

## 阅读申明

- 1.本站收集的数据手册和产品资料都来自互联网，版权归原作者所有。如读者和版权方有任何异议请及时告之，我们将妥善解决。
- 2.本站提供的中文数据手册是英文数据手册的中文翻译，其目的是协助用户阅读，该译文无法自动跟随原稿更新，同时也可能存在翻译上的不当。建议读者以英文原稿为参考以便获得更精准的信息。
- 3.本站提供的产品资料，来自厂商的技术支持或者使用者的心得体会等，其内容可能存在描述上的差异，建议读者做出适当判断。
- 4.如需与我们联系，请发邮件到marketing@iczoom.com，主题请标有“数据手册”字样。

## Read Statement

1. The datasheets and other product information on the site are all from network reference or other public materials, and the copyright belongs to the original author and original published source. If readers and copyright owners have any objections, please contact us and we will deal with it in a timely manner.
2. The Chinese datasheets provided on the website is a Chinese translation of the English datasheets. Its purpose is for reader's learning exchange only and do not involve commercial purposes. The translation cannot be automatically updated with the original manuscript, and there may also be improper translations. Readers are advised to use the English manuscript as a reference for more accurate information.
3. All product information provided on the website refer to solutions from manufacturers' technical support or users the contents may have differences in description, and readers are advised to take the original article as the standard.
4. If you have any questions, please contact us at marketing@iczoom.com and mark the subject with "Datasheets" .



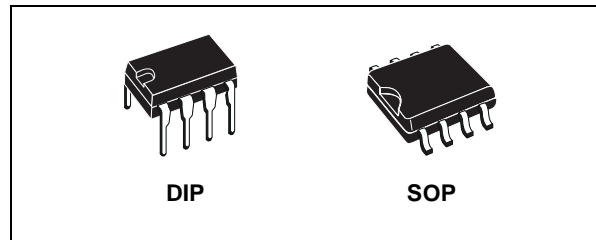
# HCF40107B

## DUAL 2-INPUT NAND BUFFER/DRIVER

- 32 TIMES STANDARD B-SERIES OUTPUT CURRENT DRIVE SINKING CAPABILITY - 136 mA TYP. AT  $V_{DD} = 10V$ ,  $V_{DS} = 1V$
- QUIESCENT CURRENT SPECIF. UP TO 20V
- 5V, 10V AND 15V PARAMETRIC RATINGS
- INPUT LEAKAGE CURRENT  
 $I_l = 100nA$  (MAX) AT  $V_{DD} = 18V$   $T_A = 25^\circ C$
- 100% TESTED FOR QUIESCENT CURRENT
- MEETS ALL REQUIREMENTS OF JEDEC JESD13B "STANDARD SPECIFICATIONS FOR DESCRIPTION OF B SERIES CMOS DEVICES"

### DESCRIPTION

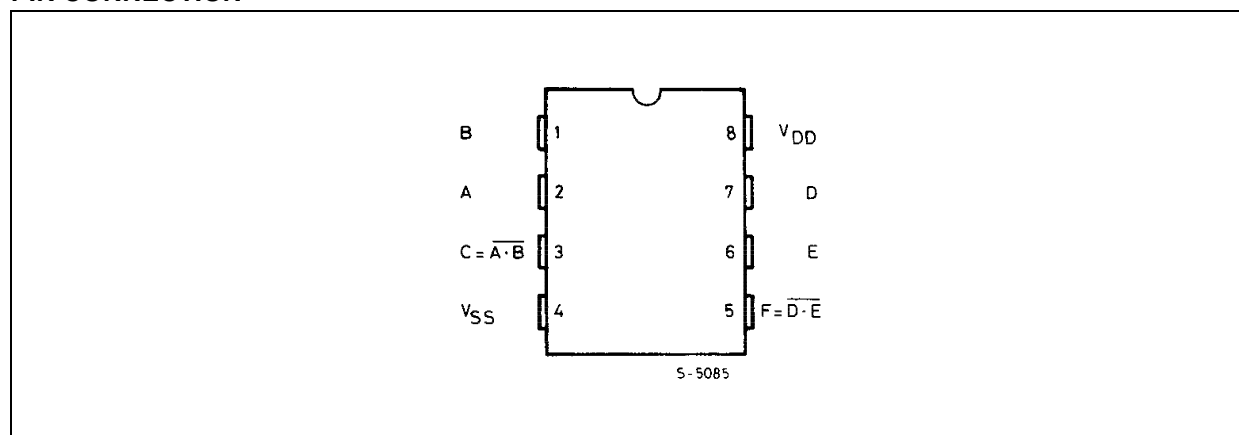
HCF40107B is a monolithic integrated circuit fabricated in Metal Oxide Semiconductor technology available in DIP and SOP packages. HCF40107B is a dual 2-input NAND buffer/driver containing two independent 2-input NAND buffers with open-drain single n-channel transistor outputs. This device features a wired-OR capability and high output sink current capability (136 mA typ. at  $V_{DD} = 10V$ ,  $V_{DS} = 1V$ ).



