

## 6V High Speed INVERTER

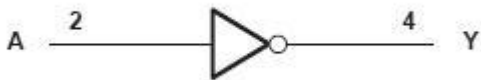
### DESCRIPTION

BL8070 is CMOS single inverter gate. The device is fabricated with advanced CMOS technology to achieve ultra high speed with high output drive while maintaining low static power dissipation over a very broad VCC operating range. The device is specified to operate over the 1.65V to 6.0V V<sub>CC</sub> range. Inputs tolerate voltage up to 6V independent of VCC operating voltage.

### FEATURES

- Space saving 5-lead surface mount SC70 Package and 1x1mm DFN package
- Ultra High Speed; TPD 8.5 ns Typ into 50 pF at 5V V<sub>CC</sub>
- High Output Drive; ±16 mA at 5V V<sub>CC</sub>
- Broad VCC Operating Range; 1.65V to 6.0V
- Low Power Consumption, 1μA Max ICC
- Schmitt Trigger Action at input makes the circuit tolerant for slower input rise and fall time

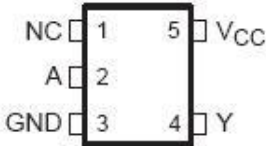
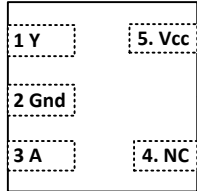
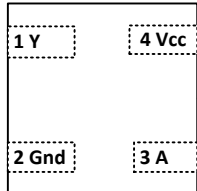
### FUNCTION DIAGRAM



### APPLICATIONS

- Cell phone and other portable device
- 3G module

### ORDERING INFORMATION / PIN CONFIGURATION / MARKING

Ordering Part No.	Package	Pin Out	Marking
BL8070CA5TR	SC70-5		<u>OC</u> <u>YW</u>
BL8070CKDTR	DFN1x1-5L		<u>OC</u> <u>YW</u>
BL8070CKDTR	DFN1x1-4L		<u>OC</u> <u>YW</u>

YW: Date Code

## ABSOLUTE MAXIMUM RATING

Parameter	Symbol	Limit	Unit
Supply voltage range	$V_{CC}$	-0.5~7	V
Input voltage range	$V_{IN}$		
Output voltage range	$V_{OUT}$		
DC Input Diode Current	$I_{IK}$	$\pm 20$	mA
DC Output Diode Current	$I_{OK}$		
DC Output Current	$I_{OL}/I_{OH}$	$\pm 25$	
Storage Temperature Range	$T_{stg}$	-40 to 150	$^{\circ}C$
Package Power Dissipation @ +70 $^{\circ}C$	$P_d$	200	mW

## THERMAL RESISTANCE RATING

Parameter	Device	Symbol	Limit	Unit
Package thermal impedance	SOT23-5-1.7	$\theta_{JA}$	252	$^{\circ}C/W$
	SO23-5-1.3		206	
	SC70-5		142	

## RECOMMENDED OPERATING CONDITION

$T_j=25^{\circ}C$

Parameter	Symbol	Min.	Max.	Unit
Supply voltage	$V_{CC}$	1.65	6	V
Input voltage	$V_{IN}$	0	$V_{CC}$	
Output voltage	$V_{OUT}$	0	$V_{CC}$	
High-level input voltage	$V_{IH}$	VCC = 2 V	1.3	
		VCC = 3 V	1.8	
		VCC = 6 V	3.2	
Low-level input voltage	$V_{IL}$	VCC = 2 V	0.7	
		VCC = 3 V	1.0	
		VCC = 6 V	2.2	
High-level output current	$I_{OH}$	VCC = 2 V	-50	$\mu A$
		VCC = 3.3 $\pm$ 0.3 V	-8	mA
		VCC = 6 $\pm$ 0.5 V	-16	
Low-level output current	$I_{OL}$	VCC = 2 V	50	$\mu A$
		VCC = 3.3 $\pm$ 0.3 V	8	mA
		VCC = 6 $\pm$ 0.5 V	16	
Input transition rise or fall rate	$\Delta t/\Delta v$	VCC = 3.3 $\pm$ 0.3 V	100	ns/V
		VCC = 6 $\pm$ 0.5 V	20	
Operation Temperature	$T_A$		-40 to 85	$^{\circ}C$

