

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 μ A 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

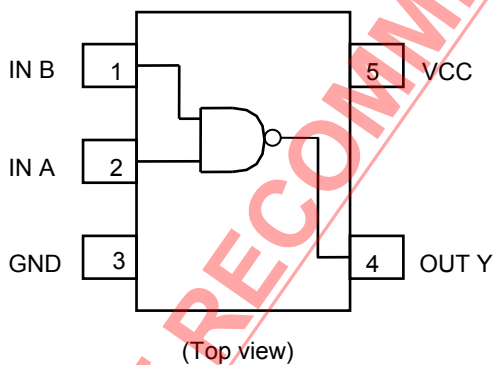
■ Applications

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

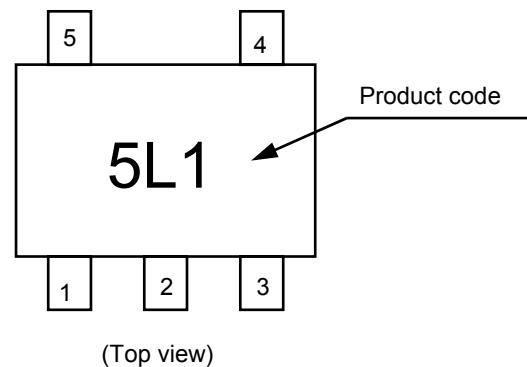
■ Package

- SC-88A

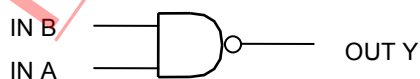
■ Pin Configuration



■ Marking Specification



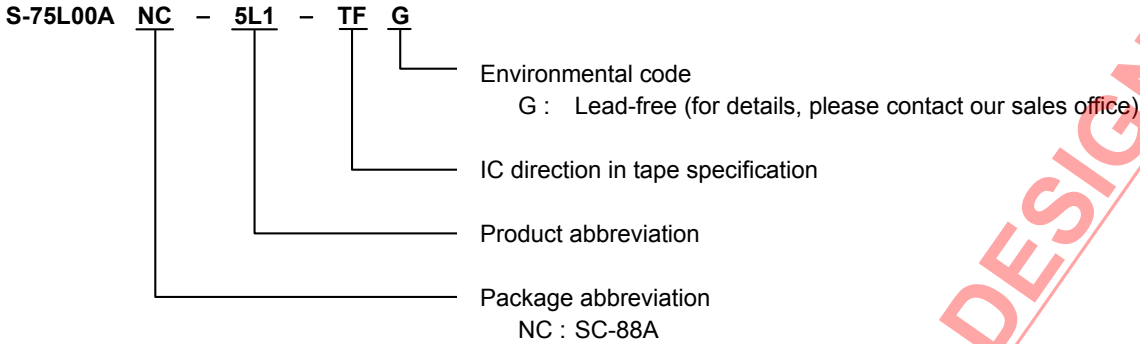
■ Logic Diagram



True values

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

■ Product Name Structure



■ Absolute Maximum Ratings

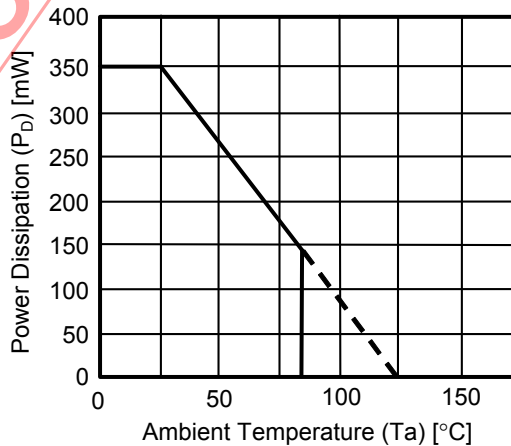
(Ta = 25°C unless otherwise specified)

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 × 1.6 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	$T_a = 25^\circ\text{C}$			$T_a = -40$ 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}	$I_{OH} = -20 \mu\text{A}$	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
				$I_{OH} = -1 \text{ mA}$	1.5	1.07	1.23	—	0.99	—	V
					3.0	2.61	2.68	—	2.55	—	V
					3.0	2.61	2.68	—	2.55	—	V
	"L" level	V_{OL}	$V_{IN} = V_{IH}$	$I_{OL} = 20 \mu\text{A}$	1.0	—	0	0.1	—	0.1	V
					1.5	—	0	0.1	—	0.1	V
					3.0	—	0	0.1	—	0.1	V
				$I_{OL} = 1 \text{ mA}$	1.5	—	0.23	0.31	—	0.37	V
					3.0	—	0.23	0.31	—	0.33	V
					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

($C_L = 15\text{ pF}$, Input $t_R = t_F = 6\text{ ns}$, $V_{CC} = 3.3 \pm 0.3\text{ V}$, $T_a = 25^\circ\text{C}$ 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

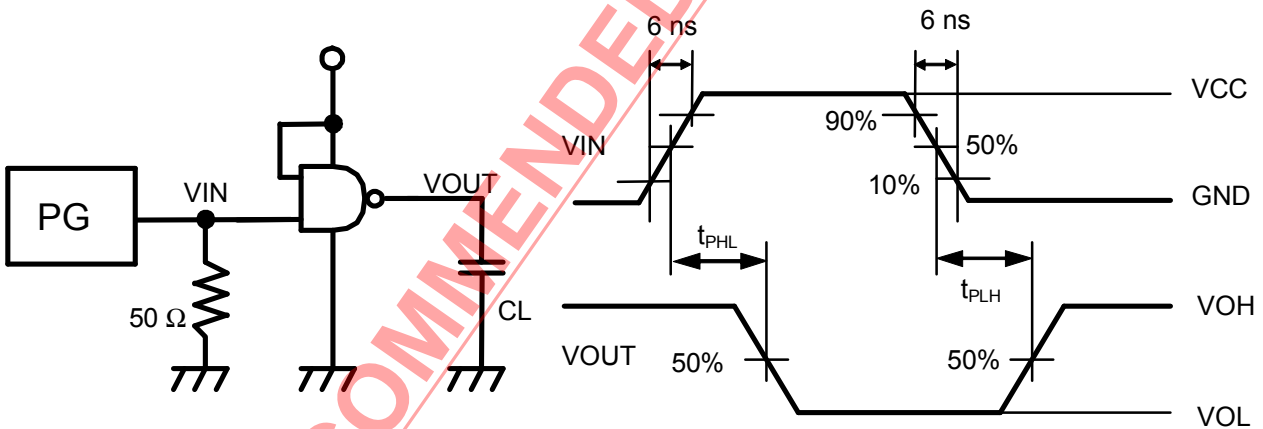
($C_L = 25\text{ pF}$, Input $t_R = t_F = 6\text{ ns}$ unless otherwise specified)

Item	Symbol	Measurement Conditions	$T_a = 25^\circ\text{C}$			$T_a = -40\text{ to }85^\circ\text{C}$		Unit	
			$V_{CC}\text{ (V)}$	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.

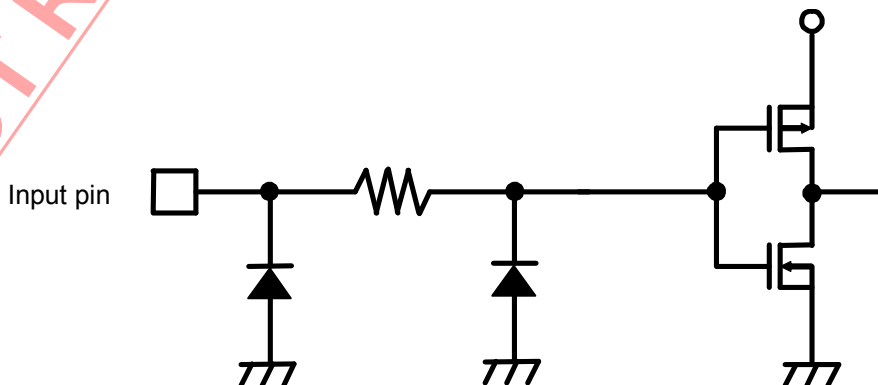
$$I_{CC(opr)} = C_{PD} \times V_{CC} \times fin + I_{CC}$$

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 μ A 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

