

Product Summary

$V_{(BR)DSS}$	$R_{DS(ON) \max}$	I_D $T_A = +25^\circ\text{C}$
20V	10Ω @ $V_{GS} = 4.5\text{V}$	0.5A
	14Ω @ $V_{GS} = 2.5\text{V}$	0.5A
	25Ω @ $V_{GS} = 1.5\text{V}$	0.1A

Description

This new generation 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.

Applications

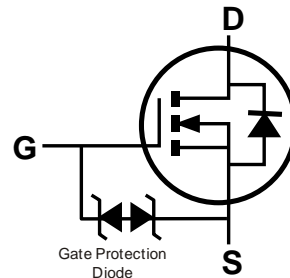
- Notebook Computer
- Portable Phone
- PCMCIA Cards and Battery Powered Circuits



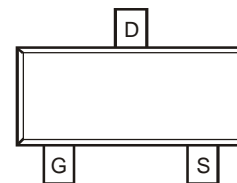
SC59



TOP VIEW



EQUIVALENT CIRCUIT


 TOP VIEW
Pin Out Configuration

Mechanical Data

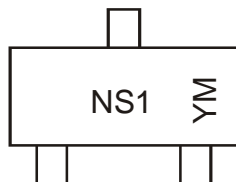
- Case: SC59
- Case Material - Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Finish Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Marking Information: See Page 3
- Ordering & Date Code Information: See Page 3
- Weight: 0.014 grams (approximate)

Ordering Information (Note 4)

Part Number	Case	Packaging
DMN2112SN-7	SC59	3000/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 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



Date Code Key

Year	2007	2008	2009	...	2012	2013	2014	2015	2016	2017	2018
Code	U	V	W	...	Z	A	B	C	D	E	F

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

Maximum Ratings (@T_A = +25°C unless otherwise specified)

Characteristic	Symbol	Value	Units
Drain-Source Voltage	V _{DSS}	20	V
Gate-Source Voltage	V _{GSS}	± 8	V
Drain Current	I _D	1.2 4.0	A

Thermal Characteristics (@T_A = +25°C unless otherwise specified)

Characteristic	Symbol	Value	Units
Total Power Dissipation	P _d	500	mW
Thermal Resistance, Junction to Ambient	R _{θJA}	250	°C/W
Operating and Storage Temperature Range	T _j , T _{STG}	-55 to +150	°C

Electrical Characteristics (@T_A = +25°C unless otherwise specified)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 5)						
Drain-Source Breakdown Voltage	BV _{DSS}	20	—	—	V	V _{GS} = 0V, I _D = 250μA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	10	μA	V _{DS} = 20V, V _{GS} = 0V
Gate-Body Leakage	I _{GSS}	—	—	± 10	μA	V _{GS} = ± 8V, V _{DS} = 0V
ON CHARACTERISTICS (Note 5)						
Gate Threshold Voltage	V _{GS(th)}	0.5	—	1.2	V	V _{DS} = 10V, I _D = 1.0mA
Static Drain-Source On-Resistance	R _{DS(ON)}	—	—	0.10 0.14 0.25	Ω	V _{GS} = 4.5V, I _D = 0.5A V _{GS} = 2.5V, I _D = 0.5A V _{GS} = 1.5V, I _D = 0.1A
Forward Transfer Admittance	Y _{fs}	—	4.2	—	S	V _{DS} = 10V, I _D = 0.5A
Diode Forward Voltage	V _{SD}	—	0.8	1.1	V	V _{GS} = 0V, I _S = 1A
DYNAMIC CHARACTERISTICS (Note 6)						
Input Capacitance	C _{iss}	—	220	—	pF	V _{DS} = 10V, V _{GS} = 0V f = 1.0MHz
Output Capacitance	C _{oss}	—	120	—	pF	
Reverse Transfer Capacitance	C _{rss}	—	45	—	pF	
SWITCHING CHARACTERISTICS (Note 6)						
Turn-On Delay Time	t _{D(ON)}	—	10	—	ns	V _{DD} = 5V, I _D = 0.5A, V _{GS} = 10V, R _{GEN} = 50Ω
Turn-Off Delay Time	t _{D(OFF)}	—	75	—	ns	
Turn-On Rise Time	t _r	—	15	—	ns	
Turn-Off Fall Time	t _f	—	65	—	ns	

Notes: 5. Short duration pulse test used to minimize self-heating effect.
6. Guaranteed by design. Not subject to product testing.

