N-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR

Features

- Low On-Resistance
- Ideal for Notebook Computer, Portable Phone, PCMCIA Cards, and Battery Power Circuits
- **Lead Free By Design/RoHS Compliant (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **ESD Protected Gate**
- **"Green" Device (Note 3)**

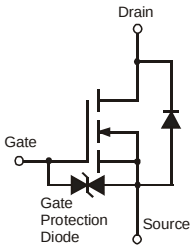
Mechanical Data

- 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)

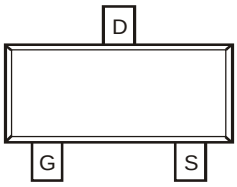

ESD protected


TOP VIEW

SC-59



Internal Schematic



TOP VIEW

Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic		Symbol	Value	Unit
Drain-Source Voltage		V_{DSS}	20	V
Gate-Source Voltage	Continuous	V_{GSS}	±12	V
Drain Current	Continuous Pulsed	I_D	1.2 4.0	A

Thermal Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Total Power Dissipation	P_d	500	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	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 1)							
Drain-Source Breakdown Voltage		BV_{DSS}	20	—	—	V	V_{GS} = 0V, I_D = 250μA
Zero Gate Voltage Drain Current	@ T_j = 25°C	I_{DSS}	—	—	10	μA	V_{DS} = 24V, V_{GS} = 0V
Gate-Body Leakage		I_{GSS}	—	—	±10	μA	V_{GS} = ±12V, V_{DS} = 0V
ON CHARACTERISTICS (Note 1)							
Gate Threshold Voltage		$V_{GS(th)}$	0.7	—	1.40	V	V_{DS} = 10V, I_D = 1.0mA
Static Drain-Source On-Resistance		$R_{DS\ (ON)}$	— —	— —	0.100 0.160	Ω	V_{GS} = 4.5V, I_D = 0.5A V_{GS} = 2.5V, I_D = 0.5A
Forward Transfer Admittance		$\|Y_{fs}\|$	—	3.3	—	S	V_{DS} = 10V, I_D = 0.5A
Diode Forward Voltage		V_{SD}	—	0.8	1.1	V	V_{GS} = 0V, I_S = 1.0A
DYNAMIC CHARACTERISTICS							
Input Capacitance		C_{iss}	—	180	—	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							
Turn-On Delay Time		$t_{D(ON)}$	—	10	—	ns	V_{DD} = 10V, I_D = 0.5A, V_{GS} = 5.0V, R_{GEN} = 50Ω
Turn-Off Delay Time		$t_{D(OFF)}$	—	50	—	ns	
Turn-On Rise Time		t_r	—	15	—	ns	
Turn-Off Fall Time		t_f	—	45	—	ns	

Notes:
1. Pulse width ≤300μS, duty cycle ≤2%.
2. No purposefully added lead.
3. Diodes Inc's "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.

