

MC14106B

Hex Schmitt Trigger

The MC14106B hex Schmitt Trigger is constructed with MOS P-channel and N-channel enhancement mode devices in a single monolithic structure. These devices find primary use where low power dissipation and/or high noise immunity is desired. The MC14106B may be used in place of the MC14069UB hex inverter for enhanced noise immunity or to “square up” slowly changing waveforms.

This device contains protection circuitry to guard against damage due to high static voltages or electric fields. However, precautions must be taken to avoid applications of any voltage higher than maximum rated voltages to this high-impedance circuit. For proper operation, V_{in} and V_{out} should be constrained to the range $V_{SS} \leq (V_{in} \text{ or } V_{out}) \leq V_{DD}$.

Unused inputs must always be tied to an appropriate logic voltage level (e.g., either V_{SS} or V_{DD}). Unused outputs must be left open.

Features

- Increased Hysteresis Voltage Over the MC14584B
- Supply Voltage Range = 3.0 Vdc to 18 Vdc
- Capable of Driving Two Low-power TTL Loads or One Low-power Schottky TTL Load Over the Rated Temperature Range
- Pin-for-Pin Replacement for CD40106B and MM74C14
- Can Be Used to Replace the MC14584B or MC14069UB
- NLV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q100 Qualified and PPAP Capable
- These Devices are Pb-Free and are RoHS Compliant

MAXIMUM RATINGS (Voltages Referenced to V_{SS})

Symbol	Parameter	Value	Unit
V_{DD}	DC Supply Voltage Range	-0.5 to +18.0	V
V_{in}, V_{out}	Input or Output Voltage Range (DC or Transient)	-0.5 to $V_{DD} + 0.5$	V
I_{in}, I_{out}	Input or Output Current (DC or Transient) per Pin	± 10	mA
P_D	Power Dissipation, per Package (Note 1)	500	mW
T_A	Ambient Temperature Range	-55 to +125	°C
T_{stg}	Storage Temperature Range	-65 to +150	°C
T_L	Lead Temperature (8-Second Soldering)	260	°C

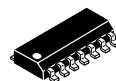
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. Temperature Derating: “D/DW” Packages: -7.0 mW/°C From 65°C To 125°C

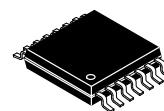


ON Semiconductor®

<http://onsemi.com>

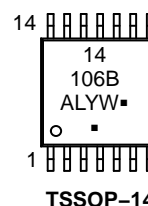
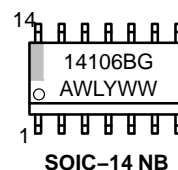


SOIC-14 NB
D SUFFIX
CASE 751A



TSSOP-14
DT SUFFIX
CASE 948G

MARKING DIAGRAMS



- A = Assembly Location
- WL, L = Wafer Lot
- YY, Y = Year
- WW, W = Work Week
- G or ■ = Pb-Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

MC14106B

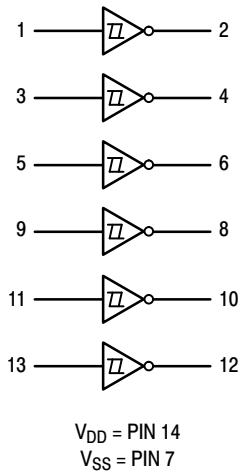


Figure 1. Logic Diagram

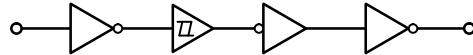


Figure 2. Equivalent Circuit Schematic
(1/6 of Circuit Shown)

ORDERING INFORMATION

Device	Package	Shipping [†]
MC14106BDG	SOIC-14 NB (Pb-Free)	55 Units / Rail
NLV14106BDG*	SOIC-14 NB (Pb-Free)	55 Units / Rail
MC14106BDR2G	SOIC-14 NB (Pb-Free)	2500 / Tape & Reel
NLV14106BDR2G*	SOIC-14 NB (Pb-Free)	2500 / Tape & Reel
MC14106BDTR2G	TSSOP-14 (Pb-Free)	2500 / Tape & Reel
NLV14106BDTR2G*	TSSOP-14 (Pb-Free)	2500 / Tape & Reel

[†]For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

*NLV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q100 Qualified and PPAP Capable.