### ORDER CODES

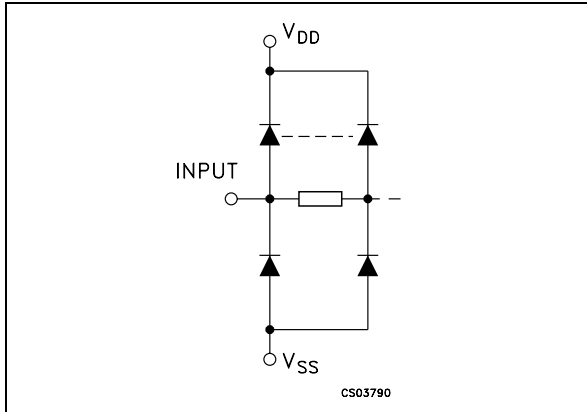
PACKAGE	TUBE	T & R
DIP	HCF40107BEY	
SOP	HCF40107BM1	HCF40107M013TR

### PIN CONNECTION



# HCF40107B

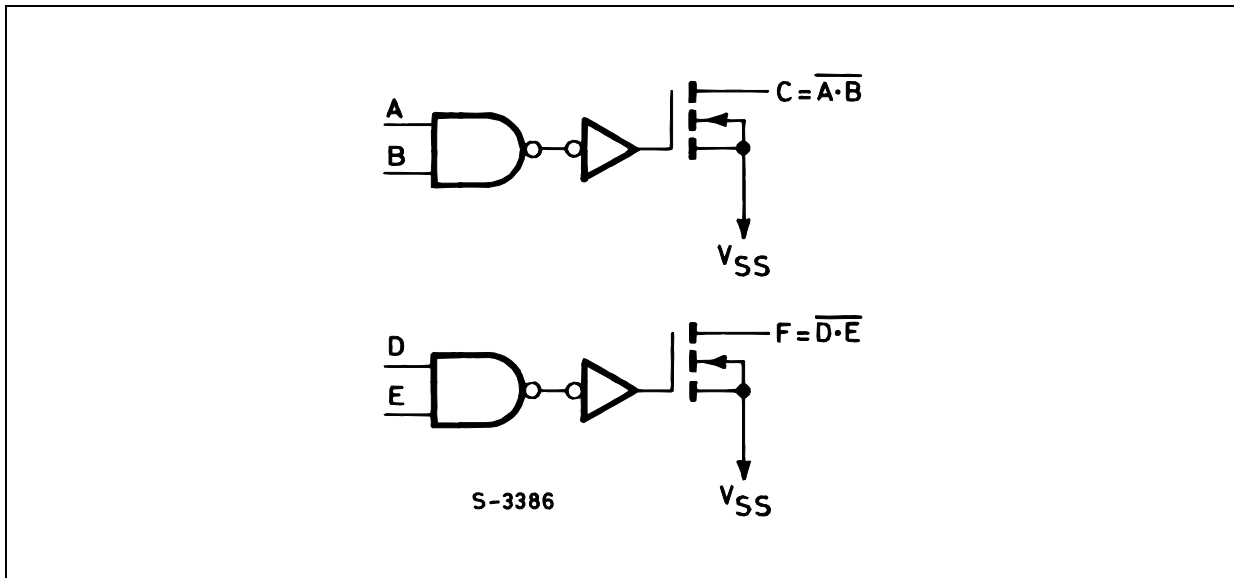
## INPUT EQUIVALENT CIRCUIT



## PIN DESCRIPTION

PIN No	SYMBOL	NAME AND FUNCTION
2, 1, 7, 6	A, B, D, E	Input
3, 5	C, F	Outputs
4	V <sub>SS</sub>	Negative Supply Voltage
8	V <sub>DD</sub>	Positive Supply Voltage