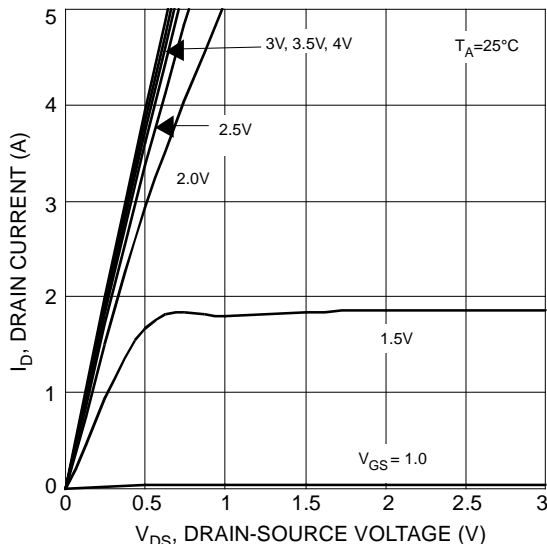


Fig. 1 Typical Output Characteristics

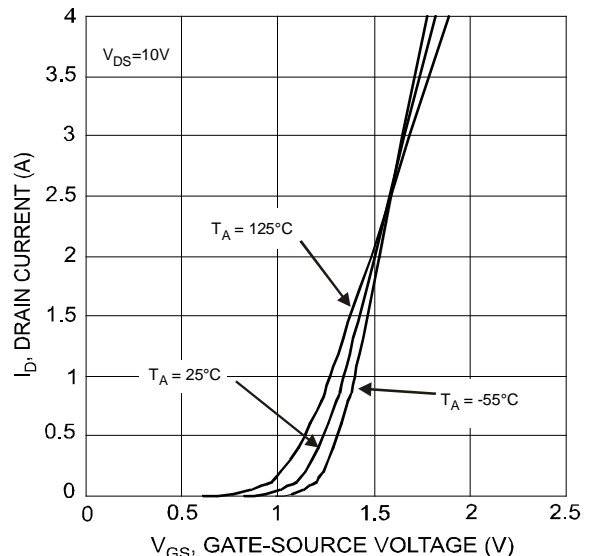


Fig. 2 Typical Transfer Characteristics

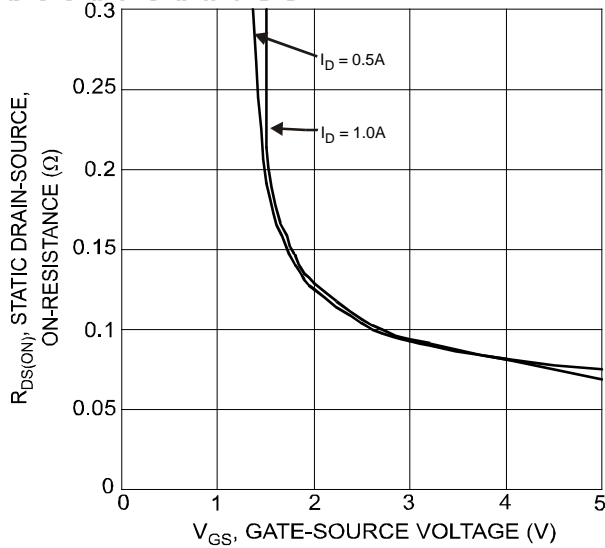


Fig. 3 On-Resistance vs. Gate Voltage

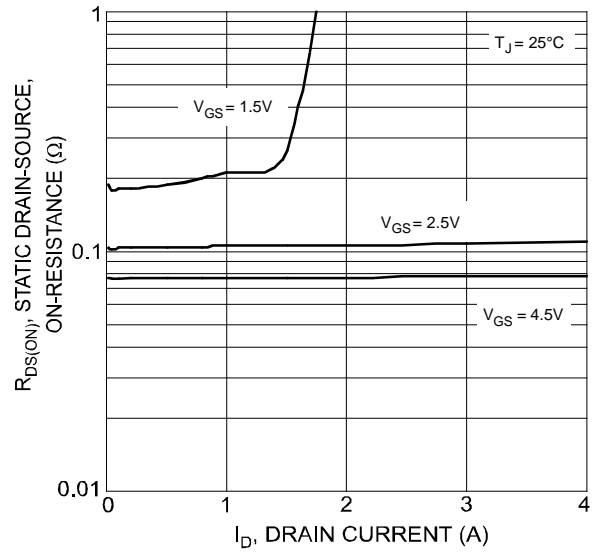


Fig. 4 On-Resistance vs. Drain Current

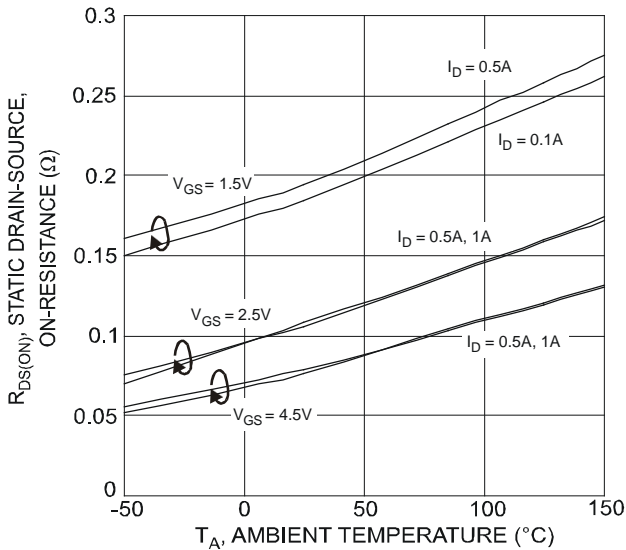


Fig. 5 On-Resistance Variation with Temperature

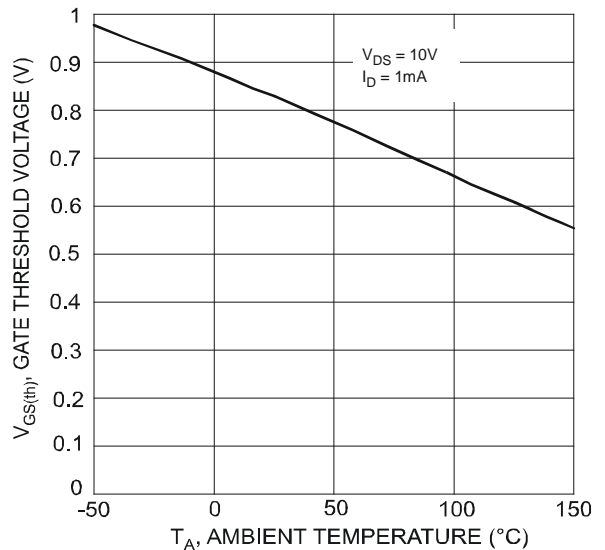


Fig. 6 Gate Threshold Voltage vs. Temperature

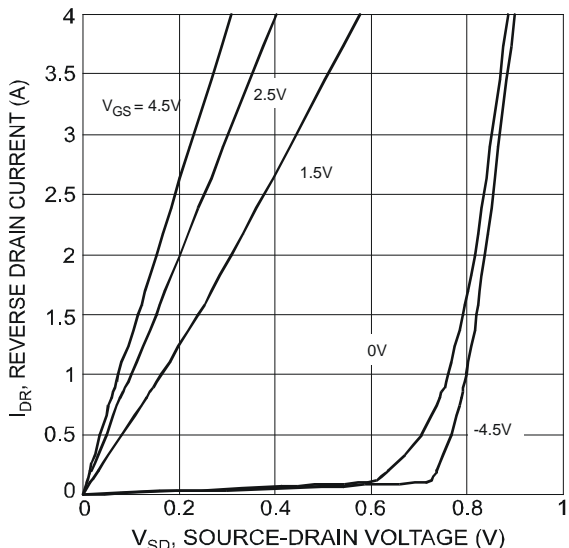


Fig. 7 Reverse Drain Current vs. Source-Drain Voltage