MC14106B

ELECTRICAL CHARACTERISTICS (Voltages Referenced to V_{SS})

Characteristic	Symbol	V_{DD} Vdc	-55°C		25°C			125°C		Unit	
			Min	Max	Min	Typ (Note 2)	Max	Min	Max		
Output Voltage $V_{in} = V_{DD}$ "0" Level "1" Level $V_{in} = 0$	V_{OL}	5.0	–	0.05	–	0	0.05	–	0.05	Vdc	
		10	–	0.05	–	0	0.05	–	0.05		
		15	–	0.05	–	0	0.05	–	0.05		
	V_{OH}	5.0	4.95	–	4.95	5.0	–	4.95	–	Vdc	
		10	9.95	–	9.95	10	–	9.95	–		
		15	14.95	–	14.95	15	–	14.95	–		
Hysteresis Voltage	$V_H^{(5)}$	5.0	0.3	2.0	0.3	1.1	2.0	0.3	2.0	Vdc	
		10	1.2	3.4	1.2	1.7	3.4	1.2	3.4		
		15	1.6	5.0	1.6	2.1	5.0	1.6	5.0		
Threshold Voltage Positive-Going Negative-Going	V_{T+}	5.0	2.2	3.6	2.2	2.9	3.6	2.2	3.6	Vdc	
		10	4.6	7.1	4.6	5.9	7.1	4.6	7.1		
		15	6.8	10.8	6.8	8.8	10.8	6.8	10.8		
	V_{T-}	5.0	0.9	2.8	0.9	1.9	2.8	0.9	2.8	Vdc	
		10	2.5	5.2	2.5	3.9	5.2	2.5	5.2		
		15	4.0	7.4	4.0	5.8	7.4	4.0	7.4		
Output Drive Current ($V_{OH} = 2.5$ Vdc) ($V_{OH} = 4.6$ Vdc) ($V_{OH} = 9.5$ Vdc) ($V_{OH} = 13.5$ Vdc) ($V_{OL} = 0.4$ Vdc) ($V_{OL} = 0.5$ Vdc) ($V_{OL} = 1.5$ Vdc)	Source	I_{OH}	5.0	-3.0	–	-2.4	-4.2	–	-1.7	–	mAdc
			5.0	-0.64	–	-0.51	-0.88	–	-0.36	–	
			10	-1.6	–	-1.3	-2.25	–	-0.9	–	
			15	-4.2	–	-3.4	-8.8	–	-2.4	–	
	Sink	I_{OL}	5.0	0.64	–	0.51	0.88	–	0.36	–	mAdc
			10	1.6	–	1.3	2.25	–	0.9	–	
15			4.2	–	3.4	8.8	–	2.4	–		
Input Current	I_{in}	15	–	± 0.1	–	± 0.00001	± 0.1	–	± 1.0	μ Adc	
Input Capacitance ($V_{in} = 0$)	C_{in}	–	–	–	–	5.0	7.5	–	–	pF	
Quiescent Current (Per Package)	I_{DD}	5.0	–	0.25	–	0.0005	0.25	–	7.5	μ Adc	
		10	–	0.5	–	0.0010	0.5	–	15		
		15	–	1.0	–	0.0015	1.0	–	30		
Total Supply Current (Notes 3 & 4) (Dynamic plus Quiescent, Per Package) ($C_L = 50$ pF on all outputs, all buffers switching)	I_T	5.0	$I_T = (1.8 \mu\text{A/kHz}) f + I_{DD}$							μ Adc	
		10	$I_T = (3.6 \mu\text{A/kHz}) f + I_{DD}$								
		15	$I_T = (5.4 \mu\text{A/kHz}) f + I_{DD}$								

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

2. Data labelled "Typ" is not to be used for design purposes but is intended as an indication of the IC's potential performance.

3. The formulas given are for the typical characteristics only at 25°C.

4. To calculate total supply current at loads other than 50 pF:

$$I_T(C_L) = I_T(50 \text{ pF}) + (C_L - 50) \text{ Vfk where } I_T \text{ is in } \mu\text{A (per package), } C_L \text{ in pF, } V = (V_{DD} - V_{SS}) \text{ in volts, } f \text{ in kHz is input frequency, and } k = 0.001.$$

5. $V_H = V_{T+} - V_{T-}$ (But maximum variation of V_H is specified as less than $V_{T+ \text{ max}} - V_{T- \text{ min}}$).

MC14106B

SWITCHING CHARACTERISTICS (C_L = 50 pF, T_A = 25°C)

Characteristic	Symbol	V _{DD} Vdc	Min	Typ (Note 6)	Max	Unit
Output Rise Time	t _{TLH}	5.0	–	100	200	ns
		10	–	50	100	
		15	–	40	80	
Output Fall Time	t _{THL}	5.0	–	100	200	ns
		10	–	50	100	
		15	–	40	80	
Propagation Delay Time	t _{PLH} , t _{PHL}	5.0	–	125	250	ns
		10	–	50	100	
		15	–	40	80	

6. Data labelled "Typ" is not to be used for design purposes but is intended as an indication of the IC's potential performance.

