

# Precision Operational Amplifier, 10 $\mu$ V, Zero-Drift, 1.6 V to 5.5 V Supply, 1.5 MHz

## Product Preview

### NCS21801, NCS21802, NCS21803, NCS21804

The NCS21801, NCS21802, NCS21803, and NCS21804 are precision op amps featuring low input offset voltage and low offset drift over time and temperature. The common mode voltage range extends 100 mV beyond the supply rails, which makes it suitable for both high-side and low-side current sensing applications.

The NCS2180x is available in single, dual, and quad channel configurations. All versions are specified for operation from  $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$ . NCV prefix parts are automotive grade 1 qualified and offer performance over the extended temperature range from  $-40^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$ .

#### Features

- Input Offset Voltage:  $\pm 10 \mu\text{V}$  max
- Offset Voltage Drift Over Temperature:  $5 \text{ nV}/^{\circ}\text{C}$
- Common Mode Input Voltage Range:  $V_{\text{SS}} - 0.1 \text{ V}$  to  $V_{\text{DD}} + 0.1 \text{ V}$
- Supply Voltage Range: 1.8 V to 5.5 V
- Extended Supply Voltage Range: 1.6 V to 5.5 V for  $T_{\text{A}} = 0^{\circ}\text{C}$  to  $85^{\circ}\text{C}$
- Unity Gain Bandwidth: 1.5 MHz
- Quiescent Consumption:  $95 \mu\text{A}$  max
- Enable Function available on NCS21803
- NCV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q100 Qualified and PPAP Capable
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

#### Applications

- High-Side Current Sensing
- Low-Side Current Sensing
- Difference Amplifier
- Instrumentation Amplifier
- Power Management
- Automotive

This document contains information on a product under development. ON Semiconductor reserves the right to change or discontinue this product without notice.



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SC-88A / SC70-5  
CASE 419A-02



TSOP-5  
CASE 483



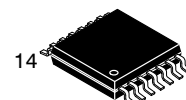
SC-88 / SC70-6  
CASE 419B-02



UDFN8  
CASE 517AW



Micro8  
CASE 846A-02



TSSOP-14 WB  
CASE 948G

#### DEVICE MARKING INFORMATION

See general marking information in the device marking section on page 2 of this data sheet.

#### PIN CONNECTIONS

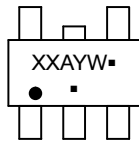
See pin connections on page 3 of this data sheet.

#### ORDERING INFORMATION

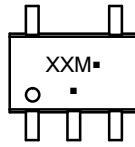
See detailed ordering and shipping information on page 2 of this data sheet.

# NCS21801, NCS21802, NCS21803, NCS21804

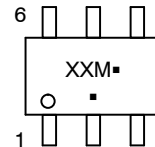
## DEVICE MARKING INFORMATION



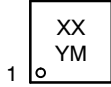
TSOP-5  
CASE 483



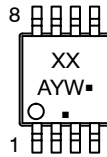
SC-88A / SC70-5  
CASE 419A-02



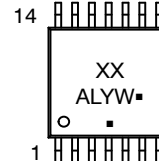
SC-88 / SC70-6 / SOT-363  
CASE 419B-02



UDFN8, 2x2, 0.5P  
CASE 517AW



Micro8  
CASE 846A-02



TSSOP-14 WB  
CASE 948G

XX = Specific Device Code  
A = Assembly Location  
Y = Year  
W = Work Week  
M = Date Code  
G or ■ = Pb-Free Package

(Note: Microdot may be in either location)

## ORDERING INFORMATION

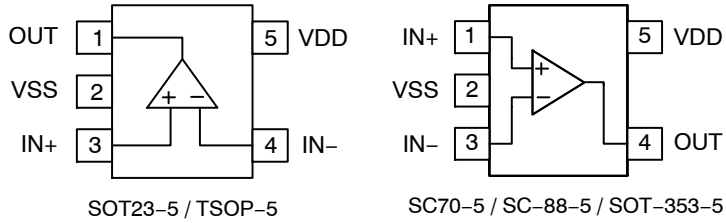
Channels	Enable	Package	Part Number	Marking	Shipping
<b>Industrial and Consumer</b>					
Single	No	SOT23-5 / TSOP-5	NCS21801		3000 / Tape & Reel
		SC70-5 / SC-88-5 / SOT-353-5	NCS21801		
	Yes	SC-88 / SC70-6 / SOT-363	NCS21803		
Dual	No	UDFN-8	NCS21802MUTBG		3000 / Tape & Reel
		Micro8	NCS21802DMR2G		4000 / Tape & Reel
Quad	No	TSSOP-14	NCS21804		2500 / Tape & Reel
<b>Automotive Qualified</b>					
Single	No	SOT23-5 / TSOP-5	NCV21801		3000 / Tape & Reel
		SC70-5 / SC-88-5 / SOT-353-5	NCV21801		
Dual	No	Micro8	NCV21802DMR2G		4000 / Tape & Reel
Quad	No	TSSOP-14	NCV21804		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.