## ELECTRICAL CHARACTERISTICS (unless otherwise noted)

Parameter	Test condition	Vcc	Min.	Max.	Unit
II	VI = 6.0 V or GND	0 V to 6.0 V		±1	μ A
ICC	VI = VCC or GND, IO = 0	6.0V		1	μ A
Ci	VI = VCC or GND	5.0V		10	pF
VOH	IOH = -50μ A	2.0V	1.9		V
		3.0V	2.9		
		5.0V	4.9		
	IOH = -8 mA	3.0V	2.6		
	IOH = -16 mA	5.0V	4.5		
VOL	IOH = -50μ A	2.0V		0.1	
		3.0V		0.1	
		5.0V		0.1	
	IOH = -8 mA	3.0V		0.4	
	IOH = -16 mA	5.0V		0.5	

## SWITCHING CHARACTERISTICS(VCC = 3.3 V ± 0.3 V)

Parameter	Input	Output	Load capacitance	Min.	Max.	Unit
tPLH	A	Y	CL = 15 pF	1	8.5	ns
tPHL				1	8.5	
tPLH	A	Y	CL = 50pF	1	12	
tPHL				1	12	

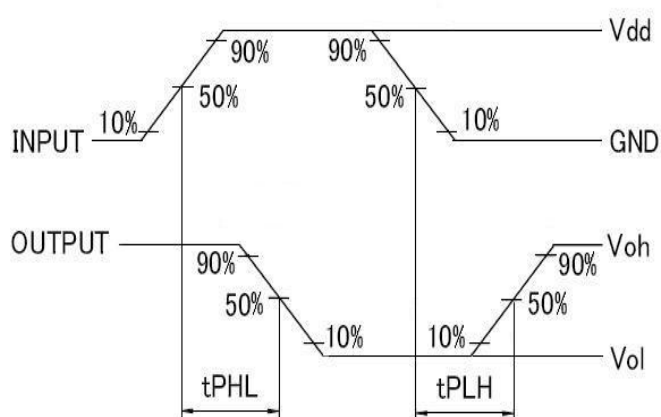
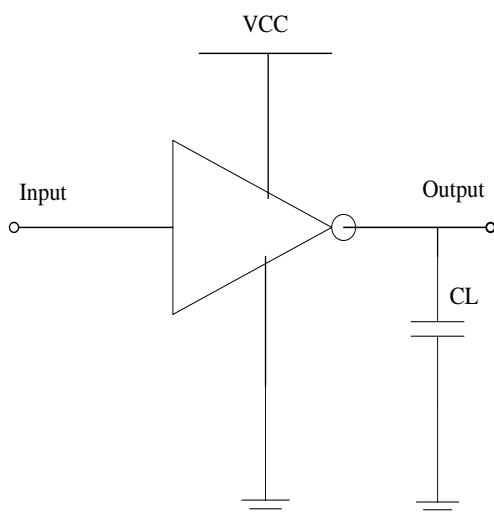
## SWITCHING CHARACTERISTICS(VCC = 6.0 V ± 0.5 V)

Parameter	Input	Output	Load capacitance	Min.	Max.	Unit
tPLH	A	Y	CL = 15 pF	1	6.5	ns
tPHL				1	6.5	
tPLH	A	Y	CL = 50pF	1	8.5	
tPHL				1	8.5	

## OPERATING CHARACTERISTICS, VCC = 5 V, TA = 25°C

Symbol	Parameter	Test condition	TYP.	Unit
Cpd	Power dissipation capacitance	No load, f = 1 MHz	12	pF