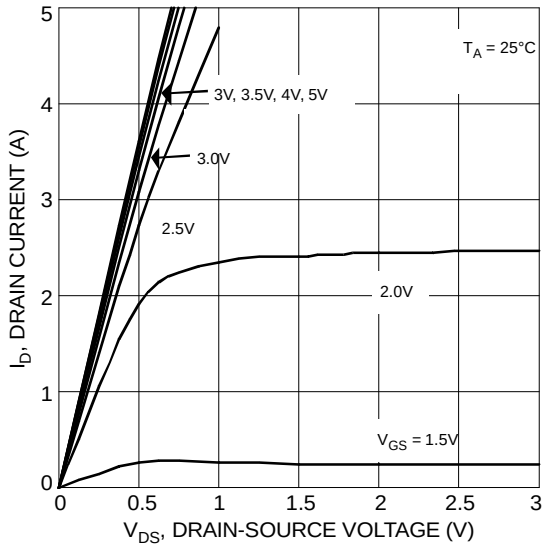


Fig. 1 Typical Output Characteristics

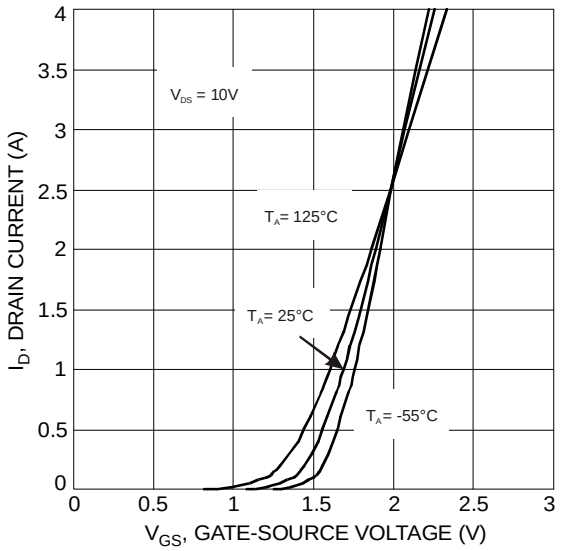


Fig. 2 Typical Transfer Characteristics

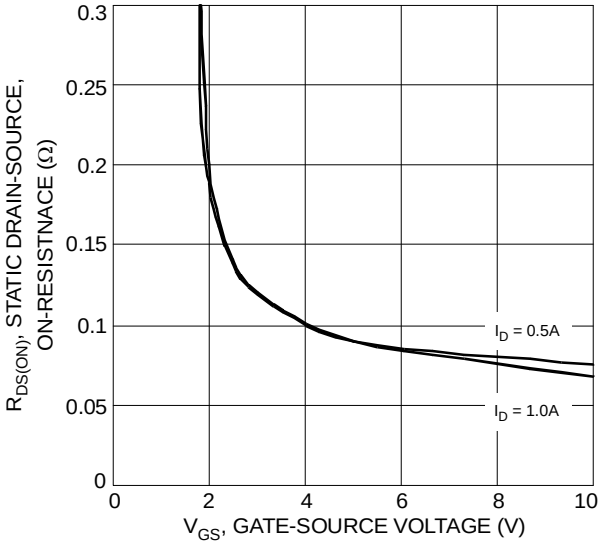


Fig. 3 On-Resistance vs. Gate Voltage

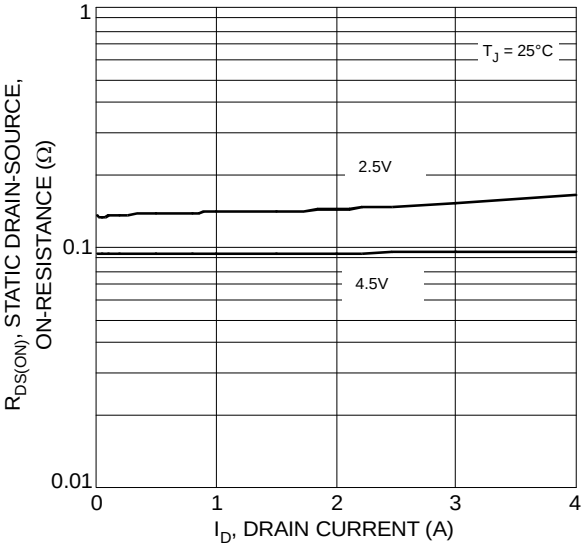


Fig. 4 On-Resistance vs. Drain Current

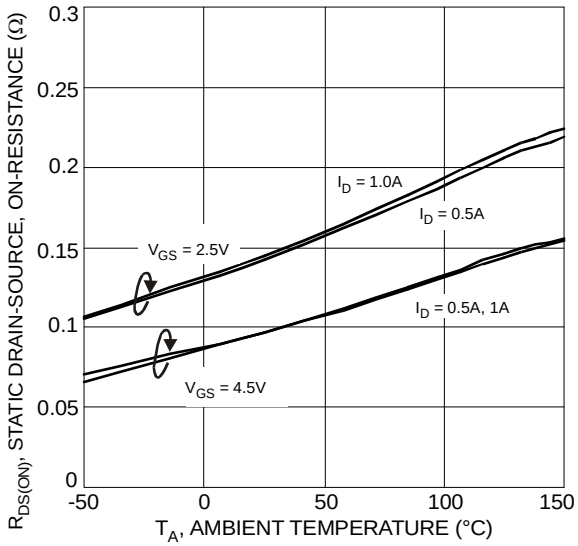


Fig. 5 On-Resistance Variation with Temperature

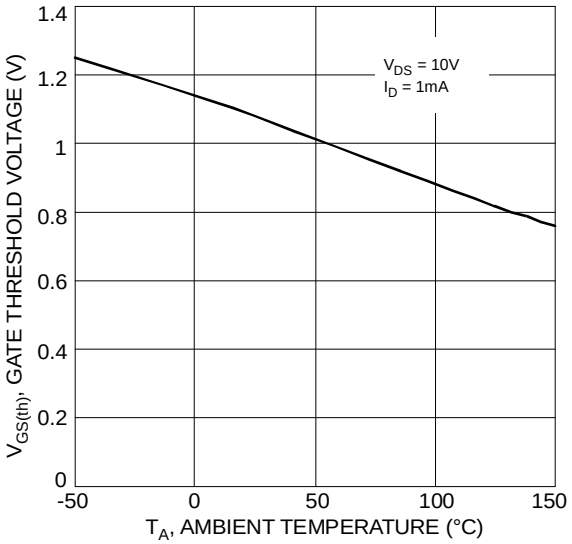


Fig. 6 Gate Threshold Voltage vs. Temperature

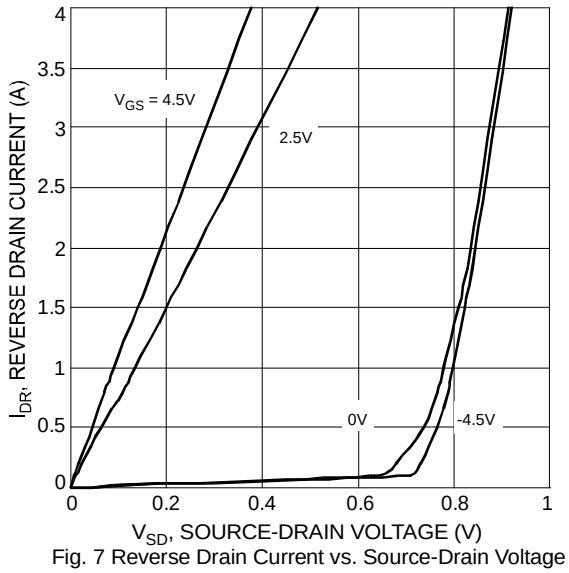


Fig. 7 Reverse Drain Current vs. Source-Drain Voltage

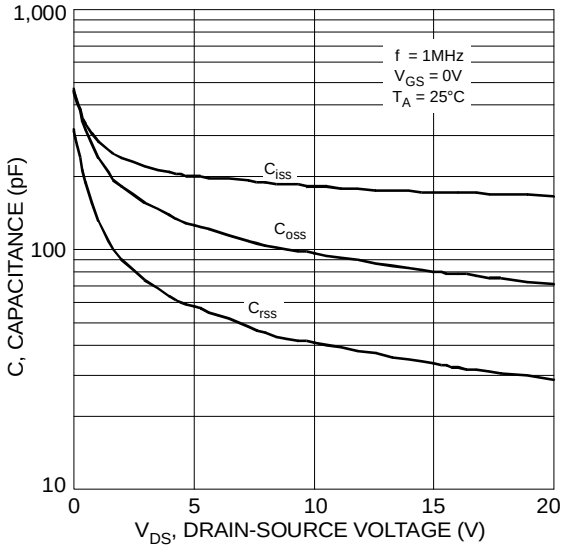


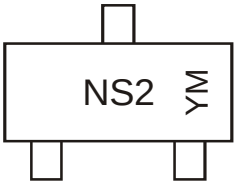
Fig. 8 Typical Total Capacitance

Ordering Information (Note 4)

