

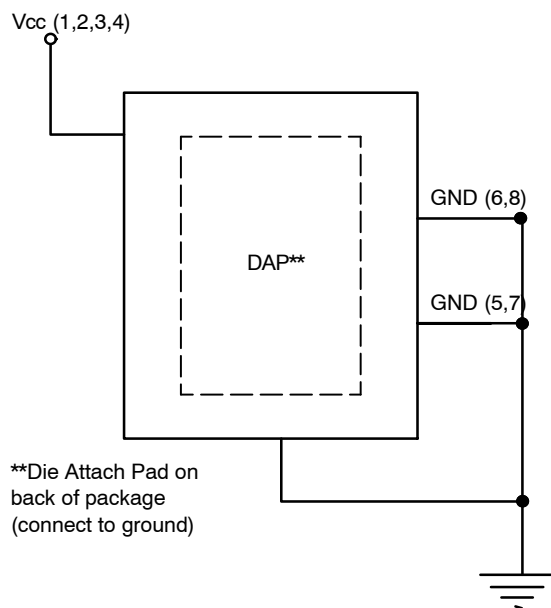
NSPU5132

13.5 V Unidirectional ESD and Surge Protection Device

Features

- Unidirectional High Voltage ESD & Surge Protection Device
- Provides ESD Protection to IEC61000-4-2 Level 4:
±30 kV Contact Discharge
- Small Package (1.8 mm x 2.0 mm)
- High Voltage Zener Diode Protects Supply Rail up to 200 A (8/20 μs)
- These Devices are Pb-Free and are RoHS Compliant

APPLICATION DIAGRAM



ON Semiconductor®

www.onsemi.com



UDFN6
D4 SUFFIX
CASE 517CS

BLOCK DIAGRAM



MARKING DIAGRAM



4W = Specific Device Code
M = Date Code
▪ = Pb-Free Package

ORDERING INFORMATION

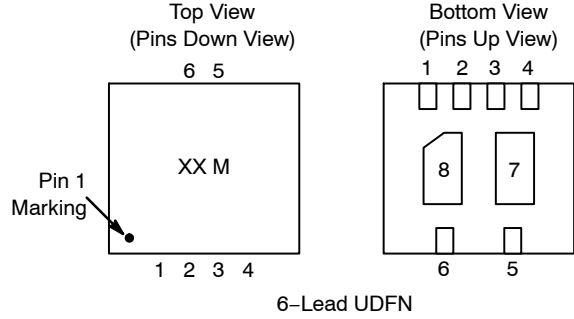
Device	Package	Shipping†
NSPU5132MUTBG	UDFN6 (Pb-Free)	3000 / Tape & Reel

†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.

Table 1. PIN DESCRIPTIONS

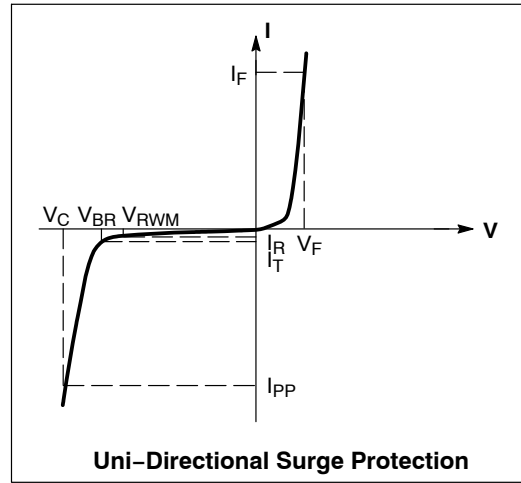
6-Lead, UDFN-8 Package		
Pin	Name	Description
1	V _{CC}	Cathode
2	V _{CC}	Cathode
3	V _{CC}	Cathode
4	V _{CC}	Cathode
5	GND	Anode
6	GND	Anode
7	GND	Anode
8	GND	Anode

PACKAGE / PINOUT DIAGRAMS



ELECTRICAL CHARACTERISTICS

Symbol	Parameter
I _{PP}	Maximum Reverse Peak Pulse Current
V _C	Clamping Voltage @ I _{PP}
V _{RWM}	Working Peak Reverse Voltage
I _R	Maximum Reverse Leakage Current @ V _{RWM}
V _{BR}	Breakdown Voltage @ I _T
I _T	Test Current
ΘV _{BR}	Maximum Temperature Coefficient of V _{BR}
I _F	Forward Current
V _F	Forward Voltage @ I _F



SPECIFICATIONS

Table 2. ABSOLUTE MAXIMUM RATINGS

Parameter	Rating	Units
Operating Temperature Range	-55 to +125	°C
Storage Temperature Range	-65 to +150	°C
Peak Current (t _p = 8/20 μs)	200	A
Peak Pulse Power (t _p = 8/20 μs)	4800	W

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.