## PARAMETER MEASUREMENT INFORMATION



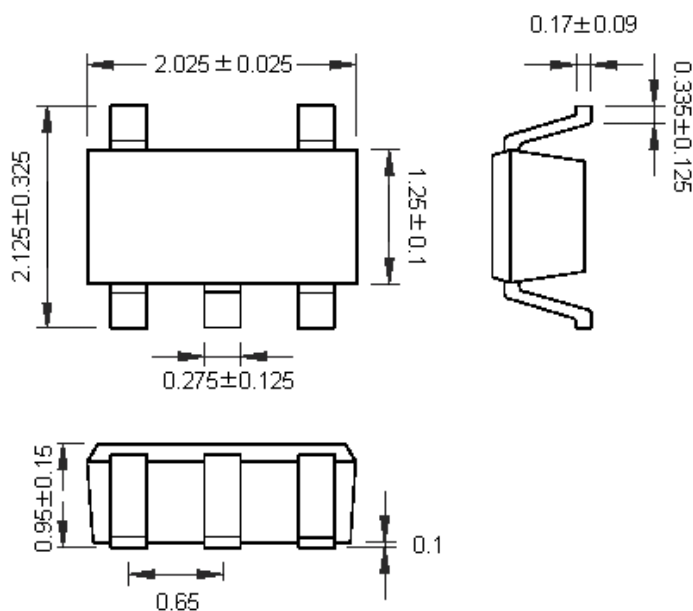
**Note:**

- A. The outputs are measured one at a time, with one input transition per measurement.
- B. All parameters and waveforms are not applicable to all devices.
- C. CL includes probe and jig capacitance
- D. All input pulses are supplied by generators having the following characteristics: PRR  $\leq$  1 MHz,  $Z_0 = 50 \Omega$ ,  $t_r \leq 3$  ns,  $t_f \leq 3$  ns.

## PACKAGE OUTLINE

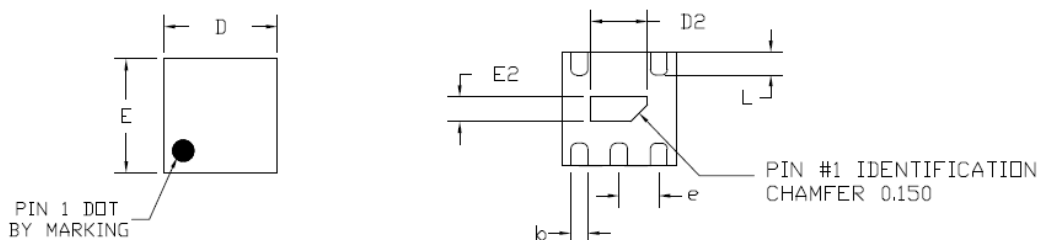
Package	SC70-5	Devices per reel	3000	Unit	mm
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Package specification:



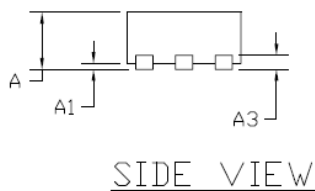
Package	DFN1x1-5L	Devices per reel	5000	Unit	mm
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Package specification:



TOP VIEW

BOTTOM VIEW



SIDE VIEW

COMMON DIMENSIONS(MM)			
PKG.	X1:EXTREMA THIN		
REF.	MIN.	NOM.	MAX.
A	>0.40	-	0.50
A1	0.00	-	0.05
A3	0.125REF.		
D	0.95	1.00	1.05
E	0.95	1.00	1.05
D2	0.45	0.50	0.55
E2	0.17	0.22	0.27
L	0.15	0.20	0.25
b	0.12	0.15	0.18
e	0.35Bsc		

Package	DFN1x1-4L	Devices per reel	5000	Unit	mm
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Package specification:

• DFN(PLP)1010-4

Unit: mm

## PACKAGE DIMENSIONS