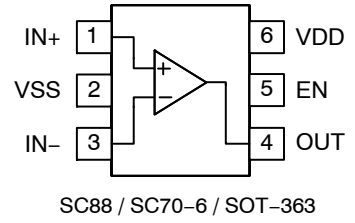
# NCS21801, NCS21802, NCS21803, NCS21804

## PIN CONNECTIONS

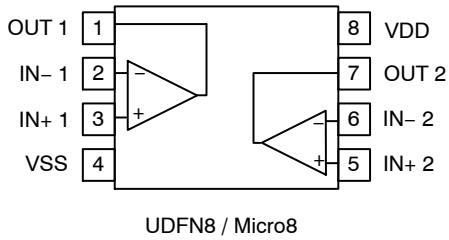
**Single Channel Configuration  
NCS21801**



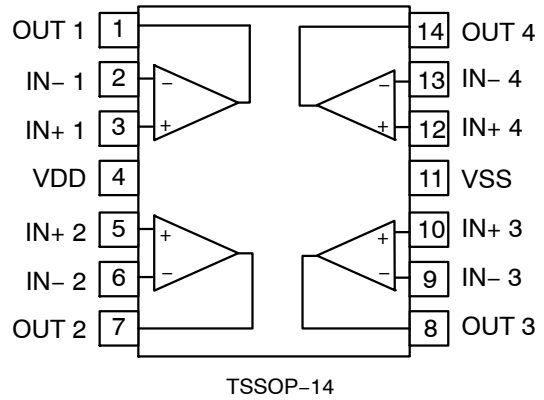
**Single Channel with Enable Configuration  
NCS21803**



**Dual Channel Configuration  
NCS21802**



**Quad Channel Configuration  
NCS21804**



# NCS21801, NCS21802, NCS21803, NCS21804

## MAXIMUM RATINGS

Parameter	Symbol	Rating	Unit
Supply Voltage (Note 1)	$V_S$	-0.3 to 6	V
Input Voltage	$V_{IN+}, V_{IN-}, V_{EN}$	$(V_{SS} - 0.3)$ to $(V_{DD} + 0.3)$	V
Differential Input Voltage	$V_{IN+}, V_{IN-}$	$\pm (V_{DD} - V_{SS} + 0.3)$	V
Output Voltage (Note 2)	$V_{OUT}$	$(V_{SS} - 0.3)$ to $(V_{DD} + 0.3)$	V
Output Short Circuit Current (Note 3)	$I_{OUT}$	Continuous	
Input Current into Any Pin (Note 2)	$I_{IN}$	$\pm 10$	mA
Maximum Junction Temperature	$T_{J(max)}$	+150	°C
Storage Temperature Range	$T_{STG}$	-65 to +150	°C
ESD Human Body Model (Note 3)	HBM	$\pm 2000$	V
	Charged Device Model (Note 3)	CDM	$\pm 1000$
Latch-up Current (Note 4)		100	mA

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. Refer to ELECTRICAL CHARACTERISTICS, RECOMMENDED OPERATING RANGES and/or APPLICATION INFORMATION for safe operating parameters
2. Input terminals are diode-clamped to the power-supply rails. Input signals that can swing more than 0.5 V beyond the supply rails should be current limited to 10 mA or less
3. Short circuit current to ground.
4. This device series incorporates ESD protection and is tested by the following methods:  
 ESD Human Body Model tested per JEDEC standard JS-001-2017 (AEC-Q100-002)  
 ESD Charged Device Model tested per JEDEC standard JS-002-2014 (AEC-Q100-011)
5. Latch-up Current tested per JEDEC standard: JESD78E.