## FUNCTIONAL DIAGRAM

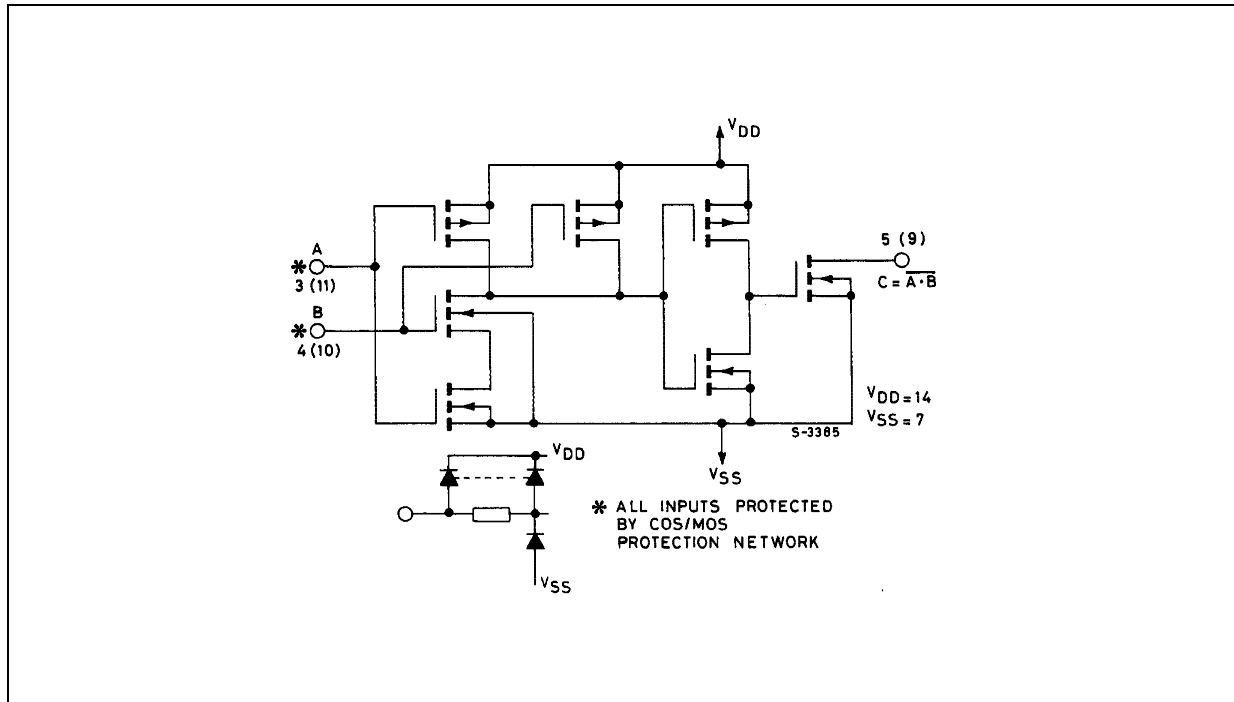


## TRUTH TABLE

A	B	C	
L	L	H*	Z <sup>#</sup>
H	L	H*	Z <sup>#</sup>
L	H	H*	Z <sup>#</sup>
H	H	L	

\* : Requires external and pull-up resistor (R<sub>L</sub>) to V<sub>DD</sub>.  
 # : Without pull-up resistor (3-state).

## LOGIC DIAGRAM



## ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$V_{DD}$	Supply Voltage	-0.5 to +22	V
$V_I$	DC Input Voltage	-0.5 to $V_{DD} + 0.5$	V
$I_I$	DC Input Current	$\pm 10$	mA
$P_D$	Power Dissipation per Package	200	mW
	Power Dissipation per Output Transistor	100	mW
$T_{op}$	Operating Temperature	-55 to +125	$^{\circ}\text{C}$
$T_{stg}$	Storage Temperature	-65 to +150	$^{\circ}\text{C}$

Absolute Maximum Ratings are those values beyond which damage to the device may occur. Functional operation under these conditions is not implied.

All voltage values are referred to  $V_{SS}$  pin voltage.

## RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Value	Unit
$V_{DD}$	Supply Voltage	3 to 20	V
$V_I$	Input Voltage	0 to $V_{DD}$	V
$T_{op}$	Operating Temperature	-55 to 125	$^{\circ}\text{C}$

DC SPECIFICATIONS

Symbol	Parameter	Test Condition				Value						Unit	
		V <sub>I</sub> (V)	V <sub>O</sub> (V)	I <sub>ol</sub>   ( $\mu$ A)	V <sub>DD</sub> (V)	T <sub>A</sub> = 25°C			-40 to 85°C		-55 to 125°C		
						Min.	Typ.	Max.	Min.	Max.	Min.		Max.
I <sub>L</sub>	Quiescent Current	0/5			5		0.02	5		150		30	$\mu$ A
		0/10			10		0.02	10		300		60	
		0/15			15		0.02	20		600		120	
		0/20			20		0.04	100		3000		600	
V <sub>IH</sub> **	High Level Input Voltage		0.5/4.5	<1	5	3.5			3.5		3.5		V
			1/9	<1	10	7			7		7		
			1.5/13.5	<1	15	11			11		11		
V <sub>IL</sub> **	Low Level Input Voltage		4.5/0.5	<1	5			1.5		1.5		1.5	V
			9/1	<1	10			3		3		3	
			13.5/1.5	<1	15			4		4		4	
I <sub>OL</sub>	Output Sink Current	5	0.4		5	21	32		16		12		mA
		5	1		5	44	68		30		25		
		10	0.5		10	49	74		37		28		
		10	1		10	89	136		68		51		
		15	0.5		15	66	100		50		38		
I <sub>OH</sub>	Output Drive Current	No Internal Pull-up Device									mA		
I <sub>IH</sub> , I <sub>IL</sub>	Input Leakage Current	0/18	Any Input		18		$\pm 10^{-5}$	$\pm 0.1$		$\pm 0.1$		$\pm 1$	$\mu$ A
I <sub>OH</sub> , I <sub>OL</sub> ***	3-State Output Leakage Current	0/18	18		18		$\pm 10^{-4}$	2		2		20	$\mu$ A
C <sub>I</sub>	Input Capacitance		Any Input				5	7.5					pF
C <sub>O</sub>	Output Capacitance		Any Output				30						pF

The Noise Margin for both "1" and "0" level is: 1V min. with V<sub>DD</sub>=5V, 2V min. with V<sub>DD</sub>=10V, 2.5V min. with V<sub>DD</sub>=15V

\*\* Measured with external pull-up resistor, R<sub>L</sub> = 10k $\Omega$  to V<sub>DD</sub>.