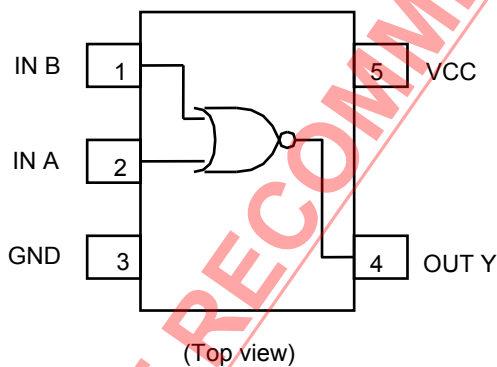
■ Applications

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

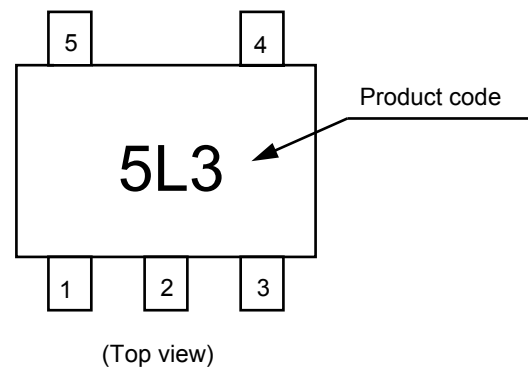
■ Package

- SC-88A

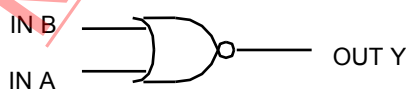
■ Pin Configuration



■ Marking Specification



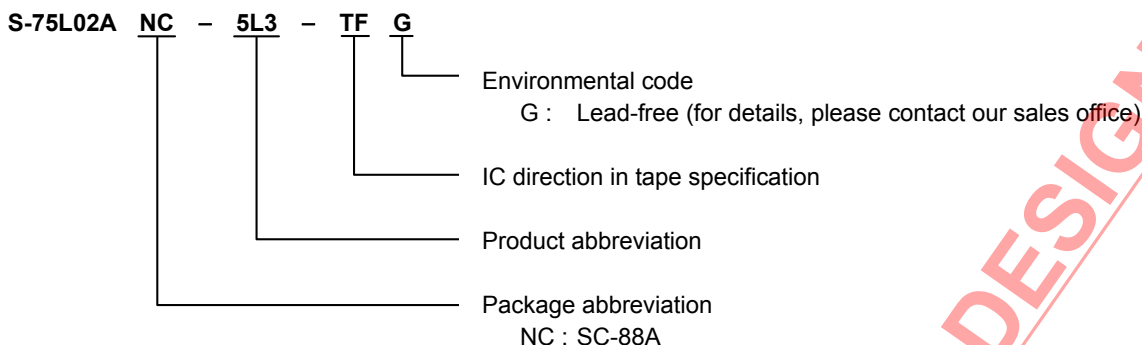
■ Logic Diagram



True values

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

■ Product Name Structure



■ Absolute Maximum Ratings

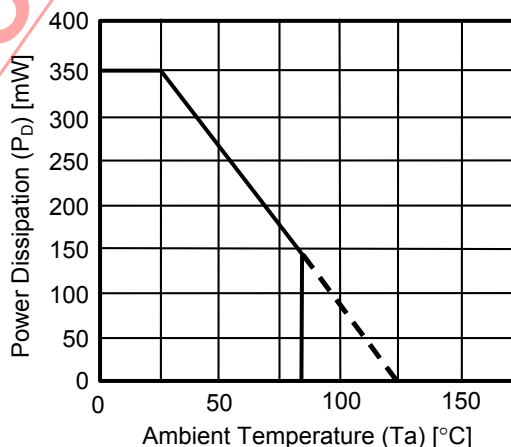
(Ta = 25°C unless otherwise specified)

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_{sta}	-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 × 1.6 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	$T_a = 25^\circ\text{C}$			$T_a = -40$ 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}	$V_{IN} = V_{IL}$	$I_{OH} = -20 \mu\text{A}$	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		
				$I_{OH} = -1 \text{ mA}$	1.5	1.07	1.23	—	0.99	—	V		
					3.0	$I_{OH} = -2.6 \text{ mA}$	2.61	2.68	—	2.55	—	V	
						$I_{OL} = 20 \mu\text{A}$	1.0	—	0	0.1	—	0.1	V
	"L" level	V_{OL}	$V_{IN} = V_{IL}$ or V_{IH}	$I_{OL} = 20 \mu\text{A}$	1.5	—	0	0.1	—	0.1	V		
					3.0	—	0	0.1	—	0.1	V		
					1.5	$I_{OL} = 1 \text{ mA}$	—	0.23	0.31	—	0.37	V	
				3.0		$I_{OL} = 2.6 \text{ mA}$	—	0.23	0.31	—	0.33	V	
						Input current	I_{IN}	$V_{IN} = V_{CC}$ or GND	3.6	—	—	± 0.1	—
				Current consumption	I_{CC}	$V_{IN} = V_{CC}$ or GND	3.6	—	—	1.0	—	10.0	μA

■ AC Electrical Characteristics

($C_L = 15 \text{ pF}$, Input $t_R = t_F = 6 \text{ ns}$, $V_{CC} = 3.3 \pm 0.3 \text{ V}$, $T_a = 25^\circ\text{C}$ 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

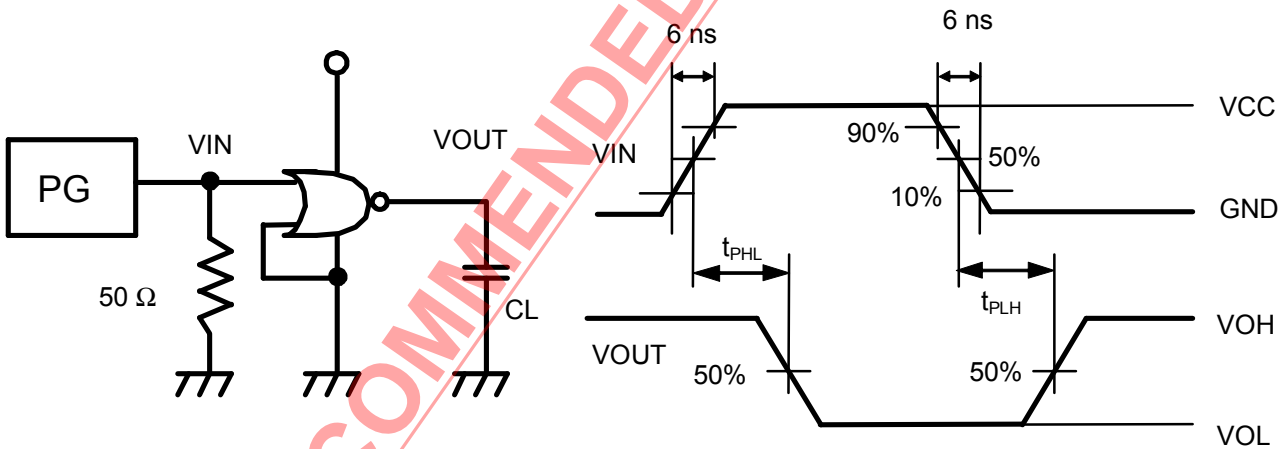
($C_L = 25 \text{ pF}$, Input $t_R = t_F = 6 \text{ ns}$ unless otherwise specified)

Item	Symbol	Measurement Conditions	$T_a = 25^\circ\text{C}$			$T_a = -40 \text{ to } 85^\circ\text{C}$		Unit	
			$V_{CC} \text{ (V)}$	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.

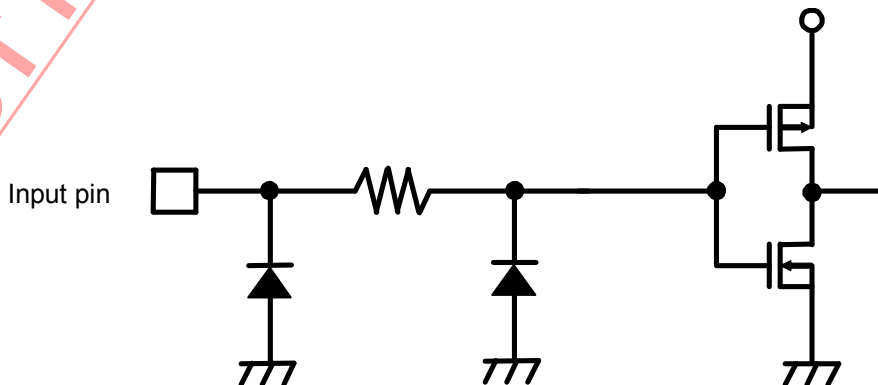
$$I_{CC(opr)} = C_{PD} \times V_{CC} \times fin + I_{CC}$$

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 μ A 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

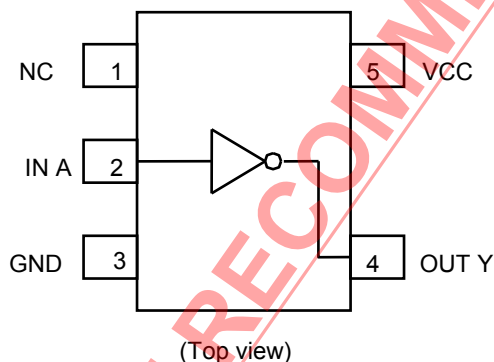
■ Applications

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

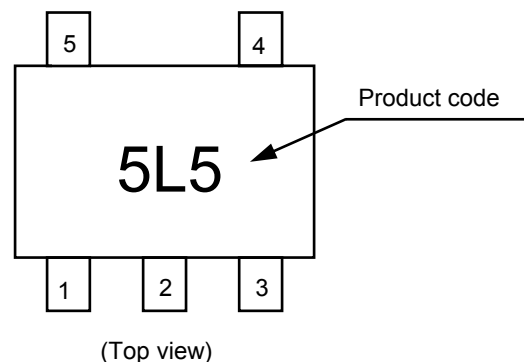
■ Package

- SC-88A

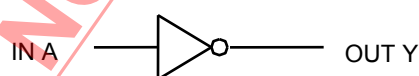
■ Pin Configuration



■ Marking Specification



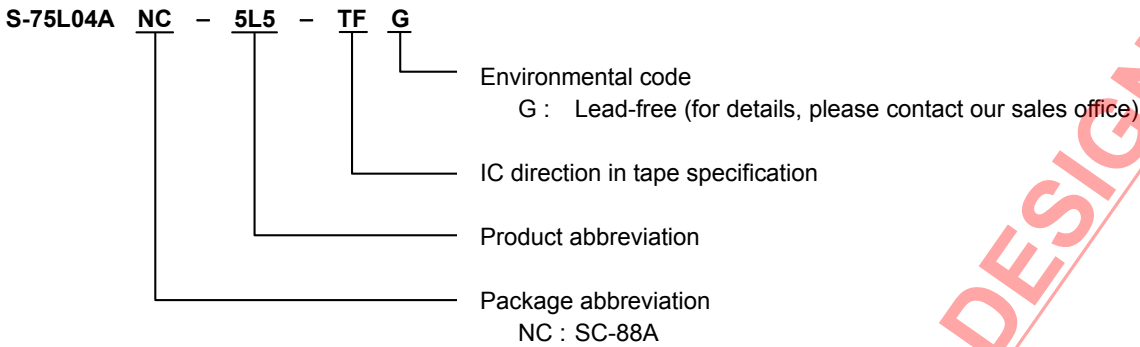
■ Logic Diagram



True values

A	Y
L	H
H	L

■ Product Name Structure



■ Absolute Maximum Ratings

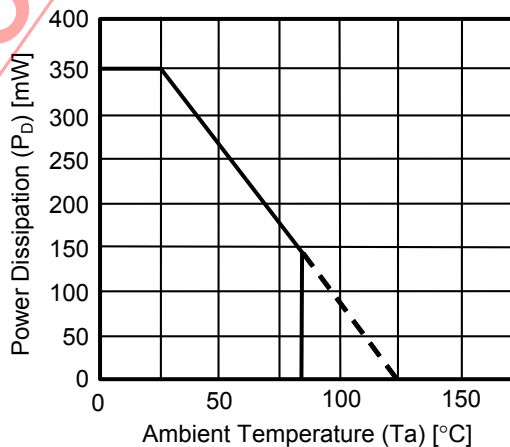
(Ta = 25°C unless otherwise specified)