## THERMAL CHARACTERISTICS

Parameter	Symbol	Package	Value	Unit
Thermal Resistance, Junction-to-Air (Notes 6, 7)	$\theta_{JA}$	TSOP-5 / SOT23-5	TBD	°C/W
		SC70-5 / SC-88-5 / SOT-353-5	TBD	
		SC-88 / SC70-6 / SOT-363	TBD	
		UDFN8	TBD	
		Micro8 / MSOP-8	TBD	
		TSSOP-14	TBD	

6. Refer to ELECTRICAL CHARACTERISTICS, RECOMMENDED OPERATING RANGES and/or APPLICATION INFORMATION for safe operating parameters
7. Values based on copper area of 645 mm<sup>2</sup> (or 1 in<sup>2</sup>) of 1 oz copper thickness and FR4 PCB substrate

## RECOMMENDED OPERATING RANGES

Parameter	Symbol	Conditions	Min	Max	Unit
Ambient Temperature	$T_A$	NCS prefix	-40	125	°C
		NCV prefix	-40	150	
Common Mode Input Voltage	$V_{CM}$	Full temperature range	$V_{SS} - 0.1$	$V_{DD} + 0.1$	V
Supply Voltage	$V_S$	$T_A = 0$ to 85°C	1.6	5.5	V
		Full temperature range	1.8	5.5	

Functional operation above the stresses listed in the Recommended Operating Ranges is not implied. Extended exposure to stresses beyond the Recommended Operating Ranges limits may affect device reliability.

# NCS21801, NCS21802, NCS21803, NCS21804

## ELECTRICAL CHARACTERISTICS

At  $T_A = +25^\circ\text{C}$ ,  $V_S = 3.3\text{ V}$ , and  $V_{CM} = V_{OUT} = \text{mid-supply}$ , unless otherwise noted. **Boldface** limits apply over the specified temperature range, unless otherwise noted, guaranteed by characterization and/or design.

Parameter	Symbol	Conditions	Temp ( $^\circ\text{C}$ )	Min	Typ	Max	Unit
<b>Input</b>							
Common Mode Rejection Ratio	CMRR	$V_{CM} = V_{SS} - 0.1$ to $V_{DD} + 0.1$	25	113	TBD		dB
			-40 to 125	<b>110</b>			
			-40 to 150	<b>90</b>			
Input Offset Voltage	$V_{OS}$		25			$\pm 10$	$\mu\text{V}$
Input Offset Voltage Drift vs. Temperature	$dV_{OS}/dT$		-40 to 125		$\pm 5$	<b><math>\pm 50</math></b>	$\text{nV}/^\circ\text{C}$
			-40 to 150		$\pm 5$	<b><math>\pm 75</math></b>	
Input Bias Current	$I_{IB}$		25		TBD	$\pm 160$	$\text{pA}$
			-40 to 125			<b><math>\pm 600</math></b>	
			-40 to 150			<b><math>\pm 4000</math></b>	
Input Offset Current	$I_{OS}$		25		$\pm 5$	$\pm 160$	$\text{pA}$
			-40 to 125			<b><math>\pm 600</math></b>	
			-40 to 150			<b><math>\pm 4000</math></b>	
Input Capacitance	$C_{IN}$	Differential	25		1		$\text{pF}$
		Common mode	25		5		
Enable Input Low (Note 8)	$V_{EN-L}$	Shutdown	-40 to 125			<b>0.5</b>	V
Enable Input High (Note 8)	$V_{EN-H}$	Enabled	-40 to 125	<b>1.3</b>			V
Enable Pin Input Leakage (Note 8)	$I_{EN}$		25		1	100	$\text{nA}$

## Output Characteristics

Open Loop Voltage Gain	$A_{VOL}$		25	120	TBD		dB
			-40 to 125	<b>110</b>			
			-40 to 150	<b>90</b>			
Output Voltage High, Referenced from $V_{DD}$ Supply Rail	$V_{DD} - V_{OH}$	$I_{OUT} = 30\ \mu\text{A}$	25		TBD	22	$\text{mV}$
			-40 to 125			<b>50</b>	
		-40 to 150			<b>100</b>		
Output Voltage Low, Referenced to $V_{SS}$ Supply Rail	$V_{OL} - V_{SS}$	$I_{OUT} = 30\ \mu\text{A}$	25		TBD	22	$\text{mV}$
			-40 to 125			<b>90</b>	
		-40 to 150			<b>100</b>		
Short Circuit Current	$I_{SC}$	Sinking Current	25		30		$\text{mA}$
		Sourcing Current	25		30		
Maximum Capacitive Load	$C_L$	No sustained oscillation	25		400		$\text{pF}$

