

## Product Summary

$V_{(BR)DSS}$	$R_{DS(ON)} \text{ max}$	$I_D \text{ max}$ $T_A = +25^\circ\text{C}$
30V	57mΩ @ $V_{GS} = 10\text{V}$	6.0A
	112mΩ @ $V_{GS} = 4.5\text{V}$	3.8A

## Description and Applications

This MOSFET is designed to minimize the on-state resistance ( $R_{DS(on)}$ ) and yet maintain superior switching performance, making it ideal for high-efficiency power-management applications.

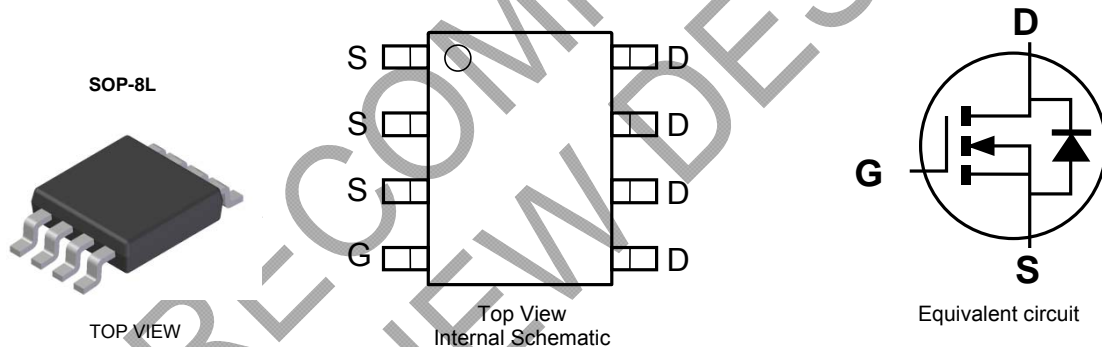
- Backlighting
- Power Management Functions
- DC-DC Converters

## Features and Benefits

- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

## Mechanical Data

- Case: SOP-8L
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals Connections: See Diagram
- Terminals: Finish - Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208
- Weight: 0.074g (Approximate)

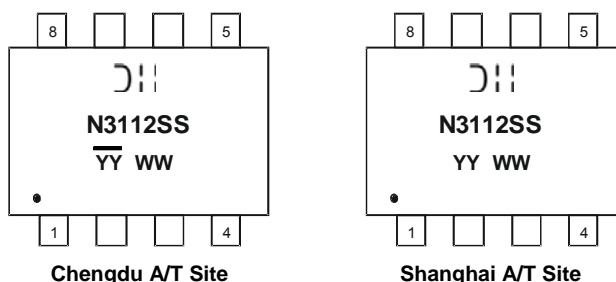


## Ordering Information (Note 4)

Part Number	Case	Packaging
DMN3112SSS-13	SOP-8L	2,500/Tape & Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
  2. See [http://www.diodes.com/quality/lead\\_free.html](http://www.diodes.com/quality/lead_free.html) for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
  3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  4. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

## Marking Information



- = Manufacturer's Marking  
 N3112SS = Product Type Marking Code  
 YYWW = Date Code Marking  
 YY or YY = Year (ex: 13 = 2013)  
 WW = Week (01 - 53)  
 YY = Date Code Marking for SAT (Shanghai Assembly/ Test site)  
 YY = Date Code Marking for CAT (Chengdu Assembly/ Test site)

**Maximum Ratings** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic			Symbol	Value	Units
Drain-Source Voltage			V <sub>DSS</sub>	30	V
Gate-Source Voltage			V <sub>GSS</sub>	±20	V
Drain Current (Note 5)	Steady State	T <sub>A</sub> = +25°C	I <sub>D</sub>	6	A
		T <sub>A</sub> = +70°C		4.5	
Pulsed Drain Current (Note 6)			I <sub>DM</sub>	24	A

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5)	$P_D$	2.5	W
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	50	$^\circ\text{C/W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

**Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	30	—	—	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	—	—	800	nA	V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V
Gate-Source Leakage	I <sub>GSS</sub>	—	—	±80	nA	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V
		—	—	±800		V <sub>GS</sub> = ±25V, V <sub>DS</sub> = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	V <sub>GS(th)</sub>	1	—	2.2	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	—	43	57	mΩ	V <sub>GS</sub> = 10V, I <sub>D</sub> = 5.8A
			83	112		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 3.7A
Forward Transconductance	g <sub>fs</sub>	—	2.8	—	S	V <sub>DS</sub> = 10V, I <sub>D</sub> = 3.7A
Diode Forward Voltage (Note 7)	V <sub>SD</sub>	0.5	0.8	1.2	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = 2.1A
DYNAMIC CHARACTERISTICS						
Input Capacitance	C <sub>iss</sub>	—	268	—	pF	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 0V f = 1.0MHz
Output Capacitance	C <sub>oss</sub>	—	73	—	pF	
Reverse Transfer Capacitance	C <sub>rss</sub>	—	50	—	pF	

- Notes:
- Device mounted on 2 oz copper pad layout with  $R_{\theta JA} = 50^\circ\text{C/W}$ .
  - Pulse width  $\leq 10\mu\text{s}$ , Duty Cycle  $\leq 1\%$ .
  - Short duration pulse test used to minimize self-heating effect.