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 × 1.6 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	$T_a = 25^\circ\text{C}$			$T_a = -40$ 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}	$V_{IN} = V_{IL}$	$I_{OH} = -20 \mu\text{A}$	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	
				$I_{OH} = -1 \text{ mA}$	1.5	1.07	1.23	—	0.99	—	V	
					3.0	2.61	2.68	—	2.55	—	—	—
	1.5	—	0	0.1	—	0.1	V					
	3.0	—	0	0.1	—	0.1	V					
	$I_{OL} = 1 \text{ mA}$	1.5	—	0.23	0.31	—	0.37	V				
		3.0	—	0.23	0.31	—	0.33	—	—			
										3.0	—	—
	Input current	I_{IN}	$V_{IN} = V_{CC}$ or GND	3.6	—	—	± 0.1	—	± 1.0			
Current consumption	I_{CC}	$V_{IN} = V_{CC}$ or GND	3.6	—	—	1.0	—	10.0	μA			

■ AC Electrical Characteristics

($C_L = 15 \text{ pF}$, Input $t_R = t_F = 6 \text{ ns}$, $V_{CC} = 3.3 \pm 0.3 \text{ V}$, $T_a = 25^\circ\text{C}$ 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

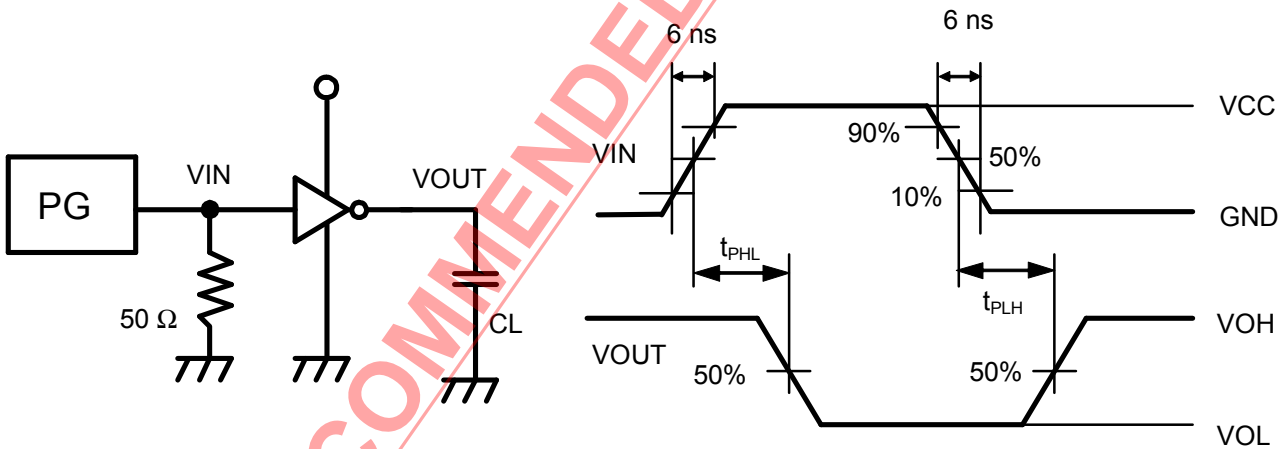
($C_L = 25 \text{ pF}$, Input $t_R = t_F = 6 \text{ ns}$ unless otherwise specified)

Item	Symbol	Measurement Conditions	$T_a = 25^\circ\text{C}$			$T_a = -40 \text{ to } 85^\circ\text{C}$		Unit	
			$V_{CC} \text{ (V)}$	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.

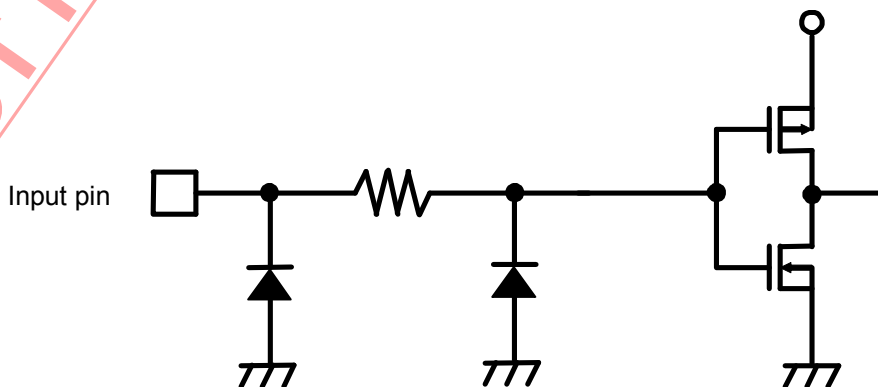
$$I_{CC(opr)} = C_{PD} \times V_{CC} \times fin + I_{CC}$$

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 μ A 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

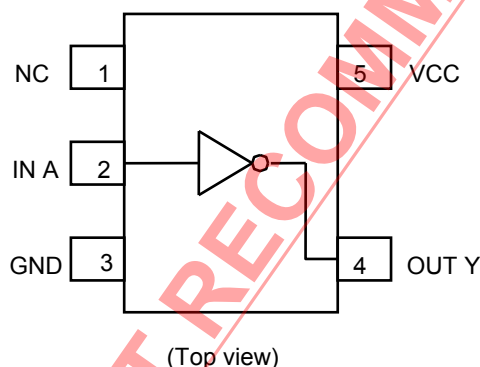
■ Applications

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

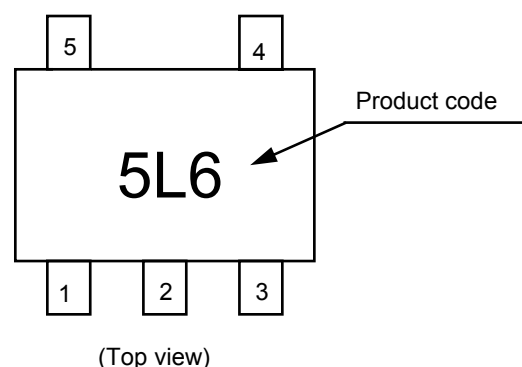
■ Package

- SC-88A

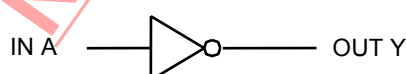
■ Pin Configuration



■ Marking Specification



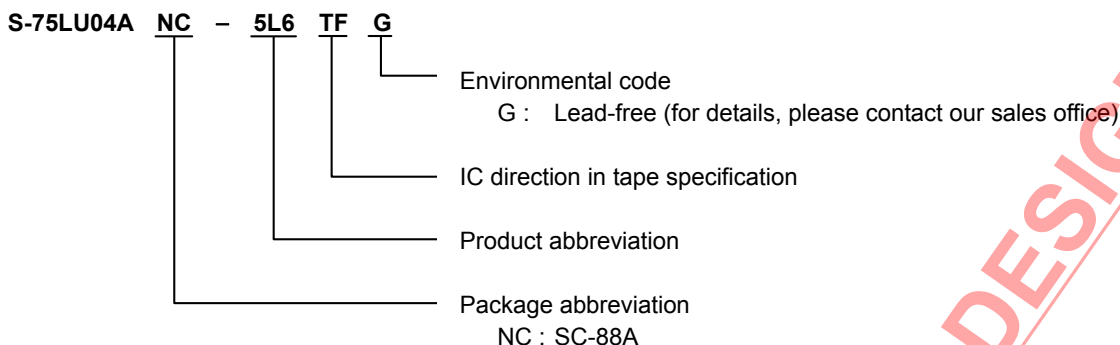
■ Logic Diagram



True values

A	Y
L	H
H	L

■ Product Name Structure



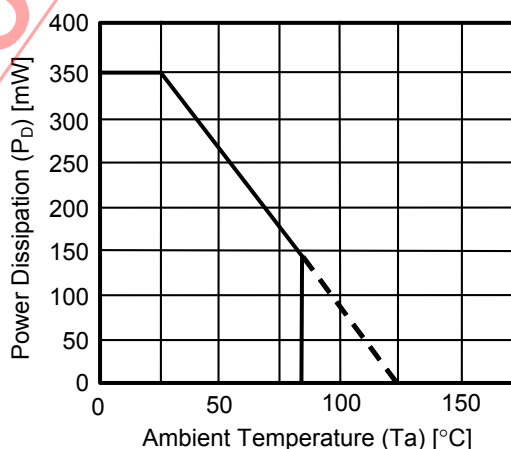
■ Absolute Maximum Ratings

(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 × 1.6 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	$T_a = 25^\circ\text{C}$			$T_a = -40$ 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}	$V_{IN} = V_{IL}$	$I_{OH} = -20 \mu\text{A}$	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	
				$I_{OH} = -1 \text{ mA}$	1.5	1.07	1.23	—	0.99	—	V	
					3.0	2.61	2.68	—	2.55	—	—	—
	1.5	—	0	0.1	—	0.1	V					
	3.0	—	0	0.1	—	0.1	V					
	$I_{OL} = 1 \text{ mA}$	1.5	—	0.23	0.31	—	0.37	V				
		3.0	—	0.23	0.31	—	—	—				
									3.0	—	—	—
	3.6	—	—	± 0.1	—	± 1.0	μA					
3.6								—	—	1.0	—	10.0

