Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

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NLAS5113

1 Ω R_{ON} SPST Switch

The NLAS5113 is an SPST switch designed for very low R_{ON} applications within portable devices. The NLAS5113 operates over a wide V_{CC} range, 1.65 V to 4.5 V, and maintain a very low R_{ON}: 1.3 Ω Max @ V_{CC} = 4.2 V. It is available in a choice of two packages: SC88 and UDFN6.

Features

- R_{ON}: 1.3 Ω Max @ V_{CC} = 4.2 V
- V_{CC} Range: 1.65 V to 4.5 V
- UDFN6 or SC88 Packages Available
- These are Pb−Free Devices

Typical Applications

- Mobile Phones
- Portable Devices

ON Semiconductor®

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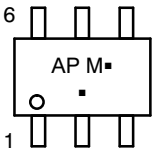
MARKING DIAGRAMS

UDFN6
CASE 517AA

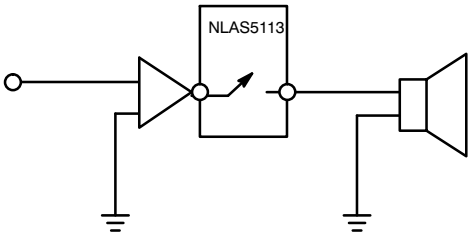
SC−88
CASE 419B



XX = Device Code
M = Date Code
▪ = Pb−Free Package

(Note: Microdot may be in either location)

APPLICATION DIAGRAM



ORDERING INFORMATION

Device	Package	Shipping†
NLAS5113MUTBG	UDFN6 (Pb−Free)	3000/Tape & Reel
NLAS5113DFT2G	SC−88 (Pb−Free)	3000/Tape & Reel

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

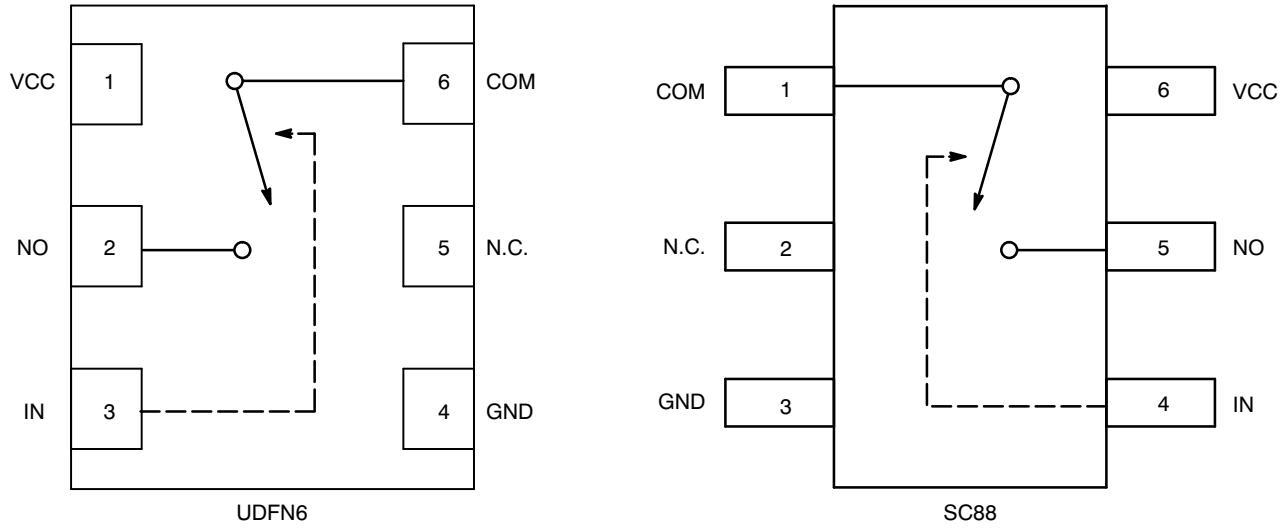


Figure 1. Functional Block Diagram Pinouts

Pin #	Name	Direction	Description
1	V_{CC}	Input	Analog Supply Voltage
2	NO	I/O	Normally Open Signal Line
3	IN	Input	Control Input for Switch #
4	GND	Input	Ground
5	N.C.	N/A	No Connect
6	COM	I/O	Common Signal Line

FUNCTION TABLE

IN	NO
0 1	OFF ON

OPERATING CONDITIONS

MAXIMUM RATINGS

Symbol	Pins	Parameter	Value	Condition	Unit
V_{CC}	V_{CC}	Positive DC Supply Voltage	−0.5 to 5.5		V
V_{IS}	NOx, NCx, COMx	Analog Signal Voltage	−0.5 to V_{CC} + 0.5		V
V_{IN}	IN1, IN2	Control Input Voltage	−0.5 to 6.0		V
I_{CC}	V_{CC}	Positive DC Supply Current	50		mA
I_{IS_CON}	NOx, NCx, COMx	Analog Signal Continuous Current	±300	Closed Switch	mA
I_{IS_PK}	NOx, NCx, COMx	Analog Signal Peak Current	±500	10% Duty Cycle	mA
I_{IN}	IN	Control Input Current			mA
T_{STG}		Storage Temperature Range	−65 to 150		°C