## Dynamic Response

Bandwidth ( $f_{-3dB}$ )	BW	$C_L = 20\ \text{pF}$	25		1.5		MHz
Gain Margin	$A_M$	$C_L = 20\ \text{pF}$	25		15		dB
Phase Margin	$\Phi_M$	$C_L = 20\ \text{pF}$	25		60		$^\circ$
Slew Rate	SR		25		0.7		$\text{V}/\mu\text{s}$
Settling Time	$t_s$	0.1%, $A_V = 1$	25		20		$\mu\text{s}$

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.

8. The enable function is available on NCS21673 only

9. Shutdown Time ( $t_{OFF}$ ) and Enable Time ( $t_{ON}$ ) are defined as the time between the 50% point of the signal applied to the EN pin and the point at which the output voltage reaches within 10% of its final value

# NCS21801, NCS21802, NCS21803, NCS21804

## ELECTRICAL CHARACTERISTICS (continued)

At  $T_A = +25^\circ\text{C}$ ,  $V_S = 3.3\text{ V}$ , and  $V_{CM} = V_{OUT} = \text{mid-supply}$ , unless otherwise noted. **Boldface** limits apply over the specified temperature range, unless otherwise noted, guaranteed by characterization and/or design.

Parameter	Symbol	Conditions	Temp ( $^\circ\text{C}$ )	Min	Typ	Max	Unit
<b>Dynamic Response</b>							
Overload Recovery Time	$t_{OR}$	$V_{IN} * \text{GAIN} > V_S$	25		200		$\mu\text{s}$
Crosstalk		$f = 10\text{ kHz}$	25		-100		dB
EMI Rejection Ratio	EMIRR	$f = 400\text{ MHz}$	25		70		dB
		$f = 800\text{ MHz}$	25		77		
		$f = 1.8\text{ GHz}$	25		91		
<b>Noise</b>							
Voltage Noise Density	$e_N$	$f_{in} = 1\text{ kHz}$	25		42		$\text{nV}/\sqrt{\text{Hz}}$
Voltage Noise, Peak-to-Peak	$e_{P-P}$	$f_{in} = 0.1\text{ Hz to }10\text{ Hz}$	25		400		$\text{nV}_{PP}$
Current Noise Density	$i_N$	$f_{in} = 1\text{ kHz}$	25		20		$\text{fA}/\sqrt{\text{Hz}}$
<b>Power Supply</b>							
Quiescent Current	$I_Q$	Per channel	25		90	95	$\mu\text{A}$
			-40 to 125			<b>125</b>	
			-40 to 150			<b>200</b>	
Quiescent Current in Shutdown (Note 8)	$I_{QSD}$	Per channel	25		TBD	300	nA
			-40 to 125			<b>300</b>	
Power Up Time	$t_{ON}$		25		40		$\mu\text{s}$
Enable Time (Note 8, 9)	$t_{EN}$		25		40		$\mu\text{s}$
Shutdown Time (Note 8, 9)	$t_{OFF}$		25		TBD		$\mu\text{s}$
Power Supply Rejection Ratio	PSRR	$V_S = 1.6\text{ V to }5.5\text{ V}$	25	115	TBD		dB
		$V_S = 1.8\text{ V to }5.5\text{ V}$	-40 to 125	<b>110</b>			
			-40 to 150	<b>90</b>			

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.

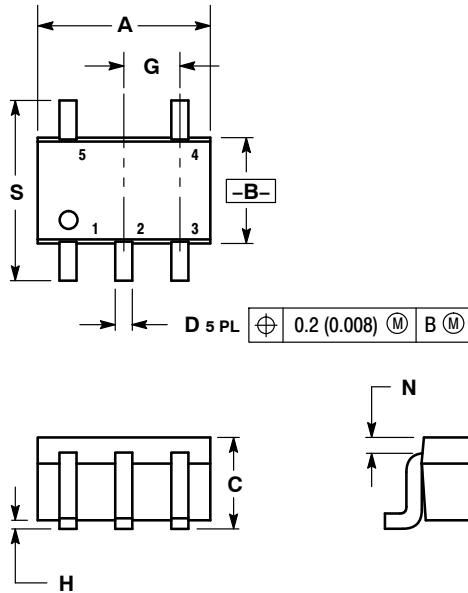
8. The enable function is available on NCS21673 only

