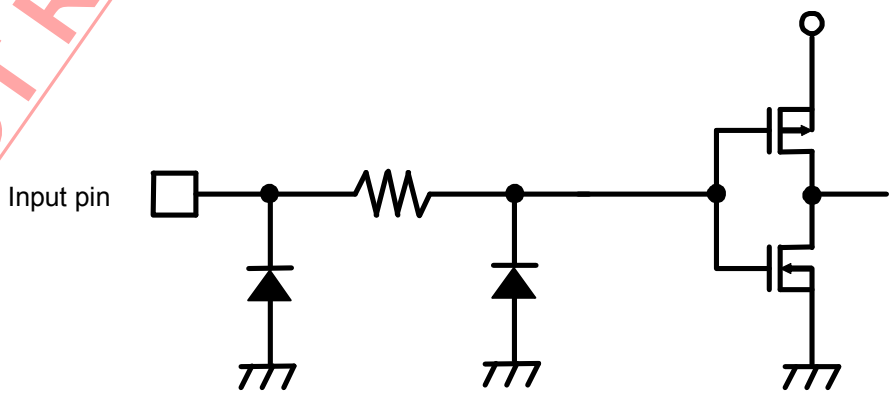
$$I_{CC(opr)} = C_{PD} \times V_{CC} \times fin + I_{CC}$$

Measurement Circuit



Remark No-load output during measurement of current consumption.

■ Input Pin Equivalent Circuit



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

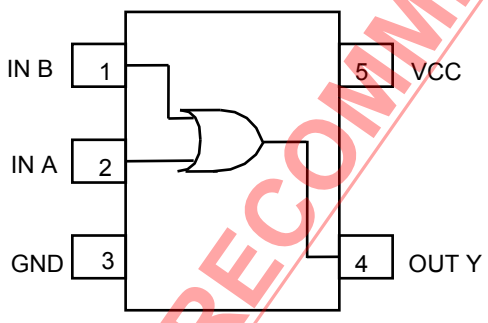
■ Applications

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

■ Package

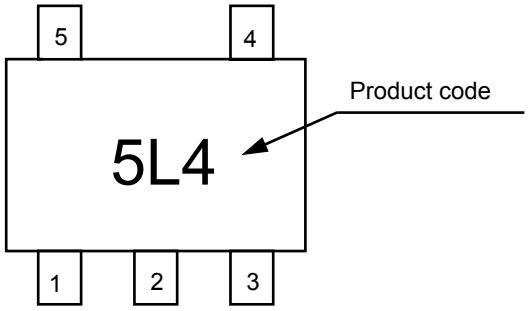
- SC-88A

■ Pin Configuration



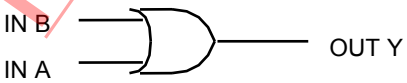
(Top view)

■ 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

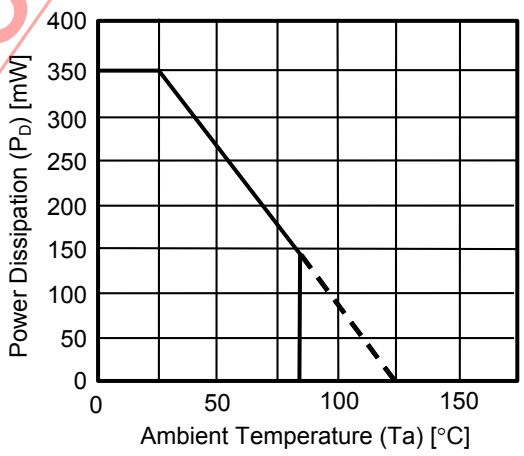
■ Absolute Maximum Ratings

(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		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_{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