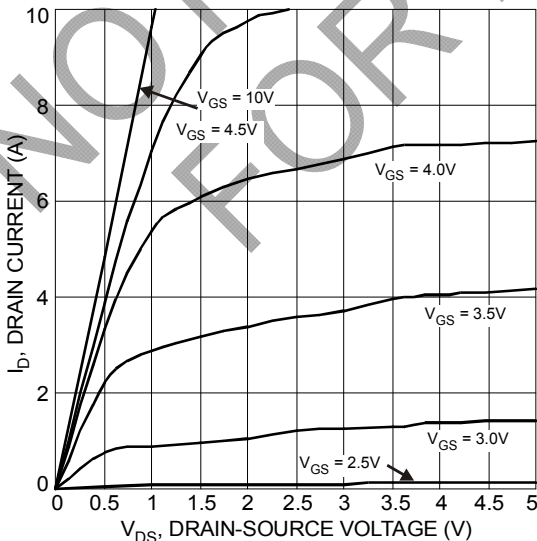


Fig. 1 Typical Output Characteristic

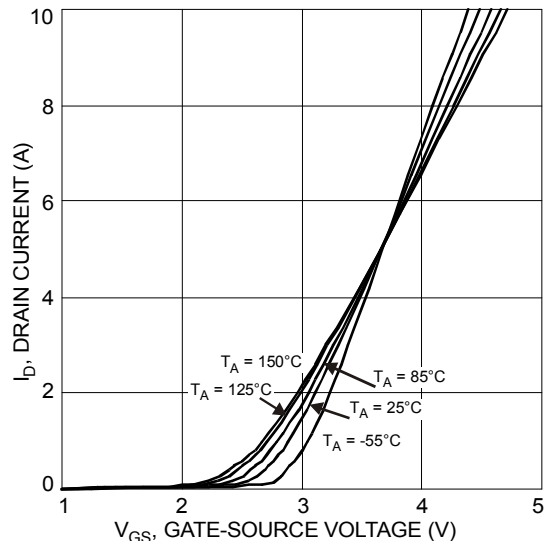


Fig. 2 Typical Transfer Characteristic

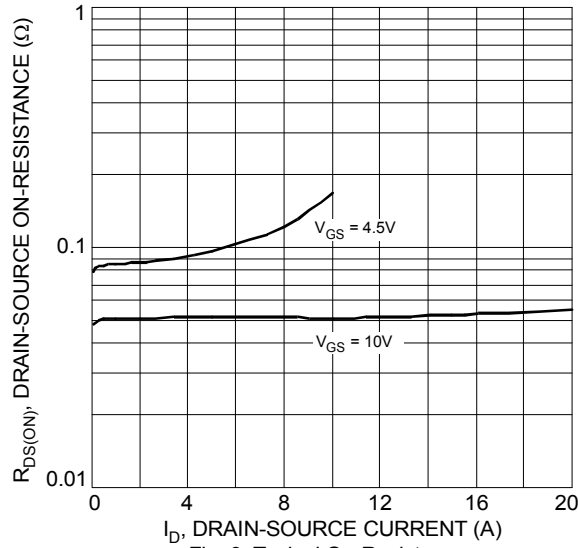


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

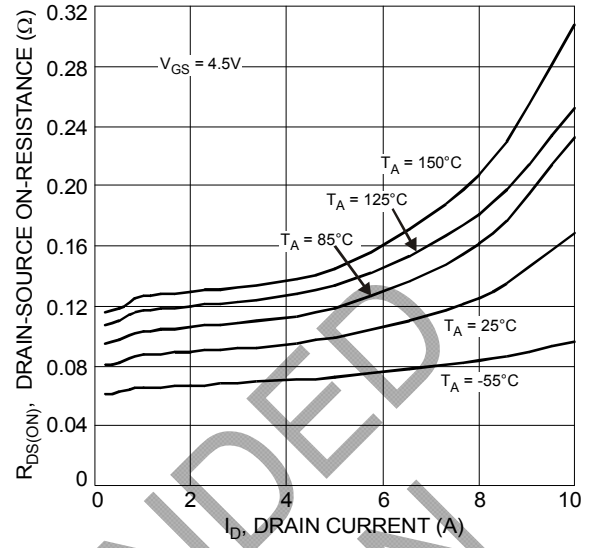


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

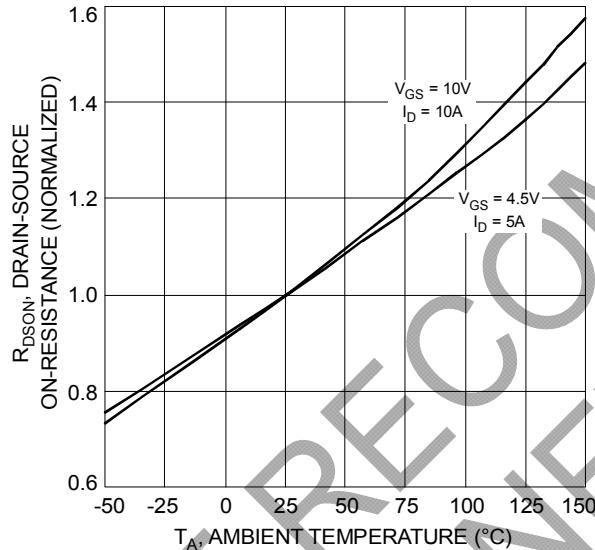


Fig. 5 On-Resistance Variation with Temperature