9. Shutdown Time ( $t_{OFF}$ ) and Enable Time ( $t_{ON}$ ) are defined as the time between the 50% point of the signal applied to the EN pin and the point at which the output voltage reaches within 10% of its final value

# NCS21801, NCS21802, NCS21803, NCS21804

## PACKAGE DIMENSIONS

SC-88A (SC-70-5/SOT-353)  
CASE 419A-02  
ISSUE L

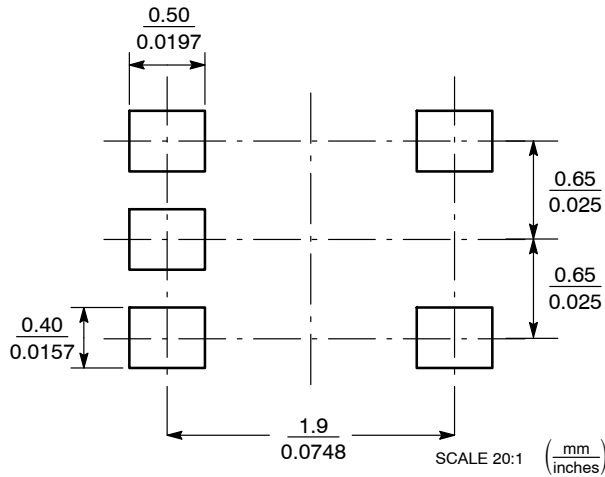


NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. 419A-01 OBSOLETE. NEW STANDARD 419A-02.
4. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.071	0.087	1.80	2.20
B	0.045	0.053	1.15	1.35
C	0.031	0.043	0.80	1.10
D	0.004	0.012	0.10	0.30
G	0.026 BSC		0.65 BSC	
H	---	0.004	---	0.10
J	0.004	0.010	0.10	0.25
K	0.004	0.012	0.10	0.30
N	0.008 REF		0.20 REF	
S	0.079	0.087	2.00	2.20

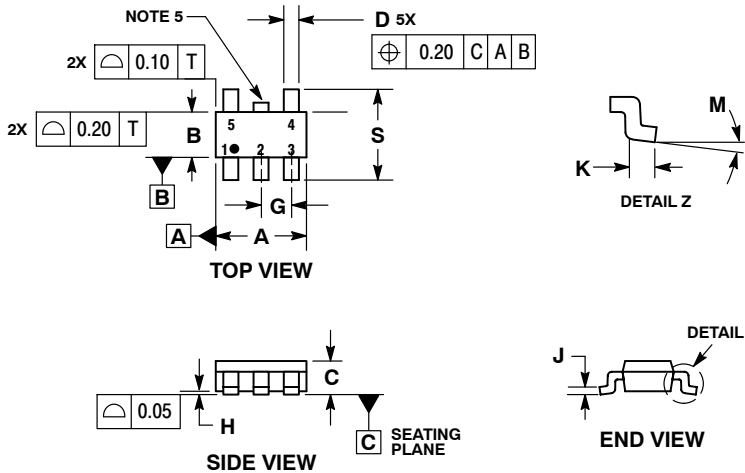
## SOLDER FOOTPRINT



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

PACKAGE DIMENSIONS

TSOP-5  
CASE 483  
ISSUE M

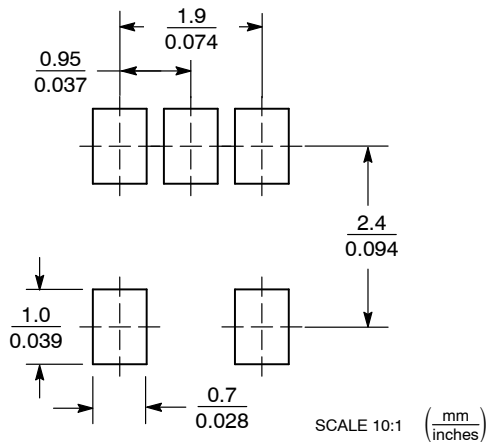


NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS. MOLD FLASH, PROTRUSIONS, OR GATE BURRS SHALL NOT EXCEED 0.15 PER SIDE. DIMENSION A.
5. OPTIONAL CONSTRUCTION: AN ADDITIONAL TRIMMED LEAD IS ALLOWED IN THIS LOCATION. TRIMMED LEAD NOT TO EXTEND MORE THAN 0.2 FROM BODY.