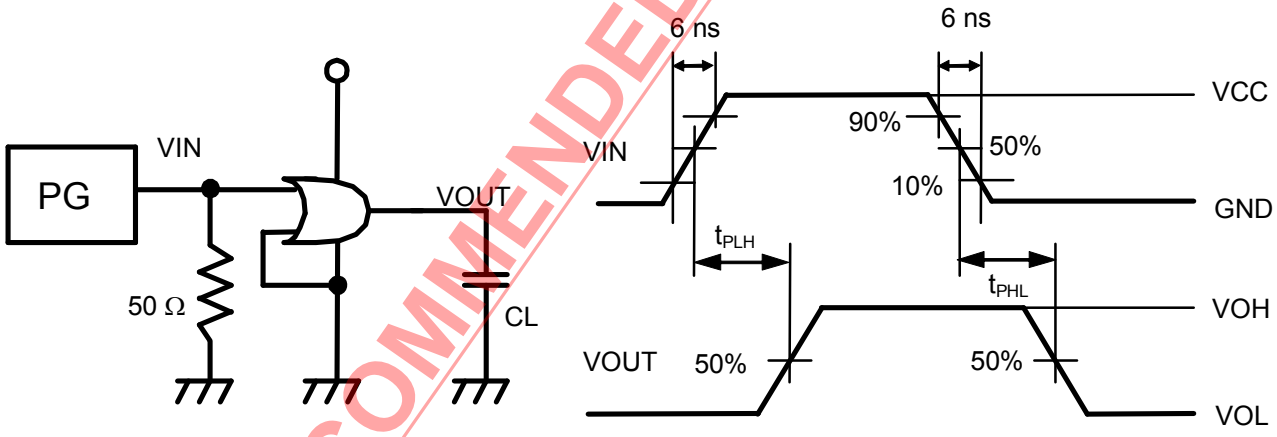
(C_L = 25 pF, Input t_R = t_F = 6 ns unless otherwise specified)

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.

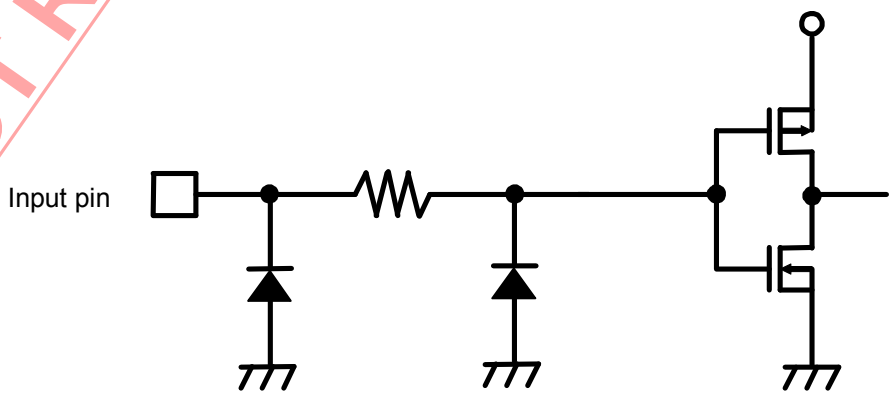
$$I_{CC(opr)} = C_{PD} \times V_{CC} \times fin + I_{CC}$$

Measurement Circuit



Remark No-load output during measurement of current consumption.

■ Input Pin Equivalent Circuit



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

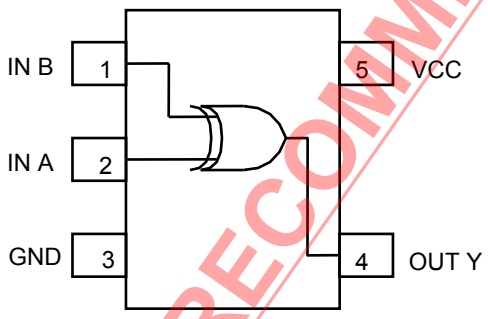
■ Applications

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

■ Package

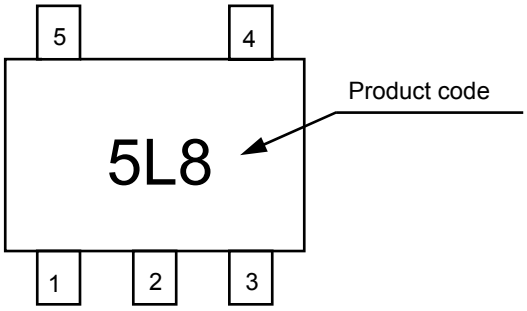
- SC-88A

■ Pin Configuration



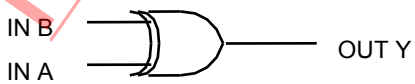
(Top view)