\*\*\* Forced output disabled.

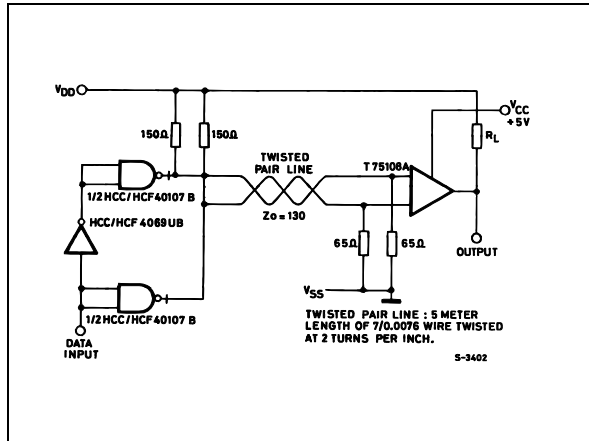
DYNAMIC ELECTRICAL CHARACTERISTICS (T<sub>amb</sub> = 25°C, C<sub>L</sub> = 50pF, R<sub>L</sub> = 200K $\Omega$ , t<sub>r</sub> = t<sub>f</sub> = 20 ns)

Symbol	Parameter	Test Condition			Value (*)			Unit
		V <sub>DD</sub> (V)			Min.	Typ.	Max.	
t <sub>PHL</sub> t <sub>PLH</sub>	Propagation Delay Time High to Low	5	R <sub>L</sub> * = 120 $\Omega$			100	200	ns
		10				45	90	
		15				30	60	
	Low to High	5	R <sub>L</sub> * = 120 $\Omega$			100	200	ns
		10				60	120	
		15				50	100	
t <sub>THL</sub> t <sub>TLH</sub>	Transition Time High to Low	5	R <sub>L</sub> * = 120 $\Omega$			50	100	ns
		10				20	40	
		15				10	20	
	Low to High	5	R <sub>L</sub> * = 120 $\Omega$			50	100	ns
		10				35	70	
		15				25	50	

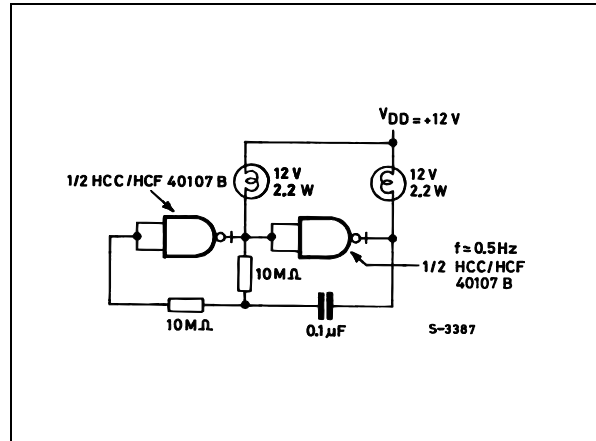
(\*) R<sub>L</sub> is external pull-up resistor to V<sub>DD</sub>.

TYPICAL APPLICATIONS

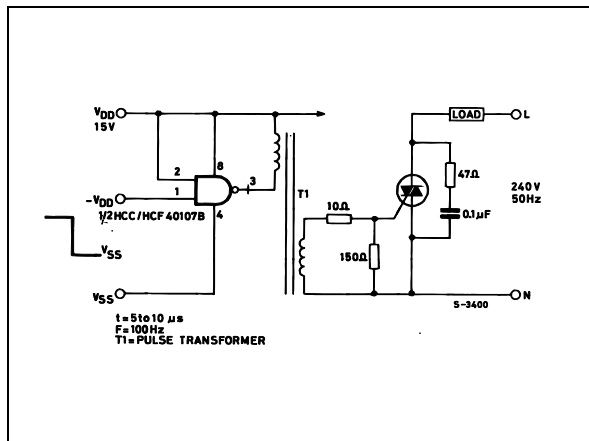
Line-driver Circuit.



