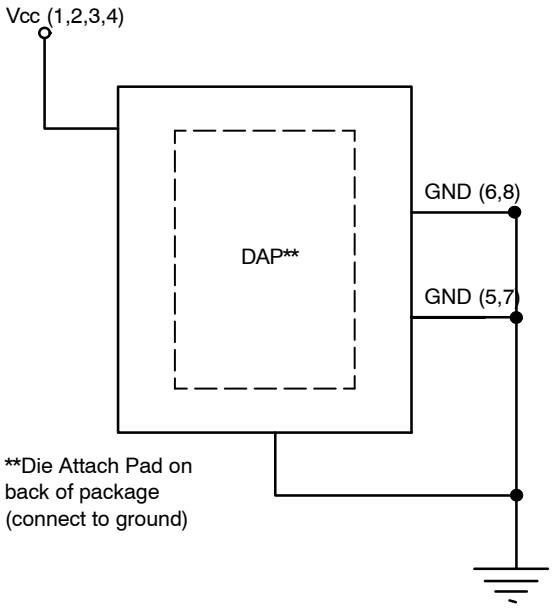
NSPU5132

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



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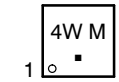
UDFN6
D4 SUFFIX
CASE 517CS

BLOCK DIAGRAM

MARKING DIAGRAM



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

ORDERING INFORMATION

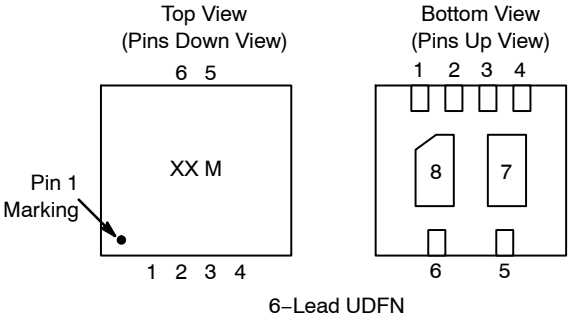
Device	Package	Shipping†
NSPU5132MUTBG	UDFN6 (Pb−Free)	3000 / Tape & Reel

†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

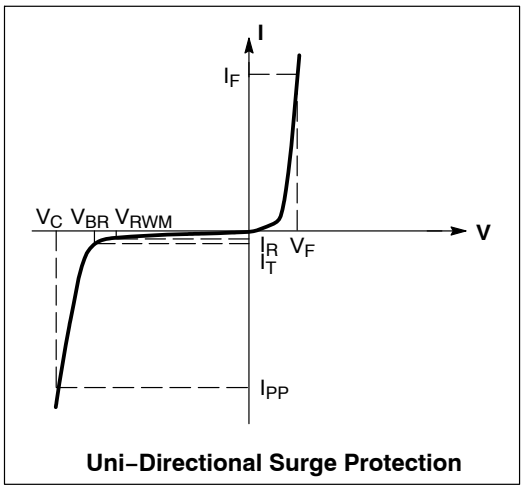
PACKAGE / PINOUT DIAGRAMS



6−Lead UDFN

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



Uni−Directional Surge Protection

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)			@ I_T (mA)	V_C (V)	I_{PP} (A)	C_J (pF)	
		Max	Max	Min	Nom	Max		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