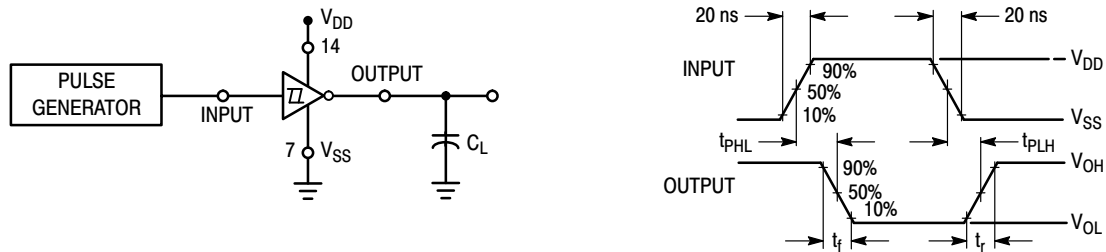


Figure 1. Switching Time Test Circuit and Waveforms

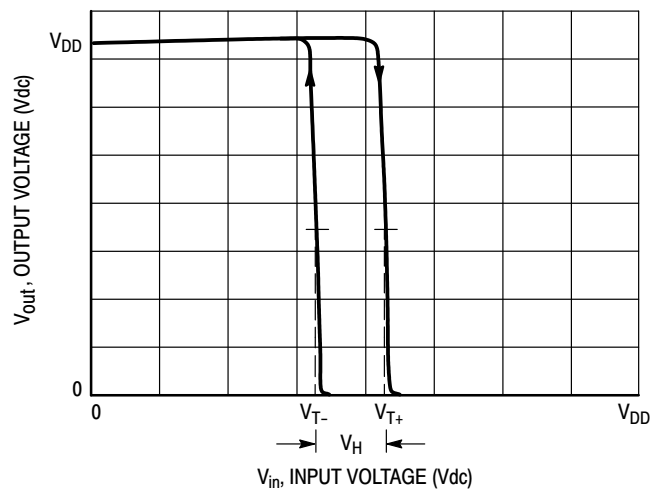


Figure 2. Typical Transfer Characteristics

MC14106B

APPLICATIONS

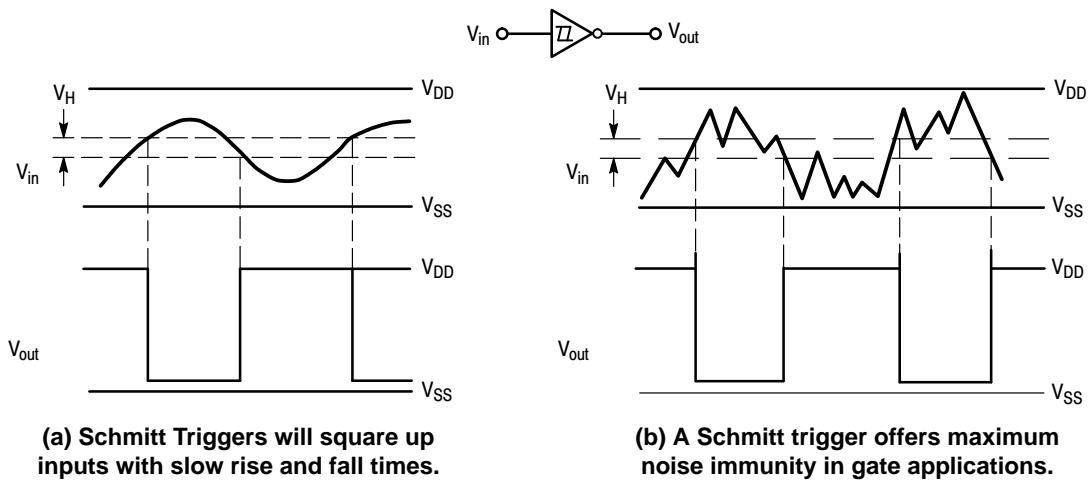
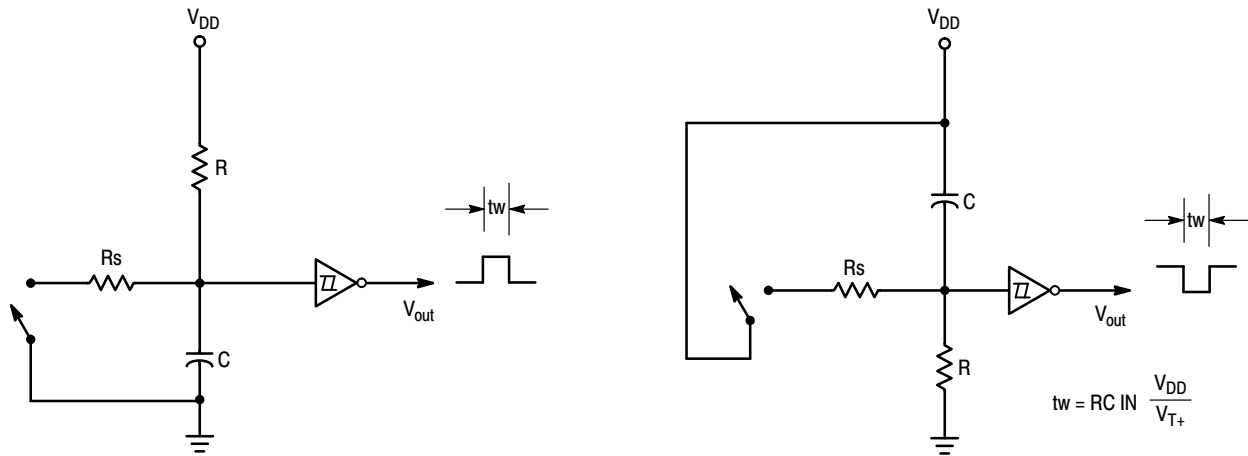