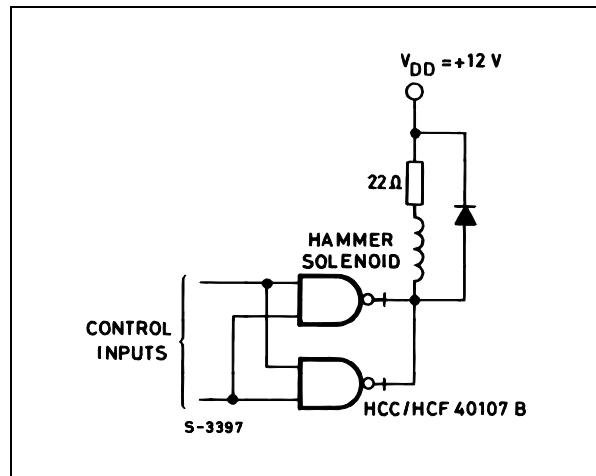
A 2.2-watt Incandescent Lamp-driver Circuit.



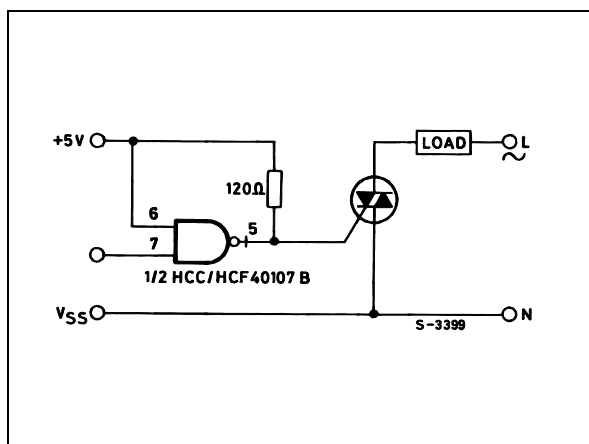
Interface of 40107B with Triac, with COS/MOS Component and Triac isolated.



Solenoid Driver Circuit

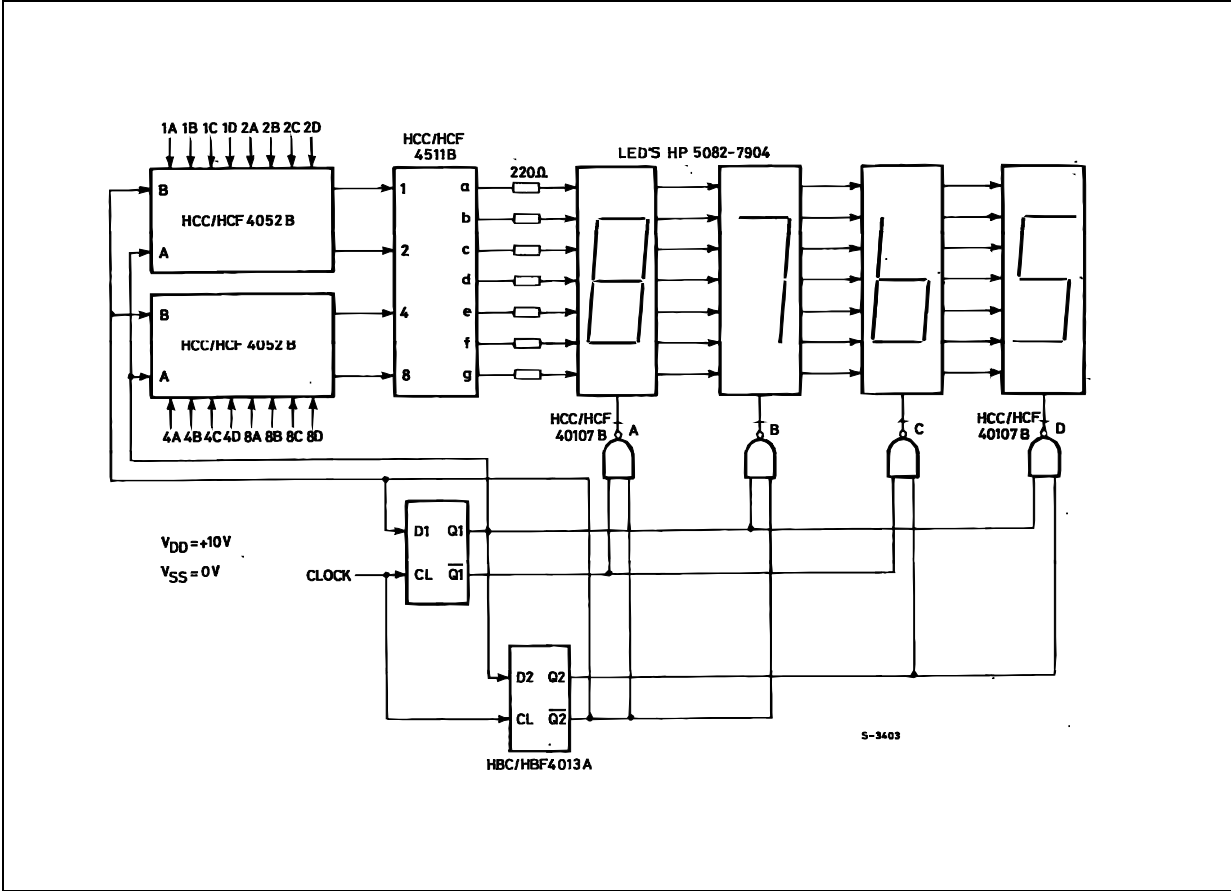


Direct Dc Driver Interface of 40107B with a Triac.