■ AC Electrical Characteristics

($C_L = 15 \text{ pF}$, Input $t_R = t_F = 6 \text{ ns}$, $V_{CC} = 3.3 \pm 0.3 \text{ V}$, $T_a = 25^\circ\text{C}$ 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

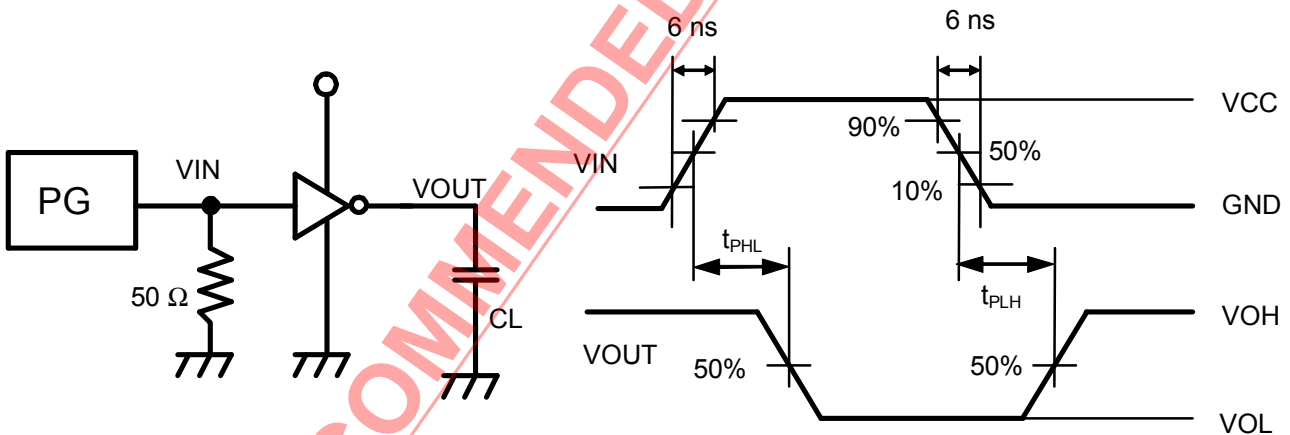
($C_L = 25 \text{ pF}$, Input $t_R = t_F = 6 \text{ ns}$ unless otherwise specified)

Item	Symbol	Measurement Conditions	$T_a = 25^\circ\text{C}$			$T_a = -40 \text{ to } 85^\circ\text{C}$		Unit	
			$V_{CC} \text{ (V)}$	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.

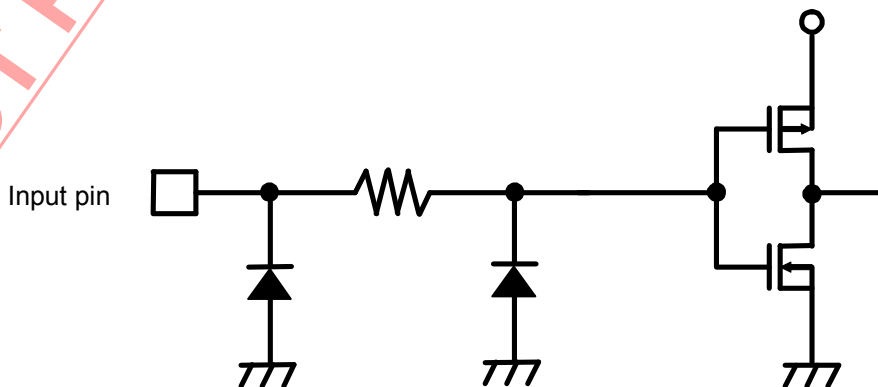
$$I_{CC(opr)} = C_{PD} \times V_{CC} \times fin + I_{CC}$$

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 μ A 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

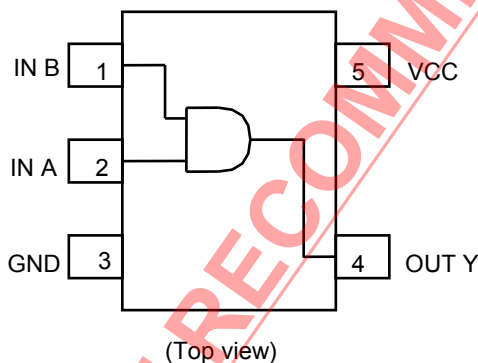
■ Applications

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

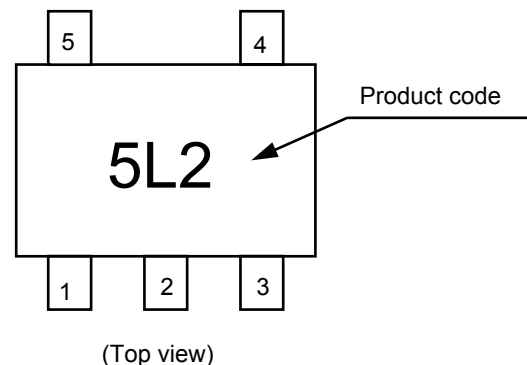
■ Package

- SC-88A

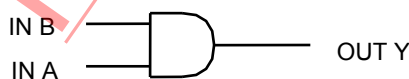
■ Pin Configuration



■ Marking Specification



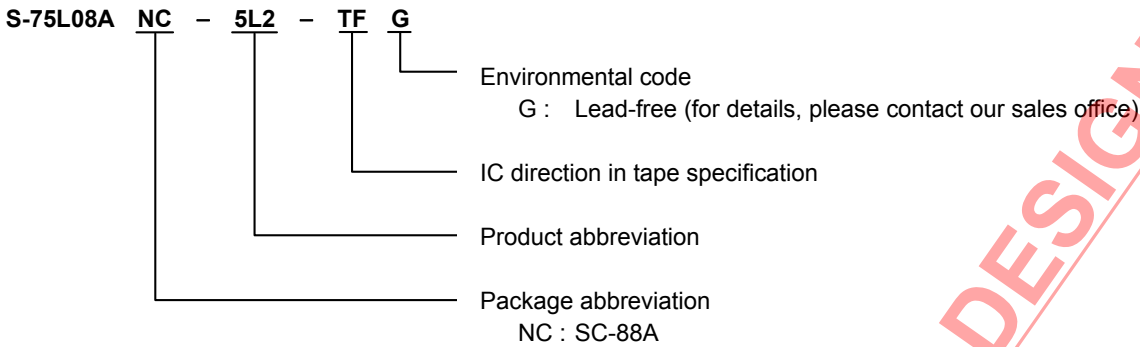
■ Logic Diagram



True values

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

■ Product Name Structure



■ Absolute Maximum Ratings

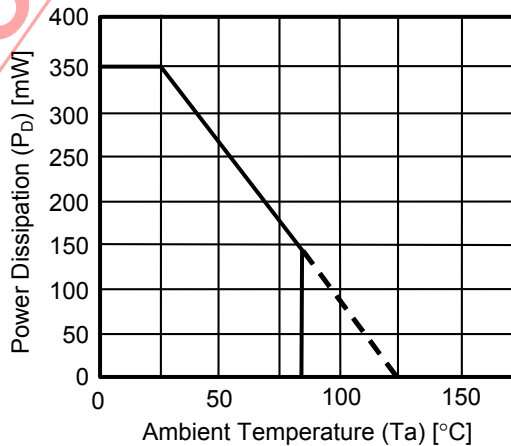
(Ta = 25°C unless otherwise specified)

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_{sta}	-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 × 1.6 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	$T_a = 25^\circ\text{C}$			$T_a = -40$ 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}	$V_{IN} = V_{IH}$	$I_{OH} = -20 \mu\text{A}$	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	
				$I_{OH} = -1 \text{ mA}$	1.5	1.07	1.23	—	0.99	—	V	
					3.0	$I_{OH} = -2.6 \text{ mA}$	2.61	2.68	—	2.55	—	V
						—	—	—	—	—	—	—
	"L" level	V_{OL}	$V_{IN} = V_{IL}$ or V_{IH}	$I_{OL} = 20 \mu\text{A}$	1.0	—	0	0.1	—	0.1	V	
					1.5	—	0	0.1	—	0.1	V	
					3.0	—	0	0.1	—	0.1	V	
				$I_{OL} = 1 \text{ mA}$	1.5	—	0.23	0.31	—	0.37	V	
					3.0	$I_{OL} = 2.6 \text{ mA}$	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

($C_L = 15\text{ pF}$, Input $t_R = t_F = 6\text{ ns}$, $V_{CC} = 3.3 \pm 0.3\text{ V}$, $T_a = 25^\circ\text{C}$ 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