Figure 3.



Useful as Pushbutton/Keyboard Debounce Circuit.

Figure 4. Monostable Multivibrator

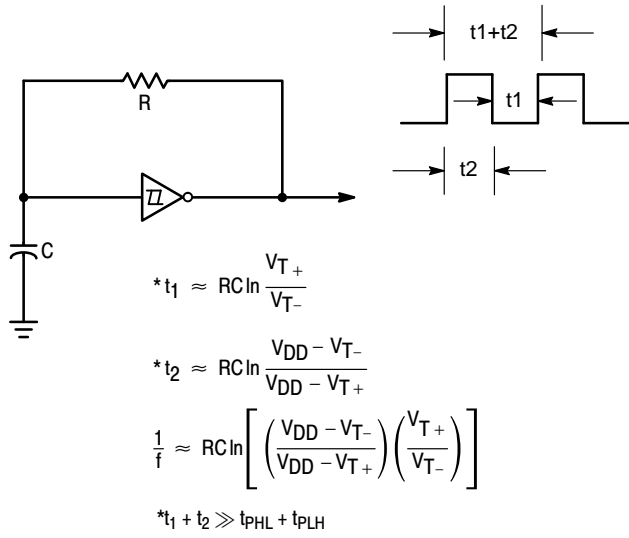


Figure 5. Astable Multivibrator

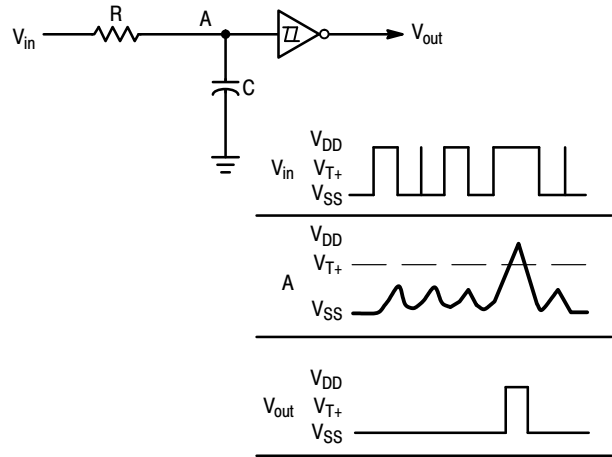
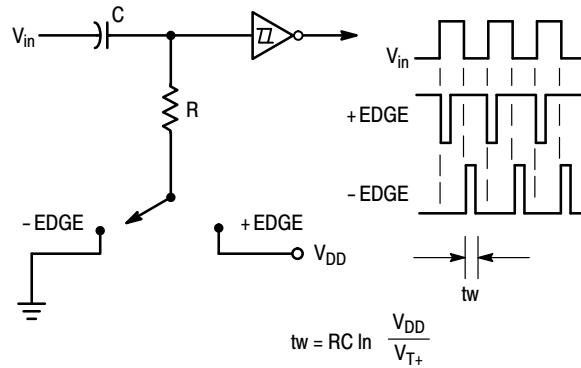


Figure 6. Integrator



Useful as an edge detector circuit.