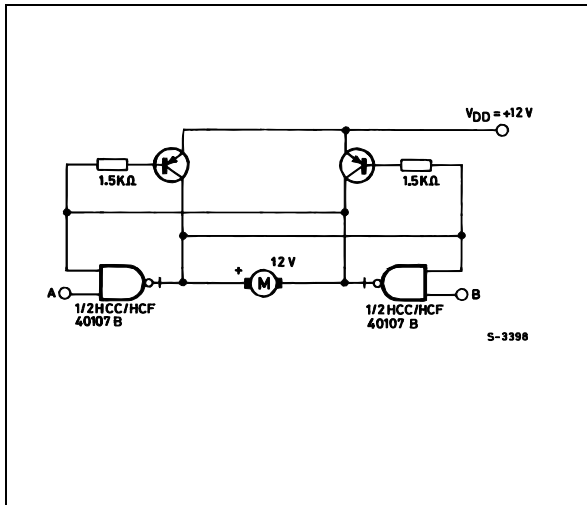


# HCF40107B

## Multiplexed Led Circuit

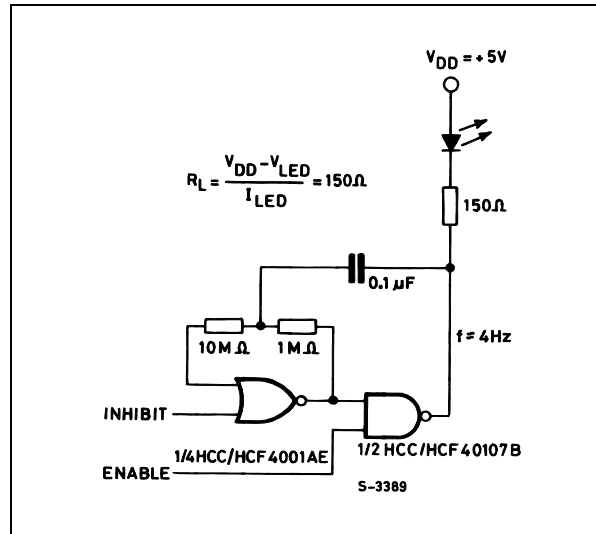


Motor-controller Circuit



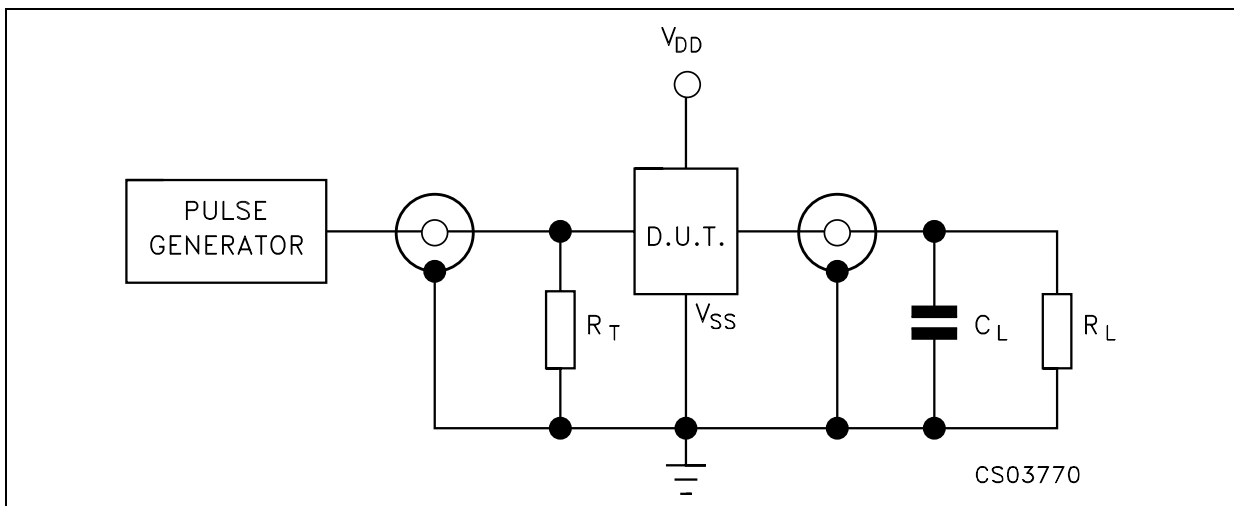
A	B	MOTOR FUNCTION
L	L	OFF
H	L	COUNTER CLOCKWISE
H	H	AS PREVIOUS STATE
L	H	CLOCKWISE
H	H	AS PREVIOUS STATE