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

RECOMMENDED OPERATING CONDITIONS

Symbol	Pins	Parameter	Value	Condition	Unit
V_{CC}	V_{CC}	Positive DC Supply Voltage	1.65 to 4.5		V
V_{IS}	NOx, NCx, COMx	Analog Signal Voltage	0 to V_{CC}		V
V_{IN}	IN1, IN2	Control Input Voltage	0 to V_{CC}		V
T_A		Operating Temperature Range	−40 to 85		°C

NOTE: Minimum and maximum values are guaranteed through test or design across the **Recommended Operating Conditions**, where applicable. Typical values are listed for guidance only and are based on the particular conditions listed for each section, where applicable. These conditions are valid for all values found in the characteristics tables unless otherwise specified in the test conditions.

DC ELECTRICAL CHARACTERISTICS Typical: T = 25°C; V_{CC} = 3.3 V, R_L = 50 Ω

Symbol	Pins	Parameter	Test Conditions	Min	Typ	Max	Unit
VOLTAGE I_{OUT} < 20μA							
V_{IH}	INx	Control Input High	2.7 V < V_{CC}	2.0			V
V_{IL}	INx	Control Input Low				0.8	V
CURRENT							
I_{IN}	INx	Control Input Leakage	0 V < V_{IN} < V_{CC}		±0.1	±1.0	μA
$I_{NO/NC}$ (OFF)	NCx, NOx	OFF State Leakage	0 V < V_{COM}, V_{NO} < V_{CC}		±0.1	±1.0	μA
I_{COM} (ON)	COMx	ON State Leakage	0 V < V_{COM}, V_{NO} < V_{CC}		±0.5	±2.0	μA
I_{CC}	V_{CC}	Quiescent Supply	All Channels ON or OFF; V_{IN} = V_{CC} or GND, I_{OUT} = 0;		1.0	2.0	μA

ON RESISTANCE I_{ON} = −100 mA, V_{IS} = 0 to V_{CC}

Symbol	Pins	Parameter	Test Conditions	V_{CC} (V)	Min	Typ	Max	Unit
R_{ON}		ON Resistance		2.7 4.2		1.7 1.1	2.0 1.3	Ω
R_{FLAT}		R_{ON} Flatness		2.7 4.2		0.4 0.4		Ω

ESD PROTECTION

Pins	Description	Minimum Voltage
All Pins to Ground	Human Body Model	3 kV

AC ELECTRICAL CHARACTERISTICS Typical: T = 25°C; V_{CC} = 3.3 V, R_L = 50 Ω, C_L = 5 pF, f = 1 MHz

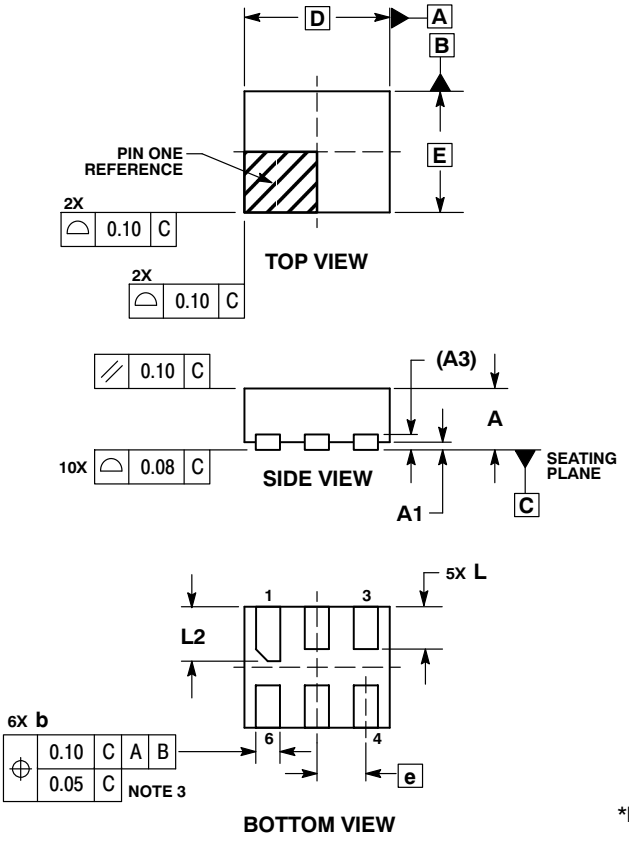
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
FREQUENCY						
BW	−3dB Bandwidth			457		MHz
THD	Total Harmonic Distortion	f = 20 Hz to 20 kHz, 1.0 V_{PP}		0.08		%
TRANSITION TIMES						
t_{ON}	Turn On Time: COM to NO			7.0		ns
t_{OFF}	Turn Off Time: COM to NO			4.5		ns
OFF ISOLATION V_{NO} or V_{NC} (pk−pk) = 1.0 V						
O_{IRR}	Off Isolation			−57		dB