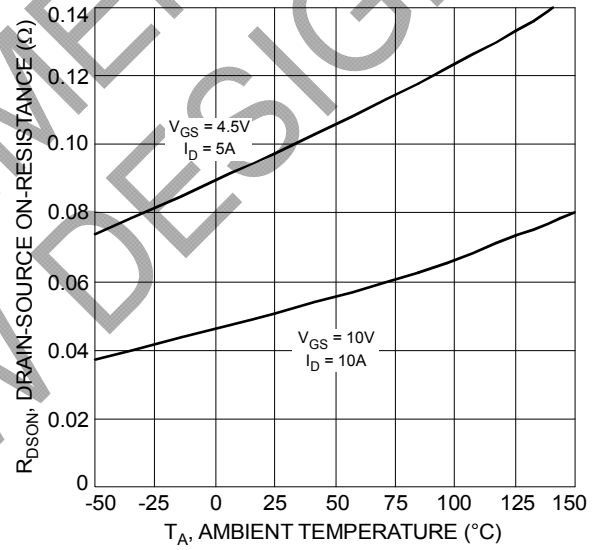


Fig. 6 On-Resistance Variation with Temperature

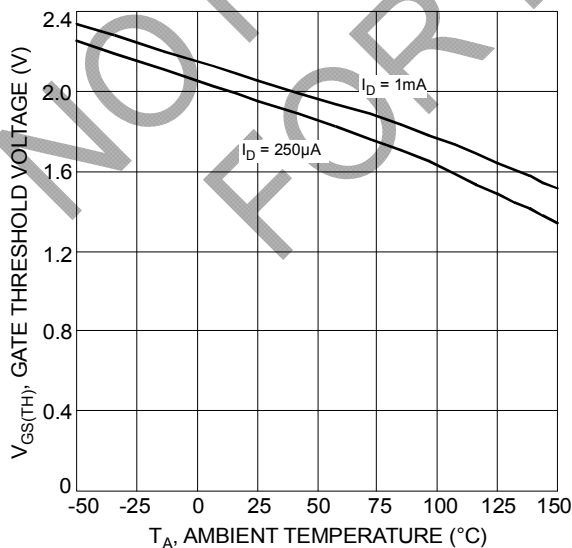


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

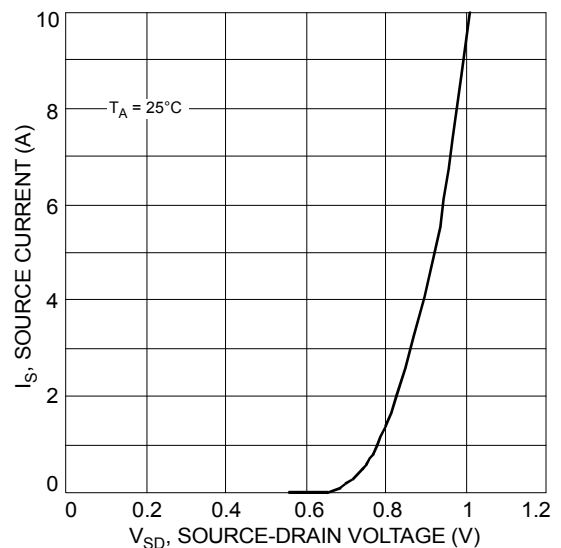


Fig. 8 Diode Forward Voltage vs. Current

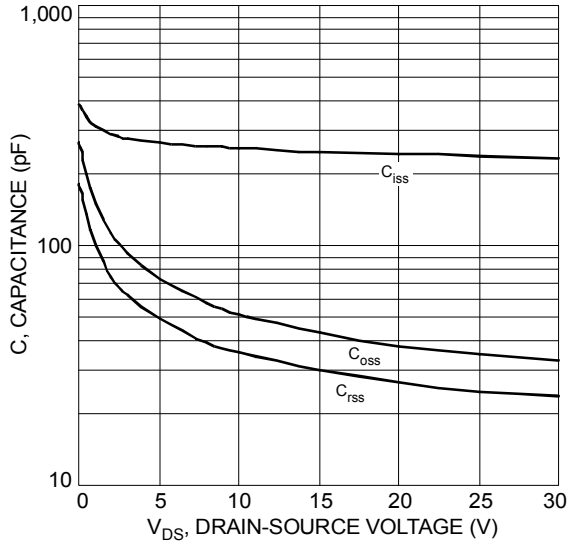


Fig. 9 Typical Total Capacitance

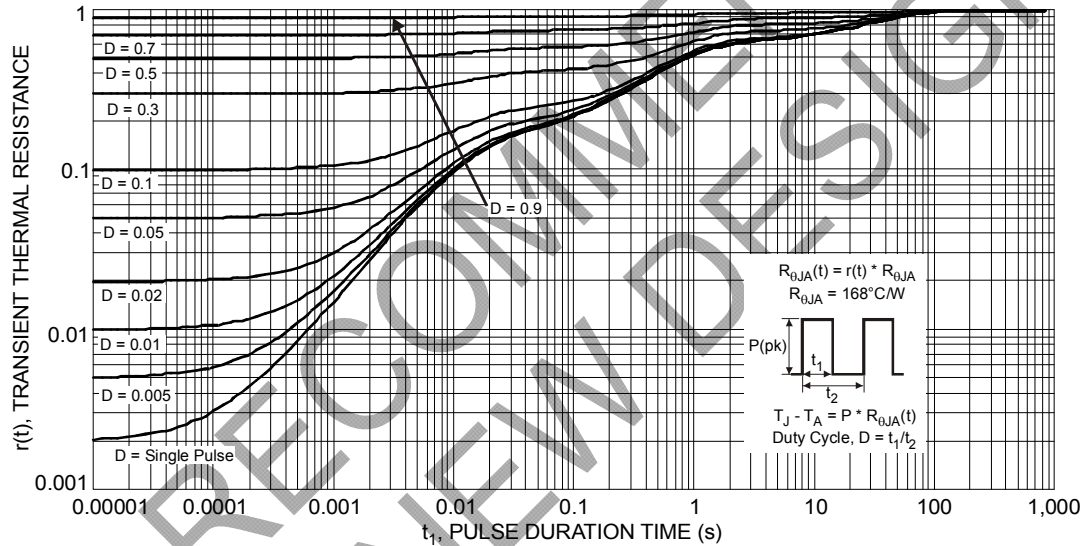
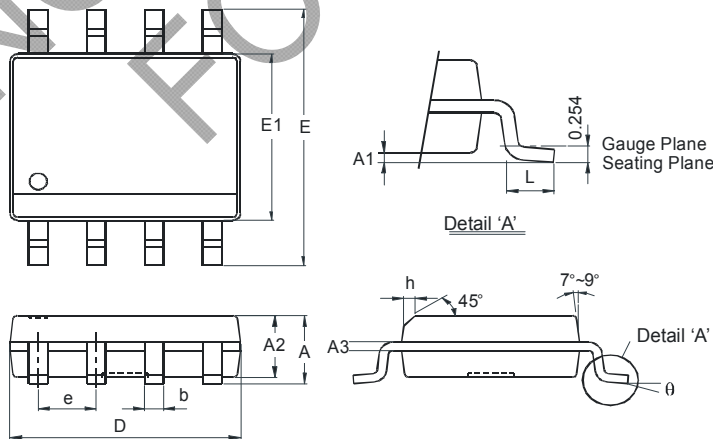


Fig. 10 Transient Thermal Response

## Package Outline Dimensions

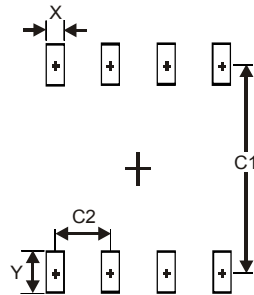
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



SOP-8L		
Dim	Min	Max
A	-	1.75
A1	0.08	0.25
A2	1.40	1.50
A3	0.20 Typ	
b	0.3	0.5
D	4.85	4.95
E	5.90	6.10
E1	3.80	3.90
e	1.27 Typ	
h	-	0.35
L	0.60	0.80
θ	0°	8°
All Dimensions in mm		

## Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



Dimensions	Value (in mm)
X	0.60
Y	1.55
C1	5.4
C2	1.27

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