■ 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

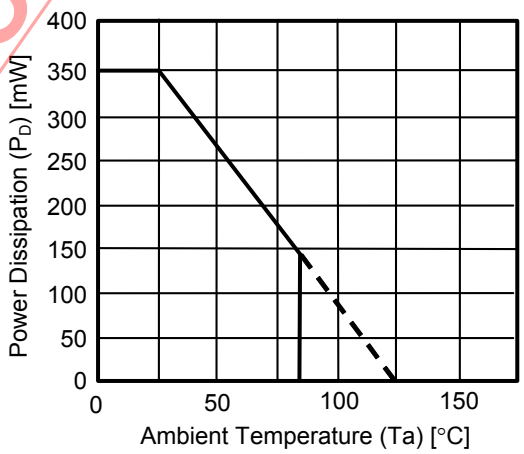
■ Absolute Maximum Ratings

(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

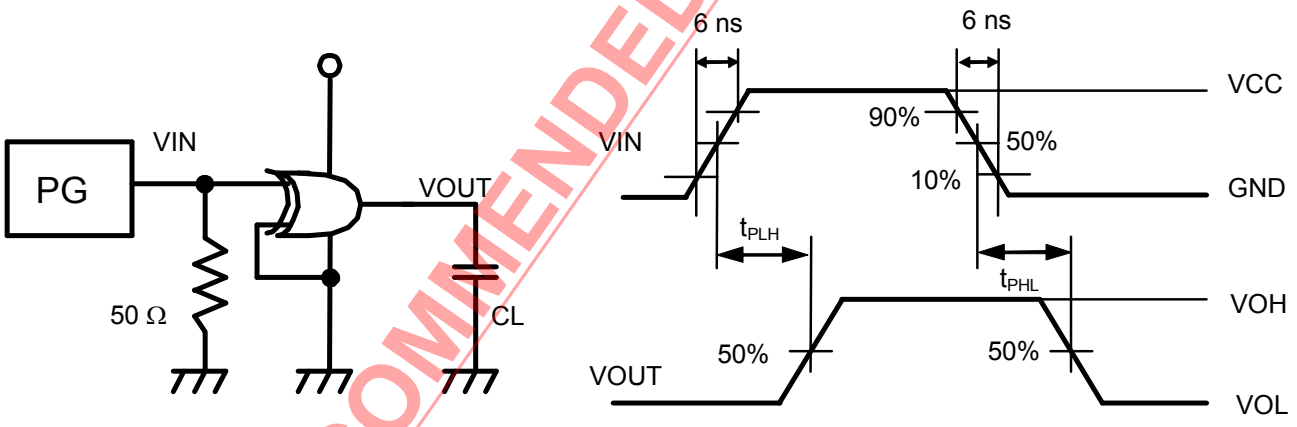
(C_L = 25 pF, Input t_R = t_F = 6 ns unless otherwise specified)

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.

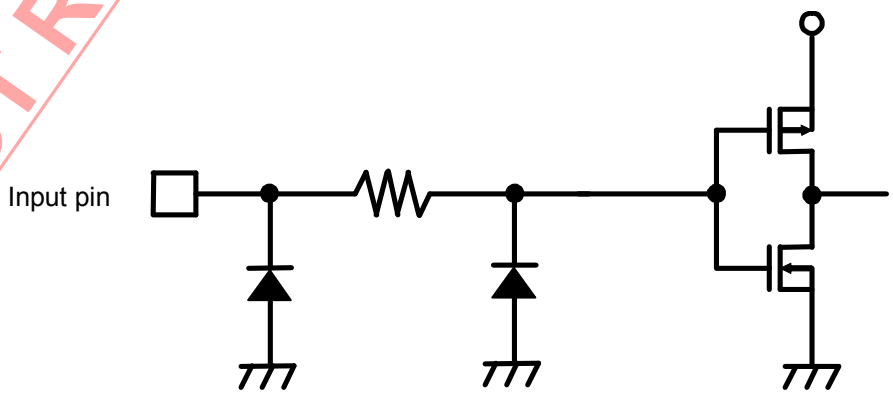
$$I_{CC(opr)} = C_{PD} \times V_{CC} \times fin + I_{CC}$$