ELECTRICAL CHARACTERISTICS

Device Name	Device Marking	V _{RWM} (V) (Note 1)	I _R @ V _{RWM} (μA)	Breakdown Voltage			V _C @ I _{PP} (8 x 20 μs) (Note 3)		Junction Capacitance (V _R = 0 V, f = 1 MHz, Pin 1 to Pin 5)		
				V _{BR} V (Note 2)			V _C (V)	I _{PP} (A)	C _J (pF)		
				Min	Nom	Max			Typ	Max	
NSPU5132	4W	13.5	0.5	13.6	15.5	17.5	1	24	200	1325	1550

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.

1. A surge protector is normally selected according to the working peak reverse voltage (V_{RWM}), which should be equal to or greater than the DC or continuous peak operating voltage level.
2. V_{BR} measured at pulse test current I_T at an ambient temperature of 25°C.
3. Surge current waveform per Figure 1.

TYPICAL CHARACTERISTICS

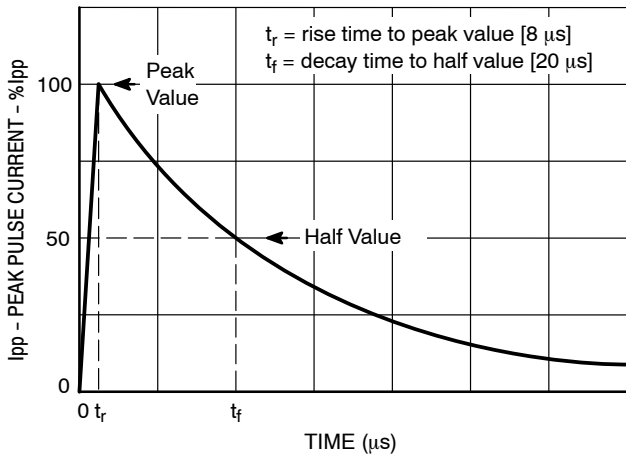


Figure 1. IEC61000-4-5 8/20 μs Pulse Waveform

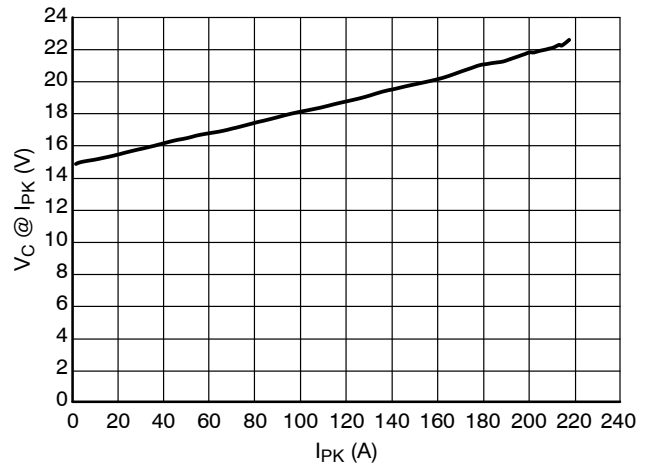


Figure 2. Positive Clamping Voltage vs. Peak Pulse Current

MECHANICAL CASE OUTLINE

PACKAGE DIMENSIONS

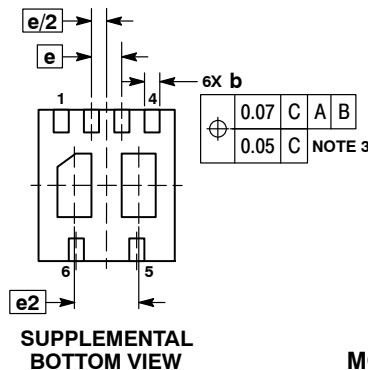
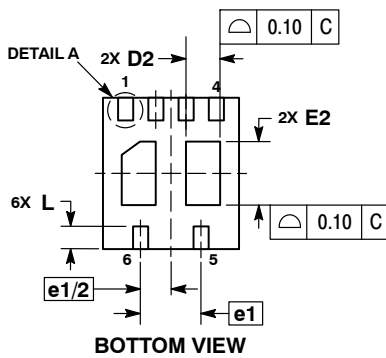
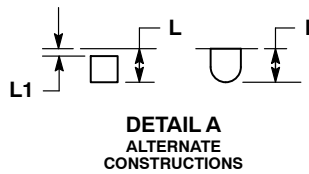
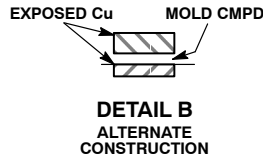
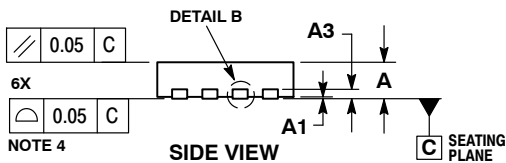
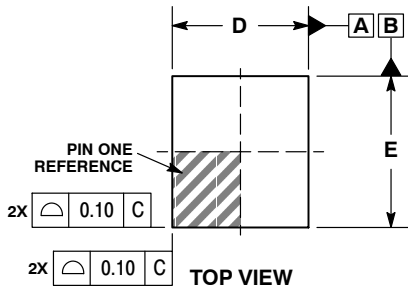
ON Semiconductor®



SCALE 4:1

UDFN6, 1.8x2, 0.4P CASE 517CS ISSUE 0

DATE 30 APR 2013



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 0.30mm FROM THE TERMINAL TIP.
4. COPLANARITY APPLIES TO THE EXPOSED PAD AS WELL AS THE TERMINALS.

DIM	MILLIMETERS	
	MIN	MAX
A	0.45	0.55
A1	0.00	0.05
A3	0.125 REF	
b	0.15	0.25
D	1.80 BSC	
D2	0.35	0.55
E	2.00 BSC	
E2	0.74	0.94
e	0.40 BSC	
e1	0.80 BSC	
e2	0.95 BSC	
L	0.20	0.40
L1	---	0.15

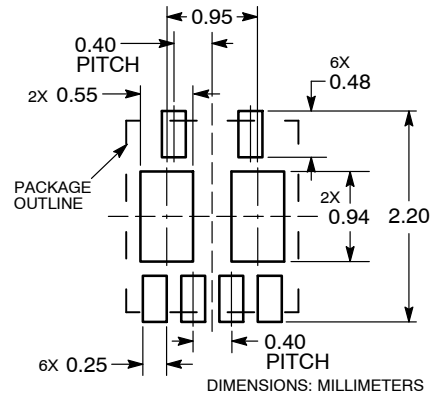
GENERIC MARKING DIAGRAM*



XX = Specific Device Code
M = Date Code

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present.

RECOMMENDED MOUNTING 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.

DOCUMENT NUMBER:	98AON89602E	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
DESCRIPTION:	UDFN6 1.8X2, 0.4P	PAGE 1 OF 1

ON Semiconductor and ON are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor 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. ON Semiconductor does not convey any license under its patent rights nor the rights of others.

ON Semiconductor and  are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of ON Semiconductor's product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor 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. Buyer is responsible for its products and applications using ON Semiconductor products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by ON Semiconductor. "Typical" parameters which may be provided in ON Semiconductor 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. ON Semiconductor does not convey any license under its patent rights nor the rights of others. ON Semiconductor products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use ON Semiconductor products for any such unintended or unauthorized application, Buyer shall indemnify and hold ON Semiconductor 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 ON Semiconductor was negligent regarding the design or manufacture of the part. ON Semiconductor 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:

Email Requests to: orderlit@onsemi.com

ON Semiconductor Website: www.onsemi.com

TECHNICAL SUPPORT

North American Technical Support:
Voice Mail: 1 800-282-9855 Toll Free USA/Canada
Phone: 011 421 33 790 2910

Europe, Middle East and Africa Technical Support:

Phone: 00421 33 790 2910

For additional information, please contact your local Sales Representative