DIM	MILLIMETERS	
	MIN	MAX
A	2.85	3.15
B	1.35	1.65
C	0.90	1.10
D	0.25	0.50
G	0.95 BSC	
H	0.01	0.10
J	0.10	0.26
K	0.20	0.60
M	0° 10°	
S	2.50	3.00

SOLDERING FOOTPRINT\*

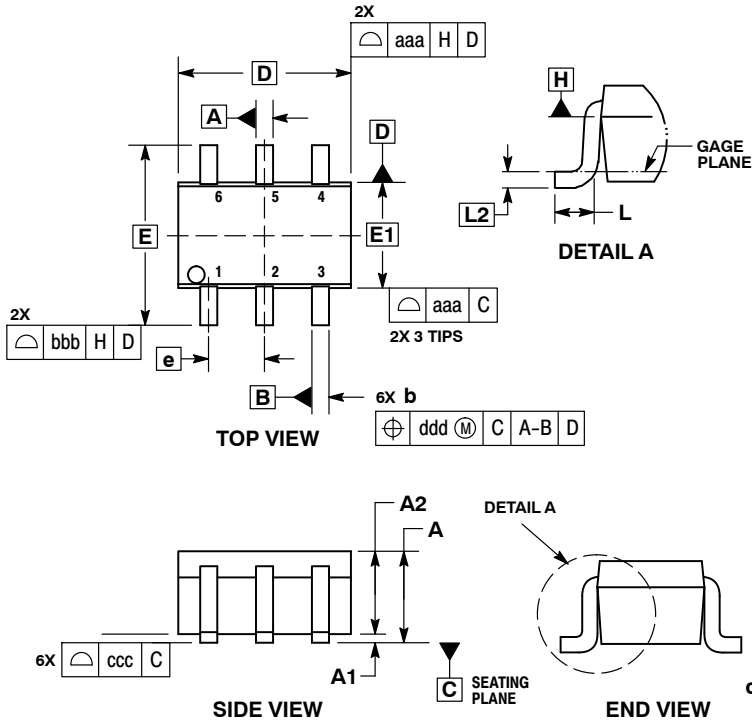


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PACKAGE DIMENSIONS

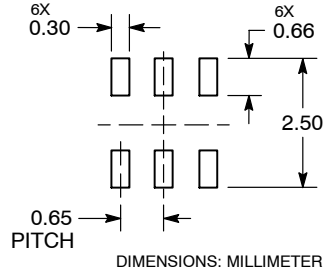
SC-88/SC70-6/SOT-363  
CASE 419B-02  
ISSUE Y



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
  2. CONTROLLING DIMENSION: MILLIMETERS.
  3. DIMENSIONS D AND E1 DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS. MOLD FLASH, PROTRUSIONS, OR GATE BURRS SHALL NOT EXCEED 0.20 PER END.
  4. DIMENSIONS D AND E1 AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY AND DATUM H.
  5. DATUMS A AND B ARE DETERMINED AT DATUM H.
  6. DIMENSIONS b AND c APPLY TO THE FLAT SECTION OF THE LEAD BETWEEN 0.08 AND 0.15 FROM THE TIP.
  7. DIMENSION b DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.08 TOTAL IN EXCESS OF DIMENSION b AT MAXIMUM MATERIAL CONDITION. THE DAMBAR CANNOT BE LOCATED ON THE LOWER RADIUS OF THE FOOT.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	---	---	1.10	---	---	0.043
A1	0.00	---	0.10	0.000	---	0.004
A2	0.70	0.90	1.00	0.027	0.035	0.039
b	0.15	0.20	0.25	0.006	0.008	0.010
C	0.08	0.15	0.22	0.003	0.006	0.009
D	1.80	2.00	2.20	0.070	0.078	0.086
E	2.00	2.10	2.20	0.078	0.082	0.086
E1	1.15	1.25	1.35	0.045	0.049	0.053
e	0.65 BSC			0.026 BSC		
L	0.26	0.36	0.46	0.010	0.014	0.018
L2	0.15 BSC			0.006 BSC		
aaa	0.15			0.006		
bbb	0.30			0.012		
ccc	0.10			0.004		
ddd	0.10			0.004		