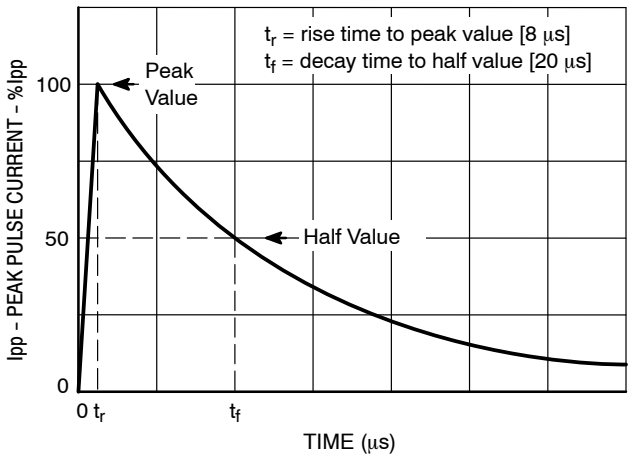


Figure 1. IEC61000−4−5 8/20 μs Pulse Waveform

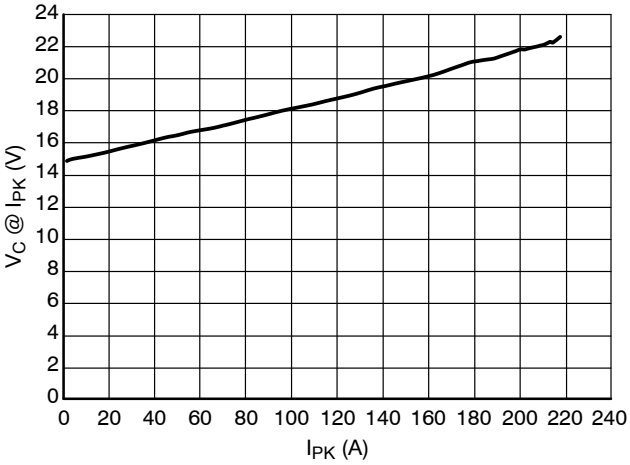


Figure 2. Positive Clamping Voltage vs. Peak Pulse Current

UDFN6, 1.8x2, 0.4P
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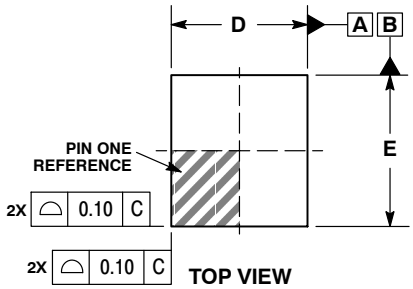
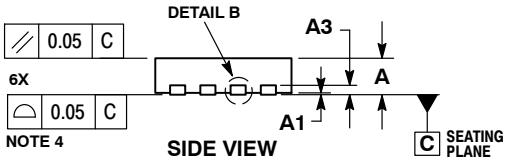
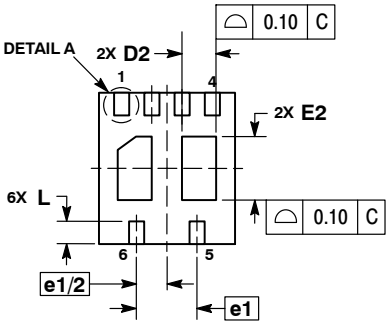
ISSUE O

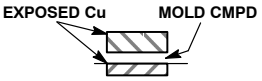
DATE 30 APR 2013

SCALE 4:1

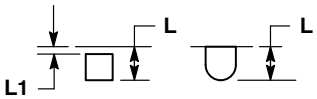








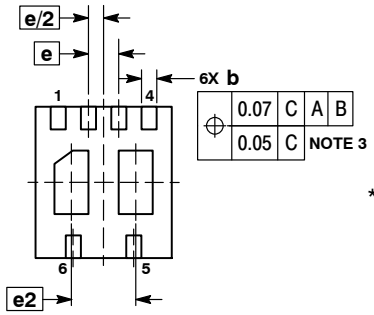
DETAIL B
ALTERNATE CONSTRUCTION



DETAIL A
ALTERNATE CONSTRUCTIONS

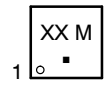
NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSION b APPLIES TO PLATED TERMINALS AND IS MEASURED BETWEEN 0.15 AND 0.30mm FROM THE TERMINAL TIP.
4. COPLANARITY APPLIES TO THE EXPOSED PAD AS WELL AS THE TERMINALS.

	MILLIMETERS	
DIM	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



SUPPLEMENTAL BOTTOM VIEW

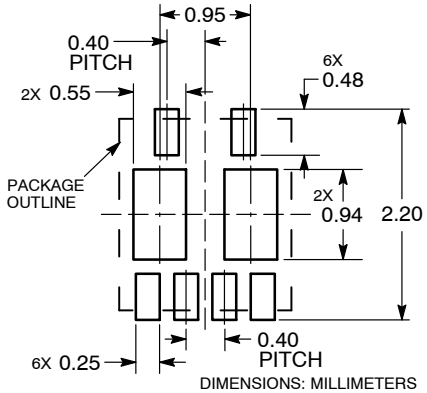
GENERIC MARKING DIAGRAM*



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*



DIMENSIONS: MILLIMETERS

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

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DESCRIPTION:	**UDFN6 1.8X2, 0.4P**		**PAGE 1 OF 1**

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