Led Driver Circuit



INHIBIT	ENABLE	OUTPUT
L	L	OFF
H	L	OFF
L	H	OFF
L	H	ON

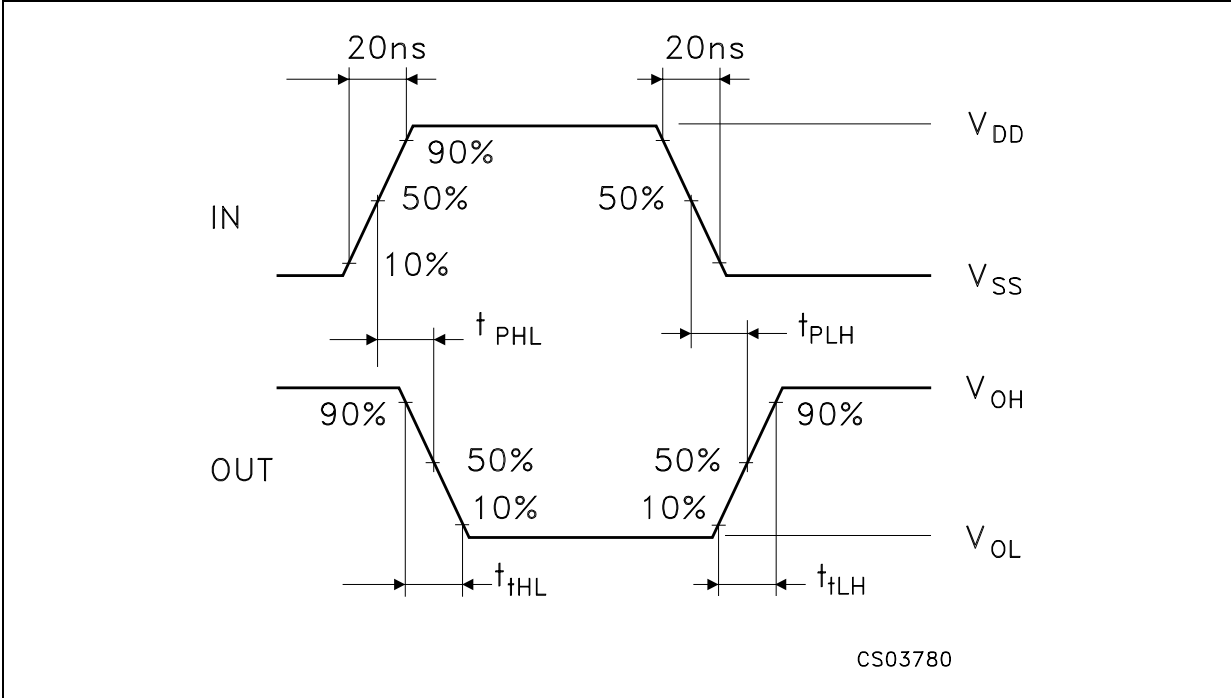
TEST CIRCUIT



$C_L = 50\text{pF}$  or equivalent (includes jig and probe capacitance)  
 $R_L = 200\text{K}\Omega$   
 $R_T = Z_{OUT}$  of pulse generator (typically  $50\Omega$ )

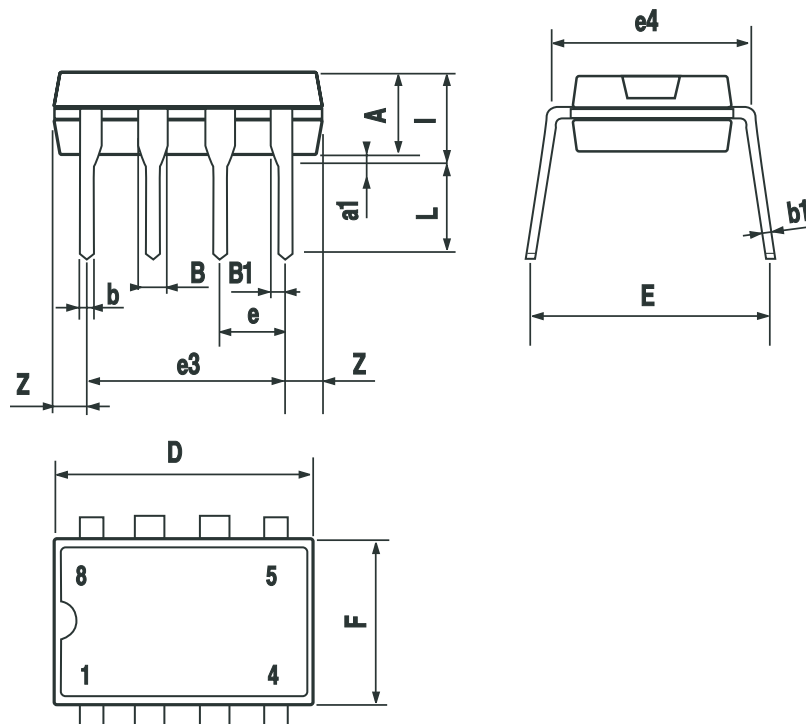


WAVEFORM : PROPAGATION DELAY TIMES (f=1MHz; 50% duty cycle)