RECOMMENDED SOLDERING FOOTPRINT\*

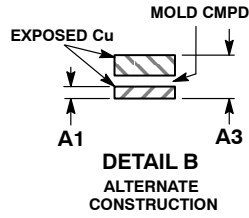
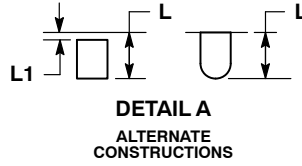
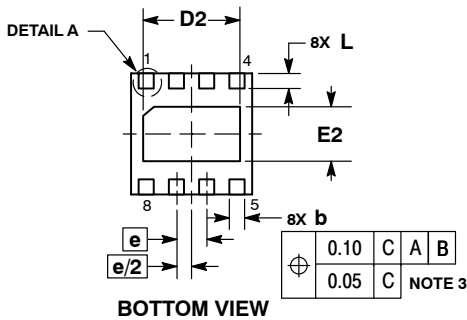
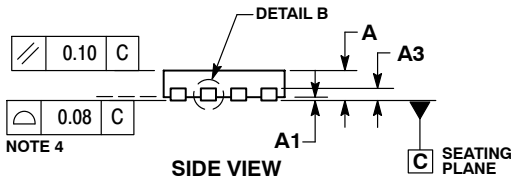
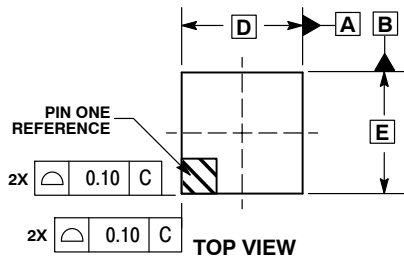


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# NCS21801, NCS21802, NCS21803, NCS21804

## PACKAGE DIMENSIONS

UDFN8, 2x2  
CASE 517AW  
ISSUE A

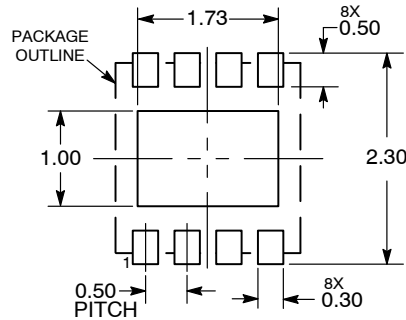


**NOTES:**

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSION b APPLIES TO PLATED TERMINALS AND IS MEASURED BETWEEN 0.15 AND 0.30 MM FROM THE TERMINAL TIP.
4. COPLANARITY APPLIES TO THE EXPOSED PAD AS WELL AS THE TERMINALS.
5. FOR DEVICE OPN CONTAINING W OPTION, DETAIL B ALTERNATE CONSTRUCTION IS

NOT APPLICABLE		
MILLIMETERS		
DIM	MIN	MAX
A	0.45	0.55
A1	0.00	0.05
A3	0.13	REF
b	0.18	0.30
D	2.00	BSC
D2	1.50	1.70
E	2.00	BSC
E2	0.80	1.00
e	0.50	BSC
L	0.20	0.45
L1	---	0.15