Part Number	Case	Packaging
DMN2114SN-7	SC59	3000/Tape & Reel

Notes: 4. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

Marking Information



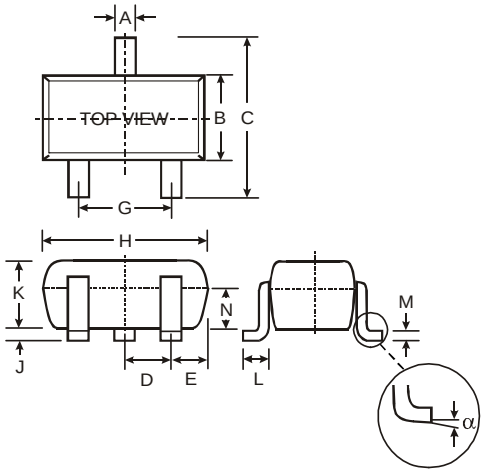
NS2 = Product Type Marking Code
YM = Date Code Marking
Y = Year ex: T = 2006
M = Month ex: 9 = September

Date Code Key

Year	2006	2007	2008	2009	2010	2011	2012
Code	T	U	V	W	X	Y	Z

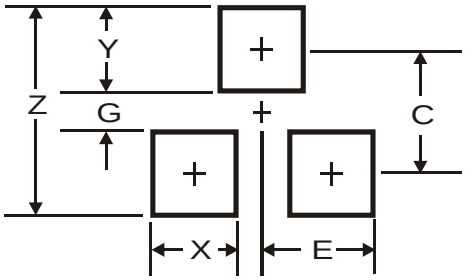
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

Package Outline Dimensions



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



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

Mouser Electronics

Authorized Distributor

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Diodes Incorporated:

DMN2114SN-7