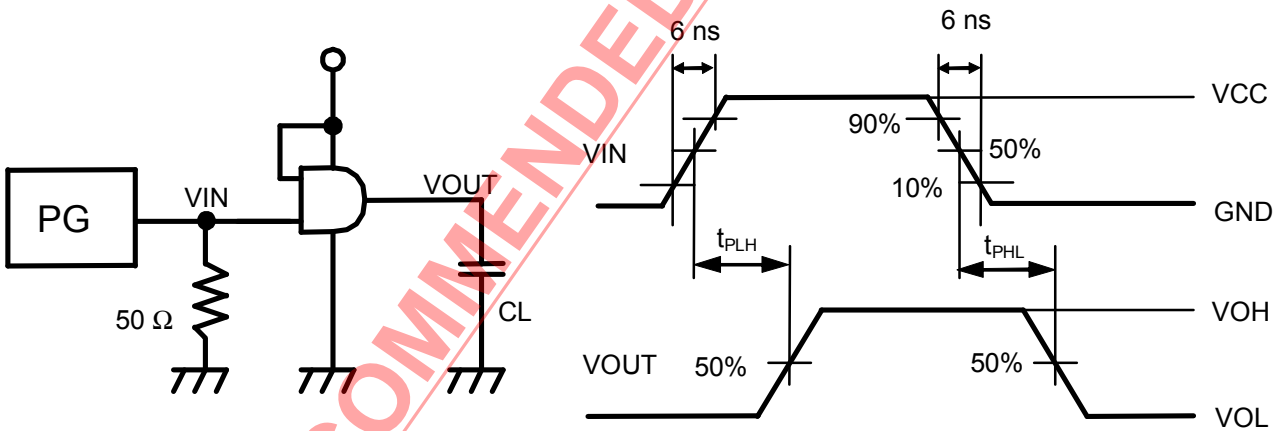
($C_L = 25\text{ pF}$, Input $t_R = t_F = 6\text{ ns}$ unless otherwise specified)

Item	Symbol	Measurement Conditions	$T_a = 25^\circ\text{C}$			$T_a = -40\text{ to }85^\circ\text{C}$		Unit	
			$V_{CC}\text{ (V)}$	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.

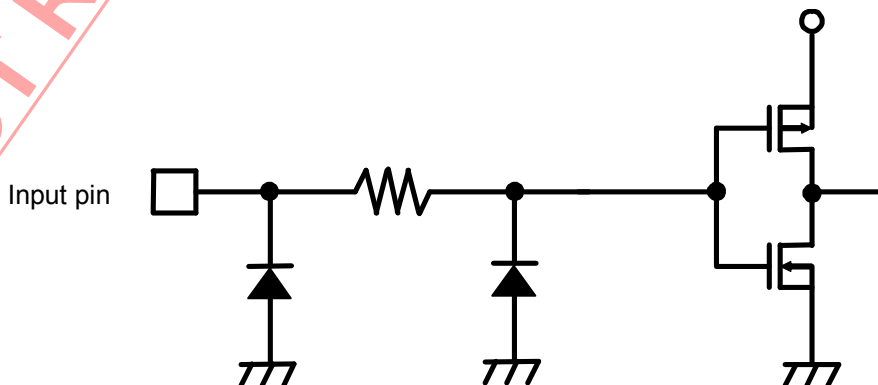
$$I_{CC(opr)} = C_{PD} \times V_{CC} \times fin + I_{CC}$$

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 μ A 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

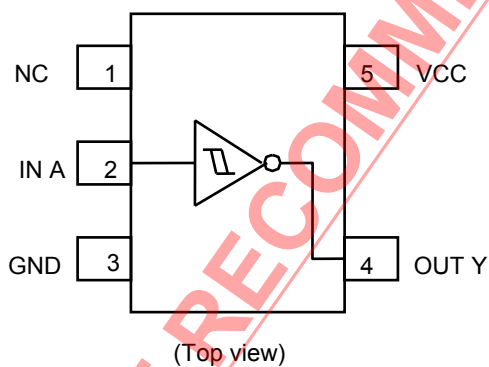
■ Applications

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

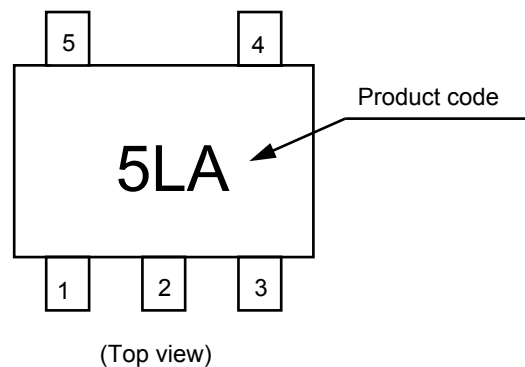
■ Package

- SC-88A

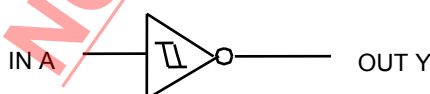
■ Pin Configuration



■ Marking Specification



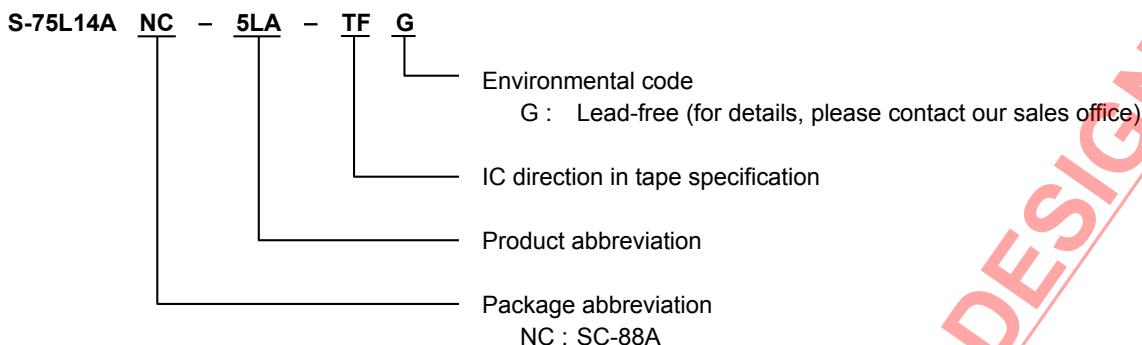
■ Logic Diagram



True values

A	Y
L	H
H	L

■ Product Name Structure



■ Absolute Maximum Ratings

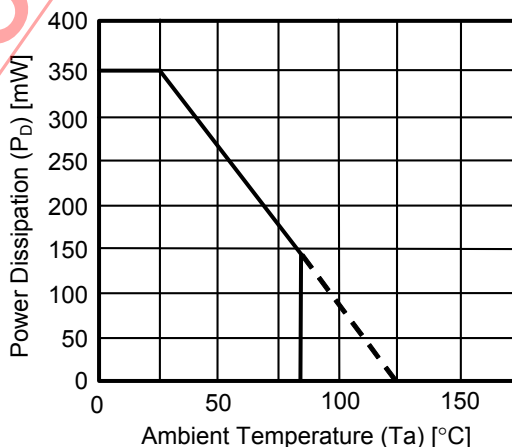
(Ta = 25°C unless otherwise specified)

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_{sta}	-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 × 1.6 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	$T_a = 25^\circ\text{C}$			$T_a = -40$ 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}	$V_{IN} = V_{IL}$	$I_{OH} = -20 \mu\text{A}$	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	
				$I_{OH} = -1 \text{ mA}$	1.5	1.07	1.23	—	0.99	—	V	
					3.0	$I_{OH} = -2.6 \text{ mA}$	2.61	2.68	—	2.55	—	V
						—	—	—	—	—	—	—
	"L" level	V_{OL}	$V_{IN} = V_{IH}$	$I_{OL} = 20 \mu\text{A}$	1.0	—	0	0.1	—	0.1	V	
					1.5	—	0	0.1	—	0.1	V	
					3.0	—	0	0.1	—	0.1	V	
				$I_{OL} = 1 \text{ mA}$	1.5	—	0.23	0.31	—	0.37	V	
					3.0	$I_{OL} = 2.6 \text{ mA}$	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

($C_L = 15 \text{ pF}$, Input $t_R = t_F = 6 \text{ ns}$, $V_{CC} = 3.3 \pm 0.3 \text{ V}$, $T_a = 25^\circ\text{C}$ 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

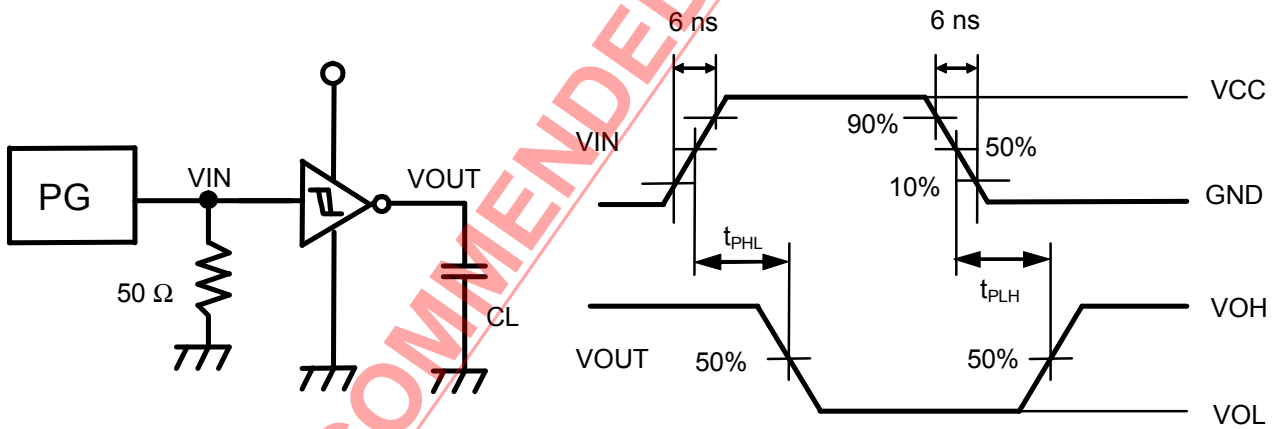
($C_L = 25 \text{ pF}$, Input $t_R = t_F = 6 \text{ ns}$ unless otherwise specified)

Item	Symbol	Measurement Conditions	$T_a = 25^\circ\text{C}$			$T_a = -40 \text{ to } 85^\circ\text{C}$		Unit	
			$V_{CC} \text{ (V)}$	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.