CAPACITANCE

Symbol	Pins	Parameter	Test Conditions	Min	Typ	Max	Unit
C_{IN}	INx	Control Input	V_{CC} = 0 V		2.8		pF
C_{ON}	NO to COM	Through Switch	V_{CC} = V_{IN} = 3.3 V		20		pF
C_{OFF}	NO1, NO	Individual Port	V_{CC} = 3.3 V, V_{IN} = 0 V		14		pF

PACKAGE DIMENSIONS

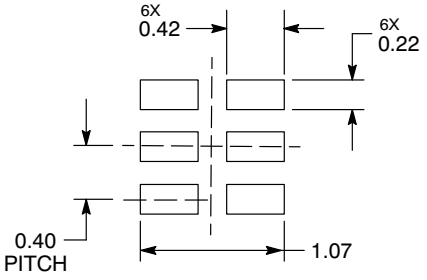
UDFN6, 1.2x1.0, 0.4P
CASE 517AA−01
ISSUE B



NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSION b APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.25 AND 0.30 mm FROM TERMINAL.
4. COPLANARITY APPLIES TO THE EXPOSED PAD AS WELL AS THE TERMINALS.

	MILLIMETERS	
DIM	MIN	MAX
A	0.45	0.55
A1	0.00	0.05
A3	0.127 REF	
b	0.15	0.25
D	1.20 BSC	
E	1.00 BSC	
e	0.40 BSC	
L	0.30	0.40
L2	0.40	0.50

MOUNTING FOOTPRINT*

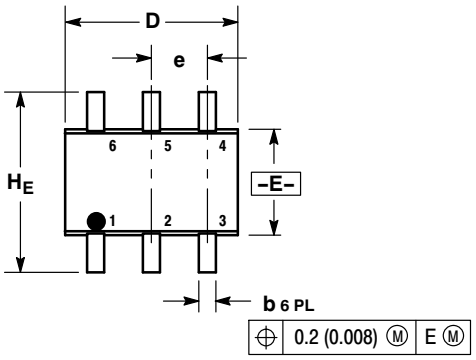


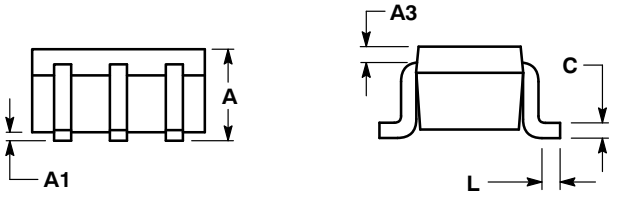
DIMENSIONS: MILLIMETERS

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

PACKAGE DIMENSIONS

SC−88/SC70−6/SOT−363
CASE 419B−02
ISSUE W

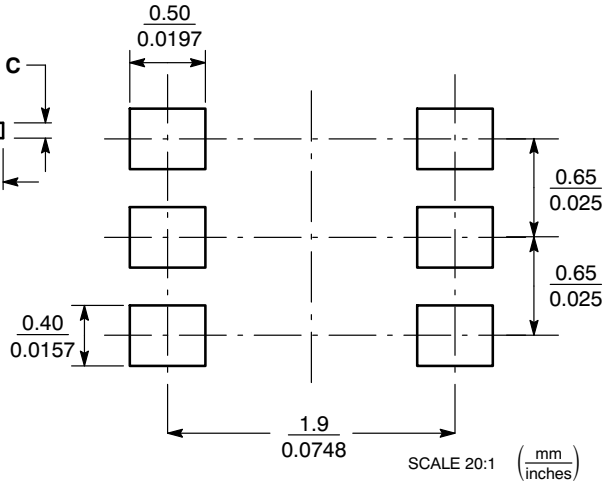




NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. 419B−01 OBSOLETE, NEW STANDARD 419B−02.

	MILLIMETERS			INCHES		
DIM	MIN	NOM	MAX	MIN	NOM	MAX
A	0.80	0.95	1.10	0.031	0.037	0.043
A1	0.00	0.05	0.10	0.000	0.002	0.004
A3	0.20 REF			0.008 REF		
b	0.10	0.21	0.30	0.004	0.008	0.012
C	0.10	0.14	0.25	0.004	0.005	0.010
D	1.80	2.00	2.20	0.070	0.078	0.086
E	1.15	1.25	1.35	0.045	0.049	0.053
e	0.65 BSC			0.026 BSC		
L	0.10	0.20	0.30	0.004	0.008	0.012
H_E	2.00	2.10	2.20	0.078	0.082	0.086

SOLDERING FOOTPRINT*



SC−88/SC70−6/SOT−363

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

PUBLICATION ORDERING INFORMATION

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