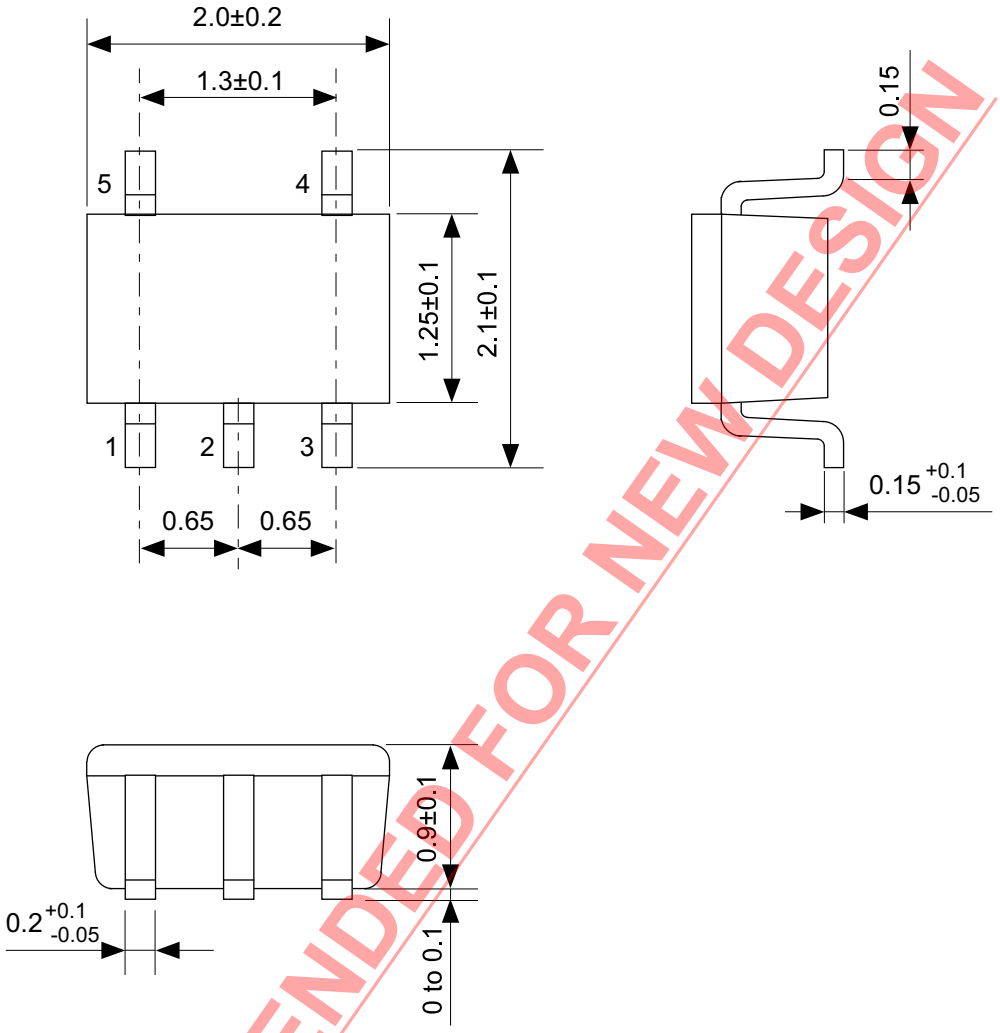
Measurement Circuit



Remark No-load output during measurement of current consumption.