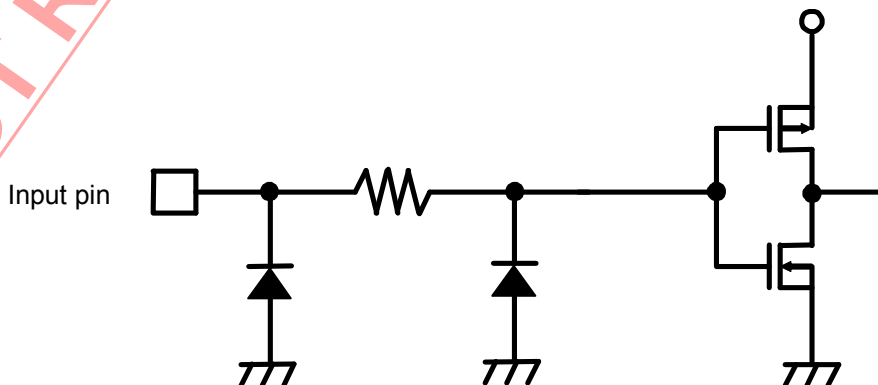
$$I_{CC(opr)} = C_{PD} \times V_{CC} \times fin + I_{CC}$$

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} .

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■ Features

- Wide power supply range: 1 V to 3.6 V
- Low current consumption: 1.0 μ A 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

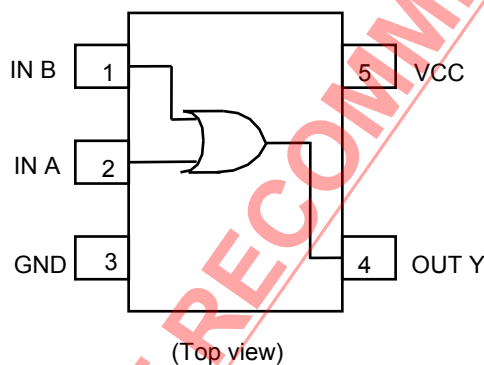
■ Applications

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

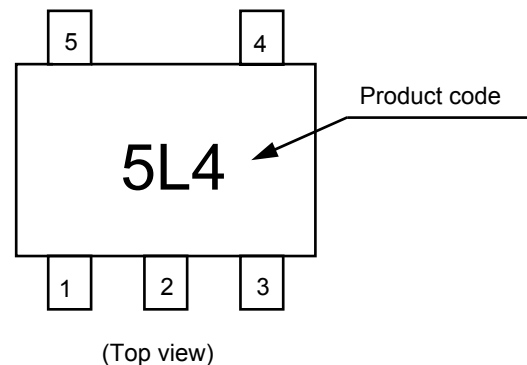
■ Package

- SC-88A

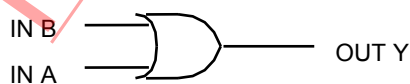
■ Pin Configuration



■ Marking Specification



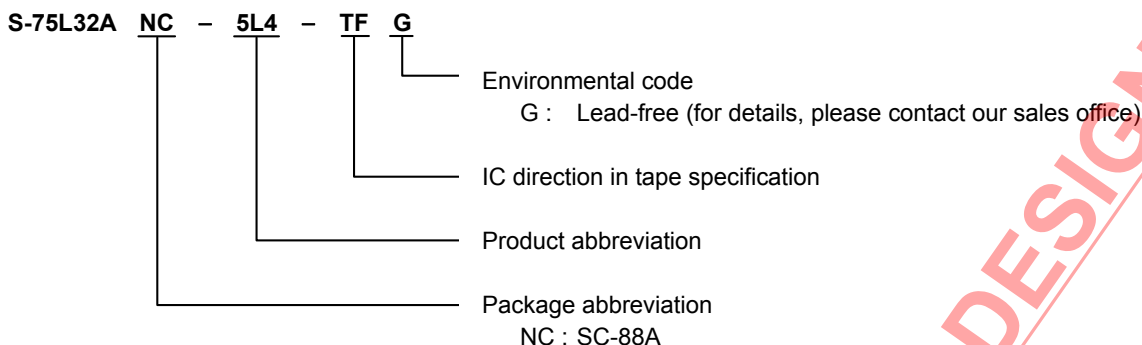
■ Logic Diagram



True values

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

■ Product Name Structure



■ Absolute Maximum Ratings

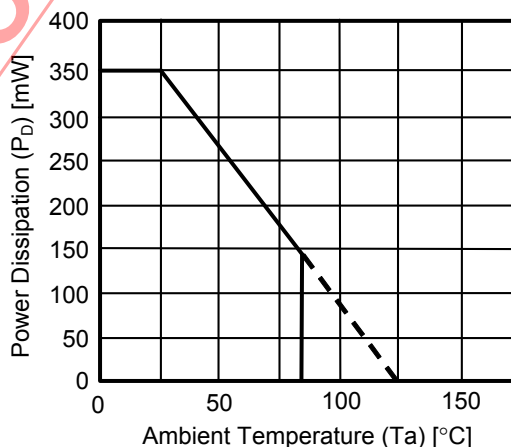
(Ta = 25°C unless otherwise specified)

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_{sta}	-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 × 1.6 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	$T_a = 25^\circ\text{C}$			$T_a = -40$ 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}	$I_{OH} = -20 \mu\text{A}$	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
				$I_{OH} = -1 \text{ mA}$	1.5	1.07	1.23	—	0.99	—	V
					3.0	2.61	2.68	—	2.55	—	V
					3.0	2.61	2.68	—	2.55	—	V
	"L" level	V_{OL}	$V_{IN} = V_{IL}$	$I_{OL} = 20 \mu\text{A}$	1.0	—	0	0.1	—	0.1	V
					1.5	—	0	0.1	—	0.1	V
					3.0	—	0	0.1	—	0.1	V
				$I_{OL} = 1 \text{ mA}$	1.5	—	0.23	0.31	—	0.37	V
					3.0	—	0.23	0.31	—	0.33	V
					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

($C_L = 15 \text{ pF}$, Input $t_R = t_F = 6 \text{ ns}$, $V_{CC} = 3.3 \pm 0.3 \text{ V}$, $T_a = 25^\circ\text{C}$ 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

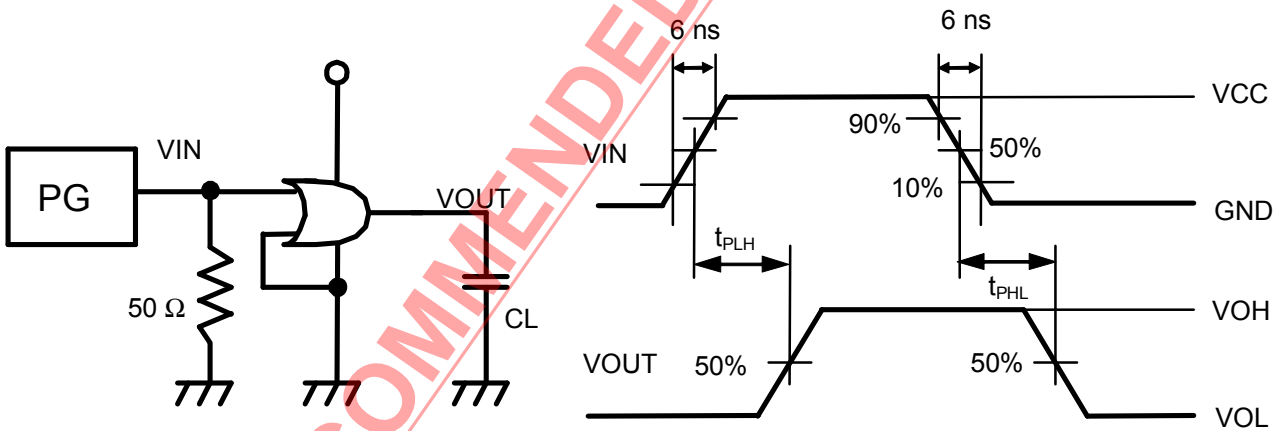
($C_L = 25 \text{ pF}$, Input $t_R = t_F = 6 \text{ ns}$ unless otherwise specified)

Item	Symbol	Measurement Conditions	$T_a = 25^\circ\text{C}$			$T_a = -40 \text{ to } 85^\circ\text{C}$		Unit	
			$V_{CC} \text{ (V)}$	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.