Figure 7. Differentiator

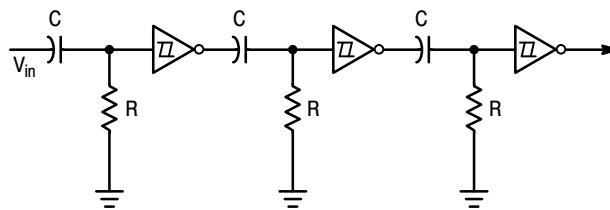
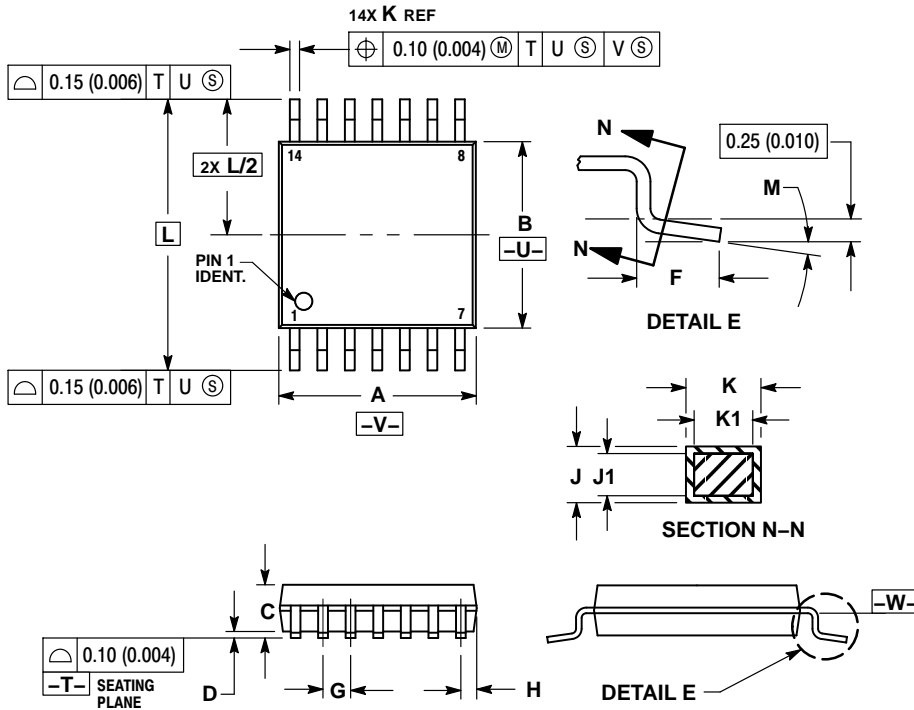