**RECOMMENDED SOLDERING FOOTPRINT\***



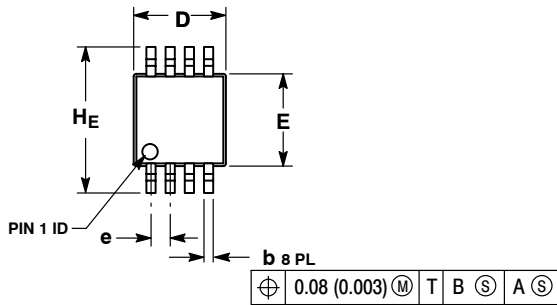
DIMENSIONS: MILLIMETERS

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

# NCS21801, NCS21802, NCS21803, NCS21804

## PACKAGE DIMENSIONS

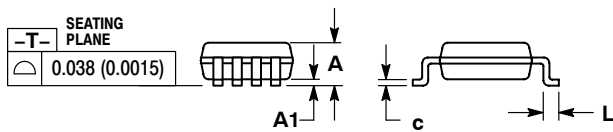
**Micro8™**  
CASE 846A-02  
ISSUE J



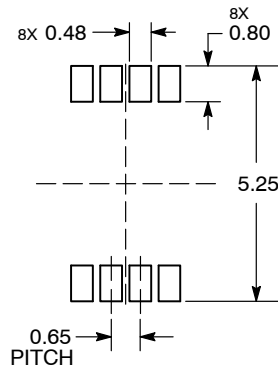
**NOTES:**

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, PROTRUSIONS 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. 846A-01 OBSOLETE, NEW STANDARD 846A-02.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	--	--	1.10	--	--	0.043
A1	0.05	0.08	0.15	0.002	0.003	0.006
b	0.25	0.33	0.40	0.010	0.013	0.016
c	0.13	0.18	0.23	0.005	0.007	0.009
D	2.90	3.00	3.10	0.114	0.118	0.122
E	2.90	3.00	3.10	0.114	0.118	0.122
e	0.65 BSC			0.026 BSC		
L	0.40	0.55	0.70	0.016	0.021	0.028
HE	4.75	4.90	5.05	0.187	0.193	0.199



### RECOMMENDED SOLDERING FOOTPRINT\*



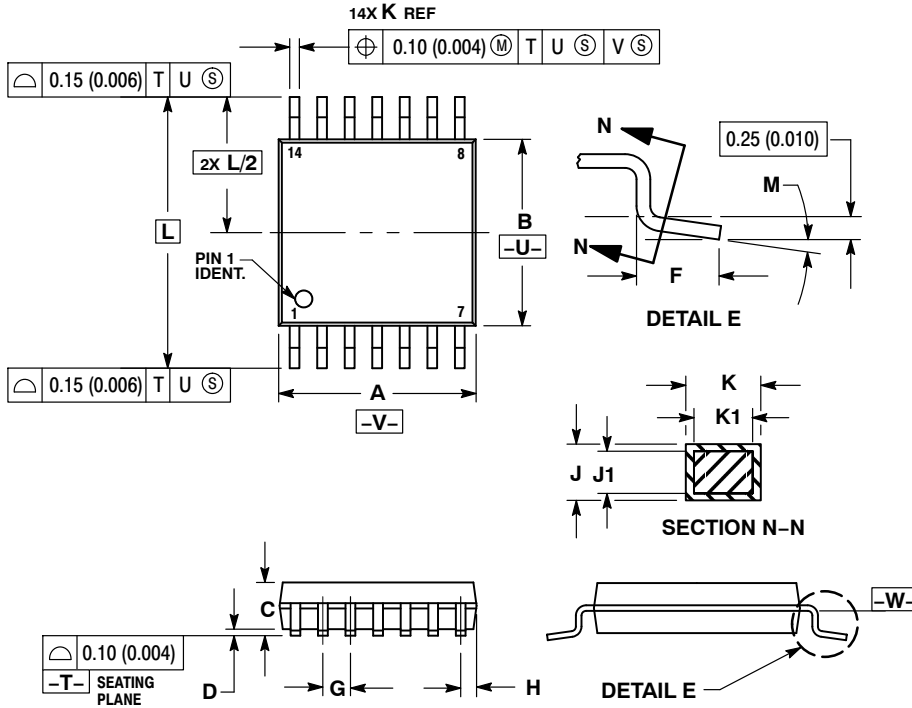
DIMENSION: MILLIMETERS

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

# NCS21801, NCS21802, NCS21803, NCS21804

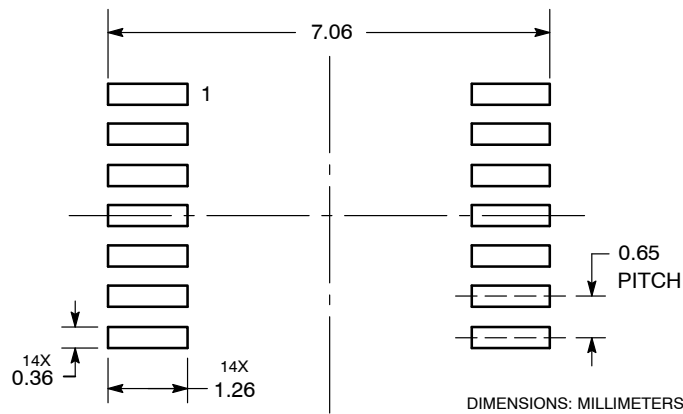
## PACKAGE DIMENSIONS

TSSOP-14 WB  
CASE 948G  
ISSUE C




- 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-.

### SOLDERING FOOTPRINT



# NCS21801, NCS21802, NCS21803, NCS21804

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