■ Input Pin Equivalent Circuit

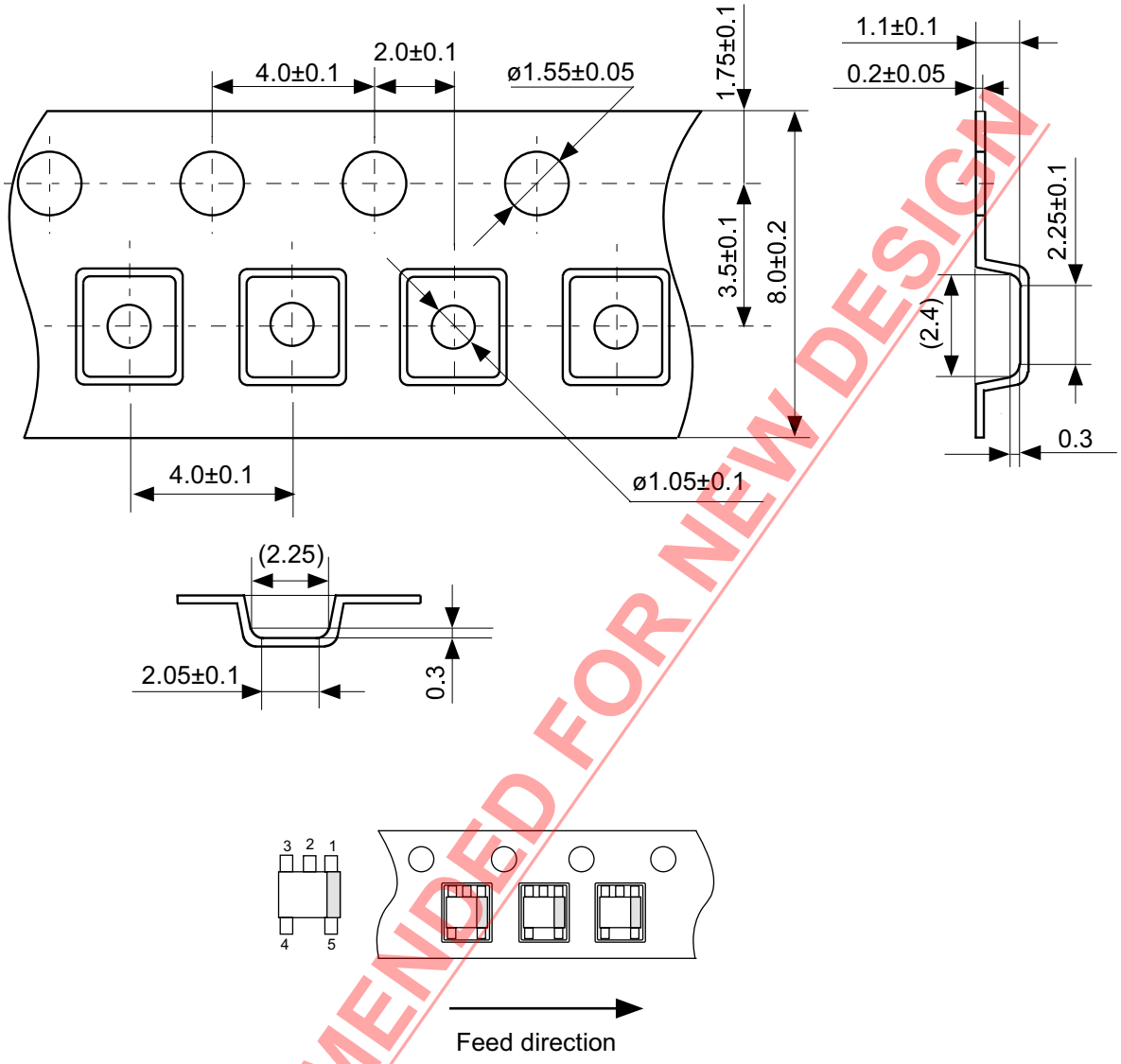




No. NP005-B-P-SD-1.2

TITLE	SC88A-B-PKG Dimensions
No.	NP005-B-P-SD-1.2
ANGLE	
UNIT	mm

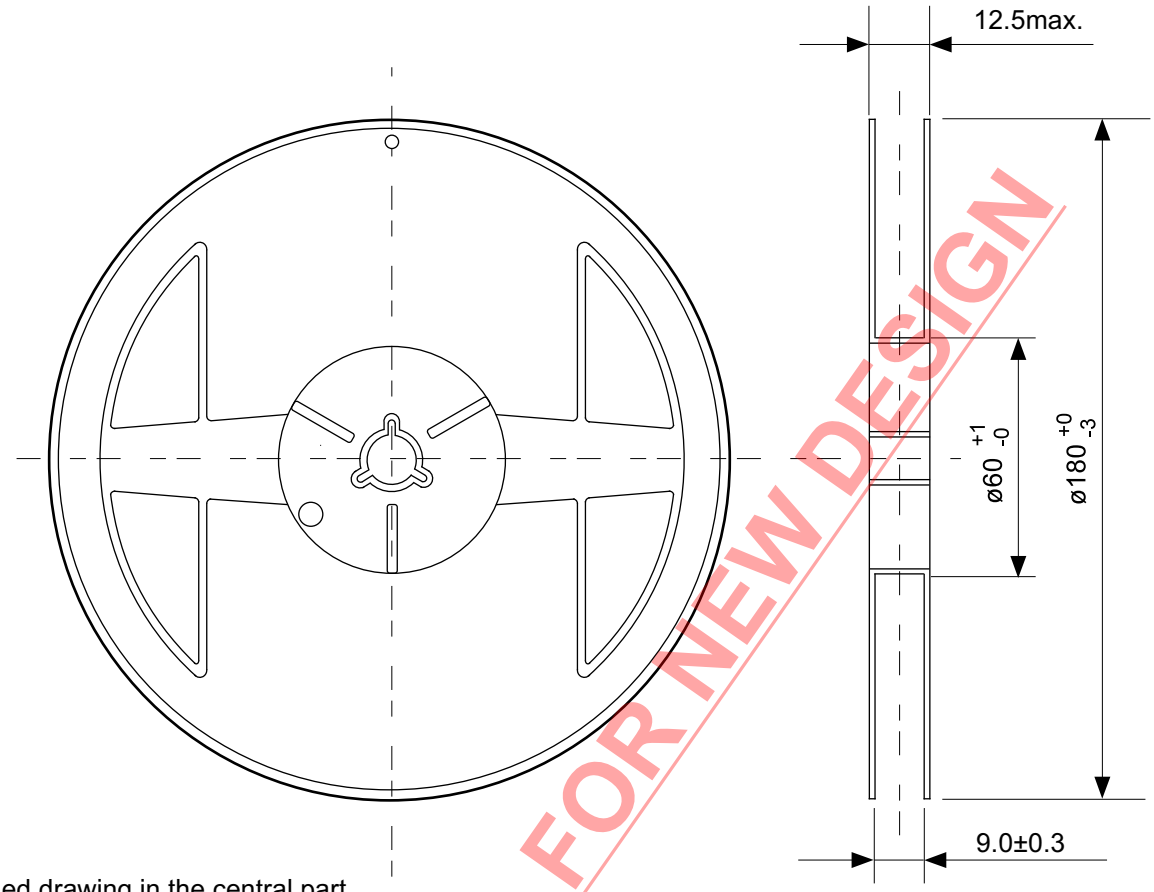
ABLIC Inc.



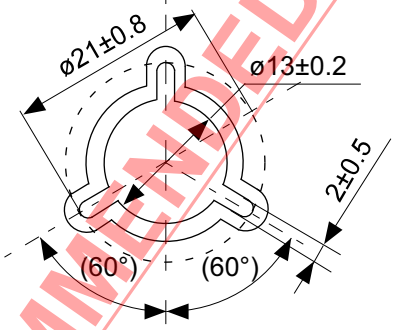
No. NP005-B-C-SD-2.0

TITLE	SC88A-B-Carrier Tape
No.	NP005-B-C-SD-2.0
ANGLE	
UNIT	mm

ABLIC 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		
ANGLE		QTY.	3,000
UNIT	mm		

ABLIC Inc.

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   Especially, the products cannot be used for life support devices, devices implanted in the human body and devices that directly affect human life, etc.
   Prior consultation with our sales office is required when considering the above uses.
   ABLIC Inc. is not responsible for damages caused by unauthorized or unspecified use of our products.
9. Semiconductor products may fail or malfunction with some probability.
   The user of the products should therefore take responsibility to give thorough consideration to safety design including redundancy, fire spread prevention measures, and malfunction prevention to prevent accidents causing injury or death, fires and social damage, etc. that may ensue from the products' failure or malfunction.
   The entire system must be sufficiently evaluated and applied on customer's own responsibility.
10. The products are not designed to be radiation-proof. The necessary radiation measures should be taken in the product design by the customer depending on the intended use.
11. The products do not affect human health under normal use. However, they contain chemical substances and heavy metals and should therefore not be put in the mouth. The fracture surfaces of wafers and chips may be sharp. Be careful when handling these with the bare hands to prevent injuries, etc.
12. When disposing of the products, comply with the laws and ordinances of the country or region where they are used.
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