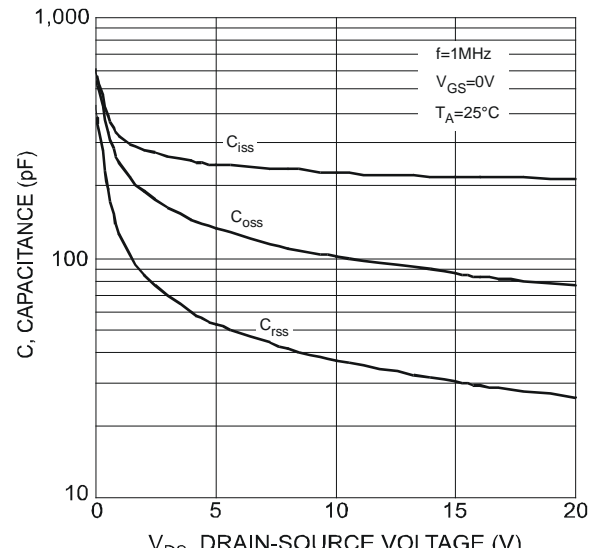
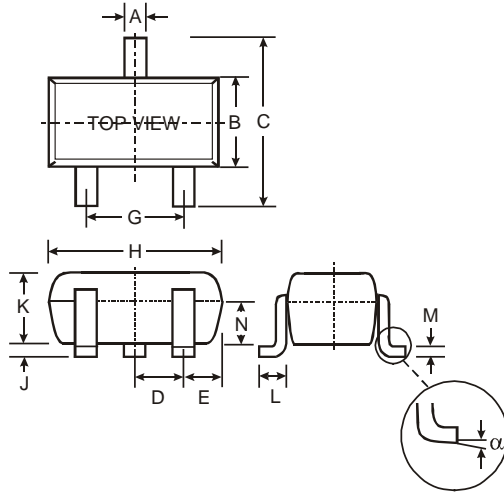


Fig. 8 Typical Junction Capacitance

Package Outline Dimensions

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



SC59		
Dim	Min	Max
A	0.35	0.50
B	1.50	1.70
C	2.70	3.00
D	0.95	
E	—	—
G	1.90	
H	2.90	3.10
J	0.013	0.10
K	1.00	1.30
L	0.35	0.55
M	0.10	0.20
N	0.70	0.80
α	0°	8°
All Dimensions in mm		

Suggested Pad Layout

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

Dimensions	Value (in mm)
Z	4.0
G	1.2
X	0.9
Y	1.4
C	2.6
E	0.95

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