### Plastic DIP-8 MECHANICAL DATA

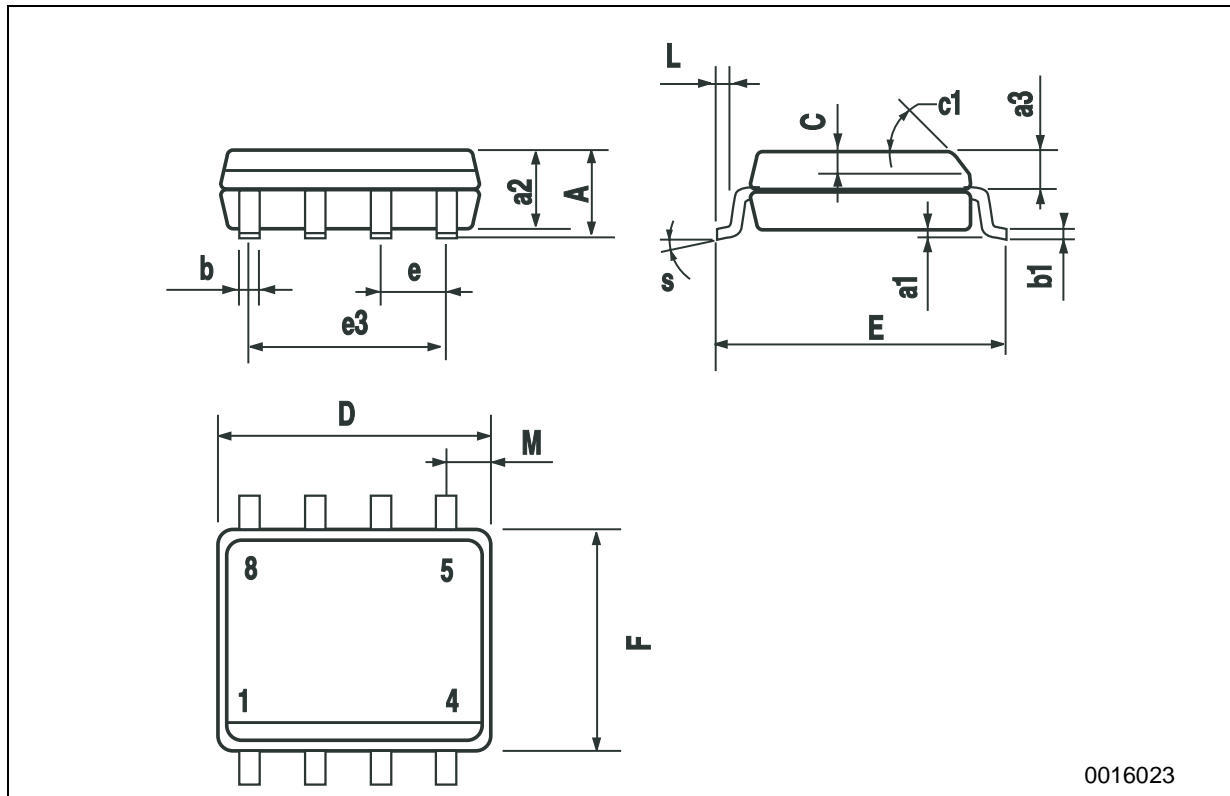
DIM.	mm.			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A		3.3			0.130	
a1	0.7			0.028		
B	1.39		1.65	0.055		0.065
B1	0.91		1.04	0.036		0.041
b		0.5			0.020	
b1	0.38		0.5	0.015		0.020
D			9.8			0.386
E		8.8			0.346	
e		2.54			0.100	
e3		7.62			0.300	
e4		7.62			0.300	
F			7.1			0.280
I			4.8			0.189
L		3.3			0.130	
Z	0.44		1.6	0.017		0.063



P001F

**SO-8 MECHANICAL DATA**

DIM.	mm.			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A			1.75			0.068
a1	0.1		0.25	0.003		0.009
a2			1.65			0.064
a3	0.65		0.85	0.025		0.033
b	0.35		0.48	0.013		0.018
b1	0.19		0.25	0.007		0.010
C	0.25		0.5	0.010		0.019
c1	45° (typ.)					
D	4.8		5.0	0.189		0.196
E	5.8		6.2	0.228		0.244
e		1.27			0.050	
e3		3.81			0.150	
F	3.8		4.0	0.149		0.157
L	0.4		1.27	0.015		0.050
M			0.6			0.023
S	8° (max.)					



0016023

Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

© The ST logo is a registered trademark of STMicroelectronics

© 2002 STMicroelectronics - Printed in Italy - All Rights Reserved  
STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - Canada - China - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco  
Singapore - Spain - Sweden - Switzerland - United Kingdom - United States.

© <http://www.st.com>