Figure 8. Positive Edge Time Delay Circuit

MC14106B

PACKAGE DIMENSIONS

TSSOP-14
CASE 948G
ISSUE B

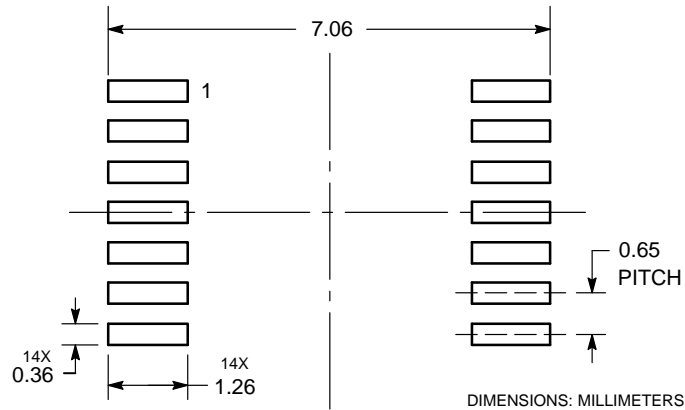


NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSION A DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. MOLD FLASH OR GATE BURRS SHALL NOT EXCEED 0.15 (0.006) PER SIDE.
4. DIMENSION B DOES NOT INCLUDE INTERLEAD FLASH OR PROTRUSION. INTERLEAD FLASH OR PROTRUSION SHALL NOT EXCEED 0.25 (0.010) PER SIDE.
5. DIMENSION K DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.08 (0.003) TOTAL IN EXCESS OF THE K DIMENSION AT MAXIMUM MATERIAL CONDITION.
6. TERMINAL NUMBERS ARE SHOWN FOR REFERENCE ONLY.
7. DIMENSION A AND B ARE TO BE DETERMINED AT DATUM PLANE -W-.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.90	5.10	0.193	0.200
B	4.30	4.50	0.169	0.177
C	---	1.20	---	0.047
D	0.05	0.15	0.002	0.006
F	0.50	0.75	0.020	0.030
G	0.65 BSC		0.026 BSC	
H	0.50	0.60	0.020	0.024
J	0.09	0.20	0.004	0.008
J1	0.09	0.16	0.004	0.006
K	0.19	0.30	0.007	0.012
K1	0.19	0.25	0.007	0.010
L	6.40 BSC		0.252 BSC	
M	0°		8°	

SOLDERING FOOTPRINT*

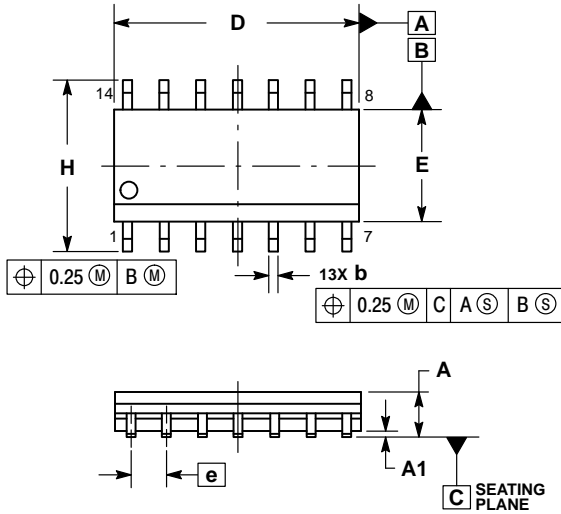


*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

MC14106B

PACKAGE DIMENSIONS

SOIC-14 NB CASE 751A-03 ISSUE K

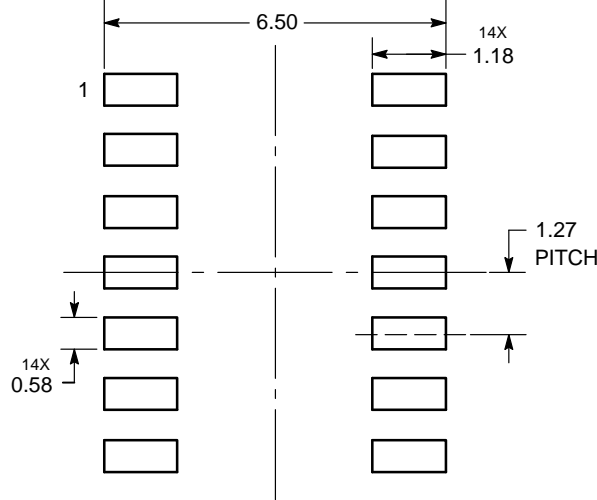


NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSION b DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE PROTRUSION SHALL BE 0.13 TOTAL IN EXCESS OF AT MAXIMUM MATERIAL CONDITION.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD PROTRUSIONS.
5. MAXIMUM MOLD PROTRUSION 0.15 PER SIDE.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.35	1.75	0.054	0.068
A1	0.10	0.25	0.004	0.010
A3	0.19	0.25	0.008	0.010
b	0.35	0.49	0.014	0.019
D	8.55	8.75	0.337	0.344
E	3.80	4.00	0.150	0.157
e	1.27 BSC		0.050 BSC	
H	5.80	6.20	0.228	0.244
h	0.25	0.50	0.010	0.019
L	0.40	1.25	0.016	0.049
M	0°	7°	0°	7°

SOLDERING FOOTPRINT*



DIMENSIONS: MILLIMETERS

*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

ON Semiconductor and the are registered trademarks of Semiconductor Components Industries, LLC (SCILLC) or its subsidiaries in the United States and/or other countries. SCILLC owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of SCILLC's product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:

Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800-282-9855 Toll Free
USA/Canada
Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910
Japan Customer Focus Center
Phone: 81-3-5817-1050

ON Semiconductor Website: www.onsemi.com

Order Literature: <http://www.onsemi.com/orderlit>

For additional information, please contact your local Sales Representative

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- Конкурентоспособные цены и скидки постоянным клиентам.
- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



Тел: +7 (812) 336 43 04 (многоканальный)
Email: org@lifeelectronics.ru