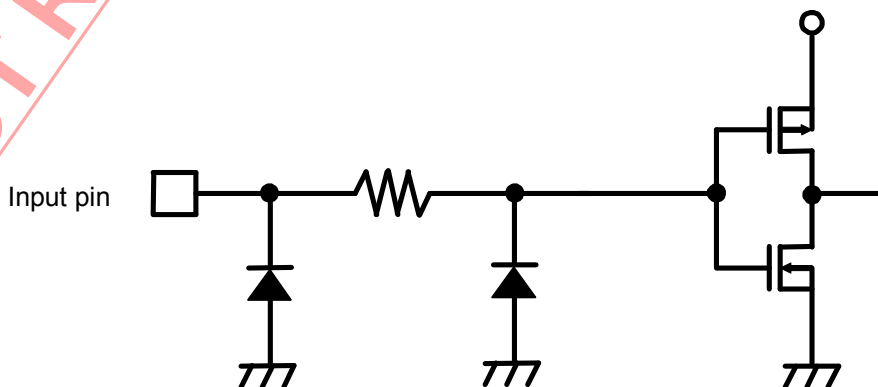
$$I_{CC(opr)} = C_{PD} \times V_{CC} \times fin + I_{CC}$$

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 μ A 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

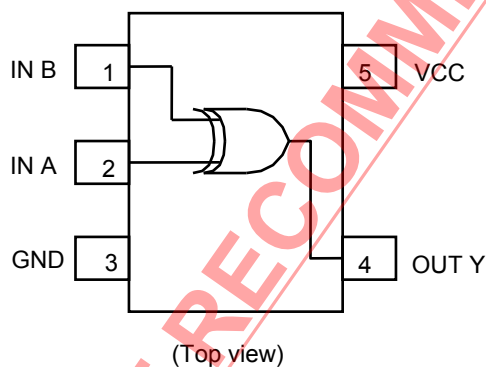
■ Applications

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

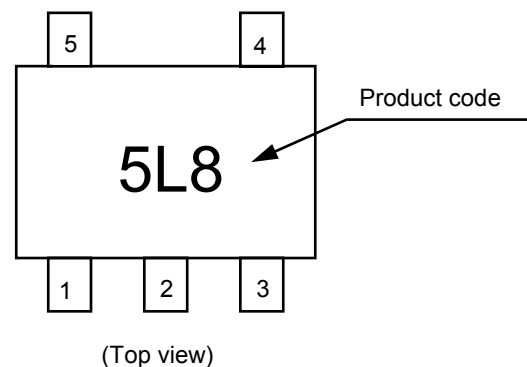
■ Package

- SC-88A

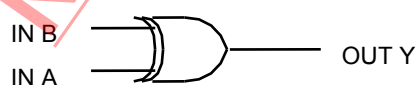
■ Pin Configuration



■ Marking Specification



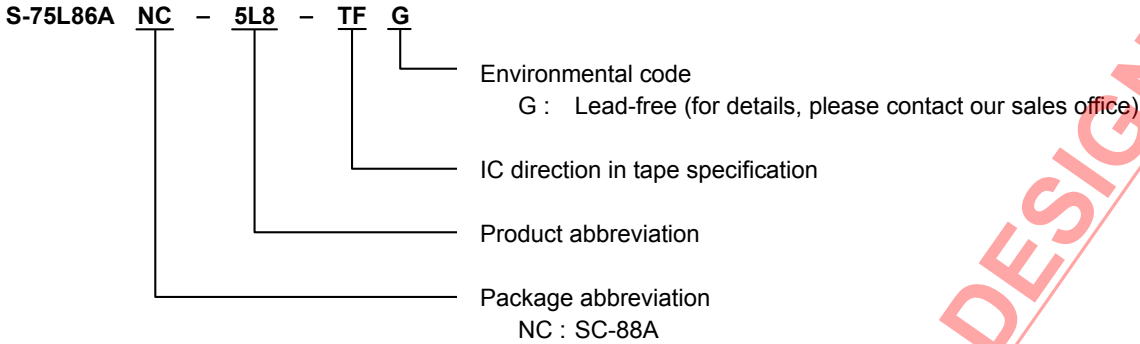
■ Logic Diagram



True values

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

■ Product Name Structure



■ Absolute Maximum Ratings

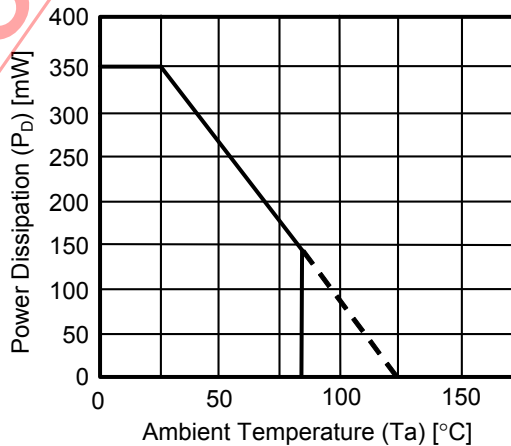
(Ta = 25°C unless otherwise specified)

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_{sta}	-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 × 1.6 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	$T_a = 25^\circ\text{C}$			$T_a = -40$ 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}	$I_{OH} = -20 \mu\text{A}$	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
				$I_{OH} = -1 \text{ mA}$	1.5	1.07	1.23	—	0.99	—	V
					3.0	2.61	2.68	—	2.55	—	V
					$I_{OH} = -2.6 \text{ mA}$	3.0	2.61	2.68	—	2.55	—
	"L" level	V_{OL}	$V_{IN} = V_{IH}$ or V_{IL}	$I_{OL} = 20 \mu\text{A}$	1.0	—	0	0.1	—	0.1	V
					1.5	—	0	0.1	—	0.1	V
					3.0	—	0	0.1	—	0.1	V
				$I_{OL} = 1 \text{ mA}$	1.5	—	0.23	0.31	—	0.37	V
					3.0	—	0.23	0.31	—	0.33	V
					$I_{OL} = 2.6 \text{ mA}$	3.0	—	0.23	0.31	—	0.33
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

($C_L = 15\text{ pF}$, Input $t_R = t_F = 6\text{ ns}$, $V_{CC} = 3.3 \pm 0.3\text{ V}$, $T_a = 25^\circ\text{C}$ 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

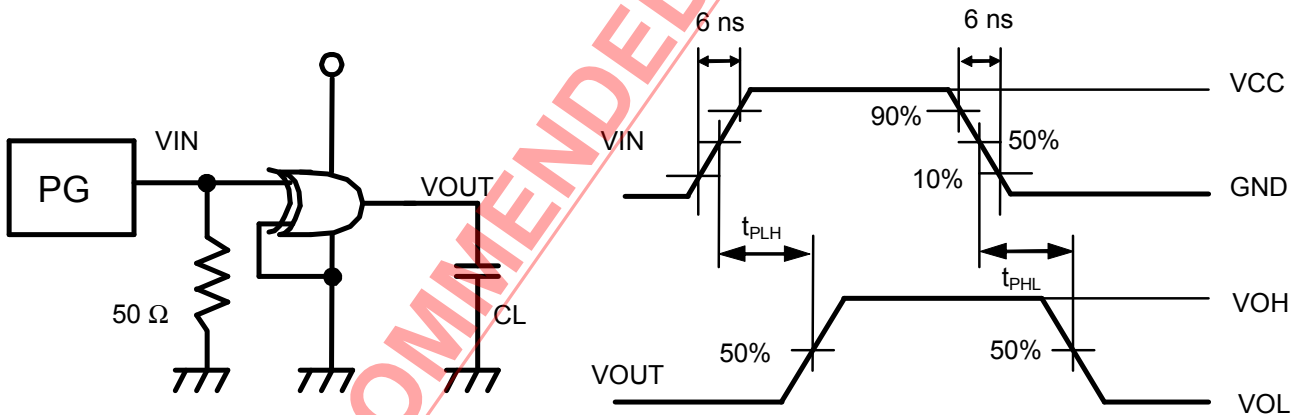
($C_L = 25\text{ pF}$, Input $t_R = t_F = 6\text{ ns}$ unless otherwise specified)

Item	Symbol	Measurement Conditions	$T_a = 25^\circ\text{C}$			$T_a = -40\text{ to }85^\circ\text{C}$		Unit	
			$V_{CC}\text{ (V)}$	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.

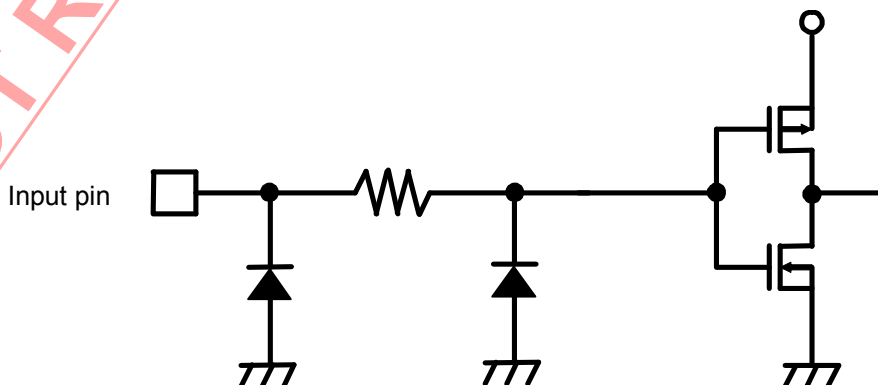
$$I_{CC(opr)} = C_{PD} \times V_{CC} \times fin + I_{CC}$$

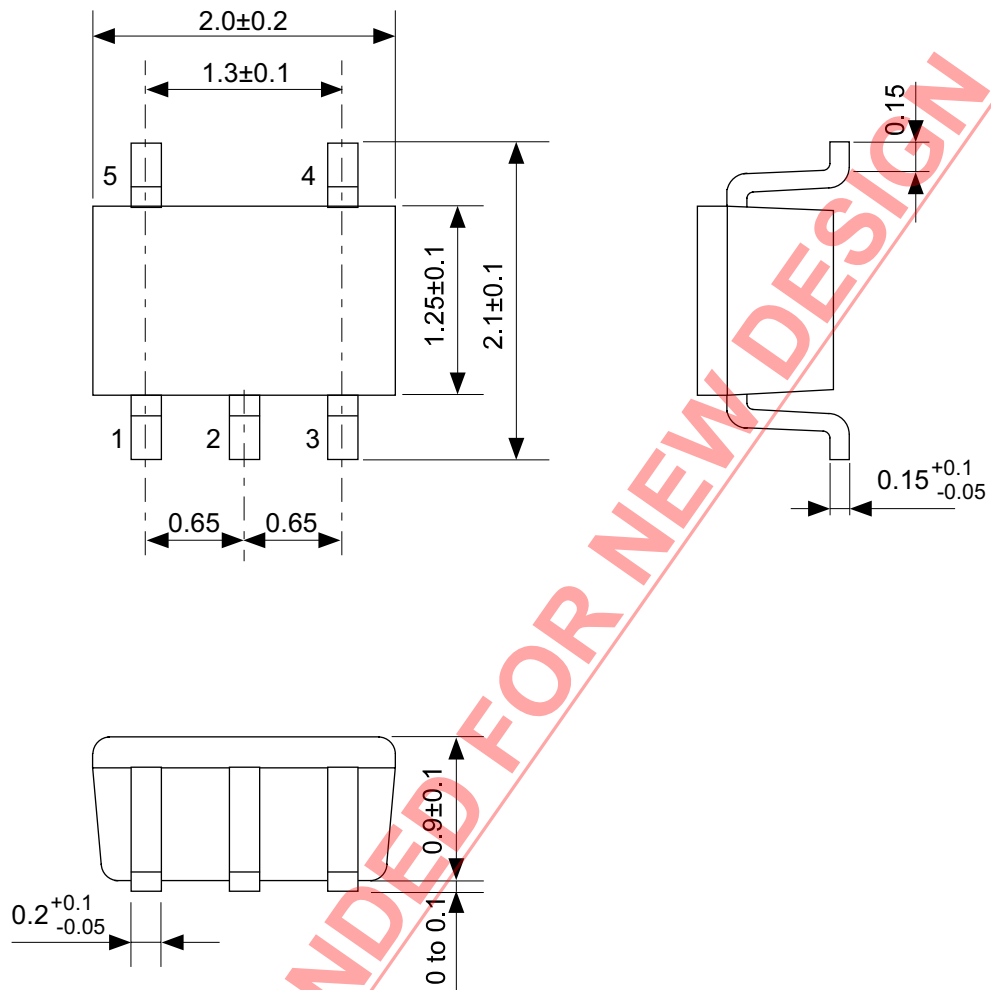
Measurement Circuit



Remark No-load output during measurement of current consumption.

■ Input Pin Equivalent Circuit



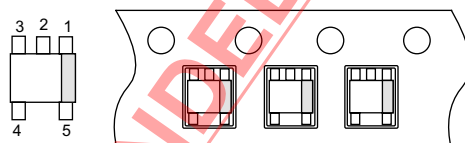
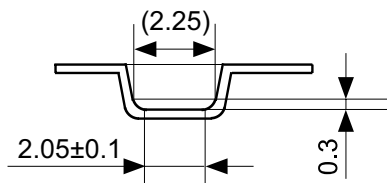
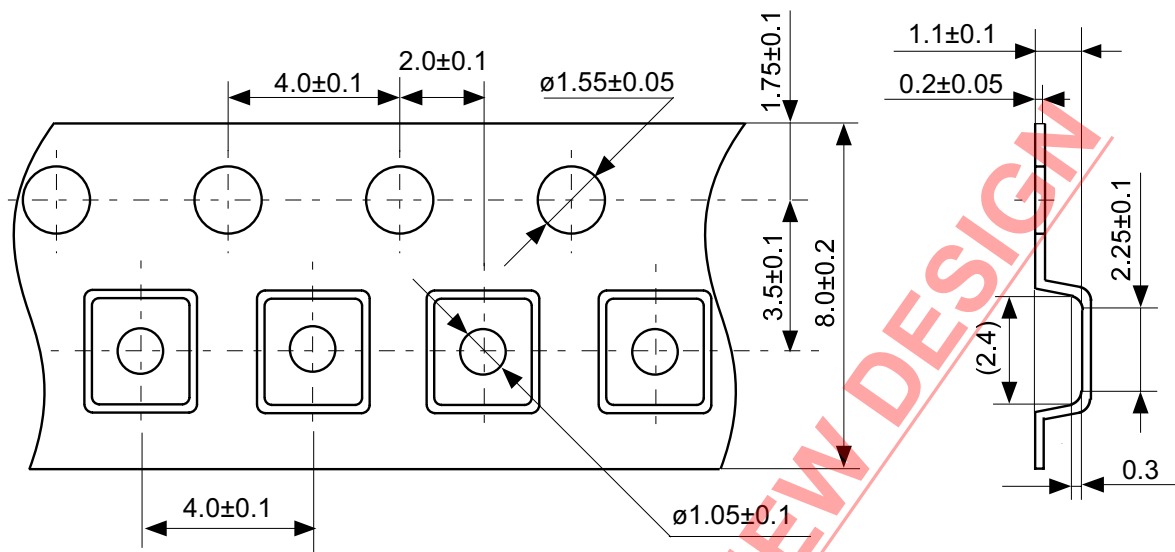


NOT RECOMMENDED FOR NEW DESIGN

No. NP005-B-P-SD-1.1

TITLE	SC88A-B-PKG Dimensions
No.	NP005-B-P-SD-1.1
SCALE	
UNIT	mm

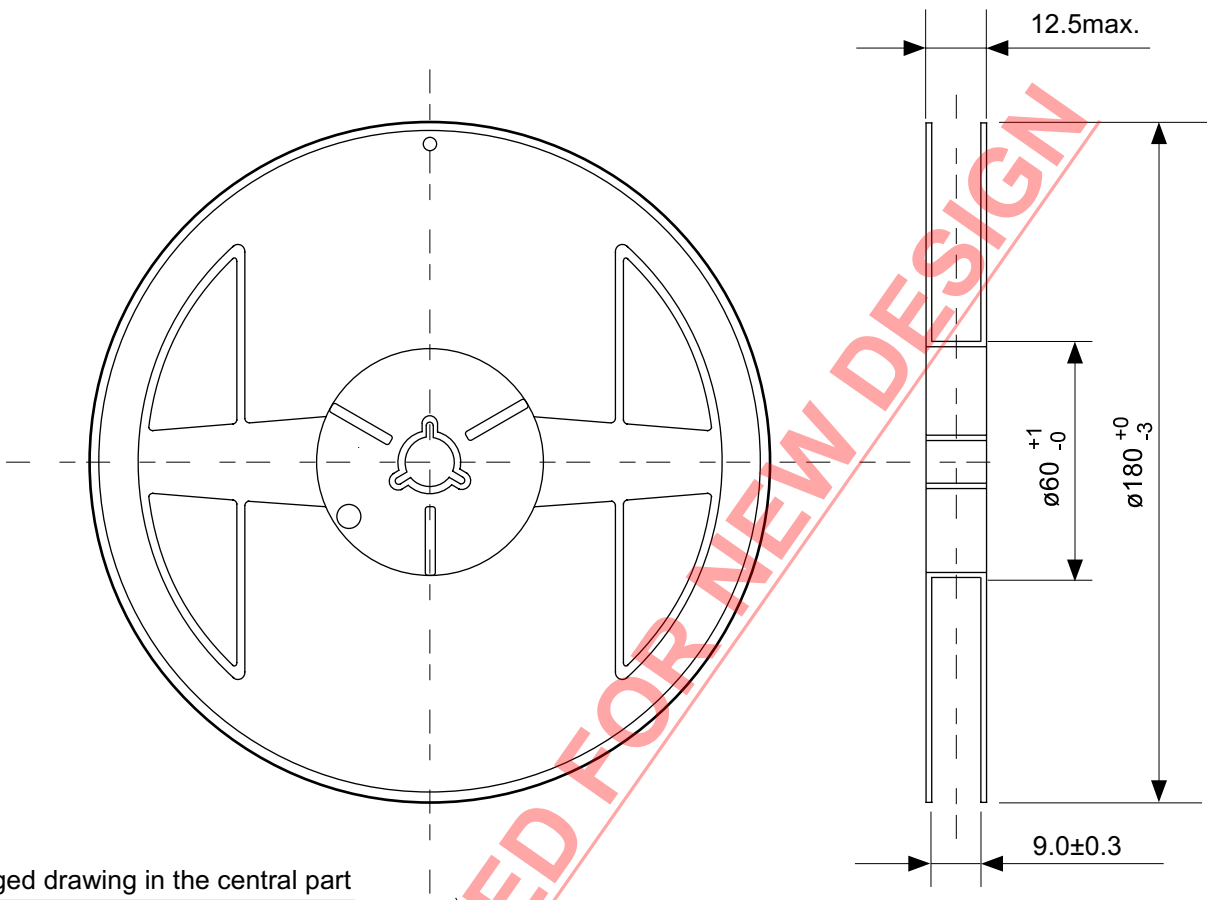
Seiko Instruments Inc.



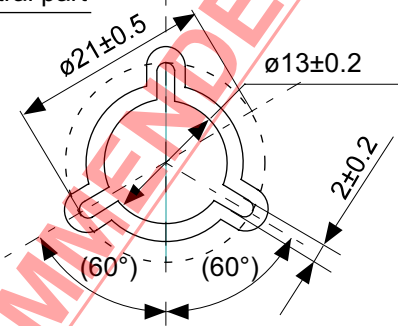
Feed direction

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

NOT RECOMMENDED FOR NEW DESIGN

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

Seiko Instruments Inc.



Seiko Instruments Inc.
www.sii-ic.com

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